

5.12 Biodiversity

In conjunction with Richard Graves Associates, we have designed a plant palette which benefits the local wildlife by providing either a food source for insects or roost potential. Bird and bat boxes are proposed to be attached to larger mature trees.



Example of bat boxes



Example of bird boxes



Example of invertebrate hotel



Example of biodiverse plant palette

5.12.1 Green roof

The green roof is located adjacent to the First Floor terrace and provides storm water management, a habitat for wildlife and contributes to lowering urban air temperature preventing the heat island effect.



Green roof diagram

5.12.3 Habitat creation

The diagram below illustrates the proposed locations for bird and bat boxes within the landscape and public realm. All bird / bat boxes located on the site should be coordinated between the architect and ecologist.



Habitat strategy diagram

5.12.2 SuDS Strategy

The SuDS strategy has been developed to manage water quality and quantity on site.

A number of SuDS systems have been included to help manage water run off on site. This includes new tree planting, new softscaped areas such as lawns and shrub beds, green roofs, and permeable paving systems.



SuDS strategy diagram

5.12.4 Summary

Using the biodiversity metric, the ecologist has calculated a 100% net gain for habitat units and a 100% net gain for hedgerow units.

The scheme delivers 100% biodiversity net gain, well above the 10% target.

5.13 Green roof specification

Biodiverse green roofs are provided where possible across the scheme, namely Building F and are co-located with PV / solar panels (where possible) using a 'biosolar' approach.

A minimum of 100mm lightweight growing substrate is required alongside a system, such as Bauder's Flora 3 system (refer to adjacent image), to ensure that plants are appropriate and meet the ecological objectives of the scheme.

The Bauder Flora 3 seed mix includes 65% perennial wildflowers, 20% annuals and 15% grasses.



Bauder Flora 3 Seed mix example



Bauder Flora 3 Seed mix example

BAUDER FLORA 3 SEED MIX

Establishment and Growth

Typically the mix will produce flowers from April to October starting with species Wild Strawberry and Cowslip, through the summer with Yarrow and Black Knapweed with Lady's Bedstraw flowering later into the autumn. The annuals, biennials and grasses will provide cover and colour in the first season allowing time for the slower growing perennials to establish in later years. The mix has been specified to be drought tolerant with sedum species and low growing perennials.

BioSOLAR

Plants are chosen that do not exceed 40 cm in height to avoid problems with shading of solar panels when the vegetation is used in conjunction with Bauder BioSOLAR. Shade tolerant ground cover plants were specified that will occupy semi-shade microclimates under the panels.

Green roofs are exposed environments subject to wind erosion therefore the mix contains pioneer and ephemeral species such as annuals, biennials and short perennials, which establish quickly from seed and help to stabilise the substrate and prevent wind erosion prior to perennial root systems getting established. A small percentage (typically <15%) of the mix contains non-aggressive grass and sedge species, which will also help to establish and stabilise the substrate.

The seed source is British Provenance (with the exception of sedum species) and suppliers of the mix adopt the Flora Locale Code of Practice for collectors, growers and suppliers of native flora.

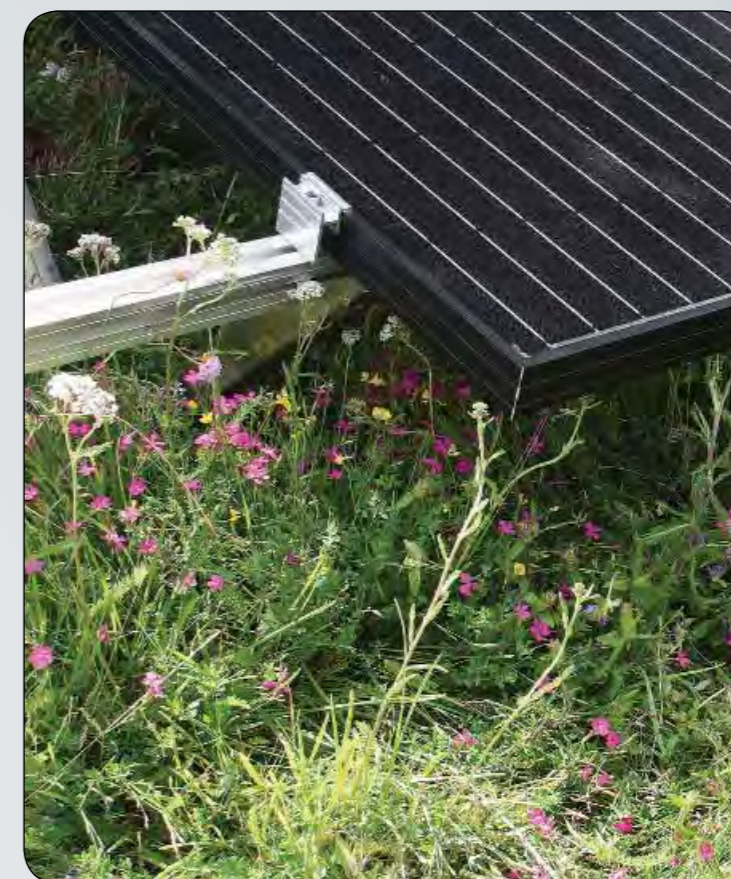


(Flora locale is an independent charity. Promoting and advancing the conservation and enhancement of native wild plant populations)

Bauder's Unique Additive Mix

Establishing seed at roof level is difficult, to maximise the germination and establishment of the diverse range of seed used, Bauder has developed a unique blend of seed adhesive, organic nutrients and mycorrhizal fungi to encourage water and nutrient uptake by the developing seedlings.

- The seed mix and additives are combined with a bulking agent which enable the correct sowing rate to be achieved, the adhesive binds the seed to the substrate preventing it from being blown away in windy conditions or washed deep into the substrate and failing to germinate.
- A small quantity of organic slow release fertiliser gives the seed a gentle boost as it establishes. Mycorrhizal fungi increases the root surface area helping the transfer of water and nutrients from the substrate to the developing root system of the plant, enabling the plants to establish quickly.



Bauder Flora 3 Seed mix guide

5.14 Lighting strategy

The external lighting proposed within the development has been designed to E3 classification for 'small town centres or suburban locations' with an upward light output ratio no greater than 15%. The design minimises any disturbance to the local nocturnal wildlife present along the existing 'dark corridor' of the River Crane and prevents nuisance to residents with front-facing windows.

The road and car park lighting illuminance will comply with BS5489-1:2013 code of practice for outdoor car parks and a quiet traffic flow of P6 lighting class. All vehicle and pedestrian routes are outside the 5m buffer zone along the river.

Along the riverfront, a 5m buffer zone restricts the amount of light spill reaching the sensitive 'dark corridor' of the River Crane. This ensures the development has the absolute minimum impact on wildlife. The 5m wide buffer zone will be heavily planted and have a 1.5m high hedge with 600mm tall woven willow trellis to the southern face to prevent any light spill from the development onto the River Crane. As excessive lighting can damage bat foraging, the minimal use, low-level light bollards and external lighting are directed away from the river.

The lighting will be designed in line with the Exterior Lighting Assessment by Desco. A full analysis of the lux levels around the river has been undertaken and has been submitted in a separate report as part of this application. This ensures the proposals are suitable for the location and do not effect the existing 'dark corridor'.

Key design measures of proposed external luminaries:

- LED lamps with no UV emissions (minimising disturbance to bats and ensuring insects are not attracted away from neighbouring habitats)
- Integrated reflectors, louvres and diffusers (controlling the direction and spread of light and avoiding unnecessary light spill and upward light pollution)
- Located so the illuminance between lighting drops below 1 lux (encouraging bats to fly between and prevent the formation of a 'light barrier')
- No uplighting proposed (avoiding illuminating bat foraging and commuting habitats)



Example of light columns

Key

- LED column lighting
- LED wall mounted luminaire

5.15 Management & maintenance

5.15.1 Maintenance

The primary aim is to manage the landscape spaces so that they thrive and are able to continue to provide their green infrastructure functions, including cultural ecosystem services, such as providing sense of place and amenity.

The following key factors will need to be addressed in order to sustain high-quality external spaces:

- Safety
- Cleanliness
- Repair and replacement
- Horticulture health
- Hard surfaces
- Playable space
- Delivery

5.15.2 Safety & security

A safe environment is one that is accessible to all. As well as adopting 'Secured by Design' principles in the design of the landscaped areas, long-term management and maintenance of the landscape proposals will be required.

Well-maintained places are less likely to suffer from crime as they are more likely to be used, thus increased presence will deter antisocial behaviour. Passive surveillance will be encouraged with landscaping, enabling clear visibility along main pedestrian routes.

Private gardens are enclosed with 1.2m walls and accessed via secured gates.

5.15.3 Cleanliness

Cleanliness is the principal indication of the quality of management of the landscape design. It will be important to maintain the cleanliness of the landscape with regular collection and removal of leaves, debris and litter.

5.15.4 Repairs & replacement

The need for repair and replacement of finishes will be mitigated by the use of appropriate and durable materials. Nevertheless, in the long-term, a degree of maintenance and replacement is unavoidable.

5.15.5 Horticulture health

The health and general condition of planted areas, including trees, shrubs and perennial plants and lawns, is clearly indicative of the level of care and attention a place receives.

Planting, including any replacements to dead or dying material, will be maintained in accordance with a Landscape Maintenance Specification.

Trees, climbers and shrubs will undergo inspections which will provide informative pruning to ensure appropriate habit and form, monitor health of trees and the removal of dead, dying or diseased branches as required.

Once established, the removal of stakes / guying systems will be required where necessary. Shrub beds will receive ongoing maintenance to ensure weed-free conditions through combined techniques of hand weed removal, chemical-free herbicides, cultivation and mulching.

Until fully established, new trees and shrubs will require adequate watering. An irrigation system will be required for establishment of plants and trees and for ongoing watering during prolonged periods of drought.

5.15.6 Hard surfaces

Seasonal maintenance of fallen leaves, snow and de-icing is required, and combined use of herbicides and hands to remove weeds that grow within paving or other hard surface joints.

5.15.7 Delivery

Delivery of the landscape scheme will be by appropriately skilled and experienced contractors and specialist contractors, in accordance with BS3936:1992, BS4043:1989 and BS4428:1989 (or subsequent superseding equivalent) and current arboricultural best practice, working to tight specifications and fully resolved designs.

Particular attention will be paid to the sourcing of both hard and soft landscape material, and the customising of specifications and workmanship to best suit these materials, which will be locally sourced where possible.

The landscape construction contract will include 12-months post-practical completion establishment maintenance before handing over to the ongoing management team.

5.15.8 Water

Planting is generally intended to be suitable for minimal watering. Irrigation in the public realm is carried out manually with a hosepipe during establishment and then as required.

A separate irrigation system is required on the podium with a drip line fed through the planting beds to irrigate the softscape planting beds.

5.15.9 Lighting & electrical

For security lighting and lux levels, please refer to the MEP design report.



Introduction

Context

Design process

Design response

Landscape

6.0 Technical design

Access

Appendices

6.1 Transport & parking

Car parking

The scheme provides a total of 83 residential car parking spaces (incl. 8 accessible) and 20 industrial car parking spaces (incl. 5 accessible) with 4 industrial loading bays and 1 car-club parking space. All surface and below podium spaces will be allocated to a specific dwelling. Accessible spaces are included within this allocation and are provided in close proximity to the accessible apartments or on the accessible house type driveway. All future residents will not be permitted CPZ permits via S106.

This is distributed as follows:

- 19 private spaces on drive (of which 2 are accessible)
- 9 integrated garage spaces
- 20 allocated spaces below podium (of which 2 are accessible and 2 are for visitors)
- 35 allocated surface spaces (of which 4 are accessible)
- 20 allocated spaces for the industrial space (of which 5 are accessible)
- 4 loading bays (which accommodate 10m HG vehicles)
- 1 car-club space

Cycle parking

In compliance with the London Plan 2021 the scheme provides a total of 196 residential cycle spaces, 6 visitor cycle spaces, and 16 industrial cycle spaces. Houses have secure cycle storage within internal garages or in external stores, and apartments have dedicated cycle stores within each building in the form of two tier cycle racks, as well as accessible Sheffield stands in the public realm and car park.

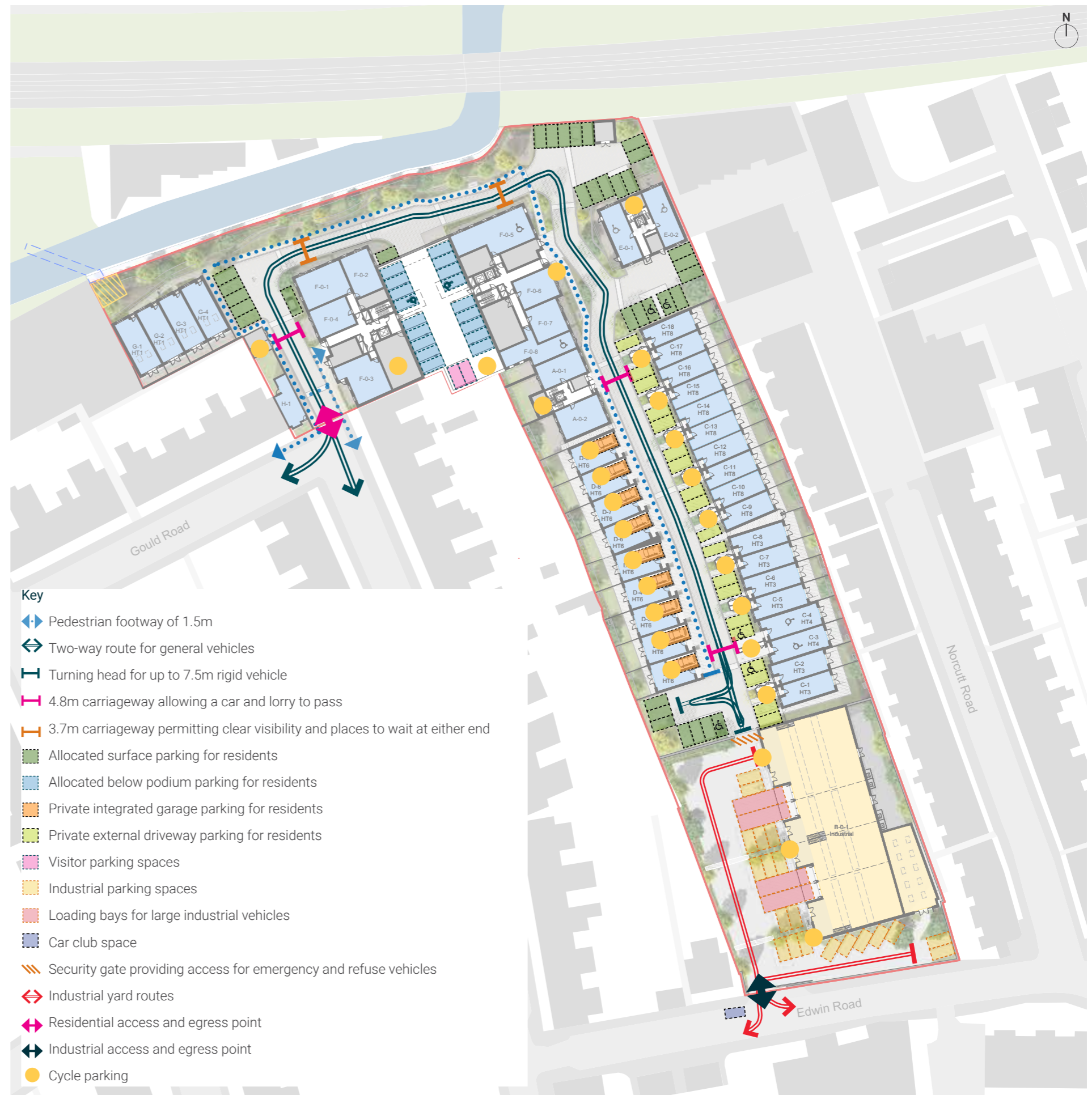
These are broken down as follows:

- 50 spaces at 1.5 spaces per dwelling for all 1 beds (5 accessible)
- 128 spaces at 2 per dwelling for all 2 beds and 3 beds (13 accessible)
- 18 additional spaces within residential
- 6 spaces at 2 per initial 40 dwellings and 1 per additional 40 dwellings for visitors
- 5 spaces at 1 per 250sqm for industrial workers and 1 per 1000sqm for visitors
- 11 additional spaces within the industrial

The proposals includes several improvements to the transport offering of the existing site facilitating both pedestrian and vehicle flow through the site. The residential development to the north of the site will provide an internal road access from Gould and Crane Road. The industrial development to the south of the site will utilise the existing road access from Edwin Road. A security gate will permit access for refuse and emergency vehicles.

A two-way street is proposed in both parts of the site for general vehicles. Given the low traffic volumes, low speeds and residential nature of the site, 3.7m points with clear visibility and passing points are proposed. The removal of the existing site access gates to the residential element and new pedestrian foot-way facilitates pedestrian accessibility through the site and enhances connectivity to the river. Both the industrial and residential elements of the site provide a level of car and cycle parking which is compliant with local parking standards, prevents overspill parking and encourages adoption of sustainable and green travel. The development is well placed for public transport, with several bus routes and rail connections within reasonable walking distance of the site. (PTAL 2 rating)

The proposal includes a car club space within immediate proximity of the development provides a further transport offering. As a borough, Richmond upon Thames advocates car clubs as an alternative to private motor car, promoting their integration across the council website. The new car club bay facilitated by the development would not be exclusively for the use of residents at the site, and would thus providing a communal benefit for surrounding residential properties. The implementation of the car club bay would be agreed with the developer, car club provider and Local Authority, as a condition of consent.



- Key**
- Pedestrian footway of 1.5m
 - Two-way route for general vehicles
 - Turning head for up to 7.5m rigid vehicle
 - 4.8m carriageway allowing a car and lorry to pass
 - 3.7m carriageway permitting clear visibility and places to wait at either end
 - Allocated surface parking for residents
 - Allocated below podium parking for residents
 - Private integrated garage parking for residents
 - Private external driveway parking for residents
 - Visitor parking spaces
 - Industrial parking spaces
 - Loading bays for large industrial vehicles
 - Car club space
 - Security gate providing access for emergency and refuse vehicles
 - Industrial yard routes
 - Residential access and egress point
 - Industrial access and egress point
 - Cycle parking

Parking and transport diagram