Appendix G: Services Report

SKELLY & COUCH

REPORT TITLE:
1705-SAC-RP-M&E Feasibility Report

PROJECT NUMBER:
1705

PROJECT NAME
The Harlington Fleet

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1.0

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1.0	16/06/2025	Preliminary	NJ	SW	Initial Issue

Contents

1 Introduction

This report summarises the response to the early feasibility design of the refurbishment of The Harlington, Fleet. Information has been obtained through an initial site visit, early-stage client briefing (refer to Appendix 2), as well as the information provided in a condition survey provided by the client. The M&E proposals have been produced in response to the Architects proposed layouts, as listed below:

Baseline (Option 1) Scheme:

- HFT-BFF-ZZ-B1-DR-A-0200-OPT 1 Rev P5
- HFT-BFF-ZZ-00-DR-A-0201-OPT 1 Rev P5
- HFT-BFF-ZZ-01-DR-A-0202-OPT 1 Rev P5
- HFT-BFF-ZZ-02-DR-A-0204-OPT 1 Rev P2

Option 2 Scheme:

- HFT-BFF-ZZ-B1-DR-A-0200-OPT 2 Rev P5
- HFT-BFF-ZZ-00-DR-A-0201-OPT 2 Rev P6
- HFT-BFF-ZZ-01-DR-A-0202-OPT 2 Rev P6
- HFT-BFF-ZZ-02-DR-A-0205-OPT 2 Rev P2

Option 3 Scheme:

- HFT-BFF-ZZ-00-DR-A-0201-OPT 3A Rev P1
- HFT-BFF-ZZ-00-DR-A-0201-OPT 3B Rev P1

Two M&E schemes have been provided as options for costing, in line with the Architects proposals. These are summarised by the following M&E scope:

Baseline (Option 1) Scheme:

- Above ground drainage branches stripped out and replaced throughout, to suit new sanitaryware
- Drainage stacks (SVPs and Stub Stacks) retained and reused (subject to survey for full condition), however it is suggested that allowance for full replacement is made as a below the line cost, since there is a risk that this may prove counter-productive and not represent the best value cost saving. Note that experience on other projects suggests there is risk that this may prove counter productive and may not represent a good value saving.
- Hot & cold-water installation replaced throughout

- Heating installation replaced throughout
- Boiler installation stripped out, and replaced with an all ASHP solution
- Ventilation Systems replaced throughout
- Electrical infrastructure, lighting, alarms and comms systems stripped out and fully replaced
- New PV installation included to flat roof
- Lifts retained

Option 2 Scheme:

As per the baseline scheme with the following further M&E installations/upgrades proposed:

- Drainage stacks (SVPs and Stub Stacks) stripped out and replaced to suit reconfigured sanitary areas.
- Rainwater harvesting system included, with buried tank
- Emergency lighting provided as a central battery system to serve auditorium
- Additional PVs included to existing south facing sloped roofs (subject to adequacy of structure/additional strengthening)

Option 3A Scheme:

As per the Option 2 scheme with the following further M&E installations/upgrades proposed:

- Allowance for possible diversion of retained incoming services.
- New ASHP installation to be roof mounted, within acoustic enclosure (subject to significant strengthening works, and tall acoustic enclosure to ensure high strength anti-vibration mounts)
- New Drainage to serve WCs within new extension
- New Hot & Cold water installation to serve WCs within new extension, fed from main plant
- New heating infrastructure to serve new extension, fed from main plant
- New AHU and ventilation installation to serve Multi-purpose space within new extension
- New electrical power, lighting, alarms and comms systems to serve architectural space configurations within new extension.

Option 3B Scheme:

- Allowance for possible diversion of retained incoming services (buried services survey required, for validation).
- New Drainage to serve WCs within new extension.
- New Hot & Cold water installation to serve WCs within new extension, fed from main plant
- New heating infrastructure to serve new extension, fed from main plant

- New AHU and ventilation installation to serve Multi-purpose space within new extension
- New electrical power, lighting, alarms and comms systems to serve architectural space configurations within new extension.

This report has been written to provide initial feedback on the M&E implications and requirements to meet the currently known client brief and Architectural proposals, to enable a rough indication of cost to be developed. Since this is still an early stage in the project, there is still a lot of work to be carried out to refine the proposals. The design will require further work and refinement during RIBA Stage 1&2.

3 Existing Services

Generally, the existing services are considered to be beyond their economic life. In the context of a major refurbishment, the starting point should be a renewal throughout. It is noted, however, within a limited capital project budget there may be some works which could be deemed lower priority, which have been described where relevant.

3.1 As Built/Survey Information

There is very little existing services information available (not unusual in a building of this type and age). Skelly and Couch have reviewed routes and visible services during a number of site visits over preceding years (as part of previous project iterations, as well as this current project), but this has been limited to non-destructive inspection only.

There is some available buried services survey information, as procured during a previous project iteration in 2017. The survey extents, however, were limited to the Gurkha Square area since the previous project intended a new build scheme in this location.

An M&E condition survey, produced by Cooper & Withycombe in 2020, has been referred to and provided within Appendix B for greater detail on the condition of the existing services.

For the purposes of this feasibility study, reference has been made to the following survey information:

- Cooper & Withycombe Condition Survey Report 19-1962 Rev 6 – Appendix D: Mechanical & Electrical Building Inspection
- Technics Desktop Subsurface Utility Report – Ref. SP17871

3.2 Statutory Supplies

3.2.1 Power

There is an existing 200A TPN supply, with utility cut-out and switchgear currently located in a narrow cupboard beneath the stairs to the rear of the building, accessed off the Ground Floor kitchen. The existing position does not provide adequate space for maintenance, nor comply with regulations for safety around live electrical equipment.

With the likely inclusion of air source heat pumps for heating, either as part of these works or as a future upgrade, it is likely that the upgrade to anything from a 400A to 630A TPN supply will be required. This would need to be confirmed depending on the additional theatrical demands proposed. It is

currently assumed this would require an upgrade to an existing substation nearby, or worst case a new substation to be located on the site. We would suggest this is allowed for as part of baseline costs, or noted as a key risk item for the next stage of the design.

3.2.2 Gas

There is an existing U65 gas meter located outside the basement plantroom, with the main gas supply that enters the building into the plantroom at high level. This gas supply serves the existing boilers, and is expected to distribute through the building to serve the kitchen gas equipment.

3.2.3 Water

There is an incoming mains water supply and meter serving the building. The location of this has not been recorded at this stage. The incoming cold water feeds cold water storage tanks located within the roof void.

3.2.4 Telecomms

Details of current incoming telecommunications are still to be confirmed.

3.3 Mechanical & Electrical systems

The Mechanical and Electrical installations throughout the Harlington Building are generally all deemed to be beyond their economic life. It has also been expressed that the heating controls and ventilation adequacy is no longer fit for purpose and tends to be very unreliable.

The Cooper and Withycombe M&E condition survey should be referred to, for full details of the existing services condition.

The Harlington Building also currently provides water and heating to the adjoining Library, as well as sharing a Fire Alarm System. As part of this refurbishment project, the intention is to separate the buildings, so that the Library no longer relies on the Harlington and seeks independent supplies for water, heating and their own fire alarm system. Should the Harlington have a legal obligation to continue to serve the Library, a financial contribution will be sought to allow the required upgrade to take place.

4 M&E Outline Scope

4.1 Introduction

The scope of works described below have been developed to inform the feasibility cost plan. A series of M&E scope of works sketches have been provided to supplement the descriptions below, as contained within Appendix 2.

A baseline (Option 1) scheme has been described, with any enhancements or upgrades to the M&E installation over and above what is proposed as a baseline, itemised under Options 2 & 3.

4.2 Surveys

The following surveys should be allowed for during the next design stage.

- Above Ground Drainage condition survey.
- Full buried services radar survey, covering site area

4.3 Building Fabric / Builderswork

Baseline (Option 1) Scheme:

- Allow for installation of insulation to the roof (proposed at ceiling level, to form a cold roof), to improve thermal performance.
- Allow for thermally upgraded windows and external doors, to improve thermal performance.
- Significant structural intervention for the auditorium roof, to allow new plant to be roof mounted
- Significant structural interventions for any new ductwork, pipework and containment risers required vertically through the building.
- Significant builders work intervention to allow new services routes to support architectural proposals, throughout.

Option 2 Scheme:

- Allow for thermally upgraded external walls, to improve thermal performance.
- Possible structural intervention to existing roofs (as indicated in Appendix 1), to allow further PV arrays to be included.

Option 3A & 3B Scheme:

- Allow for all new building fabric elements to be constructed to meet best practice U-values.
- Allow for builderswork to allow new services routes to support architectural proposals, throughout.

4.4 Incoming Services

Baseline (Option 1) Scheme:

- Allow for upgrade from 200 TPN to a possibly 630AA TPN electrical supply, with relocation of the existing switch gear.
- Allowance should be made for a new substation.
- It is suggested that where the kitchen is retained, this should be replaced with a full electric kitchen system. This would simplify the ventilation and spatial demands that a gas fed kitchen requires to meet safety regulations, and also to allow the gas service to the building to be completely stripped out.

Option 2 & 3 Schemes:

- In addition to the above, allow for an upgraded mains water supply.

Option 3A Scheme:

In addition to the above, allow for the diversion of the existing buried gas service, assuming that gas is retained to the building for kitchen use.

4.5 Mechanical

4.5.1 Drainage

Baseline (Option 1) Scheme:

- Above ground drainage branches stripped out and replaced throughout, to suit new sanitaryware
- Drainage stacks (SVPs and Stub Stacks) retained and reused (subject to survey for full condition).

Option 2 Scheme:

- Allow for new drainage stacks (SVPs and Stub Stacks) throughout, to suit reconfigured sanitary areas.

4.5.2 Hot & Cold Water

Baseline (Option 1) Scheme:

- Retain existing incoming water supply
- Allow for new cold water storage tank, to replace existing within the roof void.
- Provide a new hot water installation, via an indirect vented calorifier (including immersion heater), fed from the new ASHP plant.
- Allow for new hot and cold-water pipework throughout.

Option 2 Scheme:

- Allow for Rainwater harvesting system, with buried tank, to serve all WC's

4.5.3 Heating

Baseline (Option 1) Scheme:

- Allow for a new air source heat pump installation sized to meet the building's peak heating load. Allow for LTHW buffer vessel.
- Provide a fully renewed heating distribution system and new heat emitters, throughout. New heating distribution pipework shall be sized to suit low flow/return temperatures, to allow for a full heat pump transition.

The proposal is to transition the Harlington heating system from gas to all electric, under the scope of this refurbishment project. This is recommended within this scale of refurbishment, on the basis that it is expected that new natural gas boilers shall be phased out from 2035 for commercial buildings. Should this refurbishment project only consider upgrades for a future transition, the new distribution pipework and heat emitters would all have to be oversized to work with flow/return temperatures lower than those that a gas boiler would efficiently provide, creating compatibility issues. This oversizing of pipework and heat emitters remains a new building regulation requirement, to encourage the transition towards ASHPs. The building would also remain much more polluting for longer.

Option 2 Scheme:

- As per Option 1

4.5.4 Ventilation

Baseline (Option 1) Scheme:

- Provide new external roof mounted AHU with LTHW heating, thermal wheel heat exchanger and attenuation, to serve the Auditorium.
- Provision of supply air into auditorium from new AHU via displacement ventilation system, utilising retractable seating. Provision of extract via high level extract grille within ceiling.
- Provide new external roof mounted AHU with LTHW heating, thermal wheel heat exchanger and attenuation to serve Dance Studio.
- Provide sanitary areas, back of house, and ancillary spaces as indicated in Appendix 1 with mechanical ventilation heat reclaim units and attenuated ductwork distribution.
- Provide new external roof mounted AHU with LTHW heating, thermal wheel heat exchanger and attenuation to serve Function Room.
- New natural ventilation, with AHU top-up, and improved solar shading to the ground floor function room. Provide new external roof mounted AHU with LTHW heating, thermal wheel heat exchanger and attenuation
- Assuming a commercial kitchen is retained (tbc), allow for a new dedicated kitchen extract system, with separate make-up air supply.
- Spaces with relatively low occupancies and external windows to be naturally ventilated.
- New N+1 split cooling to dimmer/AV rooms and server room.
- Provide replacement smoke extract ventilation louvres to the auditorium, as thermally activated links with roof access.

Option 2 Scheme:

- As per Option 1

4.5.5 BMS/Controls

Baseline (Option 1) Scheme:

- New BMS (Building Management System) and EMS (Energy Management System) throughout, to account for the above Heating and Ventilation plant and systems.

Option 2 Scheme:

- As per Option 1

4.6 Electrical

Baseline (Option 1) Scheme:

- Allow for renewal of LV distribution, to all areas
- Allow for renewal of general lighting and control and house lighting, to all areas
- Allow for renewal of small power, to all areas
- Allow for renewal of fire detection and Voice Alarm, CCTV, to all areas.
- Allow for upgrades door access control and security installations, to all areas.
- Allowance for modification of lightning protection installation.
- Provision of power distribution to Stage Engineering Equipment, Production Lighting, House/work Lighting and Sound installations to Charcoal Blues requirements.
- Provision of containment to Stage Engineering Equipment, Production Lighting, House/work Lighting and Sound installations to Charcoal Blues requirements.
- Allow for renewal of House/Work and Show Blue lighting installation.
- Allow for renewal of Emergency Lighting installation to areas, via local emergency batteries.
- Allow for new disabled refuge systems.
- Allow for new PV (photovoltaic) arrays, to auditorium roof (as indicated on accompanying scope sketches within Appendix 1).

Option 2 Scheme:

- Allow for renewal of Emergency Lighting installation to areas, with central static inverter serving auditorium. Option for remote monitoring to be considered.
- Allow for new PV (photovoltaic) arrays, to further existing sloped roof areas (as indicated on accompanying scope sketches within Appendix 1).

4.7 Lifts

No works are proposed to existing passenger lift.

It should be noted, however, that the current lift could not be used for the evacuation of disabled people. This is on the basis that the existing lift could not be upgraded to be an evacuation lift with dual power supplies and an intercom

Appendix 1 – M&E Strategy proposals

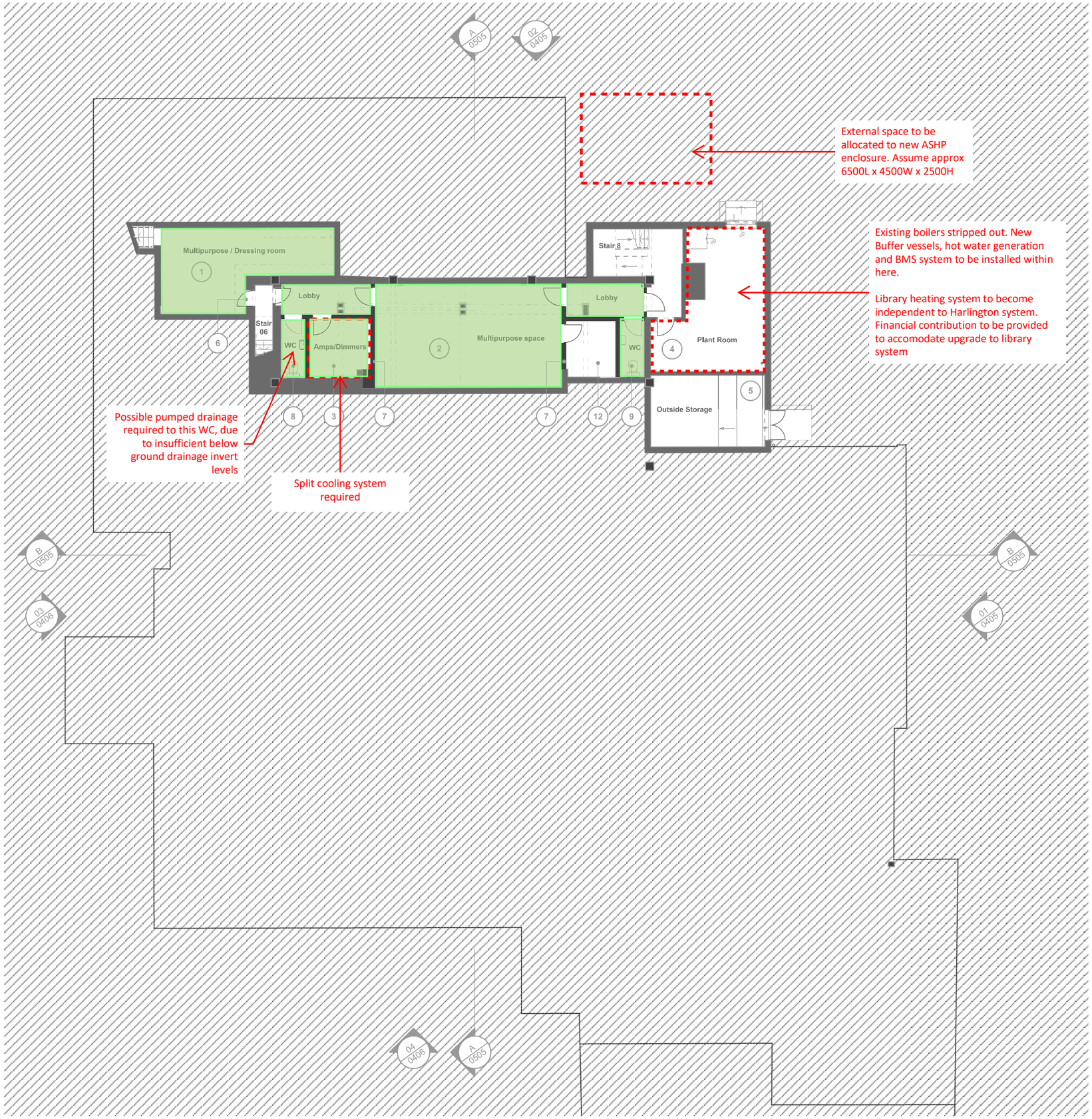
Floor finishes and ceilings replaced throughout. All internal walls redecorated. All sanitaryware replaced. All windows replaced. All internal and external doors replaced subject to fire strategy. In instances where the layout is unchanged, new doors are to fit within existing structural openings.

The thicknesses of new walls are generally slightly oversized on this drawing to allow for tolerance at this early space planning stage.

New elements

Existing building fabric

1. Multipurpose space - sometimes used as a dressing room or as an informal media suite (digital connectivity to be provided for this purpose).
2. Multipurpose space / workshop / chorus room (no more than 60 people due to inward opening doors).
3. New amps/dimmers/comms room (with cooling).
4. Fire consultant to advise whether the existing plant room needs to be lobbied.
5. Market square WC removed. Staff bike rack incorporated in the space gained.
6. Fire curtain could be installed over door opening here if required - fire consultant to advise (as a lobby here would encroach into the usable space).
7. New partitions.
8. New WCs supporting the multipurpose spaces. IN ABEYANCE SUBJECT TO INVESTIGATION OF DRAINAGE OPTIONS.
9. Emergency battery room



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1 Proposed Basement Plan
Scale: 1:200

VENTILATION SYSTEMS

Mechanically ventilated, as local MVHR system

3No. Roof mounted AHUs serve Auditorium, Dance Studio & Function Room

Local Extract only system

Assumed all other areas could be naturally ventilated via windows

HEATING SYSTEM

New ASHP system provided within external plant enclosure, adjacent to existing plantroom.

New LTHW system throughout, with distribution pipework sized to low flow/return temperatures.

New central heating system serves:
- Radiators throughout
- Heater batteries within Auditorium AHU & local MVHR units

New N+1 Split cooling systems to be provided to:
- Dimmer/AV rooms
- Server room

Zone controlled heating

New EMS/BMS system to be provided.

NOTE: *Feasibility of optimally sized ASHPs relies on fabric upgrades to reduce heat losses*

ELECTRICAL SYSTEMS

Upgraded incoming power, to ensure sufficiency for ASHPs and show requirements

Renewal of LV distribution, general lighting and control, house lighting and small power throughout.

Renewal of all emergency lighting

Allow for a new PV array to roof areas, as indicated.

New fire, security and disabled alarms systems to be provided to serve whole building

SKELLY & COUCH

1705

The Harlington, Fleet

Basement Level
Option 1 Scheme
M&E Strategies

1705-SAC-SK-Z999
Rev 2.0

Scale: NTS

13th June 2025