

CONTENTS	PAGE(S)
3.1 Existing Infrastructure	2
3.2 Substation	3
3.3 Electrical Distribution	3
3.4 Security & Access Control	4
3.5 External Lighting	4
3.6 Gas	4
3.7 Heating	5
3.8 Cooling	6
3.9 Ventilation	6
3.10 Water Services	7
3.11 Above Ground Drainage	8

APPENDICES

Appendix 3.1 – Images of Typical Building Services Equipment

3.1 EXISTING INFRASTRUCTURE

Water Services

- 3.1.1 Based on the record drawings from Thames Water, a 5" municipal mains water pipework currently runs along Broom Road to the south of the site. There is a 5" mains water pipe connection from Broom Road which serves the existing studio complex. There is also a separate 4" mains water pipe from Broom Road which serves the essential fire services. There are no existing municipal water pipework shown running below the site.

Drainage

- 3.1.2 The public sewer runs along Broom Road from the North West down to the South East. There are no existing public sewers shown crossing below the proposed site.

Gas Services

- 3.1.3 Record drawings from Southern Gas Networks indicate the municipal gas pipe to be running along Broom Road. There is a single gas connection from Broom Road that enters the site from the South West. There are no municipal gas pipework crossing below the proposed site.

Telecoms

- 3.1.4 The main BT cable ducts run along Broom road. There are also distribution BT cable ducts running along the west and north of the site. There are no main BT cable ducts running below the existing studio indicated on the record drawings.

Fibre optics

- 3.1.5 Record drawings from Virgin Media indicates fibre optic cables running along Broom Road. There are currently two fibre optic connections indicated on the record drawings. One connection is south of the site from Broom road and the second connection enters from South West of the site and connects to the west of the existing studio.

Mobile Mast

- 3.1.6 Initial search indicates there are currently two mobile phone base station located within the vicinity of the proposed site. The mobile masts will need to be temporary re-located during the construction of the proposed site. The proposed new location and temporary re-location of the mobile masts will need to be agreed with the mobile mast operators.

Electrical Services

- 3.1.7 The national grid search did not indicate any services within the vicinity of the site. However, record drawings from UK Power Networks indicates a number of high voltage connections to a substation located towards the north of the site.

3.2 SUBSTATION

- 3.2.1 New substations will be required to satisfy the electrical demand of the development. Subject to further design development and liaison with the utility supplier, an initial load estimate indicates that two double substations will be required. The substations are to be located on the ground floor with 24 hour access and will be naturally ventilated via louvres located at high and low level, in accordance with utility supplier's specific design requirements.

3.3 ELECTRICAL DISTRIBUTION

- 3.4.1 Each block will have an individual low voltage switch room located within the basement and will distribute electricity to the apartments via risers within core area. Each apartment will be separately metered. These areas and their final

locations will be subject to further design development. The tenants supplies will be taken from Ryefield panels separate from the landlord's loads. The landlord's electrical distribution will be served separately by a metered panel.

- 3.4.2 Life Safety and Critical loads will be supported by a dedicated back-up generator and an online UPS system (for security only) which will ensure power to essential services in the event of a failure . The generator is to be located within the basement level with dedicated intake and exhaust ducts/louvres. The generator flue will rise to and terminate at least 1m above roof level or any structure that is within 2.5m of the flue.

3.4 SECURITY & ACCESS CONTROL

- 3.4.1 The buildings will be provided with an entry phone voice recognition system at all main entry points that will provide secure access for all residents.
- 3.4.2 General CCTV coverage will be provided at all main entrances, the car park areas, and pertinent external areas. The system will be monitored by the main site concierge. A remote dial out facility to a control centre and a panic alarm will be provided at the concierge.

3.5 EXTERNAL LIGHTING

- 3.5.1 The site will be provided with an external lighting system that is operated via photocell sensors and a time clock , a manual override will also be provided. The lighting system will be designed so that the light pollution is to a minimal level and to comply with the 'dark sky guidelines', and also reduce disturbance to bats at night. The car park lighting design will be provided in compliance with 'secured by design'.

3.6 GAS

- 3.6.1 A new gas intake room will be required for the development to serve the main energy centre. The gas intake room will be naturally ventilated in accordance with the Institution of Gas Engineers and Managers (IGEM) regulations.

- 3.6.2 There is currently no provision to supply gas to the apartments or houses for cooking or heating. Gas is provided to the main energy centre only.

3.7 HEATING

- 3.7.1 Based on an initial desktop study on the district heating infrastructure within close proximity of Teddington Riverside, there is currently no existing or planned district heat network available for the site to connect to (refer to the sustainability statement for further details). As such it is proposed that a new central energy centre with combined heat and power (CHP) facility will be provided to supply heating and hot water to the individual apartments and houses via heat interface units.
- 3.7.2 The new energy centre is currently envisaged to be located at basement level and mechanically ventilated. Free access shall be provided for relief of any explosion overpressure to the atmosphere via the car park and the ramp. It is estimated the energy centre will consist of 4No. 500kW high efficiency natural gas-fired condensing boilers to satisfy peak heating and domestic hot water demand.
- 3.7.3 In-line with the sustainability strategy for the development, a 95kW_e/160kW_{th} natural gas-fired CHP system with approximately 15m³ thermal storage will form part of the central heating system to cover the base heating demand.
- 3.7.4 Boiler and CHP flues will rise to and terminate at least 1m above roof level or any structure that is within 2.5m of the flues.
- 3.7.5 A low temperature hot water circuit will flow from the energy centre to a plate heat exchanger in each apartment block. The plate heat exchangers are to provide hydraulic separation between the various buildings. Each flat will then be provided with a heat interface unit to serve final heating terminal units and domestic hot water. The houses and the larger 3 or 4 beds apartments will be provided with a heat interface unit coupled with local storage in order to meet the higher instantaneous hot water demand. Smaller apartments will have a heat interface unit only providing domestic hot water instantaneously.

3.8 COOLING

- 3.8.1 To minimise the carbon footprint of the development, it is currently envisaged that the development will generally be naturally ventilated by means of openable windows. The openable windows will be sized to ensure sufficient purging of the apartments can be achieved in-line with approved document Part F of the Building Regulations.
- 3.8.2 The penthouse apartments will be provided with comfort cooling. The external condensers serving the penthouse will be located within an acoustic enclosure on the terrace to each penthouse.
- 3.8.3 Where openable windows cannot achieve the required purge ventilation rate, local split type cooling systems may be required to avoid overheating in the summer. Any local cooling systems required will be selected to ensure the efficiency of the system complies with the latest Domestic Building Services Compliance Guide.

3.9 VENTILATION

- 3.10.1 Individual dwelling mechanical ventilation units with heat recovery (MVHR) will meet the general ventilation requirements in accordance with Part F of the Building Regulations. Small inlet and outlet grilles will be integrated into the façade of each apartment/house.
- 3.10.2 Kitchens within the apartments will generally be provided with a recirculation cooker hood. The penthouses and houses will be provided with a dedicated cooker hood extract with separate discharge to outside or roof level complete with a weather louvre.
- 3.10.3 Internal escape staircases within the apartment blocks will be provided with a smoke extraction system to the staircase lobby and internal escape corridors with makeup air from the top of the staircase to ensure the staircase is free of smoke. Perimeter staircases will be naturally ventilated.
- 3.10.4 The underground car park will be mechanically ventilated by a series of impulse fans and two exhaust systems located remote to the driveway ramps used for air make-up. The fans are to be fire rated and used for smoke ventilation in the

event of a fire to comply with approved document Part B of the Building Regulations. The exhaust fans will discharge away from the residential accommodation.

- 3.10.5 Refuse stores will be provided with dedicated extract system and exhaust air externally away from any circulation area.

3.10 WATER SERVICES

Cold Water

- 3.10.1 The existing water supply will be relocated/upgraded to serve the new cold water booster set and break tank located in the basement. From the new boosted set, separate metered pipework will distribute water to all apartments.
- 3.10.2 A central 25m³ central insulated cold water tank will be required to provide approximately 12 hours storage for the development. A multi-stage cold water booster set will provide boosted potable cold water to the apartment blocks. The houses will have independent water mains services. Incoming water supply to the central storage tank will be conditioned and treated in-line with the water regulations.
- 3.10.3 The cold water tank room will be cooled by a split unit to prevent the room overheating.

Sprinklers

- 3.10.4 There is currently no sprinkler system envisaged for the development subject to design development with fire engineers and agreement by the fire officers.

Hydrants

- 3.10.5 Hydrant points will be provided at the fire vehicle access points feeding dry riser breeching inlets to the individual blocks subject to agreement with the Fire Brigade.

3.11 ABOVE GROUND DRAINAGE

- 3.11.1 The soil and waste system to be provided for the apartments will be a single stack system dropping through the building serving bathrooms and kitchens, collecting discharge from all sanitary/kitchen appliances.
- 3.11.2 The layout of bathrooms in each apartment will be arranged to minimise offsets on vertical stacks. Soil and waste pipe work will be installed with adequate gradients to prevent blockages and noise when used. All stacks will be lagged acoustically, with fire sleeves at each floor.