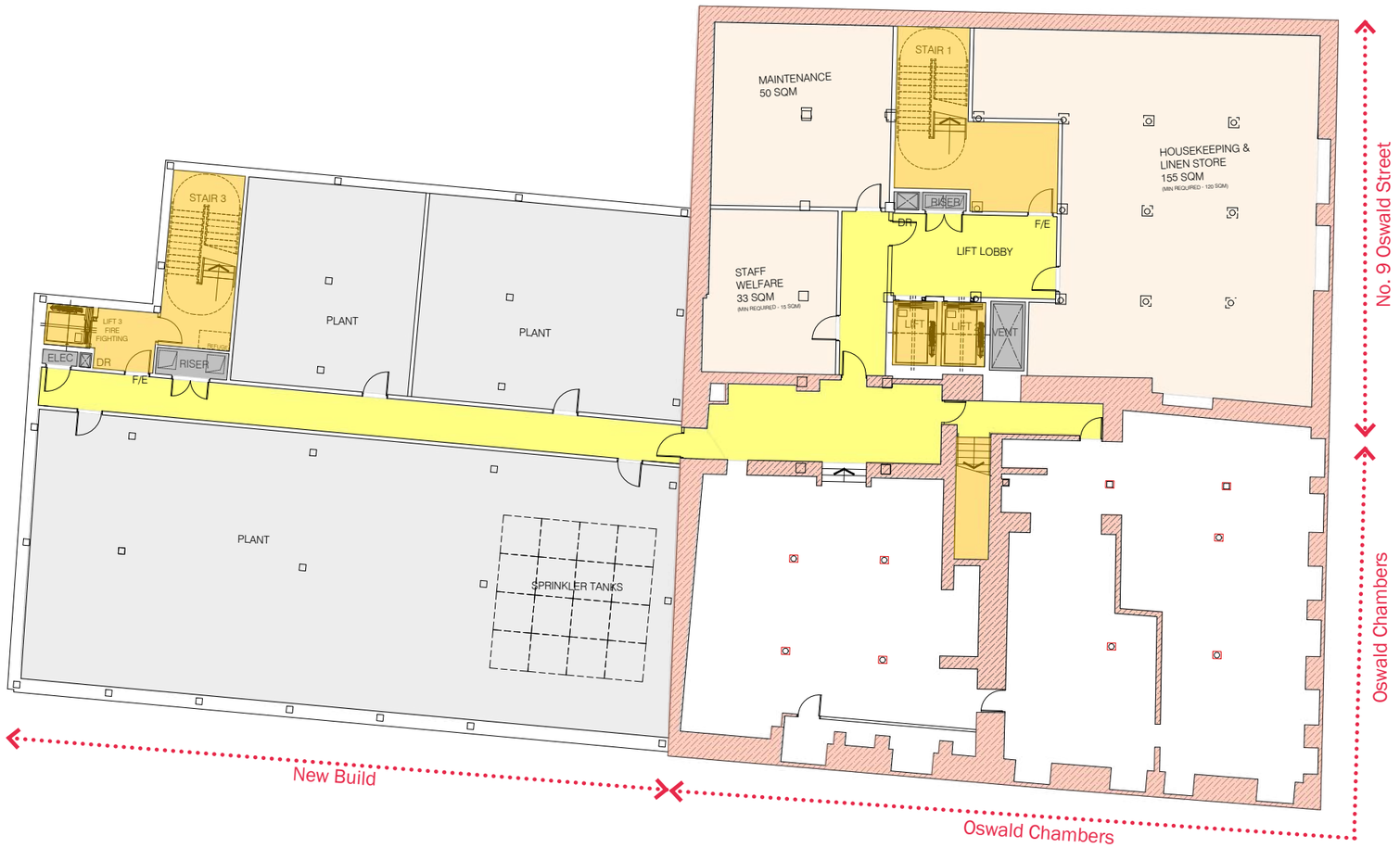
Basement

The existing basements to Oswald Chambers and no. 9 Oswald Street will contain the back of house facilities in support of the operation of the hotel. The new build extension will incorporate a basement level providing plant facilities and space for sprinkler tanks.



Key

- Circulation
- Vertical Circulation
- Front of House Entrance
- Front of House Activity Space
- Back of House
- Smart Guest Room
- Neo Guest Room
- Liberty Guest Room
- Grande Guest Room
- Accessible Guest Room

Basement Plan

Sections

Floor levels for the new build extension have been carefully considered to work with the varied heights of both existing buildings. The ground floor level has been raised above street level affording privacy to these guest rooms and allowing enhanced ceiling height to the plant spaces below.

Section BB

Key

- Circulation
- Vertical Circulation
- Front of House Entrance
- Front of House Activity Space
- Back of House
- Smart Guest Room
- Neo Guest Room
- Liberty Guest Room
- Grande Guest Room
- Accessible Guest Room

Sections

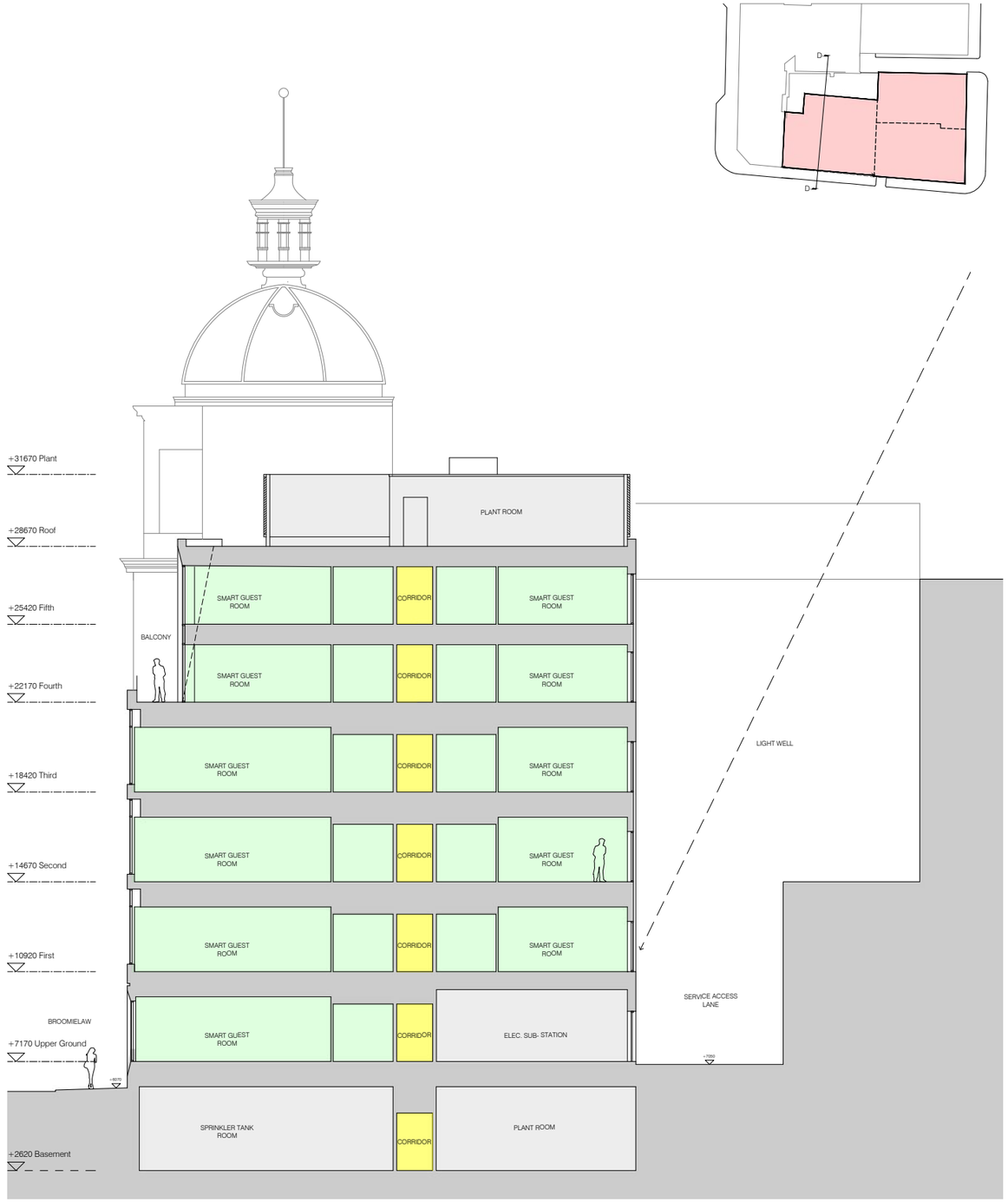
The section opposite shows the new build element of the proposals with basement plant space, raised ground floor level, recessed upper floors and rooftop plant.

Accommodation Schedule

	Room Type					Total
Level	Smart	Liberty	Grande	Neo	DDA	
0	7	0	0	0	0	7
1	19	1	3	1	1	25
2	19	1	3	1	1	25
3	19	1	3	1	1	25
4	15	3	3	1	1	23
5	14	0	3	0	1	18
6	0	0	0	0	0	0
Totals	93	6	15	4	5	123
	76%	5%	12%	3%	4%	

Area Schedule

	Areas	
Level	sqm	sqft
0	1179	12691
1	1194	12852
2	1194	12852
3	1194	12852
4	1114	11991
5	803	8643
6	164	1765
Totals	6842	73647



Section DD

South Elevation - Broomielaw

East Elevation - Oswald Street

Elevations

The proposed elevations have been developed to evolve the ordered classical language of the adjacent properties. Existing horizontal datums have been adhered to, to establish window cill and head heights. Vertically, the established rhythms of a 3-2-3 bay have been adopted across the proposed facade.

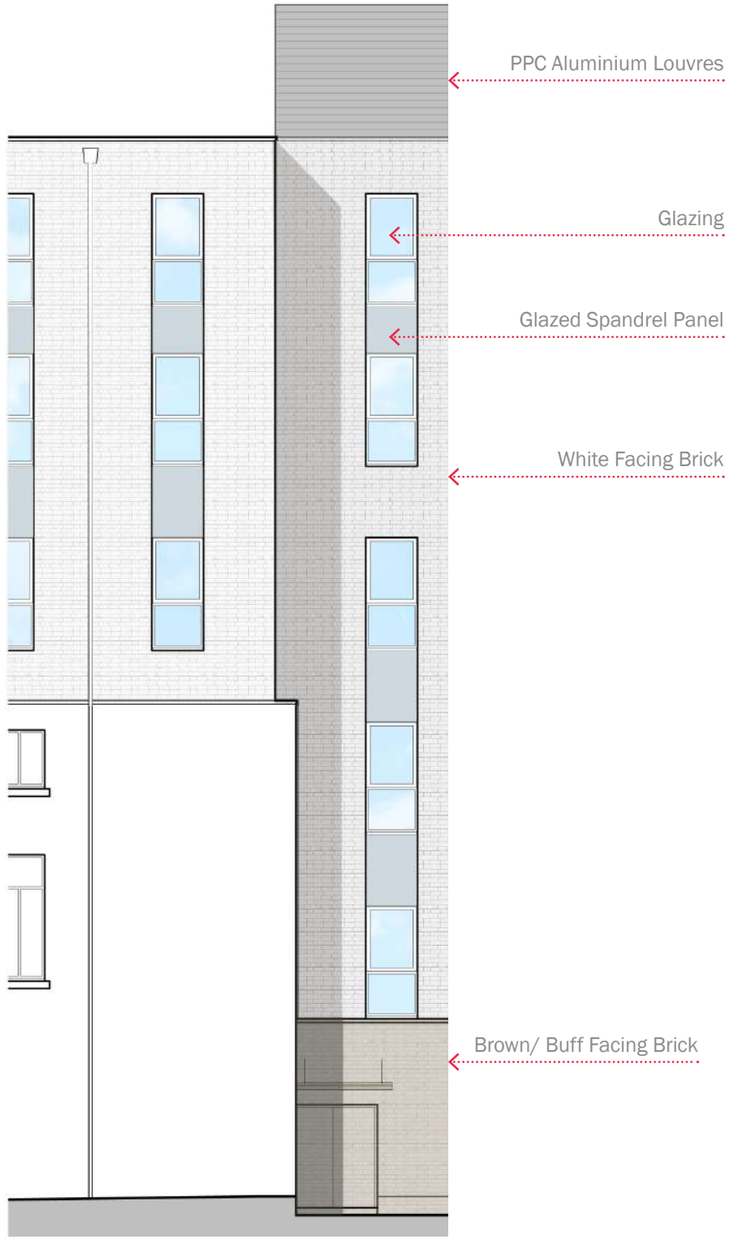
The recessed upper floors are allowed to be more expressive with vertical elements in a lighter material in reference to the expressed dormers and triumphant dome of the surrounding roofscapes.

North Elevation - Courtyard

Materials

Broomielaw Elevation

Oswald Street Elevation



Courtyard Elevation


HOTEL
IFSD

Structural Proposals

The structural proposals for Oswald Chambers are-

- Refurbishment and make good of an existing 'B' listed five storey structure at 5 Oswald Street.
- Refurbishment and vertical extension of an existing three storey structural frame at 9 Oswald Street.
- Infilling a gap site with a new build construction of a multistorey, part basement, braced steel frame structure at 66-74 Broomielaw.

Oswald Chambers

Oswald Chambers is a four-storey building with a single storey basement and attic including a lightwell on the north elevation. The building is rectangular in plan with a tapered southern footprint which follows the street geometry of Broomielaw. The structure is an existing frame with cast-iron columns and beams from basement to roof level. The suspended floors appear to be formed from timber joists with dwang blocking and a boarded floor. It is not anticipated to make structural alterations to the building frame however some slappings may be required to suit reconfiguration and connection to wider development.

9 Oswald Street

9 Oswald Street is an existing frame structure with, presumed, cast-iron column and beams generally from ground to eaves level. The single storey basement appears to be stone columns and the roof is a, presumed, cast-iron truss spanning north to south. The suspended floors appear to formed from timber joists with dwang blocking and a boarded floor. It is intended to remove the steel roof, and continue the vertical loadpaths to provide a frame for the new extension.

Structural Strategy of Vertical Extension

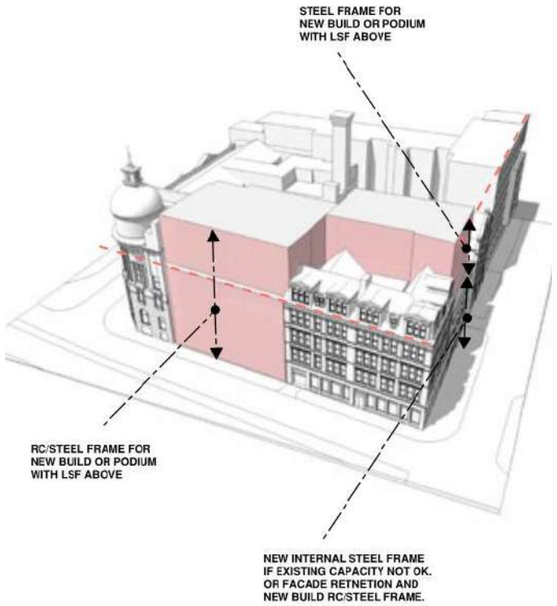
The buildings were designed to historic codes of practice which would be more onerous than current standards. The latest codes of practice for the repurposing into a hotel reduces the area load on each floor of the building. This design strategy permits the existing structure of 9 Oswald Street to be retained with the opportunity of extending the building vertically by utilising the capacity made available with this justification. The limits of the vertical extension determine are that a three storey extension is the maximum feasible to mitigate significant strengthening and underpinning to the structure.

Additional load to the existing shear walls and cores will aid in precompression to resist the increase of lateral loads to 9 Oswald Street. A new stairwell shall be inserted which will offer additional strength and stiffness to the existing structure.

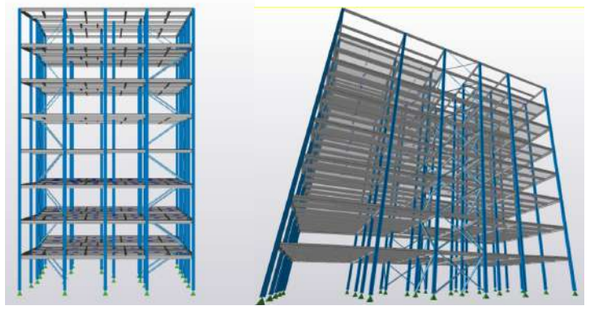
66-74 Broomielaw New Build

The new build proposal on the derelict site at 66-74 Broomielaw will demolish and clear the single-story building with basement, to make way for a multistorey steel braced frame with partial basement. Due to significant depths of made ground a piled solution is deemed most appropriate. The proximity of the River Clyde, wet silty sands and potential for running sands below the site suggest a [CHD] continuous helical displacement pile solution founded in the medium dense to dense alluvial sands between 10m-20m is feasible. These are installed without the need to produce any spoil, as cast insitu. CHD piles are a good solution minimising the volume of waste from site, vibration and pollution – key factors for consideration within a city centre site.

A multistorey steel frame is proposed adopting long span cellular floor beams, integrated with ceiling services, supporting a concrete metal deck. The slab shall act as a diaphragm distributing wind loads to strategically located braced bays.



Superstructure Considerations



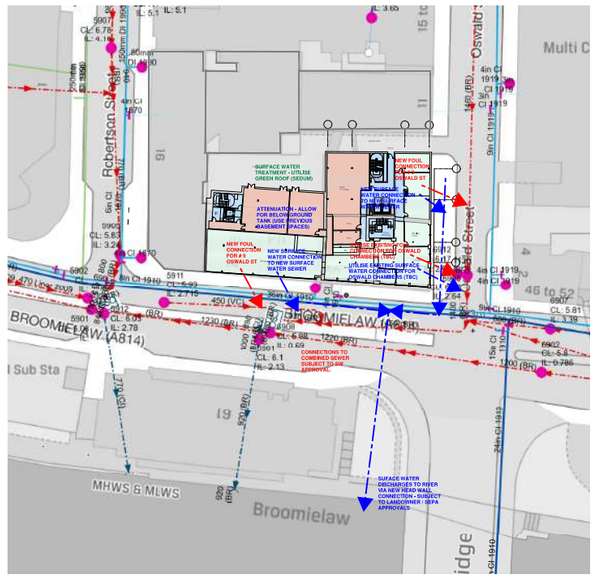
9 Oswald Street Structural Model

Drainage

The design of the surface water drainage system for the site development is to manage surface water sustainably as close to the source as possible, and to ensure the proposed flow rate is restricted to existing flow rates.

The new-build 6-storey hotel is proposed to have a blue roof to provide a form of SUDS / source control management. This blue roof will attenuate up to 100mm deep rain over the roof area, therefore offering attenuation. This rainwater will also receive one level of infiltration via the green roof. This blue roof then discharges into the combined public sewer on the Broomielaw.

Surface water landing on the existing buildings and the retained hardstanding areas will discharge directly into the combined sewers along existing lines. Due to the built-up nature of the site, with extensive basements, it is not considered viable to provide above or below ground attenuation due to the site constraints, and insufficient structural capacity to add further load to these existing buildings above ground.



Drainage Option 01

1.0 INTRODUCTION

This document has been produced to act as an outline proposal for the Mechanical and Electrical (M&E) Engineering strategy at the new Broomielaw Hotel located on the Broomielaw in Glasgow.

Central plant facilities located within the basement, ground and roof levels will act as the focal point for the engineering services distribution. Individual plant rooms shall be provided for the main mechanical, electrical switchgear and ICT plant.

It is proposed that all mechanical and electrical equipment will be new, with existing services being stripped out in their entirety.

2.0 UTILITIES

2.1 GAS SUPPLY

A new dedicated gas supply will be provided to a metering point within the development, this will be provided from the existing Scottish Gas Networks infrastructure which will be extended to meet the requirements of the hotel development.

The gas service will serve the kitchen (if required by the final design).

2.2 WATER SUPPLY

Due to the increased water demand of the building, it is proposed a new connection will be taken from the Scottish Water infrastructure to feed both the cold-water storage and sprinkler tanks and associated booster set arrangements.

2.3 ELECTRICAL SUPPLY

The hotel shall be served from local utility provider's (DNO) network at high voltage. This shall terminate in a transformer unit which shall be located in a new DNO substation in the ground floor of the hotel. A low voltage connection shall be taken from the new substation to supply to the building and this shall be TN-S, 400V, 4 wire, and 50Hz which shall terminate within the building's main electrical switchroom.

An electrical load analysis will be carried out to determine the maximum demand requirements of the hotel which is subject to confirmation of the operator.

The new incoming low voltage supply shall include for 25% spare capacity.

Overall site development discussions with Scottish Power Energy Networks (SPEN) have indicated that the existing substation within the property is no longer in use and is off-line. SPEN have noted that there may be some items of low voltage equipment in this existing room and they have arranged to visit the site to confirm this.

2.4 TELECOMMS

New incoming telecommunication connections will be derived from the local telecoms infrastructure network external to the hotel and shall terminate within the main telecoms room on the ground floor of the hotel.

The new incoming services shall serve the following systems

- Monitored alarm lines (Fire & Security)
- Analogue line for the lifts
- Voice connection for the telephone system (by client)
- Broadband for IT (by client)

The details of the connection types required shall be developed with the operator through the design period. Ducted infrastructure shall be brought into the building and shall terminate within the dedicated comms room.

3.0 MECHANICAL ENGINEERING

3.1 Heating & Cooling Solution

HEAT PUMP SYSTEM TECHNOLOGY INTRODUCTION

A heat pump is a device that transfers heat energy from one lower temperature source to a high temperature sink. This is opposite to the natural physical flow of heat energy from a hot source to a cold sink, which is achieved by the application of an external source of energy driving the physical thermodynamic refrigeration cycle. The key characteristic of a heat pump is the amount of heat energy transferred is higher than the energy required to drive the refrigeration cycle. Figure 3.2.1 below shows a simplified heat pump circuit illustrating the flow of energy described above.

An air source heat pump works by extracting heat from the outside air in the same way that a fridge extracts heat from its inside. It can get heat from the air even when the temperature is as low as -15° C

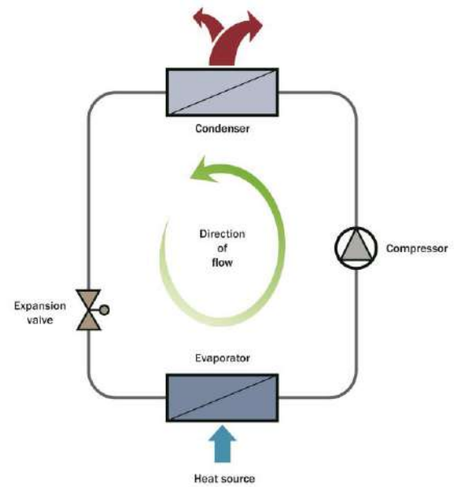


Figure 3.2.1: Simplified Heat Pump Cycle Image

KEY CONSIDERATIONS

ADVANTAGES	DISADVANTAGES
Minimal maintenance.	Terminals can be unsightly therefore the technology has a negative visual impact.
Provide heating and cooling (reversible technology).	Condensers shall generate noise. This is overcome by careful planning and acoustic advice from acoustician.
No fuel deliveries.	Initial Capital Cost of Installations is higher compared to a natural gas fired boiler equivalent system.
Coefficient of Performance (COP) is between 2 and 3.	
ASHP generating heat only are eligible for the renewable heat incentive (RHI). (Note: It is unknown at this stage until when the scheme will be available).	
The CO_2 saving benefits are likely to increase over the life of the system due to the carbon intensity of the grid supplied electricity being reduced.	

VRF HEATING AND COMFORT COOLING

The hotel's heating and comfort cooling will be provided via a Variable Refrigerant Flow (VRF) heat pump system.

VRF systems provide space conditioning through the process of warming and cooling recirculated room air. This is achieved through a fan coil unit typically mounted at high level / within the ceiling void. A VRF fan coil unit in simple form is a box which contains a fan, a filter and a heat exchanger. The internal VRF fan coil units are connected to the external condenser(s) by a pipe network; this network is fabricated from copper piping. Three pipes carry the refrigerant gas from the external condenser to and from the internal branch control boxes.

Remote from the internal VRF fan coil unit is an external condenser. The external condenser is simply a box which contains a compressor, fan unit and heat exchanger fins, all of which allow for heat transfer with the atmosphere.

Hybrid Variable Refrigerant Flow (HVRF) systems are very similar to the VRF solution above. The term 'hybrid' is used to describe the fact that HVRF is made up to two distinct loops, the first is a standard VRF loop circulating refrigerant liquid and gas on one side of an internal control box. The second loop is a water-based loop which delivers heating and cooling to the fan coil from the internal control box.

The HVRF provides simultaneous heating and cooling using refrigerant between the outdoor unit and the HBC (Hybrid BC controller), and water between the HBC and the indoor units. HBC is the most unique part in this system and allows heat exchange between refrigerant and water. Figure 3.2.2 below shows an HVRF heat pump circuit as described above.

This system reduces the amount of refrigerant pipework within the system, and therefore reduces the risk of refrigerant leakage in sleeping accommodation.

The external condensers would be located on the dedicated roof plant space, and the HBC boxes shall be within the ceiling voids on each the floors served.

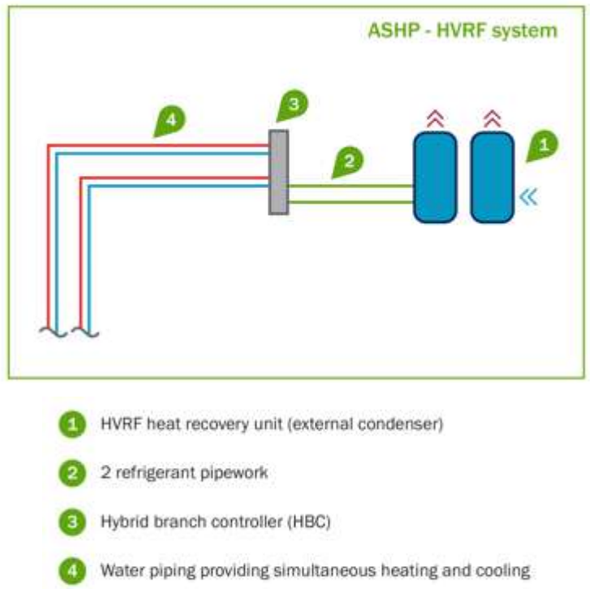


Figure 3.2.2: HVRF Heat Pump Cycle Image

3.2 Domestic Water Services

A new incoming mains water service will serve cold water storage and sprinkler storage tanks via the Scottish Water mains, as noted earlier within this report.

The sprinkler tank and associated system shall be designed in accordance with BS EN 12845 by a specialist Contractor.

The CWS tank (sized on an allowance of 100 litres per bedroom) will serve a dedicated CWS inverter driven booster set that will provide a boosted cold water service (BCWS) to each required outlet.

All outlets will require to be provided with at least 1Bar of pressure.

The water heating demands of the development will be met by hot water storage cylinders located in the hot water basement plantroom.

The stored water will be brought from 10°C to 65°C, with the primary heat source being a dedicated roof mounted air source heat pump arrangement.

Hot water shall be distributed throughout the building via copper pipework. Pipework will be insulated to BS 5422:2009.

3.3 Ventilation Services

VENTILATION – GENERAL

The hotel will be ventilated via air handling units (AHU) with heat recovery. This proposed ventilation strategy includes 'east' and 'west' AHUs located at roof and basement level, with the main ducts from these AHU's routing into east and west risers,

supplying fresh air to the back of the internal VRF fan coil units in the bedrooms and associated front of house/back of house hotel facility areas.

A high degree of heat recovery will allow the fresh supply air to be pre-heated before going into the back of the VRF fan coil units.

All ductwork entering and existing the hotel bedrooms will have smoke ventilation fire dampers.

KITCHENS

The kitchen will be served by a dedicated kitchen extract fan, which will be sized to cope with the catering equipment selected during detailed design. The kitchen extract ductwork infrastructure will be fire rated as it leaves the kitchen and will terminate in an arrangement allowing upward air velocity to ensure the dispersal of odorous and contaminated air.

Supply air will be provided to the kitchen to allow for the make-up of the extracted air. The supply air will be ducted to strategic locations within the kitchen based upon the catering equipment selected during detailed design. The volume of supply air will also be determined upon the final selection of catering equipment selected during detailed design.

LINEN ROOM / GENERAL STORES

Local extract ventilation systems will serve linen rooms and general stores. These systems will be simple extract fan units with inline ducting to remove stale and polluted air to strategically located louvre/outlet termination points. Ventilation units will run in trickle / boost mode.

GENERAL TOILET ACCOMMODATION / CHANGING AREAS

Extract from the general communal toilet accommodation (not bathrooms/shower rooms) shall be via in line extract fan systems. Ventilation units will run in trickle / boost mode.

3.4 Disposal Installation

All above ground drainage will be formed in acoustic pipework, typically twin layered polypropylene and modified polypropylene. This material will be used on all horizontal pipework above 40mm diameter and all vertical pipes.

The stack ventilation pipes will be discharged through the roof at strategic locations to allow for ventilation of the below ground sewer network.

Inline secondary ventilation will be applied where required, this will typically be via the Positive Air Pressure Attenuator (P.A.P.A) system due to the height of the building.

Drainage local to the wash-up area of the commercial kitchen will require to pass through a grease trap, the location of this grease trap needs to be agreed with the operator.

High temperature discharge pipework may be needed to the cooking range, where this is required it will be formed in copper or a high temperature plastic.

All individual connections will be as follows:

- 32mm diameter – Wash Hand Basins
- 40mm diameter – Showers and Baths
- 40mm diameter – Cleaners Sink
- 40mm diameter – General Sink
- 100mm diameter – WC

Vertical stacks will be either 100mm diameter or 160mm diameter. The stacks rising through the building to the topmost floor will be of the larger diameter.

3.5 Controls

BMMS controls will be provided to designated plant items for control / monitoring. The full extent will be agreed with the building operator but is anticipated to include the following landlord systems:

- Heating & Cooling VRF system
- Domestic hot water heat pump
- Domestic hot water cylinders
- Air handling units
- Cold water storage tanks
- Cold water booster pumps
- Sprinkler system
- Smoke Extract system
- Supply and extract fans
- Main utility meters.
- Field thermostats.

3.6 Smoke Extract

The stairwell lobbies require smoke extract to allow for appropriate firefighting services and safety. The smoke extract fans will be mounted on the roof directly above the smoke shaft riser. The smoke extract ventilation system will incorporate shaft, fans, lobby vent, controllers and control panels.

3.7 Dry Riser

Dry risers will be installed within the firefighting lobby of each level. This will be formed in steel and will be housed within a purpose-built outlet box at each landing.

4.0 ELECTRICAL ENGINEERING

4.1 Main Distribution

The complete electrical installation will be provided in accordance with BS7671 IET Wiring Regulation which shall be the industry standard for the purpose of the works.

As noted in Section 2.3, the low voltage shall for the hotel shall be derived from the new substation on the ground floor, with this supplying the hotels main switchboard.

MAIN SWITCHBOARD

The main electrical switchboard for the hotel will be located within the ground floor switchroom.

The main switchboard shall be IP31 rated and shall be constructed to Form 3b type 2.

All outgoing ways from the board shall be MCCB`s with TMD trip units fitted.

The switchboard shall also contain a minimum of 2 No. spare ways, which shall be complete with proprietary blank plates.

EARTHING AND BONDING

The complete electrical installation will be mechanically and electrically continuous throughout and will be bonded to the main earthing terminal (MET).

Main bonding conductors shall comprise minimum single core 35mm² green/yellow LSF cable connected from main earth bars to the following: -

- Incoming Gas Main (if required)
- Incoming Water Main
- Structural Steelwork
- Lightning Protection Network
- Telecommunications Cabinets
- Ventilation Ducting Systems
- Sprinkler Pipework
- Switchgear
- Lift guide rails

Equipotential bonding conductors will be installed connecting all extraneous conductive parts to the MET.

Circuit protective conductors will be installed for all final circuits.

SUB MAIN CABLES

Sub main cables shall be provided and installed between the LV switchboard and panelboards, distribution boards, lifts and other large load items of plant and equipment.

Sub main cables serving items of life safety equipment shall comply with BS 7346 and BS 8491 and shall have a LSOH outer sheath.

Sub main cables serving items of non-life safety equipment shall be XLPE/SWA/LSOH.

METERING

Metering will be provided on the following systems to achieve Building Standards compliance:

- Main Switchboard
- Guestroom MCCB Panelboards
- Landlords Distribution Boards
- Mechanical Control Panels
- Kitchen Distribution Board

DISTRIBUTION BOARDS

A MCCB panelboard will be installed on each floor to serve guestroom consumer units and, where required, a landlord's distribution board. A dedicated sub-main shall be provided for each consumer unit.

Distribution board shall be provided for landlord's lighting and power requirements.

Suitably sized consumer units shall be provided for the guest bedrooms, typically, a single consumer unit shall be provided to service the individual guest bedrooms.

The consumer units will incorporate devices that shall facilitate the protection, disconnection and isolation of individual circuits for over current, earth leakage or arc fault conditions.

Dedicated distribution boards shall be provided for the front of house areas including the kitchen.

The Distribution Boards shall incorporate a full complement of MCB's / RCBO's.

All boards shall be positioned so that they are fully accessible and can be worked on without the use of a ladder or other aids.

CONTAINMENT

Dedicated carrier systems shall be provided in ducts, plant rooms, ceiling voids and within floors to create a network of cable ways throughout the entire hotel. Containment systems shall be sized to allow adequate spacing of cables and 25% spare capacity for future growth. All steel containment to hot dip galvanised or equal or above.

The primary containment shall generally consist of the following:

- A Sub-mains cable tray will be provided where required throughout the development.
- A lighting and power cable basket will be provided throughout the development for final sub circuits emanating from local distribution boards and consumer units
- A Fire Alarm cable basket shall be installed throughout the development
- ELV cable basket shall be installed throughout for security cabling
- Structured cabling basket shall be installed from the main comms room to provide communications cable way system throughout the building
- All cable containment (conduits) within walls shall be galvanised steel. Conduit employed within the building for lighting and general-purpose power shall be standard pattern galvanised steel throughout.

Main containment shall be run primarily within the ceiling voids above circulation routes shall be installed neatly running truly vertical, horizontal or parallel with the features of the building.

BACK-UP GENERATOR

Stand by power will be required to serve the life safety systems (as a minimum) and as support for selected Hotel Operator Essential services. To achieve this, a building standby diesel generator set will be provided.

The generator will supply a generator switchboard. The generator switchboard will supply the following life safety systems:

- Smoke Control Systems
- 2No Lift Control Panels: Passenger lifts (shared group with F/F lift)
- Lift Control Panel for the Fire Fighting Lifts

At this time, it is not envisaged that any 'operational' loads will be supported by the generator.

Plant space has been allocated on the roof for the provision of the stand-by generator. The generator shall be located externally within a canopy type enclosure to minimise any acoustic issues that may arise.

4.2 Small Power

A complete small power installation shall be provided throughout the hotel with socket outlets, fused connection units, DP switches, outlets etc. will be provided and located for general purpose use or for connection of equipment to support the activities and use of each area.

Within guestrooms and front of house areas, the small power shall be provided to align with the interior design philosophy.

Additionally, socket outlets shall be located in the following locations:

a. Corridors - 1 No. per 10m of corridor (or part thereof) - single gang
b. Staircases - 1 No. per landing - single gang.
c. Plantrooms - 1 No. per room – twin gang.

Within the main kitchen, servery area and bar areas the electrical supply shall be terminated at an appropriately rated isolating device/ switch to suit the specialist services layout.

Finishes of accessory face plates in general will be selected to suit the environment within which they are installed (i.e. consideration to mechanical impact, ingress protection and aesthetic requirements will be made). The finish of socket outlets and other accessories shall be agreed with the Interior Designer / Employer's agent prior to outlet order.

4.3 General Lighting Installation

The internal lighting to the hotel shall be selected to maximise energy efficiency through a combination of luminaires with a high efficacy and lighting controls and shall be as per the luminaire schedule. It is therefore anticipated that Luminaires shall be LED type throughout.

Proposed Illumination levels provided by the artificial lighting will be as recommended by the SLL Lighting Guide 2012 and lighting guides as appropriate.

Accent / feature luminaires within the guest rooms and FOH public areas will be specified by the Interior Designer

LIGHTING CONTROLS

It is recommended that a simple lighting control system will be provided for each of the areas.

The lighting control system will be sufficiently flexible to enable the system to be altered as required during the operation of the building with a minimum of the following functionality:

a. Integrated presence detection and daylight sensors throughout the landlord areas.
b. Monitoring of illuminance levels
c. Provide control systems for individual switching.
d. Provide future expansion

Within toilets and storerooms the lighting shall be controlled via ceiling mounted presence detectors.

Within other normally occupied spaces, the lighting shall be controlled via presence detection with local override switches.

Within corridors, lighting will be operated under presence detection with a staged setback for non-occupied times and override facility. Corridor luminaires shall be wired so that 50% of luminaires are switched via a contactor controlled time clock and 50% wired directly from the distribution board to be energised 24 hours per day. Switching to be configured every second luminaire.

EXTERNAL LIGHTING

A system of external amenity lighting will be provided to the development to enable safe movement during the hours of darkness and to discourage vandalism.

Luminaires shall be located externally at each final exit position.

Control to the external lighting will be via photocell with both time clock and manual override.

EMERGENCY LIGHTING

Emergency lighting will be provided to cover all areas.

Emergency lighting will be in accordance with BS 5266: 'Emergency Lighting' and specific Local Authority requirements.

Self-contained, stand-alone emergency luminaires with LED lamps suitable for installation in escape routes or open areas as appropriate. Each luminaire will be complete with 3hour battery pack and invertor/ relay.

In areas such as plant rooms, it is proposed that emergency luminaires will be combined with the standard luminaires using integral 3hour battery packs/inverters.

Illuminated LED exit signage with the 'running man' pictogram compliant with the European Signs Directive shall be installed to highlight final exit points with appropriate legends to provide a safe egress from the building.

An emergency lighting test facility will be provided, this shall operate without interference to the standard lighting and be located by the local MCB boards.

Circuit wiring will be configured to provide local circuit and mains failure protection.

4.4 Fire Detection and Alarm System

FIRE ALARMS

SYSTEM CATEGORY

The design and installation of the fire detection and alarm system shall be in accordance with the requirements of BS 5839 and BS 5588. The classification of protection shall be to the minimum requirements of Category L1.

The fire alarm system will be connected to an alarm receiving centre via a monitored telephone line to provide automatic notification of any alarm activation.

CABLING

All cabling shall be MICC/LSOH (Red) or LPC certified soft skin cable tested in accordance with BS EN 50200, PH30 classification for normal applications and PH120 classification for applications where enhanced cable is required as defined in BS 5839.

MAIN PANEL

The system shall comprise of an analogue addressable panel c/w sounders, break glass points, smoke detectors, heat detectors, end of line monitoring devices, printer and any other devices or components required for a comprehensive and complete system.

The panel shall be flush mounted.

The panel shall visually indicate and identify each addressable device individually

GENERAL DETECTION

Detectors shall be provided in all bedrooms, linen rooms, offices, corridors, staircases and all other areas required to provide a complete L1 Fire Alarm System in accordance with BS 5839: Part 1.

Heat detectors shall only be installed in the kitchen, plant rooms and bin stores

Heat detectors shall be either fixed temperature or rate of rise type depending upon location.
Each automatic detector shall have variable sensitivity control to allow nuisance alarms to be reduced.

All detectors shall have detector activated lights and shall be finished white. Where detectors are installed in areas not readily accessible a remote indicator shall be provided.

BEDROOM DETECTION

Bedrooms shall have combined smoke and heat (multi-criteria) detectors to limit the occurrence of false alarms.

SOUNDERS/ VISUAL DEVICES

Combined detector/sounder units with common bases shall be used.

Sounders shall be arranged throughout the building to provide a sound level of 65dBA or 5dBA above ambient, and 75dBA at the bedhead in bedrooms.

In areas with a high ambient noise such as plant rooms, sounders shall be supplemented by red flashing beacons.

A minimum of two sounder circuits shall be provided on each floor, with the sounders being split on either an 'every other room' basis or on corridors with rooms both sides, a circuit down each side. Corridor sounders shall also be connected alternately.

One addressable sounder shall be fitted in the back office to alert staff of a secondary system alarm i.e. door monitor or disabled help alarm. This sounder shall have a different tone to the fire alarm sounders and shall be labelled to indicate its function.

VISUAL DEVICES

All accessible bedrooms will be fitted with a flashing beacon in the bathroom and in the sleeping area.

To cater for the hearing impaired, flashing beacons will be installed in all circulation areas and where it is likely that to have lone staff or guest occupancy.

Flashing beacons shall be fitted adjacent at each disabled refuge point.

MAGNETIC DOOR HOLD OPEN DEVICES

Where agreed, magnetic door holders with door release units shall be fitted to primary circulation doors in corridors to ease circulation around the facility. These shall close upon fire alarm activation or at a predesignated time at which point the doors may be electronically secured. Key switches shall be installed adjacent to all held open doors to allow manual over ride release.

4.5 Disabled Refuge System

It is envisaged that a dedicated Refuge alarm installation will be installed in accordance to BS 5839 - 9. A central panel will be provided at a dedicated location (generally adjacent to the main fire alarm panel) with remote call points installed in each refuge areas.

The refuge alarm system shall only be activated in the response to an emergency, by the building's fire detection system. The fire detection system will activate the master control panel, which in turn activates the remote units in the refuge areas. The remote units shall be flush mounted so as to provide a level of vandal/tamper proofing and minimise false alarms.

DISABLED ALARM SYSTEM

A disabled alarm system will be installed within all accessible WCs including accessible guestroom sleeping areas and bathrooms. A centralised panel will be located at an occupied position such as the main reception or security position.

4.6 Induction Loops

Induction loop systems to assist the hard of hearing shall be provided to align with the requirements of the Equality Act: 2010 and shall be provided throughout the hotel as required.

4.7 Intruder Alarm System

An intruder alarm system will be provided to ensure the safety and security of the guests and their personal belongings during their stay in the hotel. The intruder alarm system will be developed to align with the risk assessment and risk management strategy determined by discussion with the hotel operator.

The intruder alarm system (IAS) will comply with the requirements of BS EN 50131 and PD6662. To minimise the likelihood of false alarms the IAS will be capable of providing alarm confirmation technology generating and transmitting unconfirmed and confirmed alarm signals to the alarm receiving centre (ARC) in accordance with DD243:2004.

Dual action panic buttons shall be provided in the Reception area and all other customer/ staff interfaces. On activation a signal shall be, without delay, sent to an alarm receiving centre.

The IAS will be connected via a PSTN line with a monitored line to an alarm receiving centre.

4.8 CCTV System

COVERAGE

It is proposed that an IP digital CCTV system will be provided to provide coverage to the following areas:

- Guest entrances, internally and externally.
- Reception desk.
- General observation of the lift lobby areas on all floors.
- General observation of front of house areas including Grab and Go area etc

- Internally at all final exits

CAMERAS

Internal cameras shall be discretely located within vandal resistant enclosures.

CCTV Cameras will be located to maximise view and avoid obstruction such as soffits and decorative fixtures.

Only high-resolution low light colour cameras shall be installed and be selected to provide facial recognition and to allow images to be used in the court for prosecution purposes.

CONTROL EQUIPMENT

Control equipment should be located in the back office and should comprise of the following:

- Multi- channel digital hard disc recorder (HDR) with CD Read/writer, Kalagate certification and the appropriate hard disc size for archiving with a minimum of 31 days storage.
- 17" colour TFT flat screen control monitor connected to the HDR.
- 17" display TFT colour monitor located on reception desk (To comply with the Data Protection Act the screen must only be viewed by hotel staff) connected to the HDR.

Software, password protected will be provided to allow control of the CCTV from any PC.

4.9 Access Control

An Access Control System shall be provided and installed to limit access to authorised users.

A stand-alone door locking system will be provided to control and monitor the access and egress of staff and guests throughout the hotel. Door locks will be operated by encoded magnetic swipe cards.

The extent of the system will be determined by discussions with the hotel operator. All guest rooms will be fitted with door locks.

A central control panel will be located at the reception desk where reception staff can encode and issue cards. The software will enable cards to be encoded to allow different levels of access.

All door locks will allow emergency egress without the use of a card. A handheld controller will be provided as the user interface to integrate all door locks.

4.10 Door Entry System

A door entry system shall be provided with a stainless steel, vandal resistant recessed call panel to the main and service entry door using a common telephone handset located adjacent to the reception desk.

The entry system shall be complete and include back boxes and a recessed Vingcard (or equivalent) unit.

Automatic Entrance Doors

Automatic entrance doors shall be detailed by the architect, however the following functionality will be provided:

- Wiring and interface with Vingcard (or similar) system.
- Wiring and power supplies for doors.
- Wiring for controls.
- Fire alarm interface to ensure doors open on alarm.
- Provision of and wiring of an emergency override facility.
- Wiring of and provision of a reception desk override control.
- Switch to allow day/night operation. Note doors to power shut at night.
- Attendance on door supplier during commissioning.

4.11 Ancilliary Systems

Depending on the hotel operator there may be additional systems provided to meet their operational requirements as indicated but not limited to:

- Two –way radios/ DECT phone system
- 'Watchman Tour' system.
- Guestroom sound/ entertainment/ gaming systems.

4.12 Lighting Protection Systems

The lightning protection system provided will be fully compliant with the requirements of BS 6651, BSEN 62305:2006. The system will include air termination, down conductors and all other components necessary to provide a complete system. A Faraday cage lightning protection system will be provided to minimise the damage to the building structure in the event of any lightning strikes.

All extraneous fixed metalwork at roof level such as handrails, flues soil stacks, ventilation ducts, etc. will be bonded to the lightning protection system as required.

Surge protection devices will be provided to all incoming and outgoing cabling from the installation with the exception of the utilities.

The lightning protection system will be bonded to the Main Earth Terminal.

4.13 Lifts

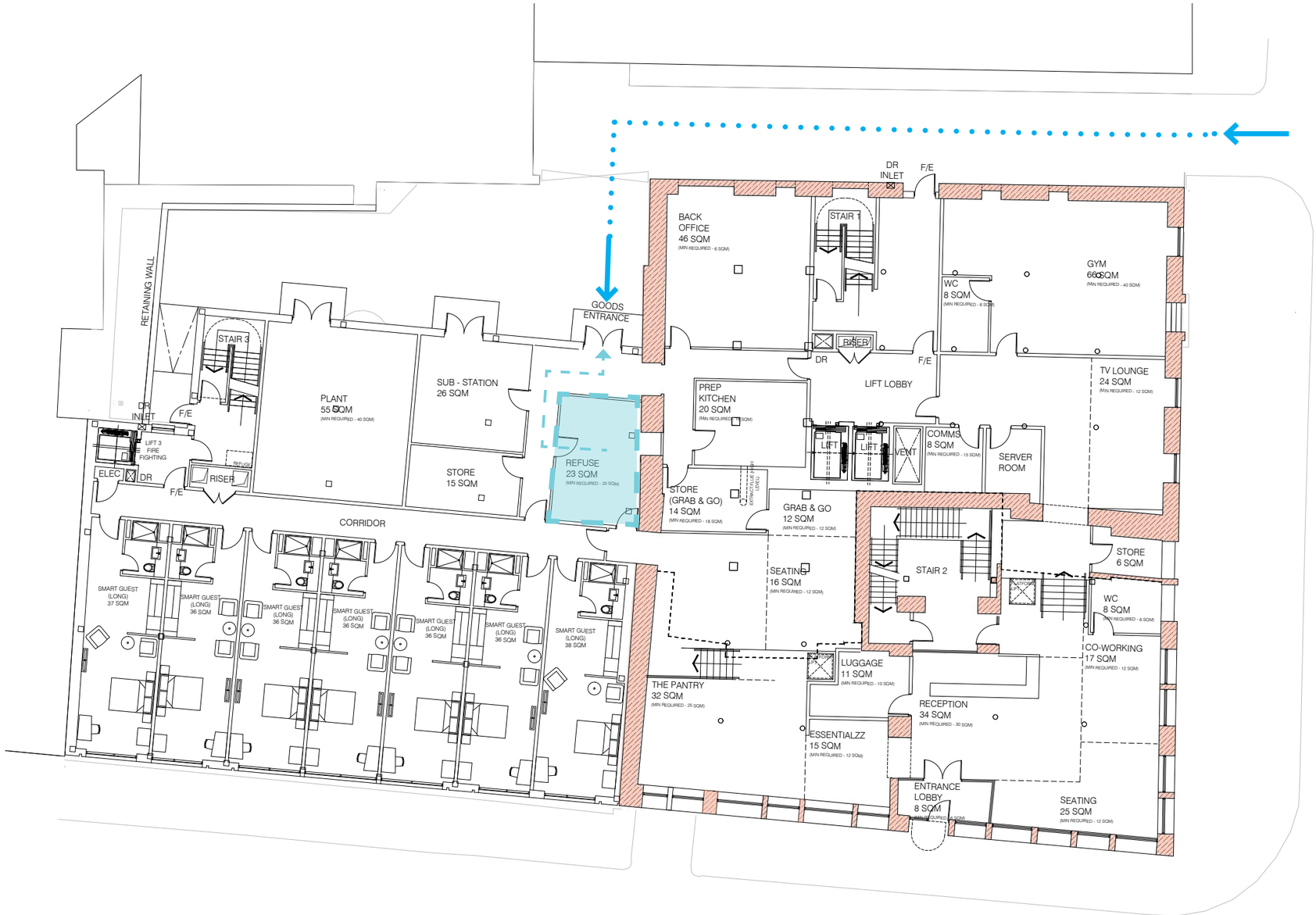
The hotel shall be provided with guest (incl. 2No. firefighting) lifts and a goods lift.

Car lift finishes will be selected to reflect the use of the building and operators requirements.

The final design solution and quantity shall be determined during further design stages.

Refuse & Service Yard

The layout opposite illustrates that the service access is provided from the rear lane off Oswald Street. The bin stores will be located within the ground floor footprint of the proposed development.



Key

- Site Boundary
- Goods/ Service Entrance
- Refuse Store
- Refuse Route

Site Facilities Diagram

Access to the site will be primarily via Broomielaw Street for pedestrians.

The city centre site is well serviced by roads and transport links - within comfortable walking distance from Glasgow Central Station

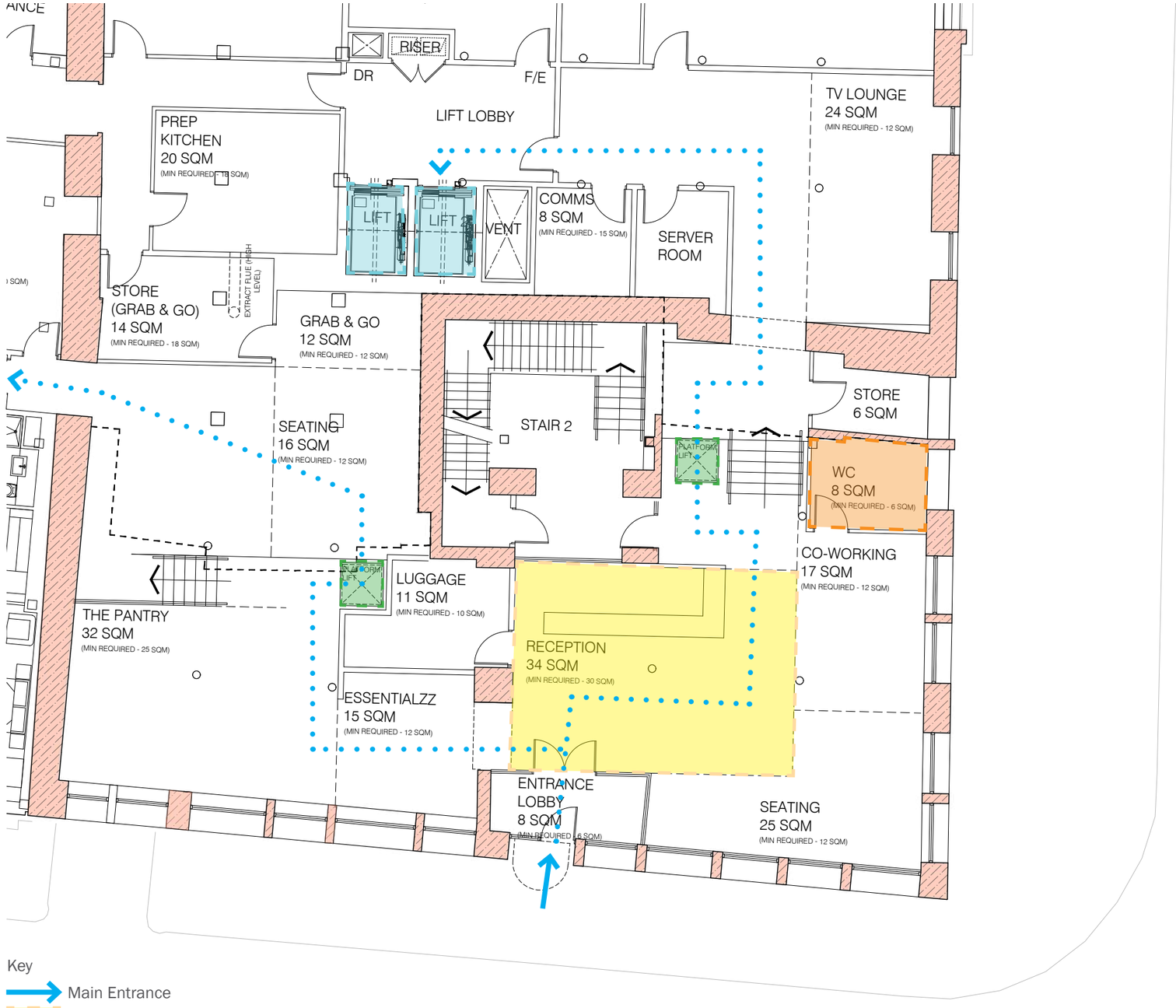
The site is subject to Glasgow's City Development Plan, which highlights the importance of sustainable and inclusive design options. The external pavement offers level access and is fully accessible to all pedestrians including wheelchair users.

The reception desk will comply with lowered levels for wheelchair access and an accessible WC will be located in close proximity to the reception area in line with the provisions of the Disability Discrimination Act 2005 (DDA) and the Technical Standards.

The development will have an automated entrance door with a push pad access control into the main entrance. This will be fully accessible for wheelchair users and those with limited mobility. There are 2 main lifts which provide access to all floors within the building. These will be maintained by the eventual operators and factors of the building to ensure that inclusive access to the development will be maintained.

Although no specific issues relating to disabled people or accessible design were raised by individuals or groups at the public consultation event, the design now brought forward takes full cognizance of relevant issues and places inclusive design at the heart of the proposals.

As such, the proposals are compliant with the Disability Discrimination Act 2005 and reflect the principles outlined under Regulation 13 of the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013.



Access Diagram

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