

IVANHOE SUSTAINABILITY REPORT

DECEMBER 2017

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Sustainability Manager, Residential

1 INTRODUCTION

This report supports a Concept Development Application for the Ivanhoe Estate Masterplan, a State Significant Development (SSD) submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). It has been prepared for Aspire Consortium on behalf of NSW Land and Housing Corporation.

Background

In September 2015 the Ivanhoe Estate was rezoned by the Department of Planning and Environment as part of the Macquarie University Station (Herring Road) Priority Precinct, to transform the area into a vibrant centre that benefits from the available transport infrastructure and the precinct's proximity to jobs, retail and education opportunities within the Macquarie Park corridor.

The Ivanhoe Estate is currently owned by NSW Land and Housing Corporation and comprises 259 social housing dwellings. The redevelopment of the Ivanhoe Estate is part of the NSW Government Communities Plus program, which seeks to deliver new communities where social housing blends with private and affordable housing, with good access to transport, employment, improved community facilities and open space.

The Communities Plus program seeks to leverage the expertise and capacity of the private and non-government sectors. As part of this program, Aspire Consortium, comprising Fraser's Property Australia, Citta Property Group and Mission Australia Housing, was selected as the successful proponent to develop the site in July 2017.

The Masterplan DA is the first step of the planned redevelopment of the Ivanhoe Estate and will create an integrated neighbourhood including social housing mixed with affordable and private housing, as well as seniors housing, a new school, child care centres, community facilities and retail development.

Site Description

The Ivanhoe Estate site is located in Macquarie Park near the corner of Epping Road and Herring Road within the Ryde Local Government Area (LGA). The site is approximately 8.2 hectares and currently accommodates 259 social housing dwellings, comprising a mix of townhouse and four storey apartment buildings set around a cul-de-sac street layout. An aerial photo of the site is provided at **Figure 1** below.

Immediately to the north of the site are a series of four storey residential apartment buildings. On the north-western boundary, the site fronts Herring Road and a lot which is currently occupied by four former student accommodation buildings and is likely to be subject to redevelopment. Epping Road runs along the south-western boundary of the site and Shrimptons Creek, an area of public open space, runs along the south-eastern boundary. Vehicle access to the site is via Herring Road.

The site is comprised of 17 individual lots and a part lot and are owned and managed by Land and Housing Corporation. The Masterplan site also incorporates adjoining land, being a portion of Shrimptons Creek and part of the commercial site at 2-4 Lyonpark Road. This land is included to facilitate a bridge crossing and road connection to Lyonpark Road.



Figure 1- Ivanhoe Estate site

Overview of the Proposed Development

The proposed Masterplan is a Concept DA (in accordance with Section 83B of the EP&A Act), which sets out the concept proposal for the development of the site. The concept contained in the Masterplan DA establishes the planning and development framework, which will form the basis for the detailed design of the future buildings and against which the future detailed DAs will be assessed.

The Masterplan DA seeks approval for the maximum building envelopes for future stages of development, the maximum gross floor area (GFA) and land uses for the development. Specifically:

- A mixed use development involving a maximum of GFA of 281,905m², including:
 - residential flat buildings comprising private, social and affordable housing
 - seniors housing comprising residential care facilities and self-contained dwellings
 - a new high school
 - child care centres
 - minor retail development
 - community uses
- maximum building heights and GFA for each development block;
- public domain landscape concept, including parks, streets and pedestrian connections;
- provision of the Ivanhoe Estate Design Guidelines to guide the detailed design of the future buildings; and
- vehicular and intersection upgrades.

An image of the Masterplan DA is provided at Figure 2 below.



Figure 2- Ivanhoe Estate Masterplan

Aspire Sustainability Commitments

The three key sustainability commitments for Ivanhoe are:

- Deliver 5 Star Green Star Design & As Built v1.1 minimum for all buildings
- Deliver 6 Star Green Star Communities v1 for the Ivanhoe precinct
- Deliver an integrated infrastructure solution via 'Real Utilities'

The individual commitments identified within Aspire's Form 7 of the bid submission are captured within at least one of the above key commitments so that the sustainability vision from the original proposal is maintained throughout the life of the development from conception to completion. How the original commitments fit within these three key headings is outlined further.

Regarding Aspire's Green Star commitments, this plan has been developed to allow maximum flexibility in achieving the above ratings, regardless of any potential changes to Green Star or its rating system over the life of this project. It has been designed to cater for the potentially different building designs and variables that may materialise in the realisation of the development, yet still achieve the high levels of outcomes envisioned for the precinct.

NSW Secretary's Environmental Assessment Requirements (SEARS)

As part of the development at Ivanhoe Estate we are adhering to the 'SEARS' principles of ecologically sustainable development, namely:

- Application of the precautionary principle and assessment of risk-weighted consequences of options
- Intergenerational equity and conservation of biological diversity and ecological integrity
- Improved valuation, pricing and incentive mechanisms including life cycle costs, use of natural resources and waste disposal
- Establishment of environmental goals and associated mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problem

2 FRASERS PROPERTY SUSTAINABILITY PHILOSOPHY AND APPROACH

Philosophy

At Frasers Property Australia, we believe that Sustainability isn't just about the environment. It's about creating communities and places that help real people live, play, shop and work in better ways. It's about being a resilient and responsible business, creating more diverse opportunities for our employees and customers, efficient spaces that allow businesses to thrive, and communities that genuinely serve the needs of residents - as well as the planet. It's about minimising our environmental impact in everything we do, and maximising the social and economic benefits for all.

This philosophy is underpinned by "A Different Way" (Refer Appendix 6B), our sustainability strategy launched in 2016. A Different Way is our real commitment to creating places where resources are reused, recycled and restored, where new ideas are fostered for everyone's benefit, and where people can lead better, healthier lives.

Approach

Our approach for Ivanhoe addresses the broader definition of sustainability. It acknowledges that a sustainable organisation not only addresses its environmental impact, but also addresses the communities it develops and interacts with, its people and the marketplace. We believe we are well placed to design and deliver an exemplary community that will achieve in a range of leading sustainability performance indicators. Our recent sustainability achievements include:

- **Nine Registered Green Star Communities projects, the most of any organisation.**
These include the Fairwater community in Blacktown NSW, which is on track to be one of Australia's most sustainable master planned communities and has already received UDIA and Green Globe awards.
- Developing approximately **1.3 million m2** of buildings that are certified or registered under **Green Star**.
- **86,000 people** live, work and shop in our **Green Star Buildings and Communities**
- Over **18,000 homes** that will be **Green Star Certified** or located within Green Star Certified Communities
- Ongoing commitment to supporting the environment and disadvantaged youth through the **Frasers Property Foundation**. Turning 10 years old this year, the Foundation provides a bank of 500 staff volunteering days per annum and is matched with a donation budget of approximately \$150,000 per annum to identify and support charities and activities in which staff can participate.
- Industry support – Frasers Property has supported the Green Building Council of Australia through involvement in technical and advisory groups as well as **sponsorship of several Green Star rating tools**. We are also represented on the GBCA's Green Star Steering Committee and Property Council of Australia's National Sustainability Roundtable.
- Frasers Property is undertaking the **Living Building Challenge** for the Burwood East Brickworks Retail Centre VIC which, when completed, will be the worlds' most sustainable retail centre.
- Frasers Property **benchmarks all community projects against the Green Star Communities** tool with a minimum internal target of 5 stars.

As recognition of our leadership in sustainability and demonstrated ability to implement sustainability principles, Frasers Property has been named a **Regional Sector Leader in the 2017 Global Real Estate Sustainability Benchmark (GRESB) Survey**, the international property market's most prestigious and credible measure of commitment to sustainability performance.

3 SUSTAINABILITY BENCHMARK 1

Commitment: Deliver 5 Star Green Star Design & As Built minimum for all buildings

Method: Using the Green Building Council of Australia's current rating tool "Green Star – Design & As Built v1.1" and subsequent releases as appropriate

Our built environment is currently the world's single largest contributor to greenhouse gas emissions, and also consumes around a third of our water, and generates 40 per cent of our waste. From individual buildings to entire communities, Green Star is transforming the way our built environment is designed, constructed and operated. Launched by the Green Building Council of Australia in 2003, Green Star is Australia's only national and voluntary rating system for buildings and communities. Green Star is helping to improve environmental efficiencies in our buildings, while boosting productivity, creating jobs and improving the health and well-being of our communities.

Green Star – Design & As Built assesses the sustainability outcomes from the design and construction of new buildings or major refurbishments, across nine holistic impact categories.

Ivanhoe Estate aims to set new Benchmarks in Sustainability under these categories as follows (Note; further commitment details are listed after):

Management

Ivanhoe Estate will utilise practices and processes that support best practice sustainability outcomes throughout the different phases of a project's design, construction and ongoing operation. These practices will include exploring amongst others:

- A comprehensive Occupants User Manual
- Building Operations – namely Performance, Commissioning and Tuning
- Building Specific Climate Resilience Strategies

Indoor Environmental Quality

Through initiatives that enhance the comfort and well-being of occupants Ivanhoe Estate will look to address issues such as air quality, thermal comfort and acoustic comfort. Areas of comfort being investigated include:

- Thermal comfort via NatHERS and BASIX commitments
- Visual comfort via extensive landscaping and visual connection
- Indoor Air Quality via ventilation and the provision of outdoor air to apartments

Energy

Built Form at Ivanhoe Estate will be designed and constructed to reduce overall greenhouse emissions from operations by addressing energy demand reduction, use efficiency and generation from alternative sources. Multiple proposed initiatives will be investigated to address this including, but not limited to:

- Bid commitments around NatHERS and BASIX targets
- Inclusion of an integrated infrastructure solution (Real Utilities)
- Efficient building systems and Carbon Neutrality in operations

Transport

Ivanhoe Estate will look to reduce the dependency of private car use as an important means of reducing overall greenhouse gas emissions, as well as encouraging the provision of alternative forms of transportation. Some of the initiatives being explored include:

- Provision of "GoGet" car sharing facilities for residents
- Extensive end of trip facilities for residents
- Electric Vehicle infrastructure

Water

Built form at Ivanhoe Estate will aim to reduce the consumption of potable water through measures such as the incorporation of water efficient fixtures and building systems and water re-use. Some of these initiatives maybe achieved through;

- Bid commitments around NABERS and BASIX targets
- 5 Star WELS appliances and fixtures
- Rainwater Harvesting

Materials

Ivanhoe Estate will aim to address the consumption of resources for the project, by encouraging the selection of low-impact materials. Areas of investigation to support this include:

- Utilisation of sustainable materials
- LCA Modelling
- 1% construction waste to landfill

Land Use and Ecology

A key focus of Ivanhoe Estate is to reduce the negative impacts on the sites' ecological value as a result of the development. We aim to minimise harm and enhance the quality of local ecology, particularly around the Turpentine Ironbark Forest along Shrimptons Creek. Initiatives to enable this currently include:

- Protecting the existing Turpentine Ironbark Forest
- Maintaining functional connection to Shrimptons Creek riparian habitat

Emissions

Ivanhoe Estate aims to reduce its environmental impacts from 'point source' pollution and reduce their effects on the atmosphere, watercourse and native animals. We are currently exploring a number of enablers for this including:

- Ensuring WSUD (Water Sensitive Urban Design) principles are applied throughout the precinct
- Reducing the impacts of light pollution from up-lighting

Innovation

Implementation of innovative practices, processes and strategies that promote sustainability in the built environment will occur throughout the lifetime of the development ensuring that Ivanhoe Estate is recognised as one of the most progressive projects in the country. A number of innovative concepts currently being explored on the project include;

- Transparent financial reporting on sustainability initiatives
- Nominal to no cost heating for social housing residents
- Carbon Neutral buildings in operations
- A strong focus on community health and wellbeing

As part of Aspire's Sustainability Benchmark 1 we will look to incorporate the following initiatives;

5 Star Green Star Design and As Built Rating Targets	
5 Star Green Star Design & As Built v1.1 for all buildings (including building by other within precinct) including:	
Process	Develop a comprehensive occupant's manual including user-friendly information on environmental features of the systems, building and facilities and advice on how to optimise performance and running costs.
Energy and Green House Gas Emissions	BASIX 45 energy ratings (on average across the development)
	6 star natHERS ratings (on average across the development)
	BASIX 45 water rating (on average across the development)
	Energy efficient equipment, lighting and appliances to be best practice (5-star energy ratings, LED lighting)
	Gas-boosted solar hot water or heat pumps for all domestic hot water needs
	Optimised integrated infrastructure solution
	Carbon Neutral in operation
	Reduction in embodied carbon (aligned with the materials commitments below and subject to LCA modelling)
Water	1.5MW Solar PV system covering approximately 50% of site roof space. The balance of roof space will be green roof and open space.
	BASIX Water 45 for all apartments (on average across the development)
	NABERS 5-star Water for all commercial buildings (where applicable)
	Water fixtures 5-star WELS
	Water appliances 5-star WELS
	Maximise the use of non-potable water for irrigation and car washing (Rainwater from building rooftops will be collected and reused on site)
Transport and Connectivity	Optimised integrated infrastructure solution
	Provision of 50 GoGet spaces
	A connected and permeable site to encourage active transport and use of public transport
	At least one bicycle parking space to be provided for each dwelling (>3,500) and at least 200 provided for visitors
	Electric vehicle ready
	End of trip facilities for non-residential buildings
Materials and Waste	Future proofing for autonomous vehicles (designing for potential alternate use of basements and street parking)
	15-20% Supplementary Cementitious Material (SCM) average in concrete mixes across site
	20% Recycle Asphalt Pavement (RAP) warm-mix asphalt
	ASI sustainable steel
	Recycled concrete in place of crushed rock where available
	Best environmental practice PVC
	FSC certified timber
	Embodied carbon reduction target
	Life cycle assessment will be used during detailed design to optimise for low carbon design. The project will target a substantial reduction in embodied GHG emissions through design and material selection.
	Carbon offsets will be purchased to meet the target if required
	Maximum 1% construction waste to landfill

4 SUSTAINABILITY BENCHMARK 2

Commitment: Deliver 6 Star Green Star Communities for the Ivanhoe precinct

Method: Using the Green Building Council of Australia's current rating tool "Green Star – Communities v1.1" and subsequent releases as appropriate

Green Star – Communities assesses the planning, design and construction of large scale development projects at a precinct, neighbourhood and/or community scale. It provides a rigorous and holistic rating across five impact categories.

Ivanhoe Estate aims to set new Benchmarks in Sustainability under these categories as follows (Note; further commitment details are listed after):

Governance

Ivanhoe Estate will look to demonstrate leadership within the industry by establishing and maintaining strong governance practices. This will occur through engagement, transparency, as well as community and industry capacity building. We will look to ensure that the Ivanhoe Estate development is resilient to a changing climate. Some of the initiatives being explored include:

- Transparency via design reviews with independent sustainability experts
- Inclusive and comprehensive stakeholder engagement process
- Site Specific Climate Resilience Strategies

Liveability

We aim to deliver a safe, accessible and culturally rich community at Ivanhoe Estate. Accordingly we will focus on the development of healthy and active lifestyles, and look to create a community with a high level of amenity, activity, and inclusiveness. Areas of investigation currently include:

- Health and Fitness classes for all residents
- A safe, walkable and accessible community
- Dedicated Community Development Managers

Economic Prosperity

Ivanhoe Estate will look to promote prosperity and productivity through the creation of equitable living and housing, through investment in education and skills development, and through community capacity building. Current initiatives being explored include:

- Provision of digital infrastructure
- On site energy generation
- Community infrastructure investment

Environment

Reducing the impact of urban development on the local ecosystem is an important objective for Ivanhoe Estate. Resource management and efficiency will be carefully considered through promoting infrastructure, transport, and buildings that have reduced ecological footprints. Accordingly, we will seek to reduce the impacts of this project on the local land and aquatic environments. Ideas currently under consideration include:

- Ensuring WSUD (Water Sensitive Urban Design) principles are applied throughout the precinct
- Urban Heat Island reduction and mitigation strategies
- Waste management strategies

- Life Cycle impacts analyses of materials used on site
- Maximising the ecological value of site to be close to or exceeding existing

Innovation

Implementation of innovative practices, processes and strategies that promote sustainability in the built environment will occur throughout the lifetime of the development ensuring that Ivanhoe Estate is recognised as one of the most progressive projects in the country. A number of innovative concepts are being currently explored on this project including;

- Transparent financial reporting on sustainability initiatives
- Contractor education on sustainability
- Innovative use of technology through an integrated infrastructure solution (Real Utilities)

As part of Aspire's Sustainability Benchmark 2 we will look to incorporate the following initiatives;

6 Star Communities Rating Targets	
6 Star Green Star Communities v1.1 including:	
Sustainable Site	Maximise the ecological value of site to be close to or exceeding existing (biodiversity, permeable surfaces, urban greening) 1. Protect the existing Turpentine Ironbark Forest 2. Maintain its functional connection to Shrimptons Creek riparian habitat through the site and with fauna crossings at road intersections. 3. Mitigating the urban heat island effect with extensive landscaped public domain, green roofs, low-SRI roofs and solar PV.
	Mitigating the urban heat island effect with extensive landscaped public domain, light coloured roofs, green roofs and solar PV.
	Employ Water Sensitive Urban Design Manage stormwater 1. Manage urban stormwater with water sensitive urban design including rainwater tanks, gross pollutant traps, underground detention tanks, swales/permeable detention basins/bio-filters as appropriate
Transport & Connectivity	A connected and permeable site to encourage active transport and use of public transport
	At least one bicycle parking space to be provided for each dwelling (>3,500) and at least 200 provided for visitors
	Provision of 50 GoGet spaces
	Electric vehicle ready
	End of trip facilities for non-residential buildings
Community Health and Happiness	To fully quantify and track tangible health and well-being metrics through programs and partnerships including Live Life Get Active and Mission Australia's Strengthening Communities amongst others.
	Public domain that encourages social interaction, has activated street frontages, is adaptable and comfortable, and is pedestrian-oriented
	We also commit to a minimum 200 volunteer hours on various community activities specifically for Ivanhoe Estate.
Living Costs	Development reduces average living costs for households, and average operating costs for businesses, compared with business as usual
	Whole of life affordability strategy considering: 1. Housing 2. Utilities 3. Food 4. Transit
	The CCAP Precinct report indicates in excess of a 40% reduction in living costs.
Local Economy	Integrate commercial opportunities within precinct, including spaces suitable for small business or home business operations and / or work from- home 1. Community Hub – fitted out with offices and session rooms for the delivery of MA's tenant support programs and also drop-in offices for the delivery of community services 2. Social Enterprise Space – opportunities for social enterprise development in conjunction with the community.
	The Strengthening Communities program will deliver opportunities that MA and MAH can create through the operation of the residential community such as: 1. Landscaping 2. Common area maintenance 3. Administration of the Community Hub 4. Live Work Dwellings are incorporated in buildings along the main street which will be suitable for small business or home business

5 SUSTAINABILITY BENCHMARK 3

Commitment: Deliver an integrated infrastructure solution via 'Real Utilities'

Method: Aspire will develop and deliver a private embedded electrical and hot water network to supply all users across the precinct. On the back these embedded networks we will improve their efficiencies by incorporating the following strategies:

1. Installation of solar PV to reduce electrical peak demand and greenhouse emissions;
2. Use of high efficiency centralised hot water;
3. Installation of smart metering technology to allow efficient demand management;
4. Minimise use of onsite gas;
5. Provision of low-cost heating to the social housing;
6. Acquire certified carbon offsets (if required) to ensure that 100% of energy supplied through Real Utilities is NCOS carbon neutral certified.

Community Energy Networks

Private – or “Embedded” – energy networks are increasingly commonplace on new retail, residential and mixed-use developments in Australia. While the distinguishing feature of a Private Network is the establishment of a gate – or “parent” – meter that separates energy users within a new development from the external grid, Private Networks come in many flavours.

Traditional providers of energy have a clear profit motive – the more energy consumed, the more revenue they receive – with little attention to energy efficiency. Increasingly they are participating in the Private Network market, but with little benefit to end-users.

Fraser's Property Community Energy Network

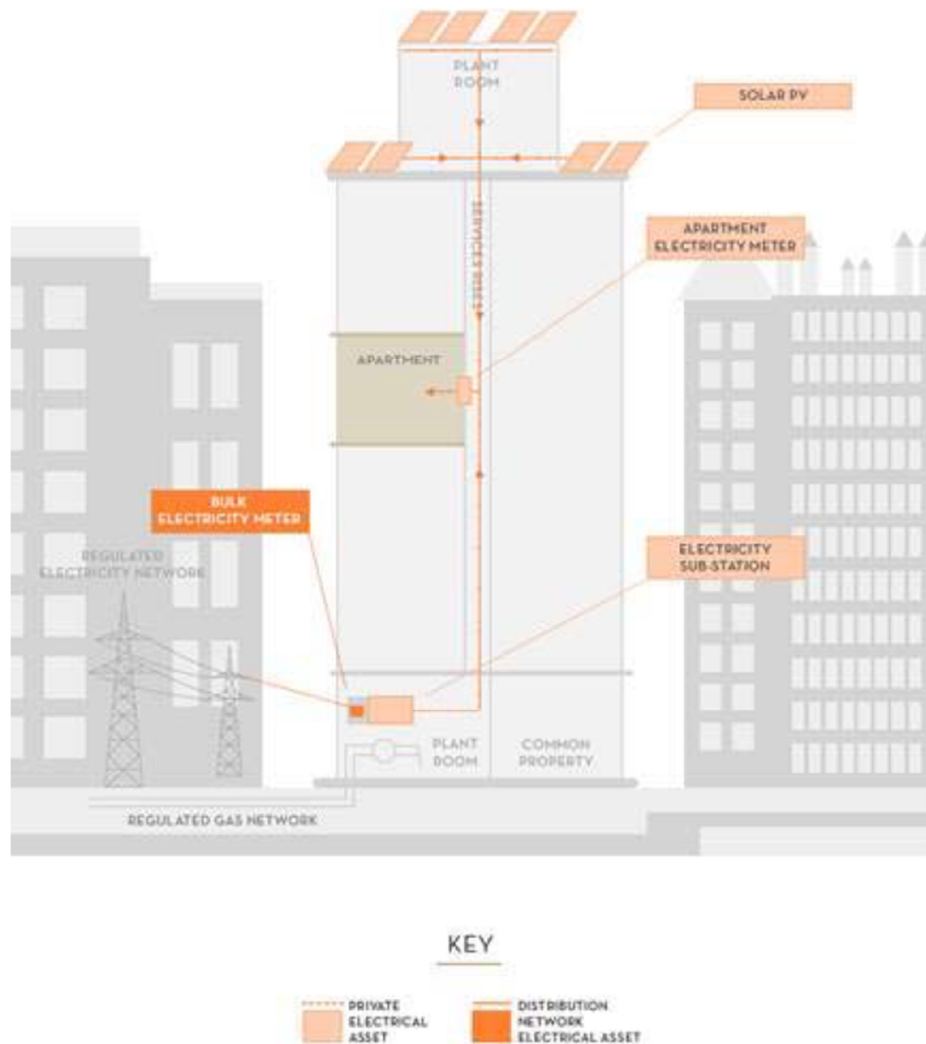
In recently establishing an embedded network division, Real Utilities, Fraser's Property has the ambition to be the leading provider of energy on new developments in Australia. In addition to a commitment to establishing Private Networks on all its new retail, residential and mixed-use developments, Real Utilities is also in the process of obtaining a Retail Electricity license.

This capability will allow Fraser's Property to provide a real difference on the Ivanhoe Estate development with the potential for the following benefits to the people who live and work in those developments to be realised:

- **Lower cost energy.** Real Utilities will match or better the lowest prices of the major electricity retailers. Moreover, it will ensure this is an enduring benefit by constantly resetting prices to be below the best discounted tariff of the three major electricity retailers in the area, without lock-in contracts or honeymoon periods
- **Carbon neutral power.** Fraser's property and Real Utilities will supply certified carbon neutral power through maximising solar PV installation to the available roof-space, and acquiring certified carbon offsets for 100% of the grid sourced electricity and greenhouse gas emissions within its Private Networks. The power will be certified carbon neutral under the Australian Government's National Carbon Offset Standard (NCOS)

- **Greater demand management by end-users.** Fraser's Property and Real Utilities will install the latest smart meter technology within its Private Networks to provide residents with usable access to their energy consumption data and to time of use energy tariffs

These benefits will have greatest impact on reducing energy demand and the costs of energy consumed will contribute to a reduction in the financial stress that underlies utility disconnections.



As part of Aspire's Sustainability Benchmark 2 we will look to incorporate the following initiatives;

Integrated Infrastructure Solution (Real Utilities) Targets	
Provide an optimised integrated infrastructure solution	
Private wire electricity supply	<p>Real Utilities will establish the precinct with one or more private wire networks by installing gate meters</p> <p>These private networks allow for:</p> <ol style="list-style-type: none"> 1. The purchase of grid electricity at bulk, with savings passed on to the residents and businesses 2. The optimal integration of renewable energy generation on site 3. Implementation of energy efficiency measures at scale 4. 100% of power supplied by Real Utilities will be NCOS carbon neutral certified 5. Continued Government concessions and subsidies to Social housing residents by Real Utilities
Smart metering and energy monitoring	<p>Without charge to any of the precincts residents, Frasers Property and Real Utilities will install the latest smart meter technology which will give residents access to:</p> <ol style="list-style-type: none"> 1. Time of use energy tariffs 2. Their energy consumption data so they may make better energy use decisions
On-site renewable energy	<p>Ensure that on-site renewable energy generation from Solar PV is maximised wherever possible</p> <p>Based on the current site density and restricted roof space available, this is estimated to be near 1,500 kW, which will be increased wherever feasible</p>
100% Carbon Neutral power	<p>Without charge to any of the precinct's residents, Real Utilities will supply 100% certified carbon neutral power. The energy will be certified under the Australian Government's National Carbon Offset Standard</p> <p>Based on current projected energy loads Frasers Community Utilities will procure offset certificates for the precinct's approximately 12,000 tonnes of CO2 emissions each year</p> <p>To ensure the durability of this feature, Frasers will acquire at least the first 5years' worth of certificates at or prior to completion of each building</p>
Affordability	<p>Real Utilities will provide all residents with electricity cost savings, at tariffs which better those of the 3 major electricity retailers in the area.</p> <p>The benefit delivered by Real Utilities will be achieved by constantly resetting prices at below the best discounted rate of the major electricity retailers, without lock-in contracts or honeymoon periods.</p> <p>Real Utilities will provide affordable heating to the social housing residents via a radiant heating system, & will be provided at a nominal to zero cost</p>
Centralised hot water	<p>Frasers Property will provide residents with centralised hot water</p> <p>The energy component of hot water will be invoiced Real Utilities, while the water component of the hot water will be invoiced by the water provider</p> <p>Hot water tariffs will set at below standard tariffs</p>
Electric/ induction cooktops	<p>Frasers Property will provide electric / induction cooktops for residents</p> <p>Electric cooktops are preferred by Frasers Property's social housing bid partner</p>
Energy efficient cooling and heating	<p>Frasers Property will procure energy efficient split air-conditioning systems for the non-Social housing dwellings</p> <p>The base solution for Social housing residents is ceiling fans and provisions for future split system air conditioners</p> <p>Heating will be provided to social housing residents via a radiant heating system, which will be provided at a nominal to zero cost</p>

APPENDICES

A. EXPERT SUSTAINABILITY CERTIFIER SUPPORT LETTER



Our ref: PS107138-171211-PR-SUSTAINABILITY LETTER.docx

By email
Rory.Martin@frasersproperty.com.au

11 December 2017

Rory Martin
Sustainability Manager - Residential
Fraser's Property Australia
Level 9, 484 St Kilda Road, Melbourne, VIC, 3004

Dear Rory

Ivanhoe Estate | Sustainability Statement

This letter provides a certificate of review for the Ivanhoe Sustainability Report (November 2017) against the Sustainability Benchmarks.

The benchmarks are:

1. **Commitment 1:** Deliver 5 Star Green Star Design & As Built minimum for all buildings using the Green Building Council of Australia's current rating tool "Green Star – Design & As Built v1.1" and subsequent releases as appropriate
2. **Commitment 2:** Deliver 6 Star Green Star Communities for the Ivanhoe precinct using the Green Building Council of Australia's current rating tool "Green Star – Communities v1.1" and subsequent releases as appropriate
3. **Commitment 3:** Deliver an integrated infrastructure solution via 'Real Utilities' with the development and delivery of a private embedded electrical and hot water network to supply all users across the precinct. On the back these embedded networks we will improve their efficiencies by incorporating the following strategies:
 - Installation of solar PV to reduce electrical peak demand and greenhouse emissions;
 - Use of high efficiency centralised hot water;
 - Installation of smart metering technology to allow efficient demand management;
 - Minimise use of onsite gas;
 - Provision of low-cost heating to the social housing;
 - Acquire certified carbon offsets (if required) to ensure that 100% of energy supplied through Real Utilities is NCOS carbon neutral certified.

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The Sustainability Report demonstrates the approach to compliance for the Green Star benchmarks and Real Utilities approach, supported by the associated reports for the planning submission and the following documents:

- Green Star D&AB Scorecard;
- Green Star Communities Scorecard.

Subject to the implementation of the stated initiatives that correspond with these scorecards, over the course of the design and delivery phases of the project; and the delivery of the Real Utilities service as described in the report; the benchmark commitments can be considered to achieved for this stage of design.

Kind regards



Richard Palmer
Director - Sustainability

B. GREEN STAR COMMUNITIES INDICATIVE SCORECARD

Green Star Communities scorecards are appended to this report to demonstrate that the initiatives identified are able to meet the benchmark requirements. As the project proceeds through planning, design and construction, the balance of initiatives and credits targeted will likely change based on design, predicted performance and whole-of-life cost. The flexibility to changes to the individual credit strategies is an important aspect of the Green Star rating tools, providing opportunities for an optimised sustainability strategy that achieves equivalent performance, provided the total points and certified rating are maintained.

CATEGORY / CREDIT	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED
GOVERNANCE				
Green Star Accredited Professional	1.0	Green Star Accredited Professional	1	1
Design Review	2.1	Site Planning and Layout	4	4
	2.2	Urban Design	4	4
Engagement	3.1	Stakeholder Engagement Strategy	3	3
	3.2	Strategy Implementation	3	3
Adaptation and Resilience	4.1	Climate Adaptation	2	2
	4.2	Community Resilience	2	2
Corporate Responsibility	5.1	Corporate Responsibility	1	1
	5.2	Sustainability Reporting	2	2
Sustainability Awareness	6.1	Community Users' Guide	1	1
	6.2	Sustainability Education Facilities	1	0
Community Participation and Governance	7.1	Community Facility Management	1	1
	7.2	Community Program Management	1	1
Environmental Management	8.1	Environmental Management System	1	1
	8.2	Environmental Management Plan	1	1
Total			28	27.0

LIVEABILITY				
Healthy and Active Living	9.0	Minimum Requirement - Footpaths	-	Complies
	9.0	Minimum Requirement - Footpaths	-	Complies
	9.1	Active Lifestyle	2	2
	9.2	Recreational Facilities	2	2
	9.3	Healthy Places	1	1
Community Development	10.0	Minimum Requirement - Community Development Plan	-	Complies
	10.1	Community Development Officer	1	1
	10.2	Community Group	1	1
	10.3	Community Events	1	1
	10.4	Community Information	1	1
Sustainable Buildings	11.1	Certified Non-Residential Buildings	-	
	11.2	NatHERS and Livable Housing Australia	4	1

Culture, Heritage and Identity	12.1	Understanding Culture, Heritage and Identity	1	1
	12.2	Enhancing Community Culture, Heritage and Identity	2	2
Walkable Access to Amenities	13.1	Walkable Access to Amenities	2	2
Access to Fresh Food	14.1	Access to Fresh Food	1	1
	14.2	Local Food Production	1	1
Safe Places	15.0	Minimum Requirement - Visibility	-	Complies
	15.1	Design for Safety	2	2
Total			22	19.0

ECONOMIC INVESTMENT				
Community Investment	16.1	Community Infrastructure Investment	4	4
Affordability	17.1	Residential Affordability Strategies	4	4
	17.2	Non- Residential Affordability Strategies	-	
Employment and Economic Resilience	18.1	Net Percentage Increase of Local Jobs	1	0
	18.2A	Diverse Local Employment – Performance Pathway	-	
	18.2B	Proximity to Major City – Prescriptive Pathway	1	0
	18.2C	NCC Class mix – Prescriptive Pathway	-	
Education and Skills Development	19.1	Higher Education Facilities	1	1
	19.2	Skills Development Programs	1	1
	19.3	Industry Capacity Development	1	
Return on Investment	20.1	Analysis of Direct Costs and Benefits	1	
	20.2	Analysis of Indirect Costs and Benefits	1	
Incentive Programs	21.1	Residential Incentives	2	2
	21.2	Non-residential Incentives	-	
Digital Infrastructure	22.1	High-speed Broadband	1	1
	22.2	Wireless Local Area Network	1	1
Peak Electricity Demand	23A	Reduced Peak Electricity Demand - Performance Pathway	-	
	23B.i	On-site Generation – Prescriptive Pathway	2	
	23B.ii	Energy Storage – Prescriptive Pathway	-	
Total			21	14.0

ENVIRONMENT				
Integrated Water Cycle	24A.1	Stormwater – Performance Pathway	2	2
	24A	Water Sensitive Urban Design – Performance Pathway	5	2
	24B.1	Alternative Water Sources - Public Open Spaces	-	
	24B.2	Alternative Water Sources - Buildings	-	
	24B.3	Stormwater Peak Discharge	-	
	24B.4	Stormwater Quality	-	

Greenhouse Gas Strategy	25A	Greenhouse Gas Strategy – Performance Pathway	6	6
	25B.1	Energy Efficiency - Infrastructure Lighting	-	
	25B.2	Energy Efficiency - Existing Buildings	-	
	25B.3	Renewable Energy Production	-	
	25B.4	District Heating and Cooling	-	
Materials	26A	Life Cycle Assessment (LCA) – Performance Pathway	-	
	26B	Life Cycle Impacts – Prescriptive Pathway	3	1.5
Sustainable Transport and Movement	27A	Sustainable Transport and Movement: Performance Pathway	3	3
	27B	Sustainable Transport and Movement: Prescriptive Pathway	-	
Sustainable Sites	28	Conditional Requirement	-	Complies
	28.1	Previously Developed Land	1	1
	28.2	Best Practice Site Decontamination	1	
Ecological Value	29.1	Change of Ecological Value	1	0
	29.2	Biodiversity Enhancement	1	0
Waste Management	30.1	Construction, and Demolition Waste	1	0.7
	30.2	Operational Waste	1	1
Heat Island Effect	31.1	Heat Island Effect	1	1
Light Pollution	32.1	Light Pollution	1	1
Total			27	19.2
INNOVATION				
Innovative Technology or Process	33A	Innovative Technology or Process	10	
Market Transformation	33B	Market Transformation		1
Improving on Green Star Benchmarks	33C	Improving on Green Star Benchmarks		
Innovation Challenge	33D	Innovation Challenge		2
Global Sustainability	33E	Global Sustainability		
Total			10	3
		TOTALS	AVAILABLE	TARGETED
		CORE POINTS	100	79.2
		CATEGORY PERCENTAGE SCORE		79.2
		INNOVATION POINTS	10	3.0
		TOTAL SCORE TARGETED		82.2

C. GREEN STAR DESIGN AND AS BUILT INDICATIVE SCORECARD

Green Star Design and As Built scorecards are appended to this report to demonstrate that the initiatives identified are able to meet the benchmark requirements. As the project proceeds through planning, design and construction, the balance of initiatives and credits targeted will likely change based on design, predicted performance and whole-of-life cost. The flexibility to changes to the individual credit strategies is an important aspect of the Green Star rating tools, providing opportunities for an optimised sustainability strategy that achieves equivalent performance, provided the total points and certified rating are maintained.

CATEGORY / CREDIT	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED
MANAGEMENT				
Green Star Accredited Professional	1.0	Accredited Professional	1	1
Commissioning and Tuning	2.0	Environmental Performance Targets	-	Complies
	2.1	Services and Maintainability Review	1	1
	2.2	Building Commissioning	1	1
	2.3	Building Systems Tuning	1	1
	2.4	Independent Commissioning Agent	1	1
Adaptation and Resilience	3.1	Implementation of a Climate Adaptation Plan	2	2
Building Information	4.1	Building Operations and Maintenance Information	1	1
	4.2	Building User Information	1	1
Commitment to Performance	5.1	Environmental Building Performance	1	1
	5.2	End of Life Waste Performance	1	1
Metering and Monitoring	6.0	Metering	-	Complies
	6.1	Monitoring Systems	1	0
Construction Environmental Management	7.0	Environmental Management Plan	-	Complies
	7.1	Formalised Environmental Management System	1	1
Operational Waste	8A	Performance Pathway - Specialist Plan	1	1
	8B	Prescriptive Pathway - Facilities	-	
Total			14	12

INDOOR ENVIRONMENT QUALITY				
Indoor Air Quality	9.1	Ventilation System Attributes	1	1
	9.2	Provision of Outdoor Air	2	2
	9.3	Exhaust or Elimination of Pollutants	1	1
Acoustic Comfort	10.1	Internal Noise Levels	1	1
	10.2	Reverberation	1	0
	10.3	Acoustic Separation	1	0
Lighting Comfort	11.0	Minimum Lighting Comfort	-	Complies

	11.1	General Illuminance and Glare Reduction	1	1
	11.2	Surface Illuminance	1	1
	11.3	Localised Lighting Control	1	1
Visual Comfort	12.0	Glare Reduction	-	Complies
	12.1	Daylight	2	0
	12.2	Views	1	1
Indoor Pollutants	13.1	Paints, Adhesives, Sealants and Carpets	1	1
	13.2	Engineered Wood Products	1	1
Thermal Comfort	14.1	Thermal Comfort	1	
	14.2	Advanced Thermal Comfort	1	
Total			17	12

ENERGY				
Greenhouse Gas Emissions	15A.0	Conditional Requirement: Prescriptive Pathway	-	
	15A.1	Building Envelope	-	
	15A.2	Glazing	-	
	15A.3	Lighting	-	
	15A.4	Ventilation and Air-conditioning	-	
	15A.5	Domestic Hot Water Systems	-	
	15A.6	Building Sealing	-	
	15A.7	Accredited GreenPower	-	
	15B.0	Conditional Requirement: NatHERS Pathway	-	
	15B.1	NatHERS Pathway	-	
	15C.0	Conditional Requirement: BASIX Pathway	-	Complies
	15C.1	BASIX Pathway	16	9
	15D.0	Conditional Requirement: NABERS Pathway	-	
	15D.1	NABERS Energy Commitment Agreement Pathway	-	
	15E.0	Conditional Requirement: Reference Building Pathway	-	
	15E.1	Comparison to a Reference Building Pathway	-	
Peak Electricity Demand Reduction	16A	Prescriptive Pathway - On-site Energy Generation	-	
	16B	Performance Pathway - Reference Building	2	
Total			18	8

TRANSPORT				
Sustainable Transport	17A.1	Performance Pathway	10	0
	17B.1	Access by Public Transport	0	
	17B.2	Reduced Car Parking Provision	0	
	17B.3	Low Emission Vehicle Infrastructure	0	
	17B.4	Active Transport Facilities	0	
	17B.5	Walkable Neighbourhoods	0	
Total			10	4

Water				
Potable Water	18A.1	Potable Water - Performance Pathway	0	
	18B.1	Sanitary Fixture Efficiency	1	1
	18B.2	Rainwater Reuse	1	1
	18B.3	Heat Rejection	2	2
	18B.4	Landscape Irrigation	1	1
	18B.5	Fire System Test Water	1	1
Total			6	6

MATERIALS				
Life Cycle Impacts	19A.1	Comparative Life Cycle Assessment	0	
	19A.2	Additional Life Cycle Impact Reporting	0	
	19B.1	Concrete	3	0
	19B.2	Steel	1	1
	19B.3	Building Reuse	4	0
Responsible Building Materials	20.1	Structural and Reinforcing Steel	1	1
	20.2	Timber Products	1	1
	20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1
Sustainable Products	21.1	Product Transparency and Sustainability	3	1
Construction and Demolition Waste	22A	Fixed Benchmark	-	
	22B	Percentage Benchmark	1	1
Total			12	9

LAND USE AND ECOLOGY				
Ecological Value	23.0	Endangered, Threatened or Vulnerable Species	-	Complies
	23.1	Ecological Value	3	1
Sustainable Sites	24.0	Conditional Requirement	-	Complies
	24.1	Reuse of Land	1	1
	24.2	Contamination and Hazardous Materials	1	
Heat Island Effect	25.0	Heat Island Effect Reduction	1	1
Total			6	3

EMISSIONS				
Stormwater	26.1	Reduced Peak Discharge	1	1
	26.2	Reduced Pollution Targets	1	1
Light Pollution	27.0	Light Pollution to Neighbouring Bodies	-	Complies
	27.1	Light Pollution to Night Sky	1	1
Microbial Control	28.0	Legionella Impacts from Cooling Systems	1	1
Refrigerant Impacts	29.0	Refrigerants Impacts	1	0
Total			5	4

INNOVATION				
Innovative Technology or Process	30A	Innovative Technology or Process	10	1
Market Transformation	30B	Market Transformation		
Improving on Green Star Benchmarks	30C	Improving on Green Star Benchmarks		
Innovation Challenge	30D	Innovation Challenge		5
Global Sustainability	30E	Global Sustainability		
Total			10	6
		TOTALS	AVAILABLE	TARGETED
		CORE POINTS	100	58.0
		CATEGORY PERCENTAGE SCORE		58.0
		INNOVATION POINTS	10	6.0
		TOTAL SCORE TARGETED		64.0