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Environmentally Sustainable Development Report

Ivanhoe Tank Site

HIP V. HYPE

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We seek to partner with those who are willing to think strategically to achieve better. We lead, collaborate and support others to deliver impact and build Better Cities and Regions, Better Buildings, and Better Businesses.

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Contents

Project Overview

Project Name	Ivanhoe Tank Site
Address	421 Upper Heidelberg Road, Ivanhoe, VIC, 3079
Traditional Custodians	Wurundjeri Woi-wurrung
Local Government	Banyule
Site Area	6,220 m²
Development Summary	12-storey mixed-use development

Merri Creek, Wurundjeri Woi-wurrung Land.
Photography by Kate Shanasy

Executive Summary

Ivanhoe Tanks Site is envisaged to comprise a residential development with ancillary uses, and creates new opportunities to connect and engage with the local Ivanhoe community.

DESIGN RESPONSE

The design responses detailed in this Environmentally Sustainable Development (ESD) report aim to effectively integrate sustainability for the Project and deliver occupant-focused spaces, reductions in life-cycle carbon emissions, improved resource efficiency, and enhanced natural systems consistent with climate resilient principles.

The report aims to respond to the ESD requirements of DPO7.

SUSTAINABILITY TARGETS

To help deliver on its sustainability objectives, the development will be designed with the aim to meet the following key benchmarks, subject to future detailed design which will be undertaken at the planning permit stage:

- Green Star Buildings 5-star certification
- 7.5-star average NatHERS rating
- All-electric building
- 20% reduction in upfront carbon
- Carbon neutral in operations

CLIMATE RESPONSIVE DESIGN

The project will respond to the unique challenges of current and future climatic conditions by adopting a fabric-first approach to design whereby the building enclosure will be optimised to maintain comfortable and healthy indoor conditions with minimal input from mechanical systems.

This will be achieved through a detailed analysis, during the planning permit stage, of key design factors such as window-to-wall ratio, shading strategies, thermal performance requirements and control (water, vapour, air) layer design.

KEY ENVIRONMENTALLY SUSTAINABLE DESIGN PRINCIPLES

The following key initiatives form part of the ESD strategy proposed for the development:

- Engagement of a suitably qualified ESD Consultant from schematic design through to construction and handover to ensure that sustainability practices are effectively incorporated into the design.
- Selection of high-efficiency water fittings and fixtures, as well as re-use of rainwater collected on site to reduce operational potable water demand.
- Selection of high-efficiency and appropriately sized building services (HVAC, lighting, domestic hot water, lifts) to reduce operation energy demand while maintaining high level of comfort and amenity.
- Selection of low VOC and formaldehyde materials to reduce occupants' exposure to pollutants.
- Internal layouts and facade design optimised to maximise daylight access and natural ventilation opportunities.
- Selection of low embodied carbon materials such locally sourced and manufactured materials, recycled materials and sustainably certified materials where possible.
- Provision of appropriate on-site resource (waste) management strategies and a target to divert 90% of demolition and construction waste from landfill.
- Provision of a mix of sustainable transport options, including bicycle parking, EV charging facilities, access to public transport, and car sharing schemes.
- Improved ecological value of the site through the implementation of significant landscaping and introduction of measures to minimise the heat island effect.

Introduction

The following report has been prepared to accompany the Development Plan, and outlines the key sustainability principles and strategy that will guide the design of the proposed residential development with ancillary uses at 421 Upper Heidelberg Road, Ivanhoe VIC 3079.

This Environmentally Sustainable Development (ESD) report identifies the principles that will be adopted to reduce the project's environmental impact and maximise occupant health, well-being and comfort.

The project response focuses on integrated water management, energy efficiency, climate responsive design, waste minimisation and improvements to urban ecology, in line with Development Victoria's Sustainability Strategy.

A Sustainability Management Plan will be prepared at the planning permit application stage, generally in accordance with this Environmentally Sustainable Development Report, to demonstrate how the proposal will meet the ESD targets specified in this report.

PROJECT OVERVIEW

The Ivanhoe Tank Site Development is located at 421 Upper Heidelberg Road, Ivanhoe, and is envisaged to comprise a residential development with ancillary uses.

CITY OF BANYULE

Ivanhoe Tank Site is located within the municipal boundaries of the City of Banyule. City of Banyule has a robust approach to ESD in the planning phase, outlined in the Banyule Planning Scheme Clause 15.01-2L-02, and expects all projects to appropriately respond to these requirements.

The objective of this report is to describe how best practice ESD could be explored in the development, including targets and proposed design principles that will be further investigated during the planning permit stage to demonstrate that the development meets and exceeds the standards required by the City of Bayule Planning Scheme and the ESD requirement of DP07.

SUSTAINABILITY TARGETS

To help deliver on its sustainability goals, the development aim to target the following key benchmarks:

- Green Star Buildings 5-star certification target
- 7.5-star average NatHERS rating
- 6.5-star minimum NatHERS rating for each apartment
- All-electric building
- 20% reduction in upfront carbon
- Targeting carbon neutral in operations
- Implement a circular approach to materials and waste
- Potable water reduction and water reuse targets
- Increased social, health and wellbeing outcomes for the future community
- Promotion of active transport and reduced emissions transport options
- Reduce Urban Heat Island impacts
- Community and climate resilience targets

Merri Creek, Wurundjeri Woi-wurrung Land.
Photography by Kate Shanasy

Our responsibility is to leave our cities and regions in a better condition than we found them in.

Management

Effective management practices can improve the sustainability performance of a project by influencing areas where decision-making is critical.

The project will aim to prioritise the implementation of principles that support positive sustainability outcomes during design and construction.

PROJECT RESPONSE PRINCIPLES

Sustainability Professional

- An expert team of sustainability professionals is appointed to provide advice and guidance throughout the design and construction phases of the project.

Responsible Construction

- The head contractor should maintain an Environmental Management System (EMS) and a project specific Environmental Management Plan (EMP) during the entire period of their engagement covering all phases including but not limited to demolition, enabling works, construction, and commissioning. The EMS should be certified to a recognised standard such as AS/NZS ISO 14001, BS 7750 or the European Community's EMAS.
- The head contractor should provide appropriate training to site workers on the sustainability targets of the development and their specific roles in achieving them.

Building Information

- A comprehensive set of building information relating to all systems and services installed should be compiled and provided to the Operator prior to Practical Completion.
- A building user's guide with information on how to most efficiently operate the building should be provided as part of a resident welcome pack.

Commissioning and Tuning

- An extensive commissioning and tuning process should be conducted by the head contractor under the supervision of an Independent Commissioning Agent (ICA).

Rooftop Solar at Burwood Brickworks.
Photography by Kim Landy.

Integrated Water Management

A building's design has a significant impact on the water consumption of its occupants, along with the way water leaves the site through the sewer and stormwater systems. Minor changes to design can have long lasting benefits.

The project will focus on reducing water demand, maximising on-site rainwater collection and reuse whilst managing the impacts of stormwater flows from the site.

PROJECT RESPONSE PRINCIPLES

Fittings & Fixtures

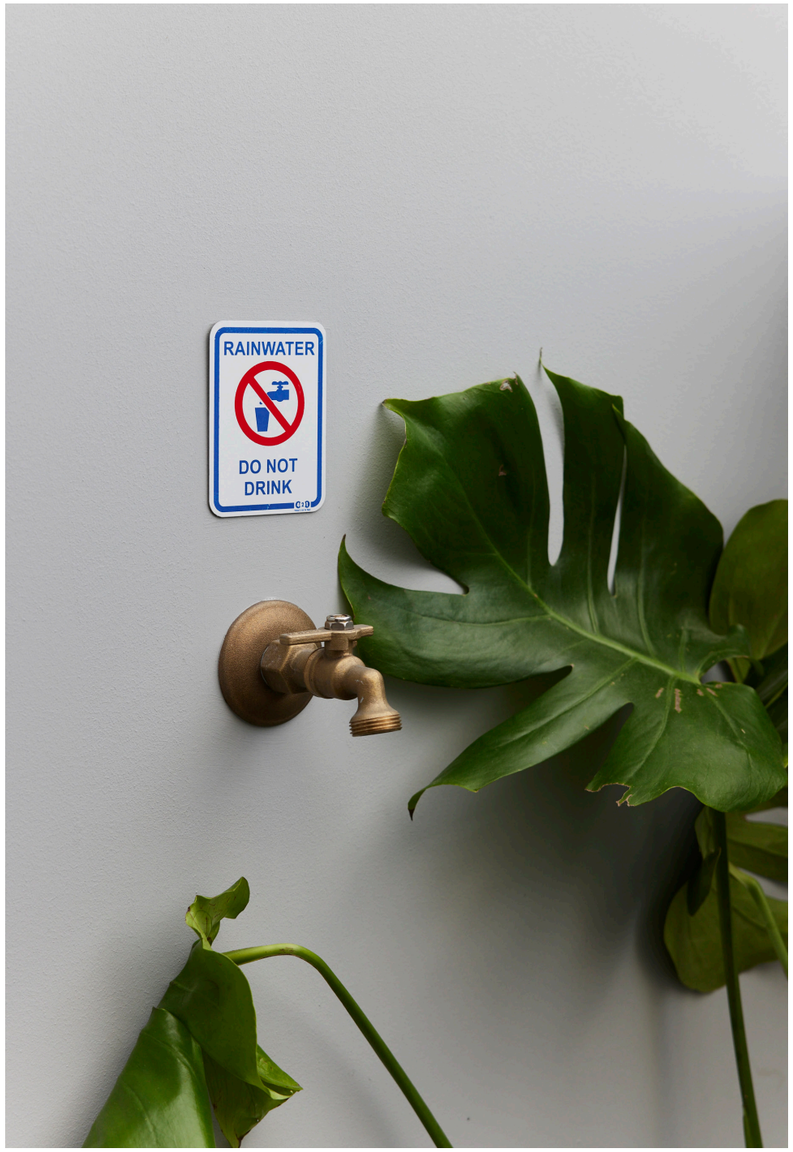
- To reduce water consumption, the project will aim to specify water efficient fittings and fixtures with high WELS ratings.

Landscape

- Drought tolerant plant species should be explored for all landscaped areas.
- Sub-surface drip irrigation with moisture sensors should be considered throughout all landscaped areas in combination with appropriate mulching.

Rainwater & Stormwater Management

- Appropriately sized rainwater tank(s) should be considered to capture rainwater from all suitable surfaces for use in toilet flushing and irrigation.
- Permeable pavement should be considered for selected suitable areas to maximise the site permeability.
- Appropriate stormwater treatment systems should be explored to reduce run-off pollutants from the site in line with statutory requirements.
- During all demolition and construction stages, the head contractor should manage stormwater quality via their EMP.



Rainwater connections to balcony taps at Ferrars & York.
Photography by Kim Landy.

Energy Efficiency

Achieving a highly energy efficient building doesn't require a significant additional upfront cost. Often, it just requires ensuring basic principles of passive design are integrated early on, and that ongoing energy use is considered when selecting building services and appliances.

The project will focus on maximising the thermal performance of building envelope to ensure that comfort conditions can be maintained with minimal operational energy input.

PROJECT RESPONSE PRINCIPLES

Building Fabric Design Strategy

- The thermal envelope performance should be explored through careful layout and building form design, as well as the use of appropriate levels of insulation, glazing performance, shading strategies, and window-to-wall ratio.
- The development aims to achieve an average minimum of 7.5 star NatHERS rating with all apartments achieving a rating of at least 6.5 star NatHERS.
- The non-residential areas of the development aims to achieve at least a 20% improvement over the requirements of the NCC 2019 Section J Part J1-J3 provisions.

Electrical Systems

- The development is targeting all-electric, with no natural gas connection provided on-site.

Building Services

- All lighting shall be provided by high efficiency LED luminaries.
- The design of the basement carpark should explore a natural ventilation approach. Where this is not achievable, CO monitoring should be installed to control the operation and speed of the exhaust fans.
- Highly energy efficient heating and cooling systems should be explored.
- Mechanical Ventilation Heat Recovery (MVHR) could be utilised in all apartments, common areas and commercial areas.
- The Domestic Hot Water should be provided by high efficiency heat pumps.

Renewable Energy

- An embedded network should be explored with the aim to provide 100% renewable energy to the project.
- A solar photovoltaic system should be explored for the rooftop and should be sized to maximise yield based on available space.

Passive shading and window design at Ferrars & York.
Photography by Kim Landy.

Indoor Environment Quality

Best practice design for Indoor Environment Quality means that building occupants can enjoy a comfortable space with high air quality, adequate daylight and ventilation. Indoor environment quality is affected by building orientation and layout, window sizes and specification, shading devices, products used for construction and fit-out and neighbouring structures.

The project will prioritise the design of comfortable and healthy indoor environments that maximise daylight access and fresh air, and minimise exposure to harmful pollutants and toxins.

PROJECT RESPONSE PRINCIPLES

Thermal Comfort

- All apartments should be designed to maintain stable indoor temperatures and reduce the risks of overheating through the implementation of passive design principles.

Daylight Access

- Appropriate daylight access to all regularly occupied spaces (e.g. living rooms, bedrooms, communal areas and commercial spaces) should be maximised and balanced to achieve both high quality indoor amenities and thermal comfort.

Air Quality

- Low VOC and formaldehyde-free materials should be specified throughout.
- All apartments, common areas and commercial spaces provided with a MVHR system would be able to provide continuous fresh, filtered air.
- The development should be designed and constructed to minimise the risk of condensation forming on the interior surfaces and/or interstitial cavities in order to reduce the potential for mould growth.

Acoustics

- All apartments should aim to be acoustically separated from adjacent apartments, commercial tenancies, and external spaces.
- All apartments should have high quality double glazed and thermally enhanced windows contributing to high acoustic performance.

Internal Amenities

- The development should aim to provide a sufficient level of internal amenity for use by occupants.

High-performance double-glazed, thermally broken windows. Photography by Kim Landy.

Building Materials

All materials used in construction have an environmental and social impact. This varies dramatically depending on the raw materials used, manufacturing process, the application and ongoing maintenance requirements.

The development will aim to minimise the embodied carbon and maximise the use of suitable sustainable materials.

PROJECT RESPONSE PRINCIPLES

Responsible Materials

- The selection of materials should aim to focus on durability with the aim of extending replacement times, with sustainable options being used whenever possible.
- All timber used in the development should aim to be Forest Stewardship Council (FSC) or Program for the Endorsement of Forest Certification (PEFC) certified.
- All steel used in the development should aim to be sourced from a Responsible Steel Maker.
- The use of low carbon concrete should be prioritised for all suitable applications within the development.
- Locally manufactured products should be utilised where possible.
- Low embodied carbon materials should be prioritised where possible.
- Recycled materials should be used where possible.

Recycled and re-purposed materials at Revival.
Photography by Kim Landy.

Waste Minimisation

New buildings and infrastructure generate waste during both construction and operation. With considered thinking and minor changes during design, both can be significantly reduced.

The project will focus on appropriate resource management by following a reduce, reuse, recycle strategy

PROJECT RESPONSE PRINCIPLES

Resource Management During Construction

- The head contractor should be encouraged to divert at least 90% by mass of all construction and demolition waste from landfill (i.e. reused or recycled).
- Prior to recycling soil, the contractor should ensure a soil test is conducted and soil is only reused in the absence of contamination.

Resource Management During Operation

- Separated waste streams should be built into kitchen joinery, making it easy for residents to divert as much waste from landfill as possible.
- The development should enable separation and collection of at least general waste, recylcing, glass, FOGO, and e-waste.
- The development should provide an appropriately sized waste storage area.

Organic food dehydrator at Burwood Brickworks.
Photography by Kim Landy.

Sustainable Transport

The sustainability of transport modes is related to both environmental, social and economic factors. Buildings, infrastructure and behaviour conducive to sustainable transport modes can lead to reduced greenhouse gas emissions, less air pollution, lower living costs and improved health and well-being.

The development will aim to deliver a suitable and accessible mix of sustainable transport modes that can be enjoyed by all occupants.

PROJECT RESPONSE PRINCIPLES

Access to Public Transport

- The development should aim to encourage the use of public transport. This is facilitated by the location of the development which is 500m (11 min. walking) from the Heidelberg train station and already has good access to the public transport network.

Active Transport

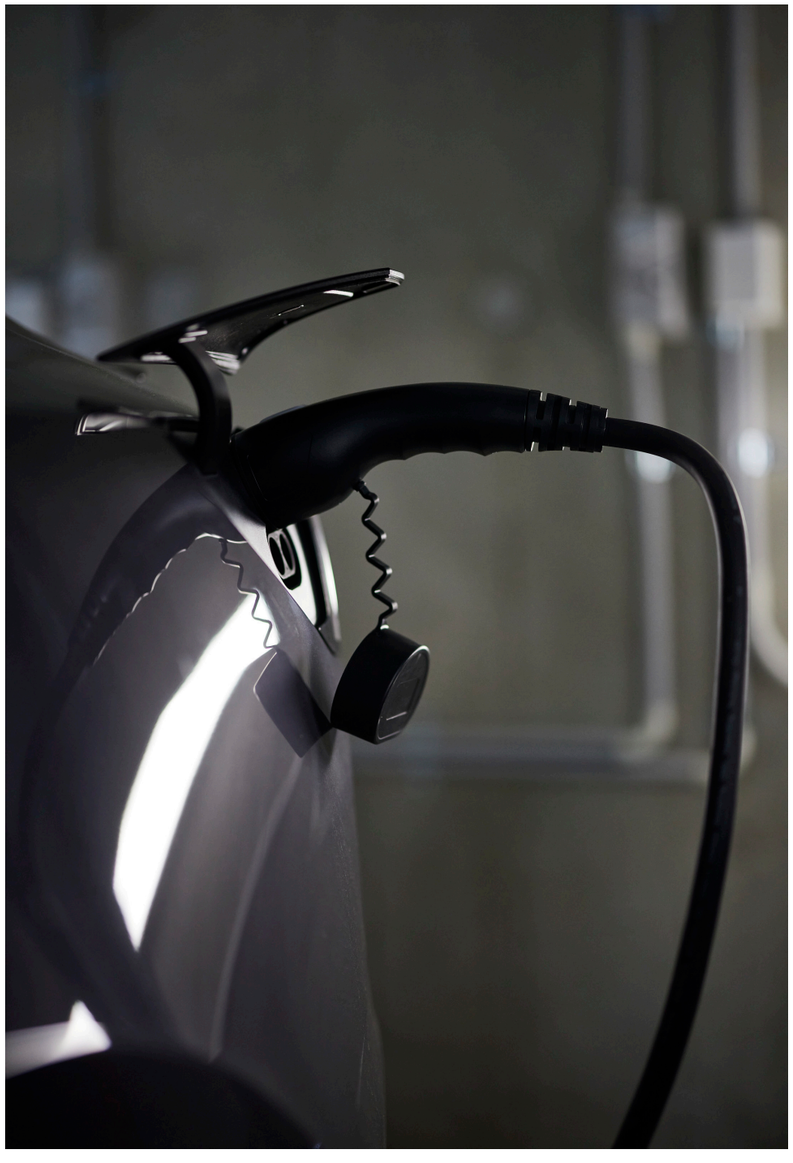
- The development should aim to encourage the adoption of active transport modes by occupants. This is facilitated by the location of the development which is in close proximity (about 800m) from many daily services on Burgundy Street
- Secure bike parks should be explored by the development for both residents and visitors, including spatial allowance for cargo and e-bikes.

Vehicle Sharing

- At least one vehicle sharing scheme (either from a third party or offered by the Operator) should be explored on site.

Electric Vehicles

- Infrastructure to allow the easy adoption of EV charging, including distribution boards, should be explored in the building.



Integrated EV charging in car-stackers.
Photography by Kim Landy.

Urban Ecology

The impact of urban development on land use and biodiversity, and the best way to have a positive impact on this, varies dramatically according to context. Urban ecology is also critical to human health and to establishing resilience to urban heat impacts and the extreme heat that climate change is already bringing.

The project will incorporate landscaping to the site with a focus on biodiversity and urban habitat development for local flora and fauna.

PROJECT RESPONSE PRINCIPLES

Urban Heat Island

- The site should aim to maximise the use of vegetation, materials with a minimum Solar Reflectance Index (SRI) of 34, or other measures that reduce the heat island effect.

Ecological Value

- The new development should aim to improve the ecological value of the site through the introduction of vegetation and landscaped areas, thus increasing biodiversity of the local flora and fauna.

Light Pollution

- To reduce adverse impacts on fauna, the development should aim to minimise light pollution on site with appropriate and responsible external lighting design.

Rooftop productive gardens at Burwood Brickworks.
Photography by Kim Landy.

Conclusion

This Environmentally Sustainable Development Report has been prepared to communicate the approach taken to embed sustainability principles into the Ivanhoe Tank Site Development.

The project prioritises sustainable outcomes, with many features to be embedded into the design and construction to realise a high-performing project that benefits people, place and planet.

CONCLUDING REMARKS

This report outlined the Environmentally Sustainable Development strategy that will be explored as part of the design of the proposed Ivanhoe Tank Site Development at 421 Upper Heidelberg Road, Ivanhoe VIC 3079.

A Sustainability Management Plan will be prepared at the planning permit application stage, generally in accordance with the DP07, to demonstrate how the proposal will meet the ESD targets specified in this report.

The development proposal demonstrates a holistic approach to sustainable urban development that addresses the key ESD requirements of DPO7.

HIP V. HYPE Team on-site.
Photography by Kim Landy.

We respectfully acknowledge that every project enabled or assisted by HIP V. HYPE in Australia exists on traditional Aboriginal lands which have been sustained for thousands of years.

We honour their ongoing connection to these lands, and seek to respectfully acknowledge the Traditional Custodians in our work.

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For additional information, questions unturned, collaboration opportunities and project enquiries please get in touch.

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