EG Funds Management

Summer Hill Flour Mill Redevelopment

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1 Introduction

The environmentally sustainable design (ESD) strategy for the Summer Hill Flour Mill redevelopment aims to maximise the urban renewal potential of the site in a cost effective manner.

Arup have developed an ESD strategy that incorporates relevant and cost effective aspects of sustainable design and will lead to regulatory compliance with BASIX and the National Construction Code.

ESD strategy will be guided by best practice in the key areas of

- Urban renewal
- Water sensitive urban design
- Internal environmental quality (daylight, views, fresh air and low volatility materials)
- Sustainable transport
- Waste management

2 ESD Strategy

The residential areas in Stage 1 of the development require an ESD strategy that meets the requirements NatHERS, BASIX and the commercial spaces will need to comply with Section J of the National Construction Code.

Stage 1 of the Summer Hill Flour Mill development involves 3 residential buildings, 4A, 4B and 4C with a total of 44 apartments and a separate commercial & retail building, 1C. This stage of the development is predominantly residential, with the commercial and retail spaces being a small proportion of the total area.

The layout of the apartments is optimised for natural ventilation. 100% of apartments have a dual orientation which allows excellent cross ventilation. The material selection will complement the passive ventilation scheme. The shading and glazing in the facades of the residential spaces will allow for natural ventilation, access to daylight and views while minimising unwanted solar heat gain.

These apartments will have fittings and fixtures with water and energy ratings that ensure compliance with BASIX, the star ratings are to be confirmed. Efficient whitegoods and gas stoves will be considered.

The apartments will be served by central systems including solar boosted gas hot water and a condenser water loop for optional air conditioning units. Solar photovoltaic panels will be installed as required, with a system capacity to be confirmed.

The communal areas of the development will be water sensitive, built with recycled materials where possible and use energy intelligently.

Extensive work has been carried out to limit overland flows in peak rainfall events. A rainwater tank will irrigate the lawns and landscaping. Water sensitive garden beds filter and moderate stormwater flows.

Efficient lighting in the communal areas will be intelligently controlled and potentially be solar powered. Allowing for safe and convenient access to the residences while minimising light pollution.

Transport options to and from site will be facilitated by providing bicycle storage spaces, public transport information and two dedicated car share parking space will be considered. Links to the planned light rail station through the site will allow access for residents and the community.

3 Energy Efficiency

By beginning with good passive design, the apartments will manage energy efficiently. The strategy for reducing demand on site includes

- A natural ventilation scheme including extensive operable areas and a dual orientation in all apartments to allow good cross ventilation
- Balcony areas and movable screens to provide shading and areas for drying clothes
- Centralised hot water system, to maximise efficiency, possibly boosted by rooftop solar thermal systems
- Efficient light fittings and automatic lighting controls in common areas

The efficiency of the systems and services will complement the good passive design of the apartments. The choice of materials will also complement the energy efficiency of the apartments.

As well as reducing demand, the options for producing renewable energy on site will be considered. These include the solar thermal hot water system and solar photovoltaic panels. The electricity produced can be used for on site for lighting communal areas, recharging electric vehicles and bicycles and be grid connected.

4 Water

Water management in the development will be informed by two main criteria; demand reduction and water sensitive urban design.

Water demand and waste will be reduced by adopting a water strategy that aims to meet or exceed the requirements of BASIX. To meet this target, the development will incorporate

- Rainwater capture, storage and use on site. Rainwater will be collected from all available roof space and the tank and associated equipment will be in the basement area.
- Rainwater can be used for irrigation and wash down areas. Possible greywater reticulation will be considered.

- Water efficient landscaping (native and or low water plants)
- Water meters for each unit
- Water efficient fixtures and fittings for;
    - Showers
    - Toilets
    - Bathroom Taps

The water strategy will be driven by the target of consuming 40% less water than the average dwelling in NSW.

The development will incorporate features of best practice water sensitive urban design. A site wide strategy involving bio-retention swales, extensive deep soil zones, permeability and a water sensitive pallet of plant species has been implemented. This strategy goes well beyond the need to deal with flooding issues, acting on the concept of treating overland flows at the point of first contact and also providing visual amenity.

In the public domain, bio-retention swales are planned for internal streets. These will filter and moderate stormwater flows. The site is linked to the planned green corridor which will run alongside the light rail line. On site, communal gardens will be planted with a mixture of trees and mulched beds.

Private courtyards will maximise the deep soil zone along Edward Street and have a pallet of species including native trees, grasses and shrubs.

This site wide strategy responds to the need for flood management with best practice water sensitive urban design, providing natural stormwater treatment, renewing the local ecosystem and providing visual amenity.

5 Internal Environmental Quality

The design of the Summer Hill apartments and houses will aim to deliver an internal environment of high quality, to help ensure the health and wellbeing of its occupants.. To achieve this goal, the design will incorporate;

- Operable areas to allow residents to control fresh air flows
- Dual orientation and high ceilings (2.8m floor to ceiling) to provide cross ventilation
- Façade design to allow access to natural daylight and views
- Selection of materials with low volatile organic content and low formaldehyde content
- Acoustic treatment to manage urban sound intrusion and in-between apartments

The thermal environment will be designed in accordance with the requirements of BASIX and for the commercial spaces, Section J of the National Construction Code.

A solar access study has previously shown that the three residential buildings have good year round sun exposure, which will reduce winter heating requirements and ensure good daylight levels. External screens will be considered to reduce solar heat gain issues in the summer months.

6 Transport

The Summer Hill development offers good transport connections. The Summer Hill and Lewisham train stations are within a 10 minute walk from site. Links through the site will provide access to the planned light rail stop, which will also provide for the community.

A dedicated bike lane route to the CBD through Haberfield, Lilyfield Pyrmont is accessible from the site.

The design will aim to include

- Bike lockers and bike storage spaces to a percentage of apartments to be confirmed.
- Transport services information for residents and tenants, including prominent display of information on trains, buses, car share details and bicycle network

Dedicated spaces for car-share programs will be considered. The opportunity to provide electric car spaces and charging stations will be investigated. Solar PV on site can be linked to this charging station.

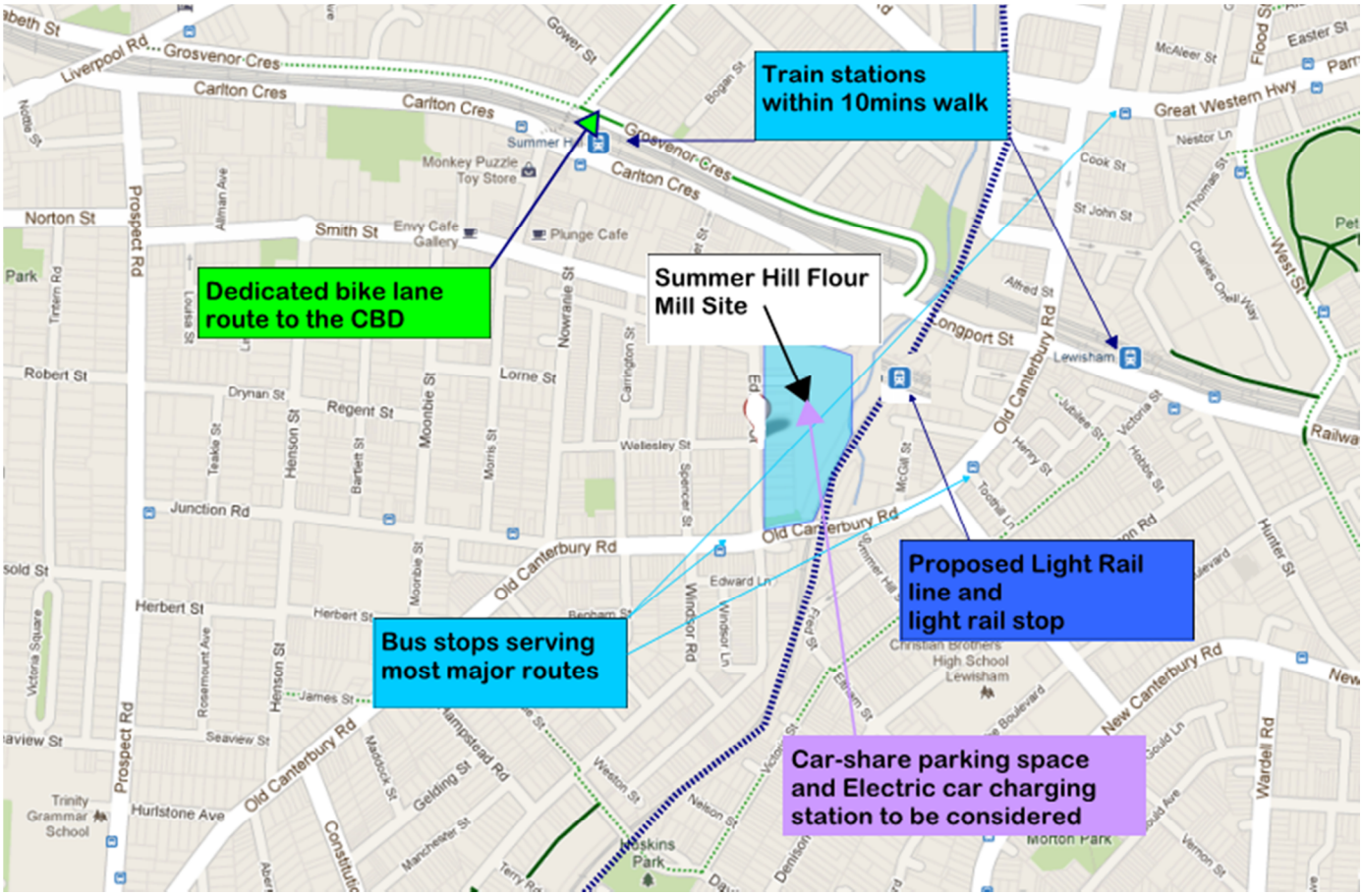

Figure 1 Local transport connections

7 Materials

The choice of materials in the buildings will be influenced by energy efficiency requirements and the impact on internal environmental quality. Material selection can reduce the energy consumed by residential air-conditioning units.

Material selection will be made with a consideration of the impact of

- Impact on internal environmental quality
- Recycled and re-used content
- Timber and steel from the demolition phase will be used in the construction of the public spaces where feasible

Eco materials such as sustainable timber, will be considered in the design. Materials such as PVC, concrete and steel will be used with regard to best manufacturing practices.

8 Waste

Through the demolition, construction and operation of the Summer Hill apartment buildings, a waste strategy will be implemented. The strategy will aim to minimise the waste material going to landfill. The building design will incorporate

- Opportunity for recycling timber, concrete and brick from the demolition stage in the new buildings and public spaces
- Recycled and re-used materials to be used where possible, sourced from on site and off site
- Space provision for the separation of waste streams (organic, recyclables, furnishings) this includes within apartments and across the site