

5.8 ROOF TERRACE

The roof terrace is a vital resource for building residents, and has been designed to maximise planting. Small trees create ample shade in the summer months, and hedge planting gives more breathing room for those looking directly onto the space. Raised planters for food production will help create a sense of community around the terrace for those utilising the space, as well as reducing waste from having to buy in less fruit/vegetables. More ornamental shrub planting provides additional visual interest through the year



Indicative Planting Species

Small multi stem tree species considered:

- Amelanchier lamarckii*
- Acer Japonica*
- Cornus controversa*

Hedge considered:

- Buxus sempervirens*
- Elaeagnus eb. Compacta*
- Pittosporum ten. Golf Ball*

Ornamental grasses, herbaceous, perennials

& bulbs considered:

- Geranium 'Rozanne'*
- Rubeckia subtomentosa*
- Miscanthus nepalensis*
- Anemanthele lessoniana*
- Deschampsia cespitosa*
- Aubrieta deltoidea 'Chianti'*
- Armenia maritima*
- Achillea tomentosa*
- Carex alba*
- Erigeron karvinskiana*
- Fetuca rubra 'Patrick's Point'*
- Helianthemum 'Wisley Pink'*
- Muscari neglectum*
- Silene uniflora 'Alba'*
- Sedum reflexum*
- Thymus serpyllum*
- Allium spp*

Climbing plants considered:

- Parthenocissus Tricuspidata*
- Hedera Helix 'Green Ripple'*
- Hedera Helix 'Woermer'*



5.9 DRAINAGE STRATEGY

All new developments of more than 1 dwelling house, or where the construction area is 100 square meters or more, require sustainable urban drainage systems (SuDS) for surface water. The SuDS must be designed and built in accordance with Statutory Welsh Government SuDS Standards, which seek to prevent schemes that rely on surface water connecting into existing drainage systems. The SuDS is an entirely separate process to planning, and must be formally approved/adopted by the local authority (in this case Cardiff Council) acting in its SuDS Approving Body (SAB) role, before construction work begins.

The SuDS for this scheme will cover both the Bus Interchange and the new housing development and seeks to ensure the most sustainable drainage solution possible. The strategy being developed incorporates a number of rain gardens into the roads surrounding the site and making the roof terrace of the housing development a combined blue / green roof. This means the development will be able to discharge all surface water by sustainable means, without having to drain into the local storm sewers. The Drainage engineers working on the scheme have consulted with Authority's SAB officers on the draft scheme and will be submitting a SuDS Pre Application alongside the planning application. More detail is provided below.

Existing Site

The existing site was a former waste transfer centre which closed in April 2014, the site consists of mainly tarmac construction with a

raised concrete platform. The total development area is circa 7000m² which all of it is currently impermeable.

There is an existing surface water sewer which runs from the north corner down the west side of the site for circa 10m before crossing under the railway lines and discharging into an existing ditch located within Waun Gron Park. A CCTV survey was undertaken on the site and identified a number of private surface water and foul water drains which will need to be abandoned to accommodate the development.

Proposed Development

The proposed redevelopment includes the provision of a bus interchange adjacent to the railway and a multi storey building which includes both retail and residential facilities. There will be no on-site car parking provision.

Flood Zones

According to Natural Resources Wales' online Flood Risk Map Viewer (Development Advice Map) the site is in Zone A, "Considered to be at little or no risk of fluvial or coastal/tidal flooding". In line with the guidance set out within Tan15 there is thus no requirement to undertake a Flood Consequences Assessment.

Welsh Water Preplanning Enquiry

A preplanning enquiry has been made to Dwr Cymru Welsh Water (DCWW) and their response (ref PPA5314) is appended to this statement.

Their public sewer records indicate that there is a surface water sewer running north to south along the west boundary of the site. Further investigations have identified that this sewer runs circa 10m into the site before crossing under the railway and discharging into a ditch located in Waun Gron Park. There is also a surface water sewer which runs north east to south west along the channel of Western Aveue. There is a combined sewer located to the north of the proposed site in Waun Gron Road.

With respect to drainage they have advised the following:-

Foul water – foul flows from the proposed development can be accommodated within the existing public sewers and the receiving Waste Water Treatment Works. Discharge from the site should be via existing connections.

Storm water – consideration should be given to discharging via infiltration or direct to watercourses prior to considering discharge to the public sewer system. Also the surface water drainage will need approval from the SAB.

Easements – the sewer along the western boundary is flagged as crossing the site and thus a 3m stand-off easement will apply to it.

On the matter of the easement requirement Curtins have undertaken on site investigations to determine the actual physical location of this sewer. The results are shown on the appended "Existing Site" drawing.

Watercourses

The nearest water course to the site is a ditch which runs along the boundary of Waun Gron Park. The ditch finally connects back into the DCWW sewers at the west corner of Waun Gron Park.

Drainage investigations undertaken on the site identified an existing connection which crosses under the railway lines into the ditch. By virtue of this having other public sewers connecting to it should be considered as a continuation of the public sewer system. Further CCTV surveys identified that the drain is likely to be damaged and silted up which is blocking the water flow. As the drain is located under the railway line any works to the drain would require agreement and approval from National Rail.

Proposed Foul Water Drainage

The proposed foul flows from the site will connect into the existing combined sewer located in Waun Gron Road. The pre-dev enquiry that a connection should be made downstream of chamber ST14778301.

Proposed Surface Water Drainage

Preliminary investigations on the site have indicated that infiltration is not a viable option for the site due to the ground make up as well as the high risk of pollutants entering the ground.

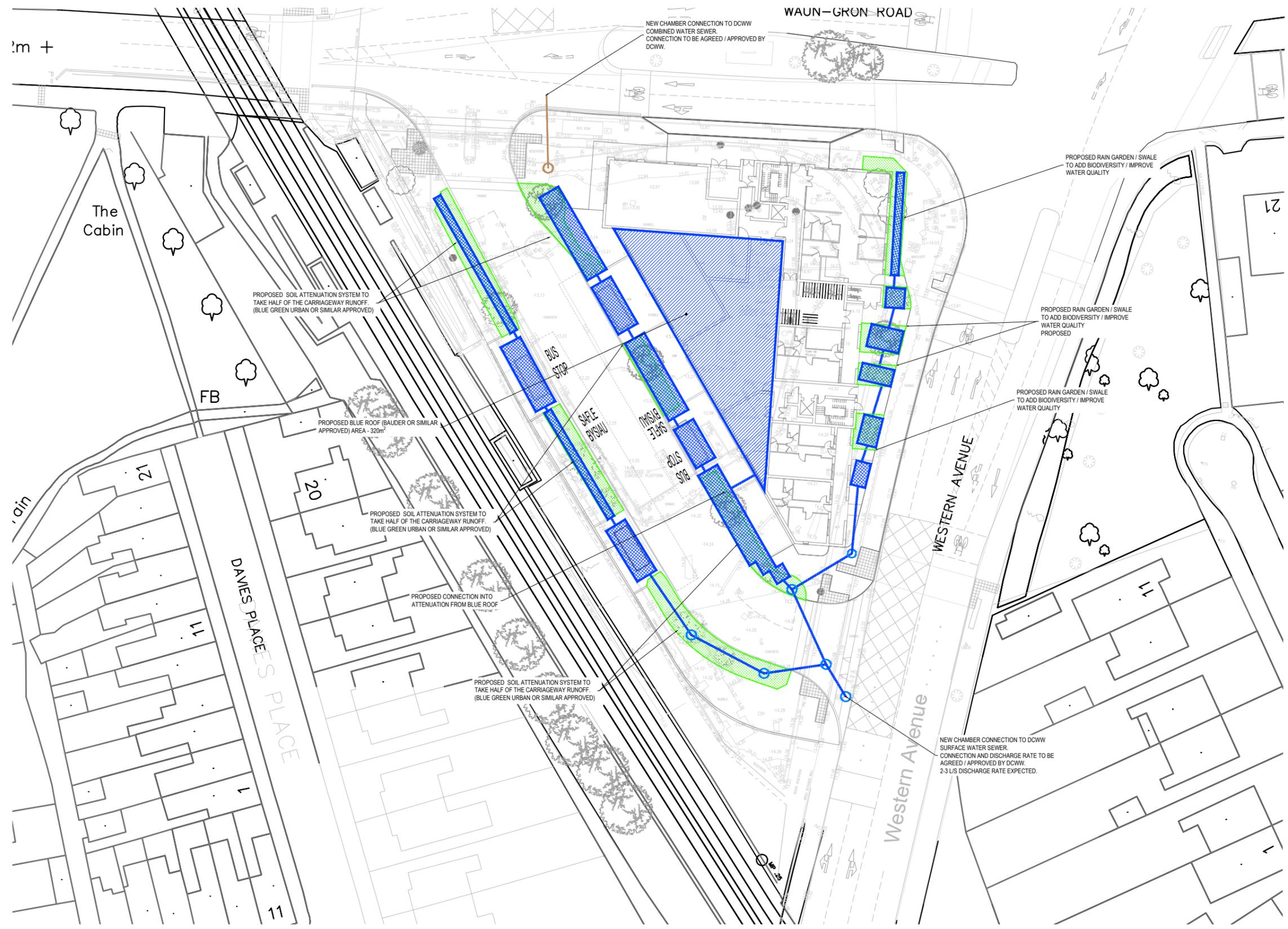
The surface water drainage strategy is for the site to be attenuated to a greenfield rate of discharge (2-3 l/s) for up to and including the 1 in 100 + 30% Climate change. The site drainage is to to

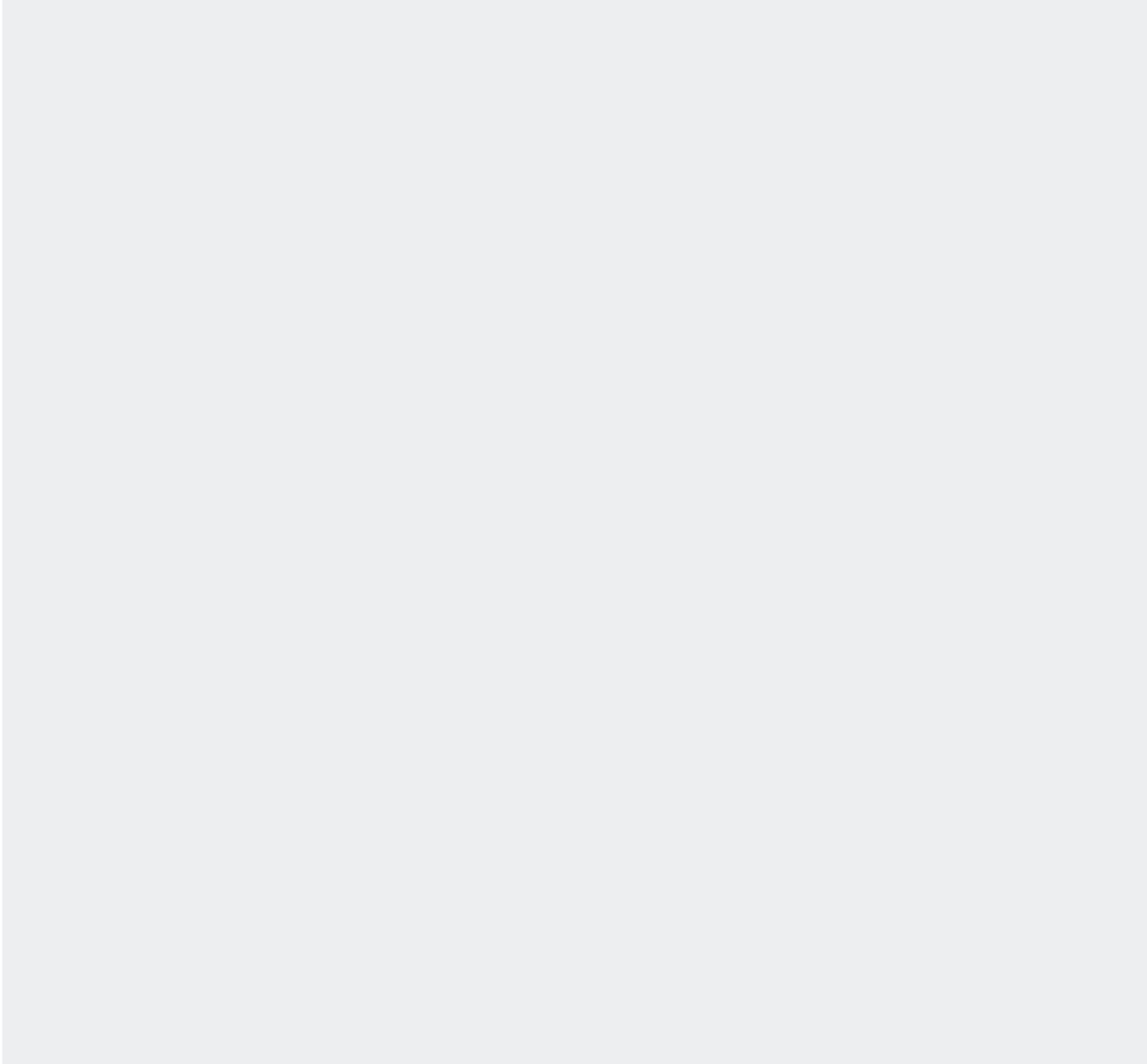
connect into the existing surface water sewer located in Western Avenue.

The main attenuation for the site is to be provided within cellular storage located under the rain gardens within the bus interchange and around the perimeter of the building.

Additional storage is to be provided within a variety of SuDS features around the site these include:

- A blue roof under the proposed terrace area on first floor.
- Rain Gardens around the perimeter of the proposed building which will add to the biodiversity of the site as well as improve the water quality of the surface water run off.
- Rain Gardens along the verges of the proposed bus interchange, which will filter any hydrocarbons from the carriageway prior to discharging into the attenuation tanks.





Sustainability & Community



6.1 ENERGY USE STRATEGY

The energy use strategy seeks to adopt heating and power solutions that will drastically reduce Co2 emissions, maximise the use of renewable technology (no gas boilers) and reduce the demand our homes will have on the grid. This will be achieved by designing in from the start Photo Voltaic panels linked to battery storage, heating via Ground Source Heat pumps (GSHP) and Mechanical heat recovery systems. This result in high a performing building, achieving significant improvement against Part L of the Current (2014) Building Regulations. It will also drastically reduce energy bills for tenants. The details of the energy strategy are set out below.

SUMMARY OF THE PROPOSED SELECTION OF THE PRIMARY ENERGY USING EQUIPMENT ASSOCIATED WITH THE MEP SERVICES:

Mechanical Services

- **Heating**

Heating for the Flats would be generated via a shared ground source bore hole array linked to individual heat pump units located in each Flat. The heat pump units would generate low temperature heating water (LTHW) which shall be distributed to the underfloor heating and to the hot water indirect cylinder. The underfloor heating provides an unobtrusive and efficient source of heating within each Flat with individual programmable thermostats located in each main room enabling the Occupiers to independently control both the temperature and operational times of the heating within each room.

Compared to other heating systems utilising direct electric panel or storage heaters or gas fired boiler plant the shared ground loop arrays used in conjunction with individual heat pumps are more efficient having lower carbon emissions, and lower energy costs.

As the heat pump units are installed in each Flat the Occupier is in full control of the operation of the heating system and responsible for the payments of the respective energy costs.

- **Hot Water**

Hot water to each Flat would be provided via independent indirect cylinders located within a service cupboard and fed via LTHW from the respective heat pump unit. All cylinders would be provided with back up electric immersion heaters for use in the event of failure of the respective heat pump.

- **Ventilation**

Permanent trickle "whole house" ventilation would be provided to the Flats to meet the requirements of the Building Regulations Approved Document Part F. Each Flat would be equipped with a central fan unit incorporating supply and extract fans, filter, and a heat recovery unit with integral summer by pass damper with integral controls. The ventilation plant incorporates a heat exchanger hence energy reclaimed from the air extracted from the dwelling will be transferred to pre-heat the incoming supply fresh air thus improving the energy efficiency.

- **Insulation**

Would be applied to heating and domestic hot water services to minimise energy losses in compliance with Building Regulations.

Electrical Services

- **Lighting Fittings**

Internal and external lighting would incorporate low energy lighting utilising a mixture of suspended, surface and recessed downlights incorporating light-emitting diode (LED) technology.

- **Lighting Controls**

Landlord controlled internal areas such as corridors, stores, stairwells would incorporate automatic lighting controls utilising occupancy sensors to inhibit lighting when there is no occupancy. Landlord controlled external lighting would incorporate time switches, with additional hold-off daylight sensing photocells with circuits sub divided to the separate elevational zones.

- **Solar Photovoltaic**

A Solar Photovoltaic (PV) system may be installed on the flat roof area of the building to ensure that the building and dwellings comply with the Wales Building Regulations and achieve the Standard Assessment Procedure (SAP) "A" standard.

6.2 CAR AND CYCLE PARKING

The proposal is a car free, sustainable development, taking advantage of its proximity to the public transport hub, therefore no car parking spaces are provided. Residents drop off can be provided through the service lay-by.

48 residents' bike parking spaces are provided internally, accessed from the lobby or externally from Western Avenue. The bike spaces are in the form of two tier stands. 4 spaces on Sheffield stands are provided separately for office staff, in a store which can be accessed from Western Avenue. The retail units will need to provide 3 long stay bike parking spaces for staff members.

10 short stay visitor bike spaces have been provided externally in Sheffield stands.

Key:

- Services Lay-by
- Bus Interchange
- Resident's Bike Store
- Office Staff Bike Store



6.3 REFUSE STRATEGY

To satisfy building regulations (where residents need to be within 30m of their bin store) two bin stores are proposed, one for the temporary accommodation and another for the permanent accommodation. Each is accessed by residents via their main circulation core on the ground floor. Refuse collection will be via Waungron Road (service lay-by provided) for the Northern most core, and the new highway which forms the bus interchange for the store to the south. Disruption to the bus interchange will be minimal, and limited to a short period of time once a week.

Separate refuse stores are shown for the office and A1 and A3 commercial units. The refuse stores have been designed to support the council's strategy for recycling, food waste and general waste, with cardboard and glass bins also accommodated for the A3 unit. The A3 unit will be able to directly access the service lay by on Waungron Road, whilst the A1 unit will need to wheel bins a short distance around the corner to Waungron Road.

Key:

-  Access to bin stores for refuse collection
-  Supported Living Bin Store
-  General Needs Bin Store
-  Office Bin Store
-  Commercial bin stores
-  Service Lay-by
-  Dropped kerb

