



PLANS AND DOCUMENTS
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19 HERCULES STREET
HAMILTON

REPORT

FOR

DA - ESD

MIRVAC

Client

EMF GRIFFITHS

Sustainability Consultants

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EXECUTIVE SUMMARY

The proposed development at 19 Hercules Street, Hamilton comprises four buildings that address Hercules Street, Main Street and the pedestrian 'street'. The buildings are situated above a three level basement carpark and retail precinct at ground level.

Due to its location in the Hamilton Northshore Urban Development Area (UDA) the development is subject to planning assessment by the Urban Land Development Authority (ULDA) rather than Brisbane City Council. When undertaking assessment activities, the ULDA is guided by their ***Draft Sustainability Policy Version 1.0***, which goes beyond ecological sustainability and considers economic performance, infrastructure, energy efficiency, climate change and urban design.

This report demonstrates the proposed development complies with and exceeds these principles by delivering measurable outcomes in the four key sustainability principles.

As shown in **Table 1**, the proposed design meets 90% of the all UDLA sustainability initiatives specified in the guidelines.

Sustainability Score* (%)	UDLA Key Sustainability Principle				Overall Score
	Promote and maintaining liveable communities	Providing economic benefit	Protecting ecological values and optimising resource use	Promoting planning and design excellence	
% met	90%	88%	81%	100%	90%
% met and partially met	100%	94%	100%	100%	99%

*Expressed as proportion of UDLA initiatives detailed in Draft Sustainability Policy Version 1.0

Table 1: Compliance with UDLA Sustainability Initiatives

Furthermore, the proposed design meets or partially meets 99% of those initiatives. That is to say, the proposal comprehensively addresses the majority of the specified sustainability outcomes for each principle and in particular cases the outcomes exceed the Draft Sustainability Policy's Requirements.

This development substantially adopts the goals identified by the ULDA and is consistent with its vision of sustainable urban communities.

In the areas below the proposed development design has been shown to exceed the requirements of the ULDA sustainability policy in the following areas:-

- Accessibility: exceeds requirement by 50%.
- Connectivity: creates an active 2400m² pedestrian street at the core of the development.
- Material & Waste: 80% of construction waste to be recycled and/or reused.
- Transport: increased provision of cycle spaces by over 400%.
- Energy Efficiency: Annual Green House Gas contribution reduced by 25% compared to benchmark. All units meet the HERS modelling standard of ≥ 5 . The majority of the apartments achieved over 5 stars HERS rating and some apartments modelled reached a maximum of 8.5 stars.
- Affordability: the proposal provides 14% of GFA as affordable units which is 180% above the ULDA requirement.
- Community recreation: the extent of public and private recreation spaces is considered to exceed normal standards, and includes accessible open space.
- Urban design and sense of place: the proposal is considered to exceed requirements for design.

The feature sustainability metrics for the proposed development are detailed in **Table 2**. Compliance elements that exceed the requirements have been highlighted. **Tables 3 to 6** summarise the compliance of the proposed design with each of the sustainability criteria of the **Sustainability Policy Version 1.0**.

Principle	Strategy	Compliance
1. Promote and maintaining liveable communities	• Housing affordability • High quality of life • High levels of community participation • Healthy and safe communities • Respect existing communities	• 14% of GFA as affordable units which is above the ULDA requirement (exceeds requirements) by 180%. • Appropriate mix of residential, retail, and recreational uses. • 2,400sqm of open public space (exceeds requirements) • Universal design with 14.5% of apartments meeting accessibility requirements (exceeds requirements)
2. Providing economic benefit	• Public benefit • Lifecycle costs • Land supply • Partnerships • Sustainability champion	• Employment opportunities with provision of over 1500sqm retail and service areas. • Complementary retail offering. • Attractive environment through planting, seating and sculptural gardens. • Improved connectivity via pedestrian street • Standardised construction processes with local/recycled materials.
3. Protecting ecological values and optimising resource use	• Climate impact • Water • Energy and transport • Materials and waste • Habitats and biodiversity • Pollution	• 4 star WELS appliances. • Rainwater harvesting via 50kL tank. • An integrated water management strategy will be implemented. • Annual Green House Gas contribution reduced by 25% compared to benchmark. All units meet the HERS modelling standard of ≥ 5. The majority of the apartments achieved over 5 stars HERS rating and some apartments modelled reached a maximum of 8.5 stars. (exceeds requirements) • 594 secure bicycle spaces. • 80% construction waste recycled. (exceeds requirements) • 4 star MEPS (Air Conditioning.) • Efficient lighting and services design with minimal light spill. • Introduction of extensive landscaping area and green walls providing habitats and biodiversity where none exist at present. • The development will minimise, in construction and operation, the noise and light pollution and all other emissions leaving the site. • Design for dematerialisation through self surfaced finishes.
4. Promoting planning and	• Community and place	• 2,400sqm landscaped pedestrian 'street.'

Principle	Strategy	Compliance
design excellence	• Responsive urban form • Quality public realm • Infrastructure • Connectivity	• Recreational deck for residents. • Alignment of key linkages with surrounding infrastructure. • Community recreation: the extent of public and private recreation spaces is considered to exceed normal standards, and includes accessible open space. (exceeds requirements). • Community recreation: the extent of public and private recreation spaces is considered to exceed normal standards, and includes accessible open space. (exceeds requirements).

Table 2: Key Principles of ULDA Draft Sustainability Policy and key development performance metrics.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)		
		Yes	Partially	No
Housing affordability	Housing choice.	✓		
	10% of all housing is universal.	✓✓		
	Meet the targets for affordable housing and housing types.	✓✓		
Appropriate mix of land uses	Protection of the amenity of existing and proposed residents.	✓		
	Provision of the appropriate mix of uses.	✓		
	new employment opportunities.	✓		
	Home businesses are permitted in residential areas.	✓		
	High speed internet connections.	✓		
High quality of life	Recreation opportunities and social infrastructure.	✓✓		
	Open space areas.	✓✓		
	Social infrastructure planned.	✓		
	Street frontages.	✓		
	Public transport nodes.		✓	
High levels of community participation	Ongoing community engagement.		✓	
Healthy and safe communities	Designed in accordance with CPTED principles.	✓		
	Development is to create: • A network of cycle safe road. • Incorporate appropriate end-of-trip facilities.	✓		
	Within 800m of public transport points.	✓		
	Public spaces comply with disability discrimination legislation.	✓		
	Public spaces for different abilities and uses.	✓✓		
Respect existing communities	Incorporates/ re-uses existing heritage, character or cultural features.	✓		

Table 3: Promoting And Maintaining Liveable Communities (✓✓ = exceeds requirement)

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)		
		Yes	Partially	No
Public Benefit	Increase in the number/ range of employment opportunities.	✓		
	Commercial areas complement those in surrounding areas.	✓		
	Development is to create destinations and places that can become focal points for community interactions and uses.	✓		
	Connectivity within precincts and the existing communities.	✓✓		
Lifecycle Costs	Standard material sizes. Use of locally available, reusable and/ or recycled materials.		✓	
	Design is appropriate for the site	✓		
	Passive design.	✓✓		
	High water use areas clustered.	✓		
	High energy/ water efficient appliances.	✓		
	Use of self finished materials on external surfaces.	✓		
	Rainwater tanks.	✓		
	Energy efficient lighting.	✓		
	On site energy generation.			✓
Land Supply	Note relevant in development assessment.	Not Applicable		
Partnerships	Commitment to sustainable development outcomes.	✓		
Sustainability Champion	Commitment to sustainable development outcomes.	✓		

Table 4: Providing Economic Benefit (✓✓ = exceeds requirement)

Strategy	Sustainability Criteria	Assessment		
		Yes	Partially	No
Climate Impact	The plan minimises greenhouse gas emissions.	✓✓		
	Building Design for Changing Climate.	✓		
Water	The development is consistent with current best practice WSUD.		✓	
	Development provides flood protection.	✓		
	Development does not adversely impact downstream users.	✓		
	≤ 160 L/person/day residential and 40L/person/day commercial.	✓		
	Water efficiency and reuse.	✓		
	Integrated Water Cycle Management.	✓		
	Smart water metering with meters.		✓	
Energy and Transport	Exceed required energy efficiency requirements.	✓✓		
	Maximise thermal performance and minimise use of artificial heating/ ventilation and A/C systems.	✓✓		
	Renewable energy sources.		✓	
	Daylighting and Energy Efficient lighting.	✓		
	Bicycle facility targets for apartments.		✓	
	Bicycle facility targets for sites other than apartments.	✓✓		
	80% of dwellings are located 800m of a railway station/400m of a bus stop/400m of a ferry terminal.	✓		
	Connectivity, directness of route and facilities.	✓		
Materials and Waste	Development minimises site disturbance.	✓		
	20% min. recycled/ reused material in construction/landscaping.		✓	
	Incorporate materials from sustainable and renewable resources.		✓	
	Responsibly sourced and manufactured materials where possible.	✓		
	Non toxic and low emission materials utilised as standard.	✓		
	Development should use materials sourced locally where possible.	✓		
	Waste management plan.	✓✓		
Habitats and Biodiversity	Development identifies and responds to ecological processes.	✓		
	Development should minimise ecological impacts.	✓		
	Supports existing habitats and implement WSUD.	✓		
Pollution	Designed to produce a healthy living environment.	✓		
	Direct light sources are not to carry beyond the line of sight.	✓		
	All land and groundwater will be fit for purpose.	✓		
	An acid sulfate soils investigation and remediation.	✓		

Table 5: Protecting Ecological Values and Optimising Resource Use (✓✓ = exceeds requirement)

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)		
		Yes	Partially	No
Community and place	Retention of community importance.	✓		
	Development contributes to a sense of place.	✓		
Responsive urban form	Subtropical urban form.	✓✓		
Quality public realm	Development will create: - a range of public space options within close proximity to residents and workers, including areas for formal and informal, active and passive recreation; - public spaces that are flexible and adaptable to accommodate a range of uses over the course of a day and a year; - public spaces that are accessible to a range of users and respond to our changing demographics; - public spaces that are interesting, engaging and safe, with active edges and host a mix of uses; - movement networks which prioritises pedestrian and cyclist movement and encourages non-motorised transport modes; - public access and quality pedestrian and cycle links along rivers and waterways; and - new subdivisions and residential developments incorporate private and communal open space.	✓✓		
	Development is to consider what public art, including festivals and public events, contributes towards the: - development of community facilities; - development of public precincts and places; - cultural animation and cultural programming.	✓		
Infrastructure	Development includes detailed descriptions of the infrastructure needed.	✓		
Connectivity, safety and accessibility	Development is to be well connected, safe and accessible.	✓		
Engagement and Partnerships	Not relevant in development assessment.	Not Applicable		

Table 6: Promoting Planning and Design Excellence (✓✓ = exceeds requirement)

SECTION 1 INTRODUCTION

EMF Griffiths have been engaged by Mirvac Qld Pty Ltd to assess the sustainability credentials of their proposed development at 19 Hercules Street, Hamilton described as Lot 3 on SP172658. The purpose of this report is to demonstrate how the proposal complies with the Northshore Hamilton UDA Development Scheme and the Draft ULDA Sustainability Policy Version 1.0.

To facilitate the creation of sustainable urban communities, the Sustainability Policy focuses on the following key principles:

1. Promoting and maintaining liveable communities;
2. Providing economic benefit;
3. Protecting ecological values and optimising resource use; and
4. Promoting planning and design excellence.

This development substantially adopts the goals identified by the ULDA. This report will illustrate the project's compliance with the criteria noted in the Development Requirements of the Draft Policy and will focus on the specific measures that contribute to a sustainable development.

1.1 BUILDING DESCRIPTION

The development proposal comprises four buildings that address Hercules Street, Main Street and the proposed pedestrian spine, which is a public landscape feature that links Main Street to Hamilton Park through the site. The proposed scheme contains a diverse mix of building heights, apartment types and uses that activate the frontages.

The site masterplan comprises four buildings:-

Building 1: 23 levels, 263 apartments, maximum height RL 74.40.
 Building 2: 18 levels, 200 apartments, maximum height RL 60.40.
 Building 3: 8 levels, 119 apartments, maximum height RL 31.40.
 Building 4: 2 levels, maximum height RL 10.96.

Car parking is provided in a three-level basement with 610 car spaces for residents, retail tenants and visitors.. The main vehicular and servicing access points are separate and both off Hercules Street.

The massing of the buildings is conceived as a series of folded planes, which assists in breaking down the scale of the buildings, enhancing the vertical elements and forming a strong architectural language. The design also includes a celebration of a landscape spine, which provides visual and pedestrian connectivity through the site.

The proposed residential mix is as follows:-

Apartment Type	Average Net Area (m ²)	Balcony Area (m ²)	Gross Area (m ²)	Total No Apartments	Mix of Apartments
1B small	50	0	50	179	31%
1B	50	8.5	58.5	163	28%
2B small	73	0	73	43	7%
2B	79	9	88	153	26%
2B+	94	10	104	44	8%
Total				582	100%

Table 7: Proposed Residential Mix

Retail and services uses (approximately 1,578sqm) are planned for the ground podium, which will marry with the existing podium level of adjoining Portside Wharf. The overall gross floor area of the proposed development is approximately 42,755sqm (excluding lifts and services).

Figure 1 below illustrates the proposed site plan and the associated building numbers.

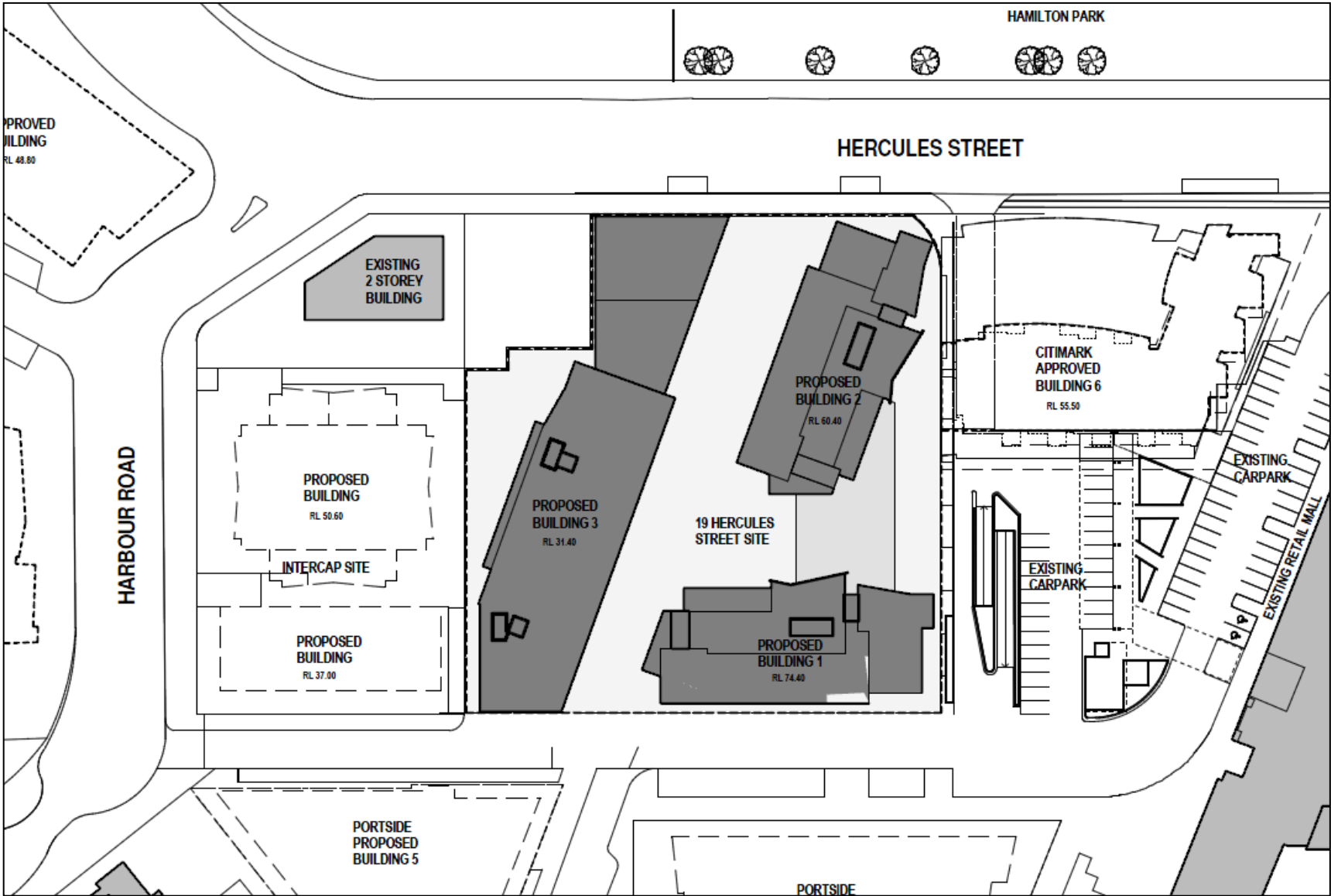


Figure 1: Site Plan

SECTION 2 COMPLIANCE WITH ULDA

2.1 THE ULDA

The Urban Land Development Authority was "established in 2007 as part of the Queensland Housing Affordability Strategy with the specific purposes of facilitating the provision of a range of housing options to address diverse community need and to facilitate planning principles that promote ecological sustainability and best practice urban design." (ULDA Guideline No.1, March 2010)

The *Urban Land Development Authority Act 2007* defines ecological sustainability as a balance that integrates:

- (i) Protection of ecological process and natural systems at local, regional, State and wider levels;
- (ii) Economic development; and
- (iii) Maintenance of the cultural, economic, physical and social wellbeing of people and communities.

The Act outlines the core functions of the ULDA as being to facilitate, among other things "planning principles that give effect to ecological sustainability and best practice urban design". To this end the ULDA has developed a Draft Sustainability Policy (currently Version 1.0) which contains the primary Vision and its associated Principles, Goals and Strategies to guide the ULDA in facilitating ecological sustainability throughout the planning and development assessment process. These principles, goals and strategies are shown in **Table 8**.

2.2 ULDA STRATEGIES

Vision	To facilitate the creation of sustainable urban communities			
Principles	Promoting and maintaining livable communities	Providing economic benefit	Protecting ecological values and optimising resource use	Promoting planning and design excellence
Goals	Communities are diverse, safe and healthy, have access to services, jobs and learning, foster active local participation and are pleasant places to live, work and visit while integrating with and enhancing the value of existing neighbourhoods.	Economic benefit is maximised by facilitating the release of urban land, incorporating lifecycle costs including operational savings, long term employment opportunities, and creating partnering opportunities and long term value.	Protect , manage and enhance natural systems, habitats and biodiversity, and promote the innovative and efficient use and management of materials, water and energy to minimise impacts on the climate.	Develop a modern resilient and adaptable urban form that promotes connectivity, safety and accessibility whilst recognising existing local values and aspirations.
Strategies	• Housing affordability. • High quality of life. • High levels of community participation. • Healthy and safe communities. • Respect existing communities.	• Public benefit. • Lifecycle costs. • Land supply. • Partnerships. • Sustainability champion.	• Climate impact. • Water. • Energy and transport. • Materials and waste. • Habitats and biodiversity. • Pollution.	• Community and place. • Responsive urban form. • Quality public realm. • Infrastructure. • Connectivity, safety and accessibility. • Engagement and Partnerships.

Table 8: ULDA Sustainability Principles, Goals and Strategies

2.3 ULDA SUSTAINABILITY CRITERIA

This section of the report will explore the key environmental sustainability strategies outlined by the ULDA's Draft Policy, and details the extent to which the proposed development complies with the specific measures in the criteria.

PRINCIPLE: PROMOTING AND MAINTAINING LIVEABLE COMMUNITIES

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Goal: Communities are diverse, safe and healthy, have access to services, jobs and learning, foster active local participation and are pleasant places to live, work and visit while integrating with and enhancing the value of existing neighbourhoods.					
Housing affordability	The development must demonstrate how it will deliver housing choice to suit a variety of households including: families, singles, couples, work-at-home occupiers, students, retirees, group accommodation households and people with special needs by offering variety in size, configuration, cost, adaptability, location and tenure.	✓			The project will deliver a variety of dwellings with 5 different apartment types to suit diverse households:- • 1 Bed Small (31%). • 1 Bed Standard (28%). • 2 Bed Small (7%). • 2 Bed Standard (26%). • 2 Bed Plus (8%). The variety of configurations seek to appeal to both investor and owner-occupier and it is anticipated the occupancy of the development will be a mix of owner-occupier and long term/short term tenancies along with the retail and/or commercial building users.

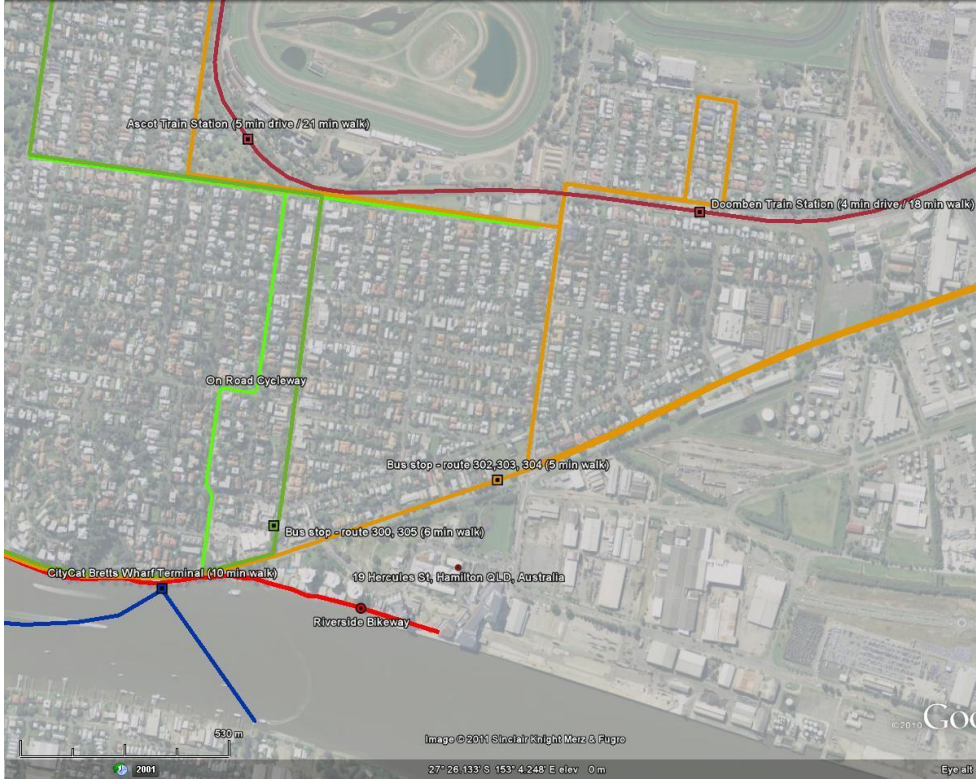
Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	10% of all housing is universal in accordance with the Universal Design Housing Booklet from the Department of Housing.	✓✓			The development includes 15% accessible apartments across one and two bedroom product in all buildings. <i>This outcome is substantially exceeding the requirement of 10%.</i> The proposed development design meets the needs of people across a range of abilities and ages; is adaptable for the changing needs of people over time and can be economically adapted in the future if necessary. The key universal design features of the development are listed below. (see Architectural Design Statement for additional details): - Door widths, entry and access passageways and doors meet design requirements for access. • Doorways minimum 920mm wide. • Passageways 1200mm – The latch side door circulation space is 460mm (compliant with AS 1428.1) which exceeds the ULDA requirements. • Entry passage width of 1495mm which exceeds the ULDA requirements. • Lift entry point to all levels and controls design for accessibility. Signage • Incorporates perceptible information, raised signage and audible signals. Fixtures and Fittings • Selection for universal design: levers rather than knobs, contrasting switches and sockets, 'keyed alike' locks. Internal circulation spaces • At least 1550mm clear length is provided in front of kitchen benches/ appliances. • 1550mm clear access is provided to the laundry / fixtures. Vehicle Parking A total of 8 accessible parking spaces will be delivered for the development. It is envisaged that car spaces will be allocated on an exclusive use basis, to allow 'swapping' of spaces between residents should their needs change. Bathroom: Mirvac has worked with Morris Goding to provide a bathroom that delivers on the accessibility intent within the structural constraints of the built form: • Hobless shower. • Wall structure to allow mobility aid retrofit.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	The development must meet the targets for affordable housing and housing types for the UDA consistent with the ULDA's housing targets as identified in the ULDA Affordable Housing Strategy.	✓✓			The project will deliver 108 apartments within the following affordability parameters 1 bed - \$370,000 (excluding carpark). 2 bed - \$550,000 (excluding carpark). <i>This equates to 18.5% of the product by number and in excess of 5,700sqm in floor area (which represents 14% of GFA when compared against the residential GFA of 41,000sqm) and exceeds the requirements by 180%.</i>
Appropriate mix of land uses	The development must adequately protect the amenity of existing and proposed residents, e.g. separating residential and industrial with appropriate buffers.	✓			The appropriate buffers, as recommend by the ULDA separate the residential and commercial uses: 12 metres between commercial buildings;18 metres between residential buildings;18 metres between residential and commercial buildings. The majority of residential apartments in the separate buildings are greater than 18m from each other. There are two locations where the separation distance is less than 18m at approximately 12.5m between buildings 1 and 3 and between buildings 2 and 3. It is noted that the required separation between commercial buildings is 12m and therefore the additional separation distance over 12m to 18m required between residential buildings is considered to address mainly privacy impacts between residences more so than to provide amenity outcomes which are adequately provided for by a 12m building separation. Accordingly, it is maintained that the arrangement of the buildings with their long axis perpendicular to the other (i.e. building 1 to buildings 2 and 3) or parallel to and offset from the other (i.e. building 2 to building 1) has ensured that where the separation distance is less than 18m at a minimum of approximately 12.5m, privacy impacts have been able to be avoided by the orientation of units away from those in the adjacent buildings including balconies and habitable room windows. Air Quality An air quality assessment has been undertaken to predict the impact of emissions from the industrial operators and potential sources of emission in the area identified through site inspection. The assessment identified that industry emissions for most compounds are predicted to comply with the adopted air quality criteria and where exceedances occur the contribution from surrounding industry is marginal and the exceedance is attributable to ambient background levels. Noise Intrusion In addition, the noise impact assessment has identified that noise impacts on the development and development noise emission impacts are able to be ameliorated to comply with the required criteria with a range of recommendations provided for building treatments and operation management. The following acoustic treatments are incorporated into the design to maintain acceptable levels of noise amenity for the occupants with the proposed configuration. - For residential units in a direct line of sight with Hercules Street (as identified in Figure 2.3.1 below) the construction materials to achieve a minimum STC of 35. - For residential units located towards the rear of the sight, facing Brisbane the construction materials to achieve a minimum STC of 30.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					Mechanical ventilation will be provided to residential units to allow windows to remain closed. 

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					External noise amenity - The large central open space is substantially shielded from external noise sources by the mass and orientation of buildings within the development. - HVAC plant acoustic louvers to contain mechanical services noise from existing and proposed residential sites. - Loading dock: As a best management approach, it is recommended that the operation of service vehicles on-site be limited to between 7 am and 10 pm.
	The development must be consistent with the details of the development precincts that contribute to the provision of the appropriate mix of uses, e.g. building heights, GFA and use limitations.	✓			The development will comprise 41,191m² of residential GFA and 1,578m² of commercial/ retail GFA which is considered to be consistent with the Development Scheme. It is acknowledged that the height of proposed buildings 1 and 2 is higher than the development scheme height limit of 15 storeys for Sub-precinct 3 (c); however, the development includes a variety of building heights where buildings 3 and 4 are less than 15 storeys at 8 and 2 storeys respectively. Site is as a mixed use zone in accordance with the UDA Development Scheme: residential with flexible retail/commercial spaces and no industrial use.
	Development is to encourage the generation of new employment opportunities that can be accessed by local residents.	✓			The ground plane features a mix of ground floor flexible use tenancies (1,600m² approx) for retail/commercial purposes immediately accessible by local residents. The proposed ground floor tenancies are provided to support and activate a proposed pedestrian spine and promote community interaction. Supporting facilities are provided to assist the retail/commercial tenancies including: 16 Retail car parking spaces in the basement; and - Retail visitor bicycle spaces located for easy access to shop frontages.
	Home businesses are permitted in residential areas.	✓			The flexible commercial spaces provided within the development allow for potential business to be established in the immediate proximity to the residential areas. A community meeting room is provided. Home based businesses can be established where consistent with the development scheme.
	High speed internet connections will be provided in all development to encourage high tech industry and work from home opportunities.	✓			High speed internet connections are to be provided. An application to the NBN has been made by electrical engineer to establish provision requirements for fibre-optic cabling. At current time provision of a dedicated ADSL 2+ internet system has been allowed for.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
High quality of life	Recreation opportunities and social infrastructure are of sufficient quantity and quality to encourage community interaction.	✓✓			A communal recreational deck is provided for residents with a pool, BBQ, meeting room, kitchen, gardens, benches and outdoor terrace. <i>A key feature of the development, which exceeds requirements, is the proposed pedestrian 'street' providing a significant publicly accessible connection and landscaped open space with multiple functions including:</i> • Through connectivity at approximately 14 metres wide providing a significant thoroughfare and connection from Hamilton Park through to the Brisbane River. The pedestrian spine is up to 21 metres wide when the colonnade spaces are included. • Approximately 2,400m² of publicly accessible open space in a comfortable, safe, sheltered and inviting setting; and • A landscaped feature of the development contributing to the overall aesthetic. A landscape harbour winding along the length of the spine is a key feature providing filtered shelter from the sun. • The provision of flexible use ground floor tenancies providing opportunities for the diversity of retail and commercial uses that will contribute the desired streetscape character and vibrancy of the precinct. Details of the proposed landscape design response are provided in the Landscape Concept Plans and intent statement by Form Landscape Architects.
	Open space areas are to be attractive, accessible and safe and encourage an outdoor lifestyle that is consistent with community expectations.	✓✓			The development includes a 2,400sqm open public space that focuses on active retail tenancies with extensive glazing, all weather protection and casual surveillance by the upper storeys. The landscape design is engaging with soft planting and artistic installation elements. Car parking is beneath the buildings and away from the public space to encourage outdoor use of the public space.
	Social infrastructure needs at each stage of the development are to be established, planned for and delivered.	✓			The project includes a variety of social infrastructure, such as: • Sport and recreation facilities • Housing • Community development • Employment opportunities • Public and community transport

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Street frontages are to be safe, open and accessible encouraging community activity after business hours.	✓			All street frontages include active ground floor retail tenancies. Upper storey apartments overlook the street increasing surveillance and reinforcing the active frontage. Ample opportunity is provided for passive surveillance of the public realm to deliver a safe living environment for the residents and the wider Hamilton community.
	Public transport nodes are to be at the centre of major open space areas and built as early as possible.		✓		The major open space area is a pedestrian area. Public transport is conveniently located near the site, with the City Cat terminal and bus services on Kingsford Smith Drive.  Figure 3.2.2: Location of Public Transport Linkages.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					The proposed dedicated bus lanes and/or bus priority measures on Kingsford Smith Drive/ Hercules Street/ Macarthur Avenue, and the associated bus rapid transit system, in combination with the existing public transport facilities / services are considered adequate for the needs of the proposed development, and no additional facilities or services are considered necessary. A new CityCat terminal is to be constructed on Macarthur Avenue, within the Northshore Hamilton Urban Development Area (UDA). Construction of the terminal is expected to be completed by the end of September 2011 and BCC are expected to provide CityCat services at the new terminal early in 2012. Pedestrian access to these nodes is facilitated at podium level by way of the pedestrian spine which bisects the site from northeast to southwest. The main route into Brisbane City is an established bicycle path along Kingsford Smith Drive and Breakfast Creek Road, which leads into Ann Street. The travel distance is less than 6km, which is approximately 1 hour 17 mins when walking and 24 mins when cycling. The development also achieves a Walk Score of 87% (http://www.walkscore.com/score/19-Hercules-Street-Hamilton), so the site is part of a very walkable neighbourhood with direct access to facilities that reduce the residents' reliance on cars. Furthermore, to encourage cycling, 594 bicycle parking spaces will be provided for in the development. This allows one space for each apartment and 12 spaces for visitors, including 4 spaces on the podium level.
High levels of community participation	Establish a program of ongoing community engagement as part of the development of the UDA. Activities could include school programs, festivals, market days etc.		✓		The community will be involved throughout the development of the project, with information and progress updates provided to all stakeholders on a quarterly basis. A community and media relations strategy has been prepared and developed by Mirvac to meet its internal standards for community and media relations. This strategy ensures the development complements and enhances the surrounding community and provides an integrated community which enhances the lives of all those who live within it and immediately surrounding. Mirvac will appoint a dedicated Stakeholder Liaison Representative (SLR) to be responsible for the management of the Community and Media Relations Strategy and to act as the primary point of contact for all stakeholders.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Healthy and safe communities	Public spaces have been designed in accordance with CPTED principles.	✓			The public spaces have been designed to maximise the potential for passive surveillance. This has been achieved through; • Compatible residential and retail uses. • Encouraging pedestrian movement through the pedestrian 'street'. • Emphasis of the building design to be active at the pedestrian level. • Unimpeded sight lines to key places with the spine (view corridors maintained.) • Ample opportunity is provided for passive surveillance of the public realm to deliver a safe living environment for the residents and the wider Hamilton community.  Figure 2.3.3: Plan showing visual permeability of main public open space. Balconies and apartments to the edge of the 'street' allow natural surveillance of the spaces between the buildings. The harbour weaving through the site does not obstruct these sight lines due to its height and path.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Development is to create: - A network of cycle safe roads and highly interconnected, attractive and efficient bikeways that give cyclists a choice of routes connecting major activity nodes with each other and also linking them to residential areas; - Incorporate appropriate end-of-trip facilities including bicycle parking and shower/change rooms into the developments that are likely to attract significant numbers of bicycle trips, such as business centres, workplaces, community facilities, educational facilities and retail developments. Cycle facilities are to be provided consistent with Australian Standard 2890.3 or similar.	✓			 Figure 2.3.4: Major and Minor paths through and around site

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					Figure 2.3.5: Figure showing proposed cycle way linkages on site and with existing cycle ways. There is ample space on the basement carpark levels and on the podium level near the small carparks, to accommodate the 594 secure bicycle spaces. (1 per apartment and 8 retail / visitor spaces) 4 retail cyclist visitor spaces are provided at a convenient location to the commercial frontages. Provision is allowed for in retail tenancies for tenant fitouts to include staff cyclist facilities. The cycle storage facilities are to be designed in accordance with Australian Standard 2890.3 Manual of parking facilities Part 3: Bicycle parking facilities.

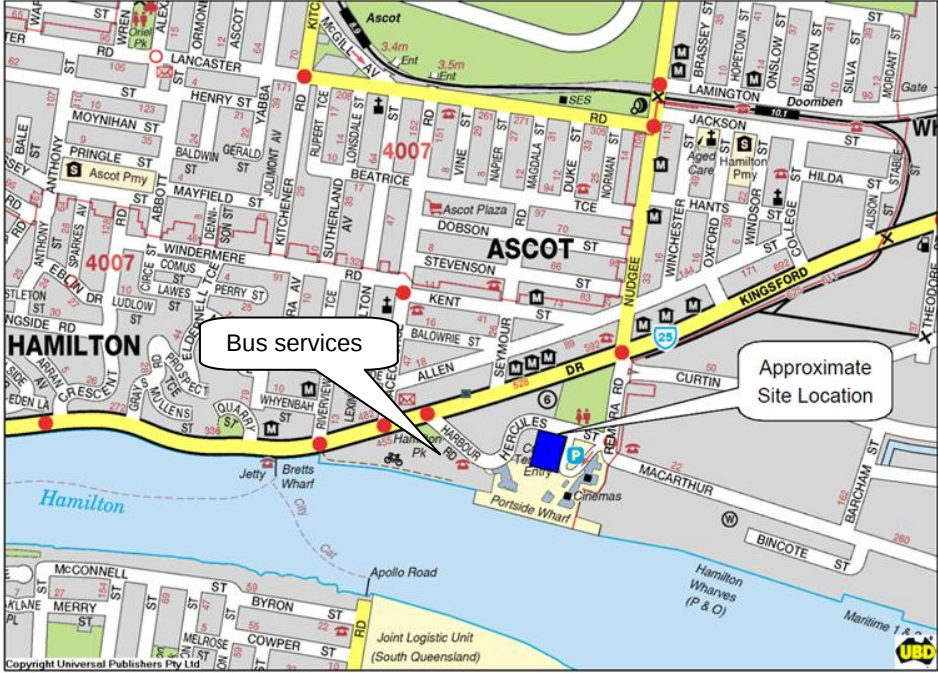
Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Highest density development is to be within 800m of public transport points and provide good pedestrian and cycle access to and from those points.	✓			The subject site is located within close proximity to existing public transport including bus and ferry services. Public transport is conveniently located near the site, with the City Cat terminal and bus services on Kingsford Smith Drive. Currently Brisbane Transport currently operates five (5) bus routes that travel and stop in the vicinity of the subject site. Bretts Wharf Ferry Terminal is located approximately 700m walk from the subject site via the riverside cycle/walk way. 

Figure 2.3.6: Local Area Plan showing location of public transport points.

The nearest bus stop is located at Kingsford Smith Drive at 400m from the site.

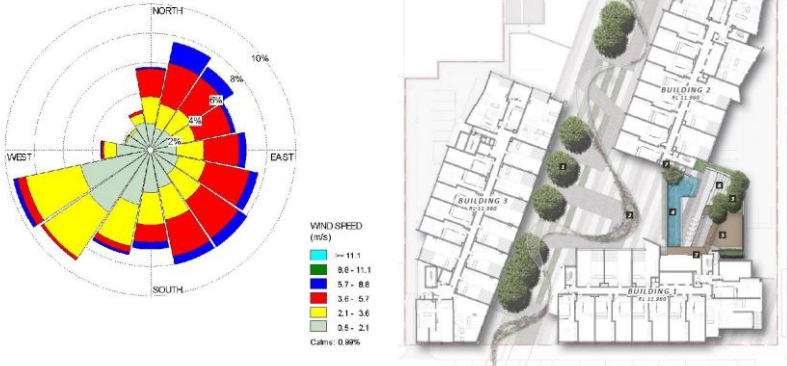
Doomben station is 1.2km (16 minutes walk) from the site.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					The proposed dedicated bus lanes and/or bus priority measures on Kingsford Smith Drive/ Hercules Street/ Macarthur Avenue, and the associated bus rapid transit system, in combination with the existing public transport facilities / services are to be within 800m of the site. A new CityCat terminal is to be constructed on Macarthur Avenue, within the Northshore Hamilton Urban Development Area (UDA). Construction of the terminal is expected to be completed by the end of September 2011 and BCC are expected to provide CityCat services at the new terminal early in 2012. The main route into Brisbane City is an established bicycle path along Kingsford Smith Drive and Breakfast Creek Road, which leads into Ann Street. The travel distance is less than 6km, which is approximately 1 hour 17 mins when walking and 24 mins when cycling. The development also achieves a Walk Score of 87% (http://www.walkscore.com/score/19-Hercules-Street-Hamilton), so the site is part of a very walkable neighbourhood with direct access to facilities that reduce the residents' reliance on cars. Furthermore, to encourage cycling, 594 bicycle parking spaces will be provided for in the development. This allows one space for each apartment and 12 spaces for visitors with 4 spaces on the podium level. Pedestrian access to these nodes is to be facilitated at podium level by way of the pedestrian spine which bisects the site from northeast to southwest.
	Public spaces are to be designed to comply with disability discrimination legislation and Australian Standard 1428 or similar.	✓			Public spaces are compliant with the Disability Discrimination Act. Where possible ramp gradients will exceed minimum requirements. An additional lift is being provided to take mobility impaired visitors from the carpark to the retail/ podium level.
	Public spaces are to include a range of uses suitable for different abilities and including both passive and active uses.	✓✓			The publicly accessible open space has multiple functions including: • 14 metre wide significant thoroughfare and connection for pedestrians; • Landscaped arbour provides filtered shelter from the sun and reduces glare; • Dining and shopping services available on ground level; and • The hard landscaping provides places for people to sit and congregate. <i>This exceeds requirements by virtue of the extent of the accessible open space.</i>
Respect existing communities	Development protects, incorporates and re-uses existing heritage, character or cultural features.	✓			The site is not a heritage site and does not have significant history or character that should be retained. The development makes a strong contribution to the desired character and identity of the area by creating a vibrant pedestrian focused precinct oriented around retail and entertainment uses. Built form is to match the adjoining "Samie's Girl" (formerly "Sam's Seafoods") building on Hercules Street.

PRINCIPLE: PROVIDING ECONOMIC BENEFIT

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria			Justification/ Notes on Assessment
		Yes	Partially	No	
Goal: Economic Benefit is maximised by facilitating the release of urban land, incorporating lifecycle costs including operational savings, long term employment opportunities and creating partnering opportunities and long term value.					
Public Benefit	Development should result in a significant increase in the number and range of employment opportunities in mixed use precincts than is currently available.	✓			Employment opportunities within the area are improved by an additional 1,578m ² of retail space to generate local jobs.
	Specialist retail and commercial areas are to demonstrate that their activities will complement those in surrounding areas.	✓			A retail assessment was undertaken by Macroplan to ensure this project complements the adjoining retail precincts including Racecourse Road and Portside Wharf. The report details the staging and expected scale and mix of uses that can be supported. The development will comprise ground floor retail uses that activate the edges of Hercules Street, Main Street and the pedestrian street. A retail strategy for the site will be developed to deliver uses that will complement the existing retail function of Portside precinct and nearby retail areas. The staging of the retail development will provide an evolution for the project, over several years, with a service and retail mix that will address the specific needs of residents, as well as contributes to the emerging character and identity of Northshore Hamilton.
	Development is to create destinations and places that can become focal points for community interactions and uses.	✓			The landscaped pedestrian street and the destination shopping will create an attractive environment for the community to interact through composite planting, seating and sculptural gardens.
	Development should promote connectivity within precincts and between the development and the existing and surrounding communities by: - consisting of distinct, walkable and well-defined precincts;	✓ ✓			A key design feature of the development that is considered to contribute to significant community benefit outcomes beyond those required by the development scheme is the inclusion of a pedestrian ‘street’ from Hercules Street to Main Street – which is over 2,400m2 of landscaped pedestrian space open to the public, and providing a link through from Hercules Street to Main Street. This open space contribution is at significant cost to the developer and will provide a passive recreation space and thoroughfare in this part of Northshore Hamilton linking all residents to the park and River.The pedestrian street encourages a strong linkage between the site and the adjoining

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	- facilitating major movement corridors; and - improving internal circulation.				neighbourhood, specifically the park, river and Portside Wharf. The landscaped street includes a defined 14m wide corridor to ensure direct pedestrian access. The harbour creates a meandering nature, directional paving and will include break out spaces within the plaza. The removal of multi storey podium car parking favour of basement car parking avoids the need to 'sleeve' car parking and reduces the bulk of the first three floors of the proposal.
Lifecycle Costs	The following sustainable features (or similar) are included as part of the development: - Standard material sizes; - Use of locally available materials; - Use of reusable and/or recycled materials.		✓		- The construction process will utilise standardised construction materials and, where possible, locally produced and recycled products and materials. - Local sourcing criteria will be included as part of the tender assessments. - High recycled content to be specified in structural steel. - Precast concrete facades have been designed to reduce waste and Hebel panels have been used in lieu of masonry for unit dividing walls to reduce the weight in the structure.
	The following smart design features (or others providing equivalent outcomes) are included in the development:				.
	Design is appropriate for the site;	✓			The design is consistent with the density and style of existing and proposed buildings in the area and therefore is appropriate to the site.
	Passive design;	✓ ✓			The integration of passive design features into the development is indicated in the energy modelling of the apartments with a 25% improvement over the Green Star benchmark. The building orientation allows capture and channelling of cooling breezes, particularly the especially cool winds coming from the river.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					 The figure consists of two parts. On the left is a wind rose diagram showing wind frequency by direction and speed. The cardinal directions are labeled: NORTH, EAST, SOUTH, and WEST. Concentric circles represent frequency percentages from 0% to 10%. A legend for wind speed in m/s is provided: >= 11.1 (cyan), 8.8 - 11.1 (green), 5.7 - 8.8 (blue), 3.6 - 5.7 (red), 2.1 - 3.6 (yellow), 0.6 - 2.1 (light green), and Calms: 0.00% (white). The highest frequency is from the North-North-East (NN-E) at approximately 9% with speeds between 3.6 and 5.7 m/s. On the right is a site plan of Hercules Street showing four buildings: BUILDING 1 (10/11, 12/13), BUILDING 2 (14/15, 16/17), BUILDING 3 (18/19, 20/21), and BUILDING 4 (22/23, 24/25). The buildings are oriented parallel to the street, which runs North-South. Landscaping with trees is shown along the street frontage. Figure 2.3.7: Wind Rose and plan showing parallel orientation of prevailing wind and proposed design. Deep planting allows for trees in front of lower level windows to block excessive sun in summer and overhangs have been orientated to allow the sunlight in during the winter (when the sun is lower in the sky) and keep it out in the summer (when the sun is high in the sky.) Extensive landscaping in the pedestrian street provides high levels of glare control. The apartments are continued vertically to minimise transfer where possible, rationalising services and structure. Precast structural and cladding elements are incorporated for efficient material use. The stairs to Buildings 1 and 2 are externalised to eliminate the need for stair pressurisation. Fire engineered solution that externalised the fire stair - allowed deletion of Stair pressurisation and lobby relief. Openable window walls to all 1Bed minus units allows for improved ventilation and natural lighting outcomes.

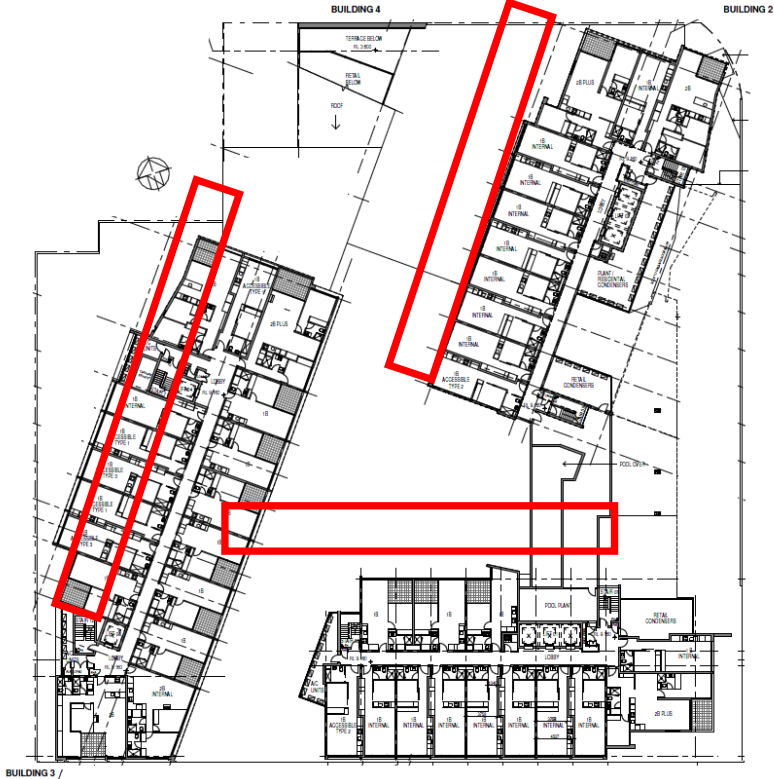
Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	High water use areas clustered;	✓			Wet areas are consistently located down the spine of the building adjacent to the common area corridors for ease of plumbing and maintenance access  The diagram is a detailed architectural floor plan of a multi-building development. It shows four main building footprints: Building 1 (top left), Building 2 (top right), Building 3 (bottom left), and Building 4 (bottom right). Each building has a central vertical spine. Red rectangular boxes are drawn along these spines, highlighting the areas where wet areas (like restrooms, kitchens, and laundry) are clustered. The plan also shows common corridors, stairs, and other service areas. Labels like 'INTERNAL', 'ACCESSIBLE', and 'POOL TANK' are visible throughout the plan.

Figure 3.2.8: Wet Areas are clustered along building spines.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment																									
		Yes	Partially	No																										
	High energy and water efficient appliances;	✓			The project will use a minimum of 4 star WELS rated fixtures and fittings where available. The project will use energy/water efficiency rated appliances (or equivalent) as follows:- <table><tr><th>Item</th><th>Manufacturer</th><th>Location</th><th>Product #</th><th>Energy/Water Rating</th></tr><tr><td>Oven</td><td>Miele</td><td>Typical</td><td>H 4412 B</td><td>European A Rating (No energy star rating applicable)</td></tr><tr><td>Dishwasher</td><td>Miele</td><td>2 Bedroom Apts</td><td>G 1022 I</td><td>3.0 Water Rating 3.0 Energy Star</td></tr><tr><td>Dryer</td><td>Fisher & Paykel</td><td>Typical</td><td>DE45F56EW1</td><td>2.0 Star*</td></tr><tr><td>A/C Unit</td><td>TBC</td><td>Typical</td><td>TBC</td><td>4 Star MEPS compliant</td></tr></table> *maximum rating available for dryer is 2 star Gas hobs will be used as they generate less greenhouse gas emissions than conventional electric cooktops.	Item	Manufacturer	Location	Product #	Energy/Water Rating	Oven	Miele	Typical	H 4412 B	European A Rating (No energy star rating applicable)	Dishwasher	Miele	2 Bedroom Apts	G 1022 I	3.0 Water Rating 3.0 Energy Star	Dryer	Fisher & Paykel	Typical	DE45F56EW1	2.0 Star*	A/C Unit	TBC	Typical	TBC	4 Star MEPS compliant
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Dryer	Fisher & Paykel	Typical	DE45F56EW1	2.0 Star*																										
A/C Unit	TBC	Typical	TBC	4 Star MEPS compliant																										
	Use of self finished materials on external surfaces;	✓			The project will use self finished products where appropriate such as coloured and uncoloured precast concrete panels.																									
	Rainwater tanks;	✓			The project will collect rainwater for reuse on site as irrigation and washdown via the provision of 50kl rainwater tank collecting rainwater harvested from the roof of the development. The rainwater will also provide flushing water for the retail toilet areas.																									
	Energy efficient lighting; and	✓			The project will use predominantly fluorescent lighting with following energy reduction initiatives:- • Occupancy sensors & timers in common areas • 80% of lighting is to be energy efficient; residential lighting efficiency to be equivalent or better than 35 Watt low voltage for all built in lights; and • Commercial development to meet the average lighting power density of ≤ 2.5W/m2/100Lux. • (No external luminaire has an upward light output ratio that exceeds 5%; and the lighting design complies with AS 4282 'Control of the Obtrusive Effects of Outdoor Lighting.																									
	On site energy generation			✓																										

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Land Supply	Not relevant in development assessment				Not Applicable
Partnerships	Applications have a demonstrated commitment to sustainable development outcomes.	✓			Mirvac is committed to: - Establishing performance improvement targets against our six sustainability priority areas – Business - Conduct, Mirvac People, Stakeholders, Supply Chain, Environmental Impact and Climate Change – and regularly reviewing and reporting publicly on progress. - Providing our customers, investors, suppliers and business partners with an experience that delivers excellence, meets or exceeds expectations of sustainable performance and engenders loyalty. - Engaging with our suppliers to improve the sustainability performance of our supply chain. - Enhancing the communities in which we operate through actions including active engagement, offering innovative and sustainable products, preserving heritage and enhancing culture, and a focussed program of community donations, investments and initiatives. - Developing, recognising and rewarding our staff to facilitate optimal performance, achieve career objectives and foster a high performance culture committed to sustainability. - Improving resource efficiency and minimising the environmental impacts of activities. - Positioning Mirvac to operate in a changing climate and carbon-constrained economy. - Contributing to advancing the sustainability of the real estate investment management, asset management and development sectors. - Pursuing continual improvement in corporate responsibility and sustainability management and performance. Please see Appendix C for Mirvac's Corporate Responsibility and Sustainability Policy
Sustainability Champion	Applications have a demonstrated commitment to sustainable development outcomes	✓			Mirvac is committed to developing sustainable projects by means of managing key environmental, social and economical issues. In order to achieve best practice, Mirvac has established six priority areas of sustainability within the organisation. This includes focusing on business conduct, Mirvac employees, stakeholders, the supply chain, environmental impacts and climate change. These areas are regularly reviewed and reported to the public. Key highlights of Mirvac's sustainable activities include: - Across Mirvac's office and industrial portfolio, Mirvac presently has an average NABERS rating of 3.6 stars across the board, with a target to increase this rating to 4.0 Stars by December 2012. - Mirvac has also committed to a number of sustainable residential projects including the construction of Australia's first zero carbon home called Harmony 9 which is located at Mirvac's Waverly Park development. The home was the first to achieve a 9.2 Star energy rating based on the Australian Government's house energy rating protocol.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					• As part of the Waverly Park project Mirvac also constructed Australia's first 6 Green Star shopping centre at Orion Springfield Town Centre, which is considered to be one of the world's most sustainable shopping centres. • Other key sustainable developments include the refurbishment of 101 Miller Street to deliver a 5 star NABERS rating, in addition to the design and development of the Bond University Mirvac School of Sustainable Development building - which achieved a 6 star Green Star (Education Pilot) rating. To further integrate sustainability practices and to deliver sustainable results, Mirvac has also adopted a Sustainability Action Plan. This includes the application of a Residential Scorecard to all future residential projects in order to track sustainability progress and to drive sustainable outcomes.

PRINCIPLE: PROTECTING ECOLOGICAL VALUES AND OPTIMISING RESOURCE USE

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria			Justification/ Notes on Assessment
		Yes	Partially	No	
Goal: Protect, manage and enhance natural systems, habitats and biodiversity, and promote the innovative and efficient use and management of materials, water and energy to minimise impacts on the climate.					
Climate Impact	The plan minimises greenhouse gas emissions through: •minimising site disturbance •reuse of existing materials •use of sustainable materials, •use of local materials; and •building design that exceeds current required energy efficiency standards, e.g, a minimum 4 star Green Star rating for commercial buildings (http://www.gbca.org.au/).	✓ ✓			Site disturbance is to be minimized within the constraints of the design. The site development process is to comply with a comprehensive Environmental Management Plan designed to minimise environmental impacts during construction. Low VOC finishes and low formaldehyde products to be specified along with use of FSC sustainable timber. Local sourcing of materials will included as part of the tender assessment process and local materials used where appropriate. The residential component of the building exceeds the Green Star benchmark for energy efficiency by 25%, achieves a minimum 5star HERS rating through use of passive design and incorporates many efficient design components:- • The buildings will include a minimum of 4 star MEPS (Air Conditioning) and efficient lighting design; • Fire engineered solution that externalised the fire stair - allowed deletion of Stair pressurisation and lobby relief with associated savings in plant and energy consumption; • Carbon Monoxide monitoring in Basement means exhaust fans only operate when needed,; • Centrally located water services along building spines; • Service decks on each level to reduce plant sizes and improve LCC performance; • Openable window walls to all 1 Bed minus units - improved ventilation and natural lighting outcomes, installing a dwelling shut down switch near main entry door to turn off lighting and A/C for each apartment; and • Integrating occupancy sensors in common areas to reduce lighting consumption. Common areas use spill air for conditioned air. The commercial areas do not meet eligibility requirements for a formal Green Star rating as a commercial building (retail or office) as the development is primarily residential.

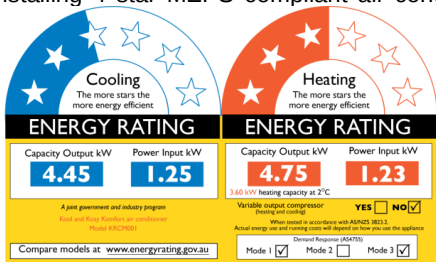
Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					However commercial tenants could seek a rating for their fitouts (beyond the scope of the Development Application) through the Green Star Interiors v1.0 Design/ As built 4 star rating. Base building services are to be designed to provide elements to assist with fitout compliance with Green Star as follows :- • Adequate noise control through façade. • Provision of electricity and water metering • Provision of adequate ventilation capacity • Provision of 12 cyclist spaces for retail tenants and 4 spaces for visitors to the retail areas.
	Landscaping, building design and infrastructure development incorporates design and construction elements that are responsive to changing climate that is likely to result in potential: • increased storm intensity; • higher winds; • increased temperatures; and • rising sea levels.	✓			The building has been designed to AS1170.2: 2002 which provides ultimate design wind speeds for a return period of 1000 years for this building under the BCA classification. The safety margin used is based on 86% increase in wind speed. The energy modelling indicates a potential doubling the annual air conditioning energy requirement for a 2 degree rise temperature and increased humidity. The HVAC services have been future- proofed by incorporating modular design which allows for upgrading with increased capacity units in the future as changes in climate occur. The services are designed to operate efficiently for the existing climate. Installing to account for possible climate changes would result in oversizing the equipment, increase maintenance and operating the services at reduced efficiencies. There is a freeboard of 1000mm between the Q100 level and the entry ramp height to prevent stormwater surcharge irrigation.
Water	The development is consistent with current best practice WSUD principles for Queensland. WSUD technical Guidelines and Factsheets are available from the South East Queensland Healthy Waterways at www.healthywaterways.org/wbd_project_overview.html		✓		An integrated water management strategy will be implemented. The development can be classified as 'low risk' for Water Quality as the site is not located in a waterway corridor, Brisbane River corridor or wetland area. Although the impermeable surface area for the site exceeds the 2500m² trigger for high risk developments, much of the impermeable surface area will consist of podium area, not subjected to vehicular traffic. The pollutant discharges for this area will therefore be low. The uses of this area are also consistent with surrounding site uses, with the proposed stormwater quality treatment methods being consistent with recent development in the area. As the development has been classified as 'low risk' Best Management Practices will be applied:-

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					Proposed Treatment Train It is proposed to install a GPT in the basement area for treatment of stormwater prior to discharge. We expect that this would be of the Ecosol RSF4000 range or equivalent which allows trapping of oils and grease. This would also provide treatment to the stormwater runoff from the podium areas. The location of this is to be determined by the Hydraulic Engineer during the detailed design phase. Integrated Water Cycle The development will include an integrated water cycle system, including elements such as a rainwater collection tank and reuse system. A 50kL rainwater tank, located within the basement level will be provided as part of the development. This will capture runoff from roof areas, and provide water for reuse in the fire sprinkler system, landscaping irrigation and toilet flushing for the retail toilets. The tank sizing and final location is to be confirmed by the Hydraulic Engineer during the detailed design phase of the development. Water Quality Monitoring Program As this development discharges stormwater into the existing drainage system using stormwater quality Best Management Practices, no proposal for water quality monitoring has been made. The measures proposed for water quality and water quantity treatment are reasonably well understood and demonstrated in Brisbane. It is hence anticipated that they are acceptable here.
	Development provides flood protection of public & private assets through identifying and managing peak flow rates for range of flood levels up to the 1% AEP flood event.	✓			A BCC Floodwise Report has been obtained for the site. The highest defined flood level is RL2.5m AHD as a result of a Storm Tide. As the Ground Level for the development will be constructed at RL4.46m AHD, with residential areas being above this, the development should not be affected by flooding, and have freeboard, to the highest defined flood level, exceeding 1.9m. Existing levels within Hercules Street, surrounding the site access range around RL3.0m, therefore sufficient freeboard is provided to the basement access from this storm event. Appendix D details the flood levels for the site.
	Development does not adversely impact downstream users and does not increase flood levels in the frequency of flooding.	✓			The discharge rates from the proposed development are similar to the existing conditions, hence no stormwater quantity controls are proposed. This can be attributed to the existing site being completely developed. Due to the close proximity of the site to the Brisbane River, stormwater will be discharged as quickly as possible. This will prevent the peak runoff from the local catchment from coinciding with the peak of the upstream catchments, ultimately increasing the peak runoff. The development will however incorporate a rainwater tank which will provide some mitigation to the minor storm runoff. This has been assumed full for the run off calculations. The only point of flood water egress is via Hercules Street.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Total water consumption is to be modelled ≤ 160 L/person/day in residential developments and 40L/person/day in commercial developments.	✓			There is an existing 150mm diameter potable water main within Hercules Street, along the full frontage of the site. There is also an existing 150mm diameter water connection to the site from the existing water main. A new water meter is also required for this connection (refer drawing C070 attached in Appendix A). It is the developer's intention to utilise this existing water connection for the development site. The water consumption model for the site with 4 star WELS rated fixtures and rainwater harvesting estimates water consumption at less than 110 L/person/day.
	The following standards should be adopted: •water efficient appliances and fittings (minimum 4 star WELS www.waterrating.gov.au/); •rainwater harvesting for reuse (e.g. for gardens & or hotwater/laundries); • greywater harvesting and reuse (e.g. for WC flushing); and • dual supply pipe with recycled water from a treatment plant, water mining or rainwater or stormwater harvesting with suitable treatment (e.g. for garden, toilet and laundry use).	✓			The development incorporates hydraulic fixtures (taps, showers, WC's and urinals) to be a minimum of WELS 4 star rated where available. The integrated water cycle management provides for a 50 kL rainwater harvesting tank to service retail toilets, pool top up, car wash bays, and landscape irrigation.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Water supply, sewerage, rainwater and stormwater systems have been integrated through a Integrated Water Cycle Management approach to: •reduce water loss through upgrading existing water, sewerage and stormwater infrastructure; •may include dual supply pipe with recycled water from treatment plants, water mining, stormwater reuse and onsite treatment; •50% of irrigation for landscaping to be supplied by alternative water sources; •maximise water use efficiency e.g. 70% of all stormwater is contained on site and reused; •maximise rainwater collection and use e.g. individual or communal rainwater tanks; •increase water recycling options; and •non-residential uses to develop water efficiency management guidelines www.qwc.qld.gov.au/WEMP+guidelines	✓			Integrated water cycle management includes the following elements • Use of minimum 4 star WELS rated fixtures and fittings and minimum 3 star WELS rated appliances to reduce flows through sewerage infrastructure. • Stormwater quality treatment consistent with recent development in the area and as the development has been classified as 'low risk' Best Management Practices will be applied:- • Proposed Treatment Train: A GPT is to be installed the basement area for treatment of stormwater prior to discharge. We expect that this would be of the Ecosol RSF4000 (or equivalent) range which allows trapping of oils and grease. This would also provide treatment to the stormwater runoff from the podium areas. The location of this is to be determined by the Hydraulic Engineer during the detailed design phase. • Integrated Water Cycle: The development will include an integrated water cycle system, including elements such as a rainwater collection tank and reuse system. A 50kL rainwater tank, located within the basement level will be provided as part of the development. This will capture runoff from roof areas, and provide water for reuse in the fire sprinkler system, landscaping irrigation and toilet flushing for the retail toilets. The tank sizing and final location is to be confirmed by the Hydraulic Engineer during the detailed design phase of the development. • Commercial/ Retail areas to develop water efficiency management guidelines
	The development should include smart water metering with meters being in highly visible and frequently used areas.		✓		Automated Meter Reading is incorporated for the cold water meter for each apartment. Smart meters are to be used for body corporate water uses and are to include a leak detection system
Energy and Transport	Building designed to exceed required energy efficiency requirements. Performance should be determined by an appropriate rating systems such as: •single residential dwelling to score ≥ 5 Stars under the AccuRate Energy Rating Scheme www.csiro.au/science/AccuRate.html ;	✓			All apartments achieve a minimum of 5 stars under the National House Energy Rating Scheme and exceed the minimum requirements as specified by the QDC (MP 4.1 July 30 th 2010). Note that BERS Professional is an equivalent program to Accurate for establishing an Energy Rating: both programs are accredited under the Federal Government Nationwide House Energy Rating Scheme and approved by the ABCB as compliant with the ABCB Housing Energy Rating Software Protocol for determining HERS star ratings.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria			Justification/ Notes on Assessment																																	
		Yes	Partially	No																																		
	and apartment buildings greater than 3 storeys and all commercial buildings building design that meets a 4 star or greater Green Star rating (http://www.gbca.org.au/).	✓			With respect to Green Star, the development is not proposing to apply for a certified 4 star As Built/ Design rating under the Green Star Multi- Unit Residential tool or for a Green Star rating for the commercial component (eligibility issues, etc). The Green Star Scheme is a holistic ESD rating and a four star rating for energy/transport is not possible under the Green Star scheme. However, the relevant Green Star components for Transport and Energy have been integrated in the proposed design at a level appropriate for a 4 star rating (a four star rating 45 points of a possible 100 weighted points – hence 45% of the energy and transport weighted points have been targeted) the following table indicates how the Green Star energy and transport credit categories have been addressed for the development. Energy (8 points required) <table><tr><td>Greenhouse Gas Emissions</td><td>Ene-1</td><td>5</td></tr><tr><td>Unoccupied Areas</td><td>Ene-7</td><td>2</td></tr><tr><td>Energy Efficient Appliances</td><td>Ene-11</td><td>0</td></tr><tr><td>Peak Electricity Demand Reduction</td><td>Ene-12</td><td>2</td></tr><tr><td colspan="2">TOTAL</td><td>9</td></tr></table> Transport (6 points required) <table><tr><td>Provision of Car Parking</td><td>Tra-1</td><td>1</td></tr><tr><td>Fuel-Efficient Transport</td><td>Tra-2</td><td>1</td></tr><tr><td>Cyclist Facilities</td><td>Tra-3</td><td>1</td></tr><tr><td>Commuting Mass Transport *</td><td>Tra-4</td><td>2</td></tr><tr><td>Trip Reduction - Mixed Use</td><td>Tra-5</td><td>1</td></tr><tr><td colspan="2">TOTAL</td><td>6</td></tr></table> * Site specific.	Greenhouse Gas Emissions	Ene-1	5	Unoccupied Areas	Ene-7	2	Energy Efficient Appliances	Ene-11	0	Peak Electricity Demand Reduction	Ene-12	2	TOTAL		9	Provision of Car Parking	Tra-1	1	Fuel-Efficient Transport	Tra-2	1	Cyclist Facilities	Tra-3	1	Commuting Mass Transport *	Tra-4	2	Trip Reduction - Mixed Use	Tra-5	1	TOTAL		6
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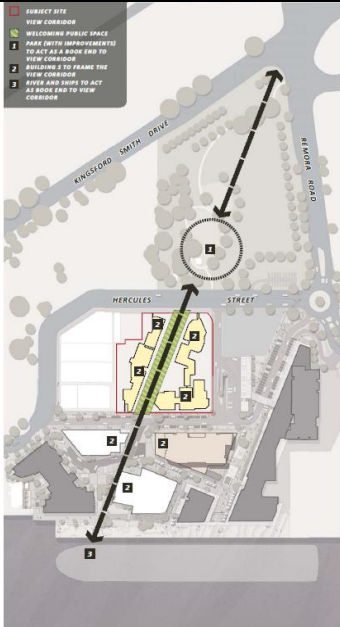
Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					The above points target has been achieved through the following initiatives. • Passive design of apartments to exceed Green Star benchmark by 25%. • Not exceeding local parking allowances by more than 10% • Installing a dwelling shut down switch near main entry door to turn off lighting and A/C for each apartment • Integrating occupancy sensors in common areas to reduce lighting consumption. Common areas use spill air for conditioned air. • Installing a centralized gas hot water heating system. • Installing 4 star MEPS compliant air conditioning reverse cycle air conditioning units. 
	Buildings are designed: • to maximise thermal performance and minimise use of artificial heating/ventilation and air conditioning systems; • so that if heating/ventilation and air conditioning systems are incorporated, they are a minimum of 4 star energy rating; • other equipment meets the National Minimum Energy Performance Standards (MEPS) www.energyrating.gov.au/meps1.html; • gas, solar or heat pump hot water heating systems to be used and hot water pipes to be insulated; • to make internal services such as water systems centrally located	✓			<u>Solar Orientation</u> The orientation and massing of the buildings has been arranged to maximise the solar access and amenity within the site precinct. Buildings 2 and 3 have been orientated predominantly on the North-South axis to minimise overshadowing of both the public 'street' space and the adjacent apartments in Building 1. The height of Building 2 (18 levels) allows for solar access to the taller Building 1 (23 levels), ensuring all apartments will receive a minimum 2 hours solar access. <u>Solar Control</u> Control of the sun to the building facades has been addressed within the built form. Glazed areas have been reduced to minimise the impact of sun where appropriate. On the north-western façade of Building 2 the window head height has been reduced by an additional 200mm to afford extra protection from the sun. Generally the inset balconies provide protection of the glazed openings from the sun. Deep planting on the podium level has allowed for additional solar control to the ground floor levels.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	where possible; - so that natural ventilation is integral; and - to provide smart metering to monitor lighting, - heating/ventilation and air conditioning systems and large electrical systems. Meters should be in highly visible areas and should show current period and previous energy use and costs				<u>Wind</u> A preliminary wind study of the proposal has been undertaken and the recommendations incorporated into the design. The wind conditions for the outdoor areas are acceptable. The effects of wind to the private balconies have been mitigated by locating them within recesses to the built form. By reducing their exposure the amenity of these areas is enhanced. As each apartment has a HERS energy rating of at least 5 stars, their reliance on air conditioning has been minimized. In addition the following initiatives have been integrated into the development design to minimise energy use; - Smart energy meters are to be installed for each apartment. Each apartment will have a displays showing energy consumption in a highly visible area. - The buildings will also include a minimum of 4 star MEPS (Air Conditioning) and efficient lighting design, - Fire engineered solution that externalised the fire stair - allowed deletion of Stair pressurisation and lobby relief with associated savings in plant and energy consumption, - Carbon Monoxide monitoring in Basement means exhaust fans only operate when needed, - Centrally located water services along building spines, - Service decks on each level to reduce plant sizes and improve LCC performance, - Openable window walls to all 1 Bed minus units - improved ventilation and natural lighting outcomes, - A centralised gas heating system with zero ODP insulation. - The development will utilise strategies to minimise energy used in construction processes and operation.
	20% of electricity used within the development to be generated from renewable sources preferably onsite.		✓		No on site electricity generation, however the Body Corporate can purchase energy from renewable sources under a Green Power scheme.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Development to meet the following lighting targets: •buildings are designed to maximise the use of natural light and minimise artificial light use; •>80% of lighting is to be energy efficient; •residential lighting efficiency to be equivalent or better than 35 Watt low voltage for all built in lights; and •commercial development to meet the average lighting power density of $\leq 2.5\text{W/m}^2/100\text{Lux}$.	✓			Lighting conforms with the Queensland Development Code which requires 80% of the lighting (ie quantity of light fittings) within the apartment to be energy efficient (fluorescent, compact fluoro or LED) and include the following energy efficient initiatives:- • 5W/m² lighting power density, occupancy sensors & timers in common areas. • Residential lighting efficiency to be equivalent or better than 35 Watt low voltage for all built in lights. • Commercial development to meet the average lighting power density of $\leq 2.5\text{W/m}^2/100\text{Lux}$. • No external luminaire has an upward light output ratio that exceeds 5%; and the lighting design complies with AS 4282 'Control of the Obtrusive Effects of Outdoor Lighting'.
	ULDA Bicycle facility targets for apartments are: •residents – to have secure space per dwelling and designed according to AS2890.3; and •visitors – to have secure space per 400m2 and to be designed according to AS2890.3	✓ ✓	Partially meets		The ULDA requirements correspond to 582 spaces for residents and 107 spaces (i.e. 42,755 m2 GFA/400) for visitors The site will incorporate 582 secure bicycle spaces for residents designed in accordance with AS2890.3 The provision of cycles spaces exceeds the BCC TAPS policy by nearly 200% (BCC TAPS policy requires 199 spaces).
	Bicycle facility targets for sites other than apartments are: •residents – to have secure space per 1000m2 net lettable area (NLA) designed according to AS2890.3; and •visitors – to have secure space per 200m2 NLA designed according to AS2890.3	✓	Exceeds		The ULDA requirements correspond to 8 spaces (i.e. 1,578 m2 NLA/200) for retail tenants and 2 spaces (i.e. 1,578 m2 NLA/1000) for visitors The site will incorporate 8 secure bicycle spaces for retail area tenants designed in accordance with AS2890.3 and located in the undercover parking area The site will incorporate 4 secure bicycle spaces for commercial area visitors designed in accordance with AS2890.3 and located on the podium

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	80% of dwellings are located within the following areas: •800m of a railway station; •400m of a bus stop; and •400m of a ferry terminal or other transport option.	✓			The site is conveniently situated near bus and ferry terminals, which will encourage the use of public transport over private use. The nearest bus stop for the 302,303 and 304 bus services is within 400m of the site. The closest ferry is located at Bretts Wharf Ferry Terminal, opposite Riverview Tce, Hamilton (700m walk - 8min). The proposed dedicated bus lanes and/or bus priority measures on Kingsford Smith Drive/ Hercules Street/ Macarthur Avenue, and the associated bus rapid transit system, in combination with the existing public transport facilities / services are to be within 400m of the site. A new CityCat terminal is to be constructed on Macarthur Avenue, within the Northshore Hamilton Urban Development Area (UDA) and within 400m of the site. Construction of the terminal is expected to be completed by the end of September 2011 and BCC are expected to provide CityCat services at the new terminal early in 2012. Pedestrian access to these nodes is facilitated at podium level by way of the pedestrian spine which bisects the site from northeast to southwest. (Note: Doomben railway station is 1.2km (16 minute walk) to the north of the subject site.)
	Development is to given high priority in terms of connectivity, directness of route and facilities by: •providing access to existing and proposed cycle and pedestrian networks; and •prioritising pedestrian and cycle movements over vehicle movements.	✓			The development includes a high level of connectivity and directness of route by providing access to existing cycle and pedestrian networks and prioritising these movements over vehicle use.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					 Figure 2.3.9: Paths in and Around the Proposed Development. The main route into Brisbane City is an established bicycle path along Kingsford Smith Drive and Breakfast Creek Road, which leads into Ann Street. The travel distance is less than 6km, which is approximately 1 hour 17 mins when walking and 24 mins when cycling. The development also achieves a Walk Score of 87% (http://www.walkscore.com/score/19-Hercules-Street-Hamilton), so the site is part of a very walkable neighbourhood with direct access to facilities that reduce the residents' reliance on cars. The pedestrian street gives priority to movements on foot throughout the site: it is both a direct pedestrian route and meandering experience of the space – promoting activation of the retail facilities.

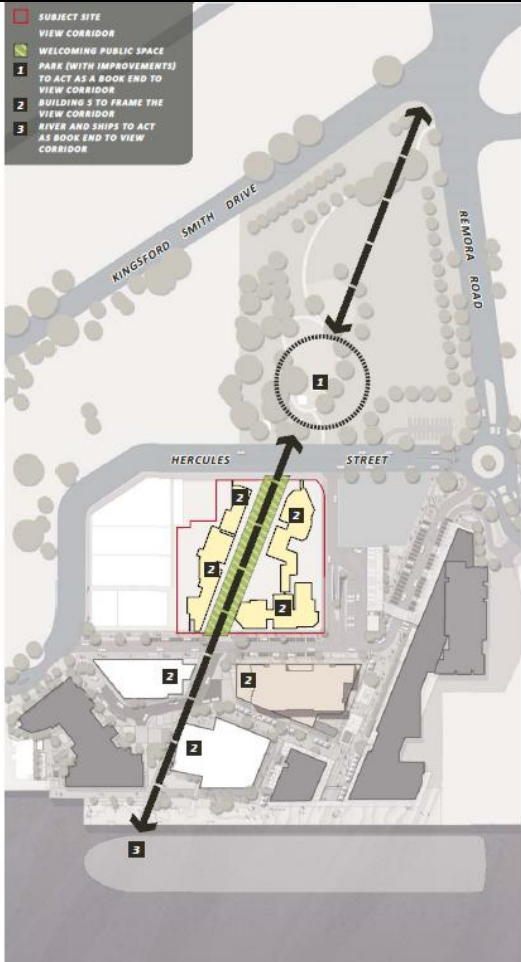
Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					 Figure 2.3.10: Figure showing rectilinear connectivity of pedestrian routes. The proposed design utilizes and enhances connections within the wider Hamilton precinct, particularly the park and river connection. 594 Cyclist storage spaces are provided within the development.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Materials and Waste	Development minimises site disturbance by: •utilising already cleared areas as a priority; •minimising cut and fill but if necessary, balancing requirements onsite to the extent practicable; •retention and reuse of top soil on site; and •implementation of a sediment and erosion control plan.	✓			Site disturbance is to be minimized within the constraints of the design. Remediated top soil will be reused on site. A comprehensive Erosion and Sediment Control Plan including a construction process has been prepared for this development. This is preliminary at this stage, however will be updated as required during further detailed design. It is proposed at this stage, that all areas are directed to the lift overruns for settlement and pump out. The ESCP designs are in accordance with the Institution of Engineers reference material and Brisbane City Council's Guidelines. Refer drawings C020 and C021 attached in Appendix A of the Civil Consultants Report
	Development is to utilise a minimum of 20% of recycled or reused material in construction and landscaping e.g. recycled steel in building, crushed glass in landscaping, flyash in concrete.		✓		Construction Methodologies proposed; - Formwork systems - Meva (MEVA is the first formwork manufacturer to completely switch to an all-plastic, 100% wood-free facing technology that does away with plywood waste) - Re-cycled timber (Joinery utilises MDF with no formaldehyde and a high recycled content) - Re-use excavated soil in soft landscaping - Standardized materials and materials with high recycled content will be used in new construction. - Precast structural and cladding elements are incorporated for efficient material use.
	Development should incorporate materials from sustainable and renewable resources where possible, e.g. timber from sustainable forestry operation.		✓		95% usage of FSC timber.
	Materials should be sourced from responsibly sourced and manufactured materials where possible. Environmental Management Systems certification of suppliers may be required.	✓			FSC timber to be specified where used. GECA selections to be specified where available.
	Non toxic and low emission materials should be utilised as standard.	✓			Use of Low VOC paints, finishes and carpet to be specified. Low formaldehyde wood products to be specified. Promote use of alternatives to PVC for piping and conduits (steel , HDPE, PE) and 'Green' PVC where PVC specified.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Development should use materials sourced locally where possible.	✓			Local materials will be used where possible.
	Development to adopt a waste management plan covering construction, operation and demolition to encourage reuse and recycling of materials and reduce waste to landfill.	✓ ✓			<u>Construction/ Demolition Waste Management Plan</u> <i>The development will minimise waste and reduce the amount of material going to landfill and exceed requirements by ensuring 80% of construction waste is recycled.</i> Of the site demolition works completed to date the recycling rates are as follows:- • Steel and aluminium; 100% recycled • Bricks and concrete 100% recycled • Timber 100% recycled • Some mechanical equipment (boilers etc) were salvaged and on-sold • All other waste achieved a minimum 80% recycled to limit waste to landfill <u>Operational Waste Management</u> A preliminary waste assessment has been undertaken for the proposed development. A brief summary on the collection and management of the waste within the precinct is as follows: • Garbage chutes have been provided in each of the 4 residential buildings • Recycling crates will be provided at each level of the buildings, adjacent to the garbage chute • Residential waste rooms are provided on level 1 for Building 1 and Building 2. These will contain compactors and 1100L bins for collection in the service area of Level 1. • Recycling bins are provided in all waste rooms at basement level. • A residential waste room and compactor is provided for Building 3 in Basement level 01. • The waste bins will be taken to a goods hoist for transfer to the collection point on Level 1. Collection of the bins will be undertaken at regular intervals to be confirmed • Provision for bin cleaning and a bin lifter is provided in each waste room Separate retail waste rooms are provided to Level 1 at the rear of Buildings 1,2 and 3. • The building manager will be responsible for the transfer and collection of waste and recycling to the central collection point

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Habitats and Biodiversity	Development identifies and responds to ecological processes by: •conducting detailed surveys; •investigating, re-establishing and enhancing linkages with surrounding areas; and •recognising the values of the area in its local, regional and national context.	✓			The original site comprised an industrial site with hardstanding.  Figure 3.2.11: The original site The development will improve the ecological condition of the site, providing opportunities for habitats and biodiversity where none exist at present with extensive planting of native garden, including a Green Wall to provide additional vertical landscaping. The landscaping plan reintroduces native species typical of the area to the development, and providing an avenue to link to the park to the north of the site.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					 Figure 3.2.12: Site showing extent of improved surface ecology

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					 Figure 3.2.13: Plan showing links to surrounding landscape.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Development should minimise impacts by: •incorporating water sensitive urban design; •incorporating biodiversity friendly urban design principles and practices; •minimal clearing and minimal site disturbance; •retention of habitat trees; •implementing low impact construction techniques and managing impacts; • minimise extent of development by building location controls; •protecting habitat for significant species; and •maintaining and providing for fauna connectivity	✓			WSUD principles have been introduced by minimizing water use with drought tolerant species, maximizing space available to biodiversity – including a green wall as part of the landscaping. A comprehensive Environmental Management Plan is to be operated throughout the construction phase to minimise environmental impacts. Off- site fabrication techniques and pre-cast façade elements have been extensively used throughout the project as part of reducing construction impacts. The pre existing site ecology is minimal. The land type is predominantly buildings and impermeable surfaces with fragmented beds of isolated trees.
	Landscaping design is to: •support existing habitats and biodiversity; •minimise water use; •retain existing trees, especially habitat trees where possible; and •implement WSUD principles and practices and function in conjunction with stormwater treatment process.	✓			Drought tolerant native species are to be included as part of the regeneration of the site ecology. The landscaping design promotes the subtropical landscape theme as appropriate for the climate. Gross Pollutant Traps have been introduced to form part of the stormwater treatment process and along with the extensive pedestrian surface with permeable landscaping allowing for bio-filtration the proposed system provides improved water quality leaving site in accordance with WSUD principles.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Pollution	Development will be designed to produce a healthy living environment in accordance with the current Queensland standards. For example: •Air – Brisbane City Council's Air Quality Planning Scheme Policy and Environmental Protection Act 1994 and the Environmental Protection (Air) Policy 2008; •Noise –the Environmental Protection Act 1994 and Environmental Protection (Noise) Policy 2008; and •Water - the Environmental Protection Act 1994 and Environmental Protection (Water) Policy 1997 or the Queensland Water Quality Guidelines 2006.	✓			The development will minimise, in construction and operation, the noise and light pollution and all other emissions leaving the site.
	Direct light sources are not to carry beyond the line of sight unless: •it is into areas that are lit to similar intensities; or •it falls directly onto a surface that requires illumination.	✓			No external luminaire has an upward light output ratio that exceeds 5%; and The lighting design complies with AS 4282 'Control of the Obtrusive Effects of Outdoor Lighting'."
	Development will ensure that all land and groundwater will be fit for purpose. Remediation will meet Environmental Protection Agency (EPA) Guidelines and standards for the assessment and management of contaminated land in Queensland.	✓			Remediation meets Environmental Protection Agency (EPA) Guidelines and standards for the assessment and management of contaminated land in Queensland. In general, the remediation strategy for the site, based on existing contamination identified on the site, is the excavation and off-site disposal of identified contaminated soils from site area. Soil will be loaded onto trucks and disposed to a licensed landfill facility (yet to be determined). All loads of soil will be documented and will be accompanied by documentation describing the nature of the contaminants contained in the load and its destination. No stockpiling of contaminated soils for periods of longer than twenty-four hours will occur. Any temporary stockpiles of odorous materials will be covered as long as it remains on site. All trucks will be covered prior to leaving the site.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	An acid sulfate soils investigation in accordance with current best practice in Queensland will be undertaken on all developments that have: •disturbance of greater than 100m³ of soil in areas below 5m AHD; •the placement of greater than or equal to 500m³ of fill material in layer of greater than or equal to 0.5m in average depth in areas below 5m AHD; and •disturbance of greater than or equal to 100m³ of soil below 5m AHD where the surface level is between 5m and 20m AHD. Acid Sulfate soils will be treated in accordance with current best practice in Queensland as provided in State Planning Policy (SPP) 2/02 Planning and Management Involving Acid Sulfate Soils and the Queensland Acid Sulfate Soils Technical Manual.	✓			Butler Partners have completed an investigation at the site in order to delineate identified contamination and characterise soils for off-site disposal. The site is listed on the Department of Environment and Resource Managements (DERM's) Environmental Management Register (EMR) for the notifiable activity of 'hazardous contaminant'. The Removal of ASS material will be managed under an Acid Sulfate Soils Management Plan (ASSMP) in accordance with current best practice in Queensland as provided in State Planning Policy (SPP) 2/02 Planning and Management Involving Acid Sulfate Soils and the Queensland Acid Sulfate Soils Technical Manual. In general, the remediation strategy for the site, based on existing contamination identified on the site, is the excavation and off-site disposal of identified contaminated soils from site area. Soil will be loaded onto trucks and disposed to a licensed landfill facility (yet to be determined). All loads of soil will be documented and will be accompanied by documentation describing the nature of the contaminants contained in the load and its destination. No stockpiling of contaminated soils for periods of longer than twenty-four hours will occur. Any temporary stockpiles of odourous materials will be covered as long as it remains on site. All trucks will be covered prior to leaving the site.

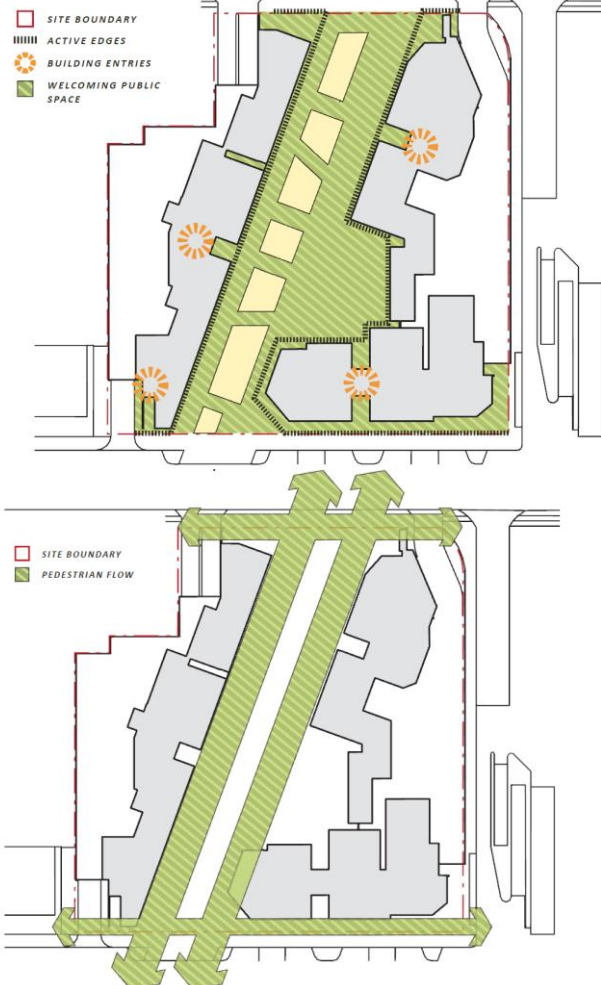
PRINCIPLE: PROMOTING PLANNING AND DESIGN EXCELLENCE

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria			Justification/ Notes on Assessment
		Yes	Partially	No	
Goal: Develop a modern resilient and adaptable urban form that promotes connectivity, safety and accessibility whilst recognising local values and aspirations.					
Community and place	Development is to retain and celebrate the places and ideas of community importance in terms of the social, cultural, historical and landscape character of the area identified through the planning process.	✓ ✓			The site is not a heritage site and does not have significant history or character that should be retained. The proposal has provided a detailed response to the intended character and identity for the precinct as detailed in the urban design report by Mirvac Design provided with the application. The proposed development is consistent with the precinct intent and the following key relevant precinct outcomes for the Northshore Urban Village Precinct: • The precinct will form the western activity node of the Northshore Hamilton UDA • A mixture of integrated uses will provide a variety of experiences for shopping, entertainment and leisure activities. • Buildings will support high and medium density residential living. • The precinct will benefit from river and city views. Particular focus will be given to ensuring a safe public edge to the waterfront based on CPTED principles. • All buildings will address streets, including residential buildings which will provide entrances to ground floor units.
	Development contributes to a sense of place by: - creating distinctive character and identity; - exhibits architectural quality; - well structured and permeable streets; - streets are pedestrian and cycle friendly; - traffic and pedestrian movement is integrated with surrounding areas; - creating public realms that are accessible and safe; - being well accessible to public transport;	✓			Urban Design Principles The site is but one part of the wider Hamilton precinct, and has been approached as such. The development proposal provides diversity of height both within the site, and within the precinct of predominantly 15-16 level surrounding developments. Site Context The design addresses the relationship between public spaces, represented by the ‘street’, and the privacy requirements of the residential apartments. Clear delineation of both public and private spaces is achieved.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	- builds and supports a diverse local economy; and - comprises and attracts a diverse population.				At the ground level the 'street' is activated by mixed use retail/commercial services to all frontages offering potential for a variety of uses to enhance a diverse activity within the spaces. Ample opportunity is provided for passive surveillance of the public realm to deliver a safe living environment for the residents and the wider Hamilton community. The delivery of the central spine provides a 'street' that aids in the both the physical and visual connection from the park to the river. Built Form The massing of the buildings is conceived as a series of folded planes, which assists in breaking down the scale of the buildings, enhancing the vertical elements and forming a strong architectural language. The built form also provides the framework for the celebration of the landscaped 'street', which provides visual and pedestrian connectivity through the site. Podium The expression of the podium reduces the scale of the main buildings and provides a base that relates to the open landscape spaces. The podium folds up the buildings providing a distinct and defining architectural language that is followed through the design. This expression allows a colonnade at the base of the buildings, providing a human scale element and shelter from the weather that is integral within the design (rather than dependant on applied awning structures). The main roof plane folds down to form a ribbon at the ground plane, linking main buildings, much like the harbour running through the spine. Facade articulation The solidity or openness of the built form responds to the individual site constraints. At lower levels the incorporation of solid elements respects privacy and overlooking, both within and external to the site. At the upper levels an increased amount of glazing allows views of the river, the city and surrounding districts, and provides an opportunity to lessen the mass of the buildings. The selection of materials, colour and pattern in form is reflected in the design of all elements from the landscaping treatment of the ground plane to the built form.

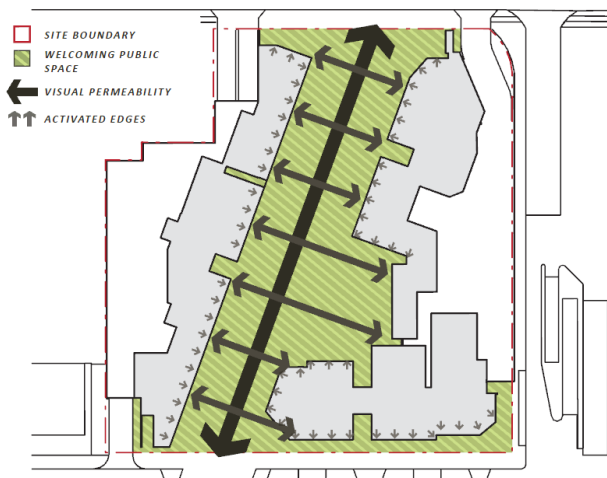
Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					Ground Interface • The pedestrian 'street' is activated by mixed use retail to the perimeter offering potential for a variety of uses to enhance opportunities for diverse activities within the spaces. • The ground plane provides a hierarchy of connections through the site – both a direct pedestrian route and meandering experience of the space. • The landscape arbour is a significant element that weaves through the 'street'. It allows for a degree of openness through the site to maintain visual connectivity and surveillance, whilst providing a greening of the spine. • The proposed design utilizes and enhances connections within the wider Hamilton precinct, particularly the park and river connection. Basement Whilst podium car parking is a cost-effective way of delivering car spaces within this precinct, we understand from the ULDA that the resultant visual outcome is an undesirable urban design outcome. Although the basement car parking carries a significant cost penalty in delivery, the development proposal accommodates all residential and visitor parking within a three level basement. This not only delivers a superior design outcome from a built form perspective, it also delivers improved passive surveillance of the ground plane.
Responsive urban form	Subtropical urban form is achieved by: - including responsive buildings and environmental systems; - a mixture of street types and public spaces that connect activity areas; - buildings will utilise natural light and shade; - buildings are orientated to promote seasonal solar gain and loss, taking into consideration major site views and vistas; - building forms allow for cross ventilation and are naturally ventilated where possible; - building include weather protection and sun shading (including eaves and overhangs) that are incorporated into façades and roof forms to reduce direct solar heat and rain protection appropriate to each facade orientation	✓ ✓			EMF Griffiths were part of QUT's recent research group investigating Sub-tropical High Rise Residential Design which set out to establish leading edge passive design principles. This design approach has been promoted in this development by allowing flexible outdoor-indoor space connection, both on balconies and in the core public open space connecting the buildings and landscaping with subtropical native plants. A mixture of street types and public spaces that connect activity areas have been incorporated in the site layout and building form. Solar Orientation The orientation and massing of the buildings has been arranged to maximise the solar access and amenity within the site precinct. Buildings 2 and 3 have been orientated predominantly on the North-South axis to minimise overshadowing of both the public 'street' space and the adjacent apartments in Building 1. The height of Building 2 (18 levels) allows for solar access to the taller Building 1 (23 levels), ensuring all apartments will receive a minimum 2 hours solar access.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	- public realm, including streets, parks, plazas, and piazzas will be safe and comfortable to move around or through or to stop in; - providing space, shade, and shelters; and - landscaping is subtropical in nature to provide habitat and shade.				Solar Control Control of the sun to the building facades has been addressed within the built form. Glazed areas have been reduced to minimise the impact of sun where appropriate. On the north-western façade of Building 2 the window head height has been reduced an additional 200mm to afford extra protection from the sun. Generally the inset balconies provide protection of the glazed openings from the sun. Wind A preliminary wind study of the proposal has been undertaken and the recommendations incorporated into the design. The wind conditions for the outdoor areas are acceptable. The effects of wind to the private balconies have been mitigated by locating them within recesses to the built form. By reducing their exposure the amenity of these areas is enhanced. The building design uses a large surface area to volume ratio to take advantage of cooling during night time period and the narrow footplate allows capture and channelling of cooling breezes, particularly the especially cool winds coming from the river Native species are used for the subtropical landscaping. The design addresses the relationship between public spaces, represented by the 'street', and the privacy requirements of the residential apartments. Clear delineation of both public and private spaces is achieved. At the ground level the 'street' is activated by mixed use retail/commercial services to all frontages offering potential for a variety of uses to enhance a diverse activity within the spaces.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Quality public realm	Development will create: - a range of public space options within close proximity to residents and workers, including areas for formal and informal, active and passive recreation; - public spaces that are flexible and adaptable to accommodate a range of uses over the course of a day and a year; - public spaces that are accessible to a range of users and respond to our changing demographics; - public spaces that are interesting, engaging and safe, with active edges and host a mix of uses; - movement networks which prioritises pedestrian and cyclist movement and encourages non-motorised transport modes; - public access and quality pedestrian and cycle links along rivers and waterways; and - new subdivisions and residential developments incorporate private and communal open space.	✓ ✓			The following extracts from the Landscaping report highlight the features of the pedestrian street. 

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
	Development is to consider what public art, including festivals and public events, contributes towards the: - development of community facilities; - development of public precincts and places; - cultural animation and cultural programming. Public art project outcomes may result in: - visual artworks including painting, and sculpture; installation and digital media; and artworks that have functional aspects such as reception areas, street furniture and signage.	✓			Sculpture Gardens include interactive geometric art forms incorporated into the landscaping design: encouraging residents and visitors to the utilise the public spaces.  

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Infrastructure	Development includes detailed descriptions of the infrastructure needed for following: - water and sewerage; - transport; - climate control; - waste disposal; and - establishment of social connectivity and community.	✓			Water and sewerage Options for the development's sewer connection have been identified and discussion with Queensland Urban Utilities regarding these options have commenced. Advice from QUU and the ULDA is still required to determine their preferred connection location, as this is dependent on the servicing agreement to meet the needs of the catchment (including the subject site) between the ULDA and QUU, which is currently being prepared. From the investigation conducted, the Civil Engineers report demonstrates that the proposed development can be constructed and serviced in accordance with the relevant standards. Transport The proposed dedicated bus lanes and/or bus priority measures on Kingsford Smith Drive/ Hercules Street/ Macarthur Avenue, and the associated bus rapid transit system, in combination with the existing public transport facilities / services are considered adequate for the needs of the proposed development, and no additional facilities or services are considered necessary. There is ample space on the basement carpark levels and on the podium level near the small carparks, to accommodate the total parking requirement of 199 bicycle spaces as calculated by reference to Austroads Traffic Engineering Practice Part 14. Climate Control 1m freeboard has been established between Q100 level and entry ramp level to avoid stormwater inundation. Stormwater management study has been completed to establish adequate management in hydraulic design. Wind studies have been conducted based on 1000 year return wind levels with significant safety margin to evaluate structural integrity and dynamic sensitivity of the design. Waste Disposal A preliminary waste assessment has been undertaken for the proposed development. A brief summary on the collection and management of the waste within the precinct is as follows: • Garbage chutes have been provided in each of the 4 residential buildings • Recycling crates will be provided at each level of the buildings, adjacent to the garbage chute • Residential waste rooms are provided on level 1 for Building 1 and Building 2. These will contain compactors and 1100L bins for collection in the service area of Level 1. • Recycling bins are provided in all waste rooms at basement level. • A residential waste room and compactor is provided for Building 3 in Basement level 01.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
					- The waste bins will be taken to a goods hoist for transfer to the collection point on Level 1. Collection of the bins will be undertaken at regular intervals to be confirmed - Provision for bin cleaning and a bin lifter is provided in each waste room Separate retail waste rooms are provided to Level 1 at the rear of Buildings 1,2 and 3. - The building manager will be responsible for the transfer and collection of waste and recycling to the central collection point.
Connectivity, safety and accessibility	Development is to be well connected, safe and accessible by creating: - well structured and permeable streets; - streets that are pedestrian and cycle friendly; - movement integrated with surrounding areas; - public realms that are accessible and safe; - streets that are well accessible to public transport; and - streets and public spaces designed in accordance with CPTED principles.	✓			 The diagram is a site plan showing a building footprint with a central 'spine' of public space. A red dashed line indicates the 'SITE BOUNDARY'. Green hatched areas represent 'WELCOMING PUBLIC SPACE'. Black arrows pointing in various directions indicate 'VISUAL PERMEABILITY'. Small upward-pointing arrows along the edges of the public space indicate 'ACTIVATED EDGES'. The public realm and buildings have been designed to maximise the potential for passive surveillance. This has been achieved through:- - Compatible residential and retail uses. - Delivering people for long hours during the day and night encouraging pedestrian movement through the pedestrian 'street'. - Emphasis of the building design to be active at the pedestrian level. - Unimpeded sight lines to key places with the spine (view corridors maintained.) - Ample opportunity is provided for passive surveillance of the public realm to deliver a safe living environment for the residents and the wider Hamilton community. Balconies and apartments to the edge of the 'street' allows natural surveillance of the spaces between the buildings. The harbour weaving through the site does not obstruct these sight lines due to its height and path.

Strategy	Sustainability Criteria	Assessment (does the development meet the Criteria)			Justification/ Notes on Assessment
		Yes	Partially	No	
Engagement and Partnerships	Not relevant in development assessment	Not Applicable			Not Applicable

SECTION 3 ENERGY EQUIVALENCE MODELLING

3.1 BCA 2010

Section J of the BCA requires that a building, including its services, must have features that reduce the creation of greenhouse gases.

The compliance requirement for sole occupancy units in a Class 2 or Class 4 building is outlined in the BCA (2010) Section J Clause J0.2 which requires that each unit must

- i) Collectively achieve an average energy rating of not less than 6 stars and
- ii) Individually achieve an energy rating of not less than 5 stars

Using a calculation method that complies with the ABCB Protocol for House Energy Rating Software.

EMF Griffiths use BERS Pro V 4.1 software, which meets this requirement.

3.2 QUEENSLAND DEVELOPEMENT CODE

However the Queensland Development Code supersedes the BCA for projects in Queensland. The latest release of the QDC (MP 4.1 July 30th 2010) still refers to the BCA 2009 and specifies the following requirements:

Performance Criteria P1 is directly related to BCA Energy Efficiency requirements of Class 1 buildings, stating that:

Performance Criteria (P2)	Acceptable Solutions (A2)
The thermal performance of sole occupancy units in Class 2 buildings complies with performance requirement JP1 of the BCA 2009 (Volume 1)	The thermal performance of sole occupancy units in class 2 buildings complies with JV1 of the BCA 2009 (Volume 1) except that
	(a) for JV1(a) (i) each sole occupancy unit has a software rating of not less than 4 stars; and
	(b) for JV1(a)(ii) the average software rating of all sole occupancy units is not less than 5 stars ; and
	(c) the deemed to satisfy provisions of Section J of the BCA 2009 (Volume 1) have no effect for sole occupancy units.

3.3 ULDA REQUIREMENTS

The ULDA Draft Sustainability Policy 1.1 includes as one of its criteria, under 'Energy and transport (P23 of 30) that 'single residential dwellings to score a minimum of 5 stars under the AccuRATE Energy rating scheme'.

The Policy states that the sustainability criteria will be used as the basis for measuring the development's compliance with the Vision, Principles, Goals and Strategies.

3.4 RESULTS

There are a total of 582 apartments in the Hercules St. Development, with 18 basic plan forms, with additional variations arising from orientation, vertical position in the building (which affects wind loading), outside rather than party walls and location at roof level.

EMF has modelled the worst case apartment configurations (12 of the 18 plan forms), and a total of 30 apartments to establish star ratings for the development as a whole.

Of the 30 apartments modelled the majority achieved 5 stars or greater, with a maximum of 8.5 stars and an average (of the 30 apartments) of 6.5 stars. This is in line with the ULDA goal that each apartment will achieve a minimum of 5 stars.

For the apartments that do not currently comply, alterations will be made and the following treatments are proposed:

- Floor insulation to apartments situated above car parks, garbage rooms, or the substation
- Additional roof insulation
- Modified glazing treatments to include heavily tinted or low-e glass
- Ceiling fans
- Alterations to the floor finish
- Modifications to window sizes

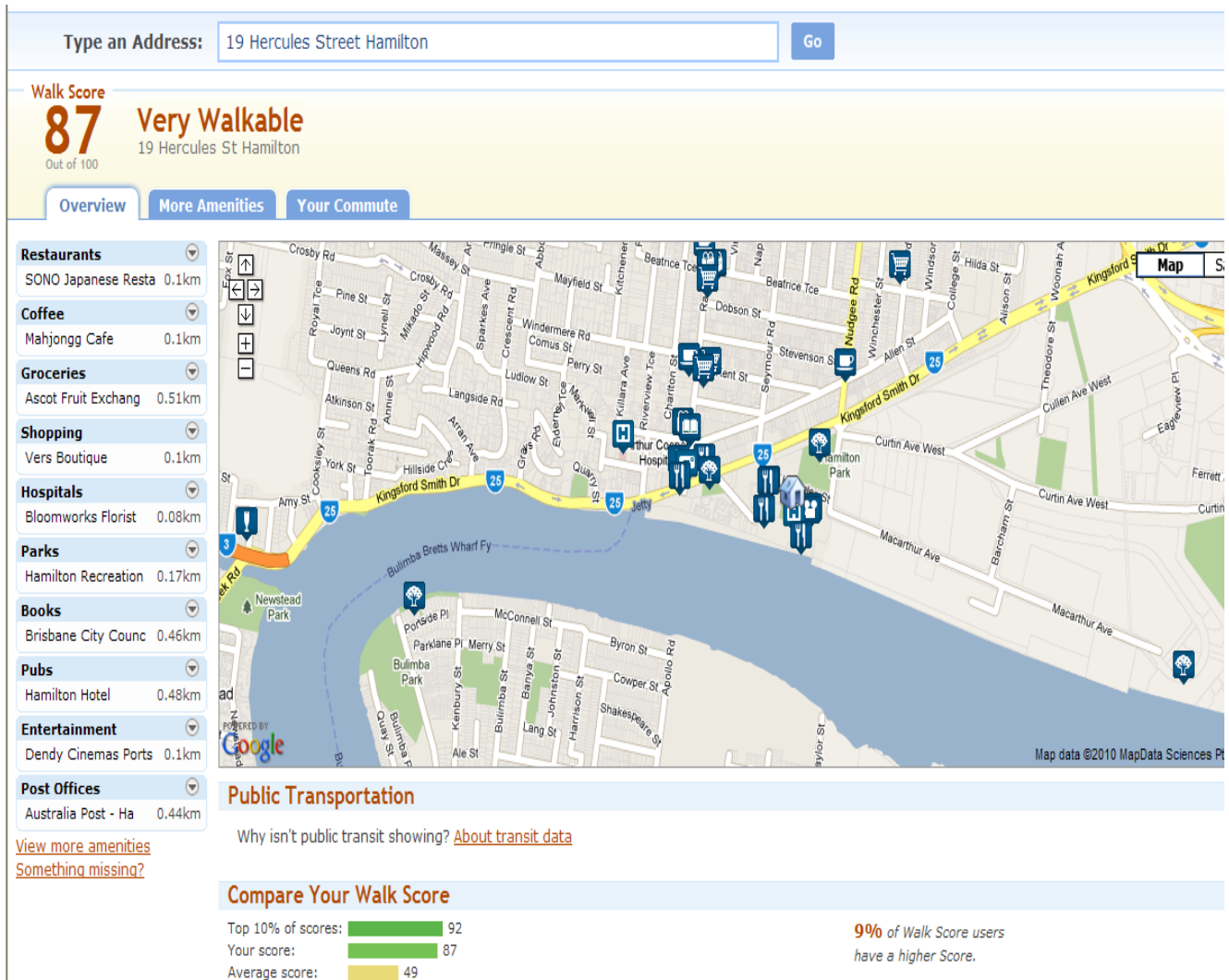
3.5 CONCLUSION

Provided the above recommendations are incorporated into the proposed design, the modelling indicates all apartments will achieve 5 stars or greater, with a maximum of 8.5 stars and an average of 6.5 stars. This is in line with the ULDA goal that each apartment will achieve a minimum of 5 stars.

APPENDIX A HERS MODELLING INPUTS

Minimum Requirements		
External Walls :	precast concrete, plasterboard lined	
External Wall Insulation :	R2.0 bulk insulation	
Internal Walls :	200 mm Hebel, lined	
Floor to Ceiling Height :	2700mm	
Windows Properties :	glazing	single glazed medium tint
		no draught seals
		no insect screens
Window Frame :	aluminium	
Window Opening :	as per drawings	
Window width :	as per drawings	
Floor Type :	concrete slab	
Under Side Floor Insulation :	above carpark as required	
Floor Covering :	bedrooms	carpet and tile
	kitchen/living	carpet and tile
	bathrooms	ceramic tiles
Ceiling to Roof :	rendered	
Insulation in Ceiling :	nil	
Roof :	concrete slab	
Roof insulation	R2.0 bulk insulation	
Roof Colour:	light	
Ceiling fans	no	
Eaves :	overhangs as noted on the drawings	

APPENDIX B WALKSCORE RESULTS



APPENDIX C MIRVAC CORPORATE RESPONSIBILITY AND SUSTAINABILITY POLICY



Mirvac Corporate Responsibility and Sustainability Policy

Mirvac is a leading ASX-listed, integrated real estate group with activities across the real estate investment and development spectrum.

Mirvac's commitment to corporate responsibility and sustainability means managing environmental, social and economic risks and responsibilities and capitalising on opportunities to deliver sustainable development and investment outcomes for the benefit of stakeholders and the broader community.

Mirvac recognises that acting in a responsible and sustainable manner creates new opportunities, enhances investor value, and improves social and environmental returns.

This policy enshrines Mirvac's Group-wide commitment to corporate responsibility and sustainability, and directs further change across all Mirvac Group activities.

Commitments

Mirvac is committed to:

- Maintaining high standards of honest, ethical and legal business behaviours at all times.
- Establishing performance improvement targets against our six sustainability priority areas - Business Conduct, Mirvac People, Stakeholders, Supply Chain, Environmental Impact and Climate Change - and regularly reviewing and reporting publicly on progress.
- Providing our customers, investors, suppliers and business partners with an experience that delivers excellence, meets or exceeds expectations of sustainable performance and engenders loyalty.
- Engaging with our suppliers to improve the sustainability performance of our supply chain.
- Enhancing the communities in which we operate through actions including active engagement, offering innovative and sustainable products, preserving heritage and enhancing culture, and a focussed program of community donations, investments and initiatives.
- Developing, recognising and rewarding our staff to facilitate optimal performance, achieve career objectives and foster a high performance culture committed to sustainability.
- Preventing harm to people.
- Improving resource efficiency and minimising the environmental impacts of activities.
- Positioning Mirvac to operate in a changing climate and carbon-constrained economy.
- Contributing to advancing the sustainability of the real estate investment management, asset management and development sectors.
- Pursuing continual improvement in corporate responsibility and sustainability management and performance.

Accountability

Group, State and Business unit-level Sustainability Committees are accountable for developing and driving implementation of the Group corporate responsibility and sustainability strategy and targets structured under this policy. The Mirvac Group Executive Committee is responsible for reviewing performance.

Progress against our sustainability strategy will be independently assured where appropriate.

This policy will be reviewed at least every two years and updated as required to maintain Mirvac's positioning as a leader in corporate responsibility and sustainability.

I commit Mirvac to the implementation of this policy and task all divisions and personnel across Mirvac with contributing to this goal.

Nicholas Collishaw
Managing Director

January 2009

Living Quality

Integrity ■ Diversity ■ Creating Connections ■ Sharing Success

APPENDIX D FLOOD LEVEL DIAGRAM

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Figure 1: Hamilton Graphical Height Diagram

