



University Partnerships Programme

University of Reading St Patrick's Hall Redevelopment

Utilities Assessment

November 2017

Rev D

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This Utilities Assessment has been prepared in relation to a revised application for the redevelopment of St Patrick's Hall to provide student accommodation and associated ancillary uses. A previous application (Council Planning Ref: 161182) for the redevelopment of the site was withdrawn following the local listing of Pearson's Court within the site. This revised application retains Pearson's Court and redevelops the remainder of the site.

The changes proposed as part of this revised scheme are summarised as follows:

- There is a net reduction in student bed numbers in comparison with the previous submission. The withdrawn application proposed 1024 new student bedspaces and 6 no. three bedroom flats for families, resulting in a net increase of 726 bedspaces. The revised application provides 884 new bedspaces and would retain 116 existing bedspaces within Pearson's Court. This results in a net increase of 702 bedspaces at the site.
- The demolition of the original Pearson's Court building no longer forms part of the plans for redevelopment.
- The Sets building to the south of the Pearson's courtyard will be removed and replaced with new, high-quality accommodation; this element of the scheme has been redesigned to complement the retained courtyard.
- The proposed new courtyard to the north of the site, has increased in massing to accommodate the need for student accommodation while retaining the locally listed Pearson's Court.
- The two low-rise buildings previously proposed in the southern part of the site have been removed in response to concerns raised regarding the proximity of the buildings to the nearby house.
- New low rise accommodation is proposed set further back from the southern boundary and deeper into the site to mitigate proximity to the neighbours.
- New accommodation is now proposed above the catering Hub building and to the centre of the site.
- The Social facilities including the bar, café and dining facilities will be located in the centre of the site away from the southern boundary.
- The Combined Heat and Power (CHP) energy centre has been relocated to the centre of the site away from the southern boundary.
- Warden accommodation will be provided within the existing accommodation on the southern boundary and an updated Student Management Plan have been introduced as part of the revised application.

1.0 SUMMARY

Principal items of this report:

- 3 no. offsite connections from utility provider's networks will be necessary, low pressure gas, water (including fire main connection) and high voltage electricity.
- Southern Gas Networks (gas shipper), Thames Water and Scottish and Southern Energy (district (electricity) network operator) have all confirmed that their existing mains in Northcourt Avenue are of adequate capacity to serve the requirements of the current proposals for the new redevelopment.
- The University proposes to expand the infrastructure of their data/telecoms networks from adjacent off-site areas of their campus, resulting in adequate cover for the new redevelopment at rate of 24Mbps or greater (defined by the European Union as Superfast Broadband).

Further details of each proposed infrastructure service are provided in section 3 of this report.

2.0 INTRODUCTION

This Utilities Assessment is included as part of the planning application to Reading Borough Council, for the proposed new student accommodation redevelopment at St Patrick's Hall, Northcourt Group at the University of Reading.

The new St Patrick's Hall redevelopment is to principally comprise accommodation Blocks and Townhouses, supported by the Hub and associated buildings, all served by site-wide underground gas, water, electricity and data/telecommunications infrastructure networks.

Using the proposed occupancy levels, typical building usage profiles and historical data, the expected peak load for each new building has been estimated.

The proposed site contains buildings to be demolished, which are currently supplied by utility provider's networks.

Furthermore there are buildings within and adjacent to the proposed site, also served by the utility provider's networks which are currently routed though the site. To maintain the supplies these networks are to be diverted or the existing buildings provided with new.

The total estimated load of each network, i.e. the combined peak loads for each new building, a reduction allowance for each building to be demolished and the estimated load for each existing building to be served from the new networks have been determined.

A ground penetrating radar survey has been commissioned, and, along with desktop investigations of the utility provider's and University's records, the resulting survey drawings have been analysed.

These estimations and analyses have enabled various supply strategies for each network to be considered.

This Utilities Assessment is a summary of the proposed supply strategies for the gas, water, electricity and IT/data/telecommunications infrastructure networks, which have resulted from these investigations, in addition to outlining the principal services enabling/diversion proposals.

This document is intended to provide a non-technical overview of the proposed infrastructure works, issued in-line with the requirements of the planning conditions, set by Reading Borough Council.

It is not issued as a Services Specification. Technical details and further information will be provided in the M&E Performance Specification, Strategy Document and associated documents/drawings, provided at the relevant stages of the project.

The materials, components and completed installations shall be specified to conform to the National Joint Utilities Group Guidelines (including the positioning and colour coding of underground apparatus), appropriate Regulations, Codes of Practice and British/European Standards.

For details of the works proposed for the below ground foul and storm water drainage systems, refer to information issued by Curtins Consulting, the Project Structural/Civil Engineers.

3.0 SUPPLY STRATEGIES

3.1 General

The following describes the proposed strategy to provide the new redevelopment with adequate incoming supplies, in addition to outlining the principal services enabling/diversion works.

These clauses detail the outline strategy, which will be revisited and revised as necessary to reflect the requirements of the final phasing proposals.

These proposals are results of the analyses of load estimations (as outlined in the following clauses), a ground penetrating radar survey and desktop (utility provider's and University's records) investigations.

Initial CCTV and external lighting proposals have also been outlined.

The proposed routes of the new and existing services have been arranged to suit the layout of the new redevelopment and to reduce the risk of excavations in the vicinity of designated tree root protection zones.

These routes and the external lighting proposals are detailed on Hulley and Kirkwood's sketches;

P0263(50)SK01: Primary Services Infrastructure Routes

P0263(50)SK03: Existing Services (Record)

P0263(50)SK04: Existing Services (Proposed Site Overlay)

P0263(50)004 Incoming Services (Proposed Site)

P0263(60)SK03: External Lighting & CCTV Layout

P0263(60)SK02: External Lighting LUX Plot Layout

These drawings based upon WIA architectural plans:

StP-WIA-00-GF-DR-A-000001 – Site Location Plan

StP-WIA-00-GF-DR-A-000002 – Existing Site Plan

StP-WIA-00-GF-DR-A-000001 – Proposed Site Plan

3.2 Natural Gas

Records provided by the University's current gas shipper, Southern Gas Networks (SGN) confirm the existence of two low pressure mains running in Northcourt Avenue, adjacent to the proposed site.

One of these mains (noted as 180 mm polyethylene) is a dedicated supply serving buildings on the campus, namely New Court, Sherfield Halls, Reception/JCR and the four residences on Sherfield Drive.

New Court, Reception/JCR and the residences (at the Southern Boundary) on Sherfield Drive are to be demolished, thus reducing the demand on the main.

Sherfield Halls are to remain, and the local gas services to these halls will be served by extending the new gas main proposed to serve the Boiler/CHP building (detailed later in this clause).

The second main has three connections, the most northerly connection (noted as 180mm) runs within the proposed site boundary, although does not appear to serve existing buildings on site (all adjacent to site).

This main shall be protected during the construction works, or replaced with a new main routed to suit the layout of the new redevelopment (to be confirmed as the actual route and depths of the existing on-site service are established).

The remaining two connections on the second main (both noted as 90mm polyethylene) serve buildings on the campus, namely Pearson Court (via meter: M-016) the Café and the Warden's House (via meter: M-017).

It is anticipated the existing gas meter service to Pearson Court to remain. Although further design development could include this service within the new site infrastructure.

The services from gas meter 017 are to be demolished, thus reducing the demand on the second main.

The estimated peak hourly and annual loads for each new building, a reduction allowance for each building to be demolished and the estimated load for each existing building to be served from the new (diverted) gas service had been determined.

Using the original figures, and noting there is a reduction of accommodation for the current proposals, SGN confirmed their existing main in Northcourt Avenue is of adequate capacity for the redevelopment.

This is based on initial site proposals, and therefore is to be revised accordingly, although a significant site load increase is not anticipated.

In addition to the disconnection works, SGN are to provide a new supply to serve the new gas meter enclosure local to the new CHP building.

This enclosure, which shall be located in the middle of the site close to East boundary, will contain a main site meter and associated equipment, including governor and controls, provided by the selected gas supplier.

A new low pressure gas infrastructure system shall be extended from the site meter, by the Principal/Services Contractor, to serve the Boiler/CHP building.

The Pearson Court service and Warden Accommodation internal gas supplies shall remain (subject to possible diversion works) and connected via the new primary gas service. Disconnection of the existing gas meter will be necessary upon completion of these diversion/ reconnection works.

The Café/ Kitchen will be either served by a supply from the main site meter (by the Principal/Services Contractor) or from a dedicated meter, located in/adjacent to the (served by SGN).

3.3 Cold Water/Fire Mains

Records provided by Thames Water (TW) confirm the existence of two water mains running in Northcourt Avenue (both appear to be 100mm diameter).

There are three connections/supplies from one of these mains, serving the proposed site, and adjacent buildings with water and fire mains.

The most northerly connection/supply serves New Court, areas of Pearson Court, Creighton Court and various fire hydrants.

New Court to be demolished, thus reducing the demand on this main, which is to be re-routed to serve Creighton Court and the new fire hydrants required to serve the new buildings in the north of the redevelopment.

The existing service to Pearson Court (part) to remain although connected off the new site infrastructure.

The second connection/supply serves the remainder of Pearson Court. It is anticipated the existing TW meter and service to Pearson Court to remain. Although further design development could include this service within the new site infrastructure.

The third (most southerly) connection/supply serves the 16 blocks of Sherfield Hall, the Reception/JCR, the 4 residences on Sherfield Drive and a fire hydrant.

The Reception/JCR and single residence on Sherfield Drive are to be demolished; therefore the main (after the meters) will be modified to only maintain the services to Sherfield Hall, the Warden accommodation and the fire hydrant.

The original estimated water load for the new redevelopment had been assessed, and issued to Thames Water, who have confirmed that their existing main in Northcourt Avenue is of adequate capacity to serve the new redevelopment. The current proposal has a slight reduction on the original demand and would not adversely affect this assessment.

TW will be requested to provide an adequately sized connection/supply from their existing main, and a site meter, located in the middle, eastern boundary.

The new redevelopment is to be served by a large central tank and booster set (contained in central tank room, located in the south west area of the site), providing a boosted potable cold water supply to each new building.

A new supply shall be extended from the site meter, by the Principal/Services Contractor, to serve the central tank.

TW shall also be requested to provide a second connection, from which the Principal/Services Contractor shall extend a fire main (including lockable isolation and non-return valves within a chamber), serving the new hydrants in the south of the redevelopment.

The actual amount and locations of the fire hydrants shall be agreed with the Approved Inspector/building Control.

3.4 Electricity

The proposed site, and adjacent areas are served by a low voltage network provided from an existing Scottish and Southern Energy (SSE) owned sub-station, located in the north east area of the site.

This sub-station, which is connected to the high voltage main in Northcourt Avenue, serves the buildings to be demolished, in addition to buildings that are to remain.

This sub-station is located in an area which compromises the redevelopment, and so is proposed to be removed and replaced with new, located in close proximity to the existing sub-station, but sited to the East to suit the proposed layout.

The new sub-station will serve the new buildings proposed for the redevelopment and the remaining buildings, currently served by the existing sub-station.

The estimated electrical loads for each new building, a reduction allowance for each building to be demolished and the estimated load for each existing building have been determined.

Using these figures, SSE have provided a preliminary quote, confirming their existing high voltage main in Northcourt Avenue is of adequate capacity.

This quote is based on initial site proposals, and therefore is to be revised accordingly, although a significant site load increase is not anticipated.

SSE will also remove the existing sub-station.

The Fire Specialist (International Fire Consultants Ltd) has confirmed that no secondary power source is required for each evacuation lift on this occasion.

3.5 Data/Telecommunications

The University has a main Network Node Data Room (NNDR) currently on the site, providing all IT/data services across the campus.

The University has installed a ductwork distribution system throughout their campus, which provides routes/containment for their three separate networks.

These are; telephone (copper), business (fibre optic) – University's admin and finance network, which includes CCTV, site-wide alarms, access control and BMS, and Reading Connect (fibre optic) – student services.

These networks currently serve the existing development via the ductwork system.

This NNDR is located in an area which compromises the redevelopment, and so is proposed to be removed and replaced with a new NNDR, located in the proximity of the existing, but sited to suit the proposed layout.

A new ductwork distribution system shall be provided, to suit the layout of the redevelopment, linked to the existing ductwork system.

Additionally all existing IT/data supplies shall be disconnected as required from the existing NNDR, before demolition works commence, and redirected from the new NNDR utilising the new/existing ductwork system.

Each new building will then be provided with new data connections which will provide each user with a data connection in excess of 24mbps (defined by the European Union as Superfast Broadband).

3.6 CCTV and External Lighting

The Principal/Services Contractor shall provide CCTV and external lighting systems serving the new redevelopment.

The CCTV system shall incorporate pan tilt zoom and University standard dome type cameras, covering site and building egress and entrance points, and principal areas, including the main reception desk, bin stores, cycle sheds, and the laundry.

The CCTV system shall either comprise signal cables (co-axial) or CAT cabling (IP based) which shall serve the system, and shall be run in the new ductwork system, linking to the University's business network via the new NNDR.

The external lighting system, which will include the agreed luminaires and shall incorporate columns, illuminating main entrances of the new buildings, walkways, paths, car parking areas and roadways.

The external lighting has been designed to limit any upward light spill, currently the design is below 0.5 lux at 6m and above, as detailed on sketches P0263(60)SK01 and 02.

The lighting shall be controlled via photocell and time switch, permitting the lighting to be automatically turned off at a predetermined time.

Power cables serving the CCTV and external lighting systems will either be provided from the associated buildings or run within the ground from the new sub-station.
