

Design

A challenge to develop in an area that has seen little improvement before, is that pioneering developments are destined to live for a while in isolation

It is important to consider future developments likely to come forward, and propose new buildings that preserve the ability of other sites to be developed

Rather than considering the height of the surrounding low-rise buildings, this proposal should be judged in the context of likely future new developments

New buildings in the vicinity are all presented in a contemporary fashion. The form of this building is defined by its function as an environmental building

A holistic design

Proposed, is a building integrated in structure, heating, ventilation, and control, to provide security, comfort, and health, at zero fossil energy cost in use

Fabric first - super-insulation keeps heat in or out, breathable construction allows moisture and dampness to pass out of the building

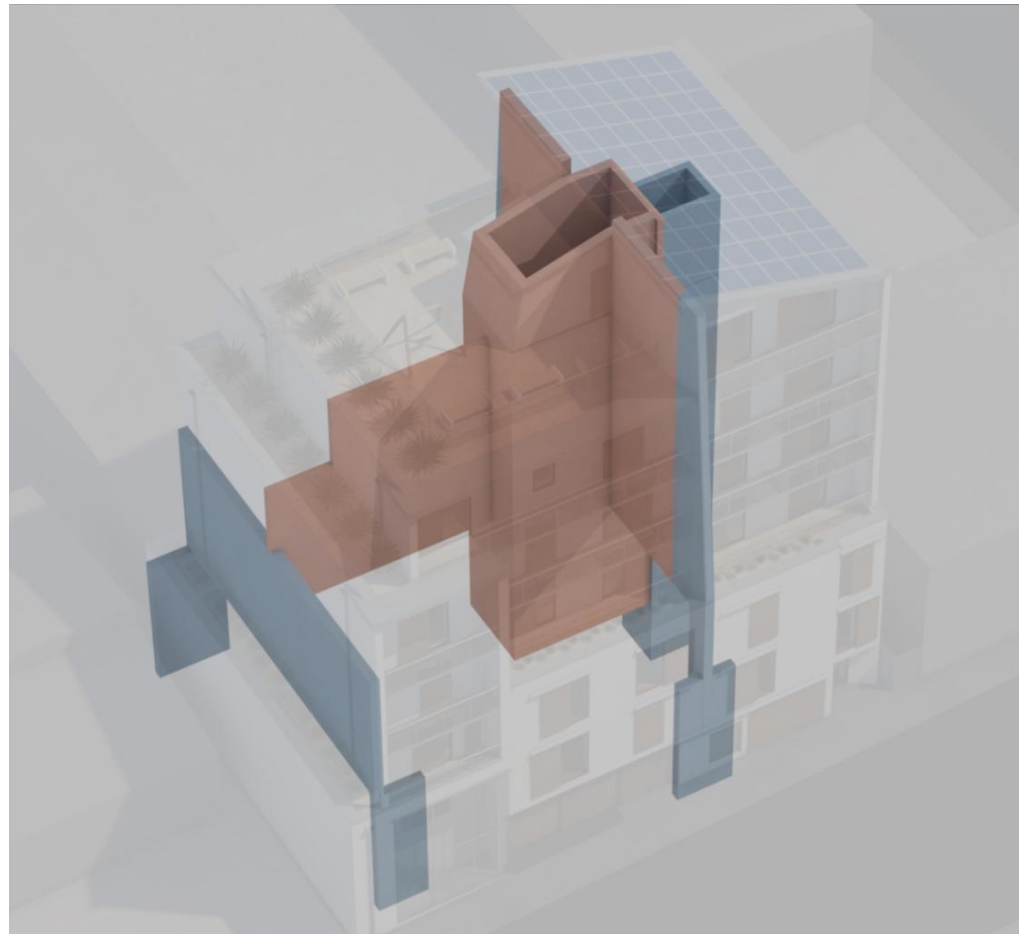
Renewable energy - on-site systems that use mains power only as a back-up to solar generation (wind power not appropriate on residential buildings)

Heating and ventilation - heat pumps powered by solar energy ventilate the building, and heat hot water, central heating is not required

Control and automation - All built-in systems have integrated control with monitoring to make the most efficient use of energy to maintain health

Environment - the building is an integrated habitat to welcome and nurture wildlife, in addition to accomodating human living and working

16 North Street is designed to separate flats from one another in case of fire, and provide a clear span over the ground floor so it can be used as a car park. This building is proposed to use no steel, which is both energy intensive to produce, and is weak if exposed to heat in a fire.



An arrangement of buttresses and walls supports the weight of the upper floors with no steel or internal columns.

The suspended stairwell and all separating walls are of fireproof fibre-reinforced concrete construction.

Roof gardens:

Habitat, rainwater attenuation, pollution absorption

Solar Panels:

245 sq.m
35KW(p)
24MWh/a

Bat and Bird Boxes

Building Material:

Lime rendered Durisol:
Breatheable, healthy,
recycled materials, highly
insulated, fireproof



Automatic shutters:

Shading, noise absorption,
and privacy. Part of building
environmental monitoring
and control system

Sound Baffles:

Reduce noise disturbance

Electric Vehicle Charging

Solar Shading: Overheating

Rainwater:

Watering of habitat,
flow attenuation



Balconies and shutters



Ty Mawr Glaster: Render



Roof garden at sunset

Sustainability

A friendly building, 16 North Street will encourage wildlife, and minimise flooding and pollution impacts by an integrated system of naturally watered roof gardens. Extra-deep eaves, in a position where they can be maintained, will be provided to house birds (swallows in particular), and bats, in specially constructed nest boxes.

Materials

As a healthy environmental building, 16 North Street is designed to be built using natural, breathable, and healthy materials, where possible from UK based pioneers:

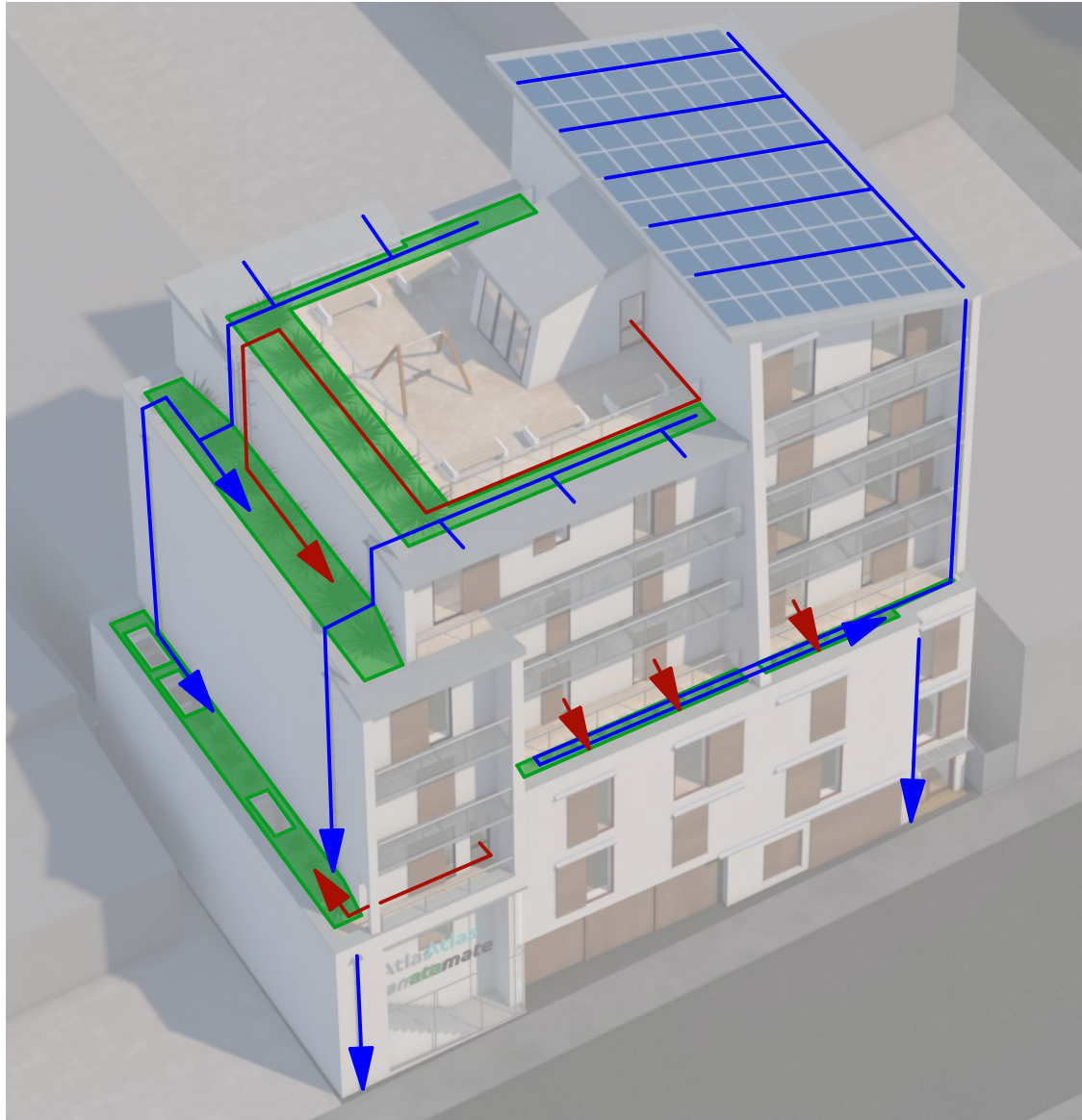
Durisol: Made in Wales from recycled agricultural waste and cement, Durisol is breathable and very highly insulated.

Ty Mawr Glaster: Made in Wales, a natural lime render with an aggregate made from recycled glass, Glaster is attractive, and breathable.

Composite open web joists and wood fibre insulation are of recycled waste materials and are breathable.

Ty Mawr hydraulic lime plaster will maintain the total breathability of the structure.

Windows and doors will be triple-glazed aluminium clad wooden units from Velfac, with principal windows provided with sliding timber shutters.



16 North Street is to be provided with an integrated system of roof gardens to attenuate rainwater flow, remove pollution, provide wildlife habitat, and improve the wellbeing of residents and other building users

Maintenance access is provided to all gardens, almost all from neutral circulation spaces

Green
Roofs

Watering

Maintenance
Access

Energy

This environmental building will generate surplus power (after heating, cooling, and hot water) on an annual basis. Excess energy will be available for car charging.

Using stored domestic hot water for energy storage will allow automatic energy load balancing; maximising use of solar energy and low tariff electricity

Air-to-air heat-pumps heat and cool office spaces. Apartments use demand controlled infra-red heating and passive cooling to prevent summer overheating

Atlas Controls

Atlas Controls Ltd with partner company Atamate Ltd are experts in control of building services and integrate control of:

- Heating and cooling systems; heat pumps, air conditioning, infra-red heaters

- Micro heat pumps to recycle heat from extract air to hot water

- Hot water systems; distribution and control of hot water

- Use of domestic hot water as energy storage medium to maximise use of solar energy

- Ventilation systems; mechanical extract ventilation, mechanical ventilation heat recovery (MVHR), demand controlled ventilation (DCV)

- Passive cooling using motorised shutters and purge ventilation

- Heartbeat technology which allows monitoring of all building services

- Gates, garages, lifts and other entry systems

- Access technology linked building behaviours

- Enhanced building security by recognising abnormal behaviour patterns

North Street will be an exemplar project minimising energy, maintenance and management while maximising resident comfort and security

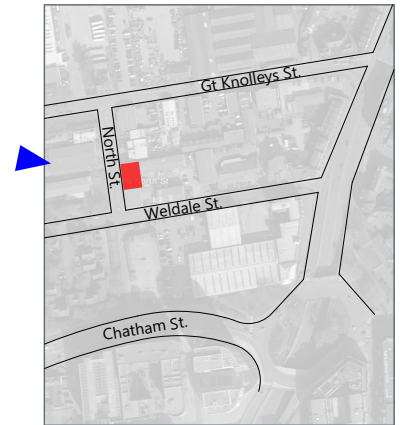
Data from North Street will be used to further develop Machine Learning (AI) tools to reduce building emissions, and share best practice globally

Currently Atlas Controls projects include work with Oxford Brookes and Loughborough Universities, and the Building Research Establishment

A gradient of heights has been established between the buildings of Chatham Place, and the forthcoming 'Foundry Quarter' on Weldale Street

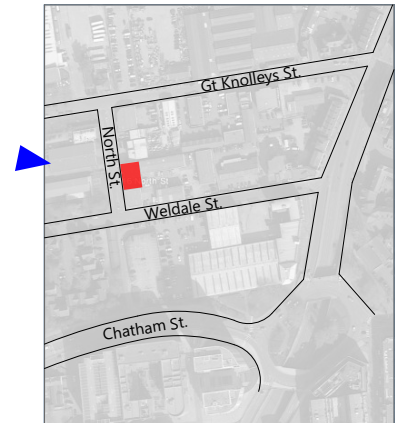
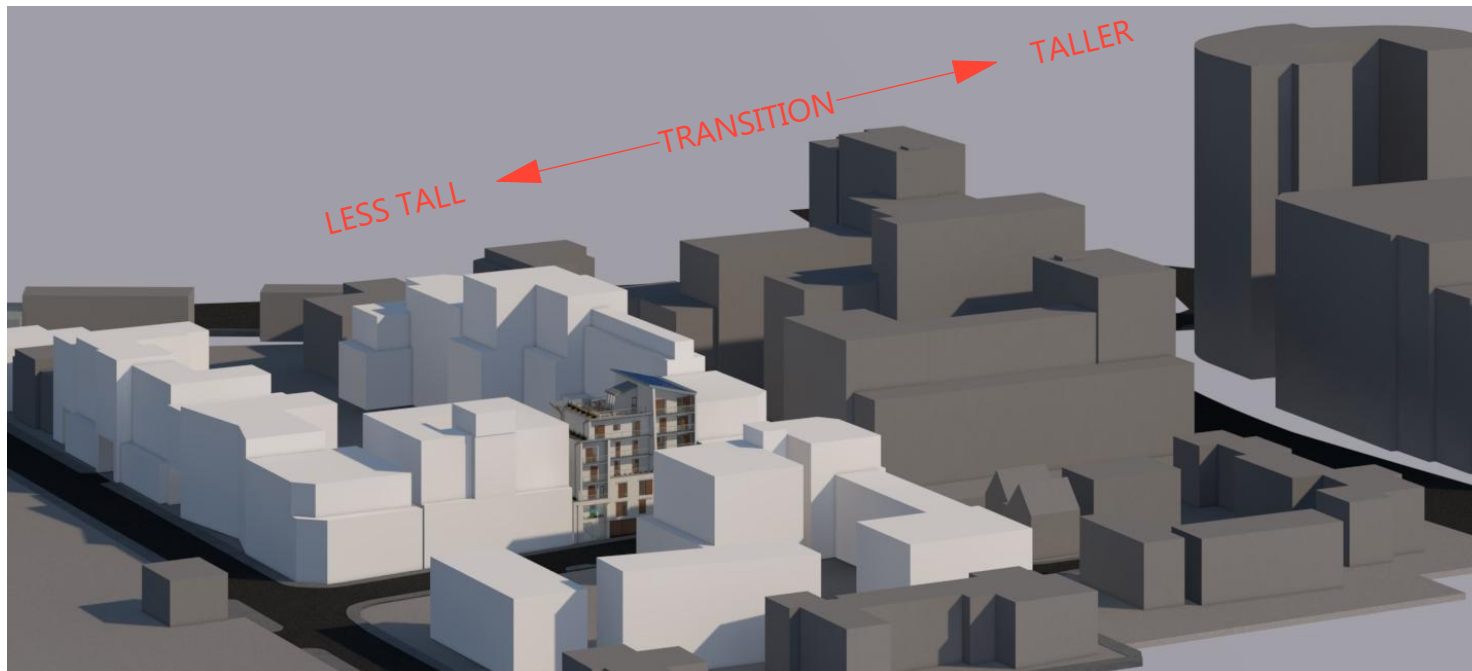
Other recent developments in the area are all significantly taller than the two storey buildings of the commercial / industrial area

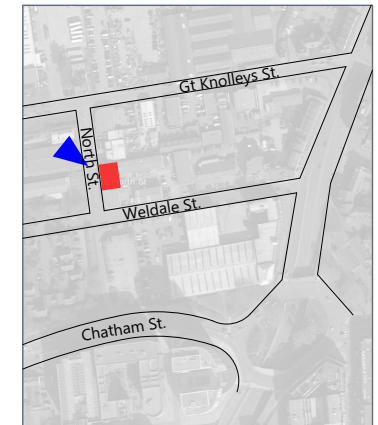
Residential buildings to the West are of three storeys with pitched roofs



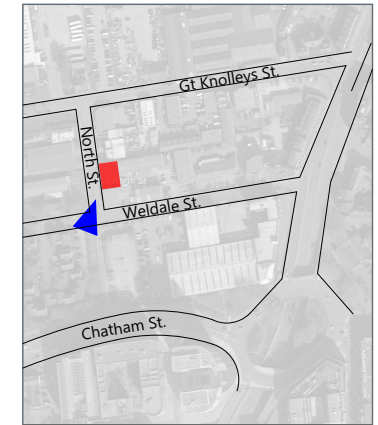
Hypothetical future buildings are shown, that continue the gradient of heights established by existing and consented development

The proposal for 16 North Street is of transitional height in this context





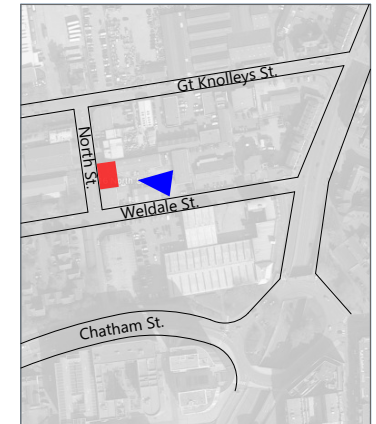
With mass concentrated towards the taller buildings of Weldale Street and Chatham Place, 16 North Street has an arrangement of volumes based on townhouse proportions, punctuated by vertical fins which are both structural, and protect open windows from noise



Roofs at curious angles
to give better solar
generation also give the
building a distinctive
profile in the skyline

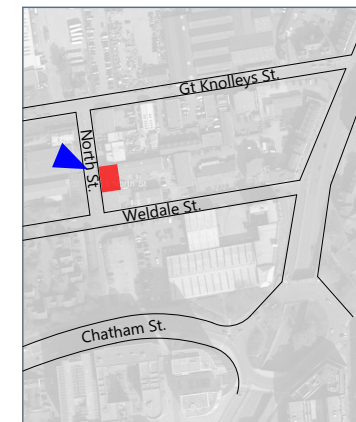


Proposal in context of existing developments



The rear elevation is the principal elevation as viewed from central Reading

Solar-gain is less important from the morning sun in the East: shade-giving balconies are provided to the West only where apartments have face in both directions



Residents of each apartment have a private balcony and access to a communal roof garden with panoramic views

A system of roof gardens filter rainwater and improve the natural environment of the building and its surroundings

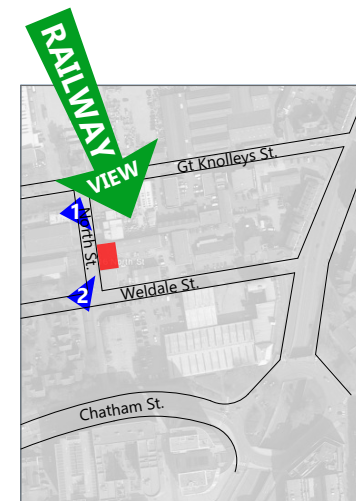
Deep eaves above the roof garden are fitted with nest boxes for swallows and bats



The principal contribution of 16 North Street to a view of Reading is that from the trains drawing into Reading Station. The North facing flank elevation that is seen from the railway has an articulated form with terraces and intersections of pitched roofs

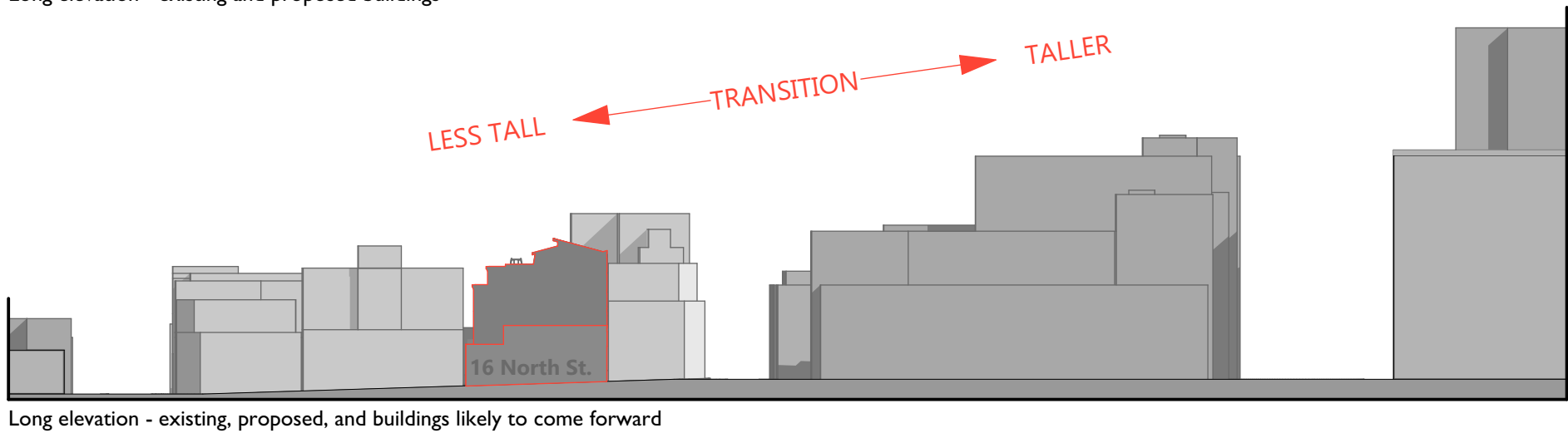


The South elevation will become obscured by new building in due course, and contains no windows. While it is exposed it is proposed to provide a significant electrical input to the building with a large solar-photovoltaic array, in addition to the solar panels that are mounted on the roof



Flank Elevations

16 North Street is designed to be appropriate both now, and in the context of future development



Vehicle & Cycle Access

Centrally placed access to the ground-level parking area and cycle store gives the optimal visibility according to road safety standards

Access to the parking area will be completely closed with a sliding gate controlled via the building management system

Charging points are to be provided to each parking space in the car park, and each cycle space in the cycle store

Personal Access

This development is ten minutes' walk from both Reading Station and Reading Town Centre

This development has been designed with reference to the Building Regulations Part M: Approved document in all respects:

Level access is provided to a wheelchair accessible lift serving all floors

All stairs and passageways meet at least the minimum standards for access

Apartments

Level access from the pavement gives onto a secure mail lobby for deliveries including to personal post boxes

A secure two-storey vaulted lift and stair lobby gives access via the wheelchair accessible lift to all floors

Access to the upper floors is secured from those with access to the lobby

Offices

Level access from the pavement gives onto a glazed stair leading through a secure lobby to a two-storey vaulted stair hall serving each floor of offices

Access for the mobility impaired is via the lift accessed by the secure lobby that serves the apartments

Use

Existing office space is proposed to be replaced in greater volume than currently exists, in accordance with the policies of the Reading Central Area Action Plan

Ten apartments of one and two bedrooms are also proposed, also in accordance with the policies of the Reading Central Area Action

Amenity

Each apartment is proposed to meet the Nationally Described Space Standards, and be provided with:

Triple glazing sound insulation

A private balcony

Access to a communal roof garden

Highly efficient insulation

Energy efficient ventilation

Solar shading

A secure car parking space

A secure cycle parking space

Secure bin storage

Secure by Design

Secure by Design standards have been applied throughout the design

Refuse

Apartments are provided with bin storage meeting the Reading Borough Council standards for the collection of household waste

Offices are provided with secure storage for two 1100l refuse containers for private collection of separated waste

Fire

The building is designed to meet and exceed the provisions of the Building Regulations and BS5588 in terms of escape and internal and external spread of fire