

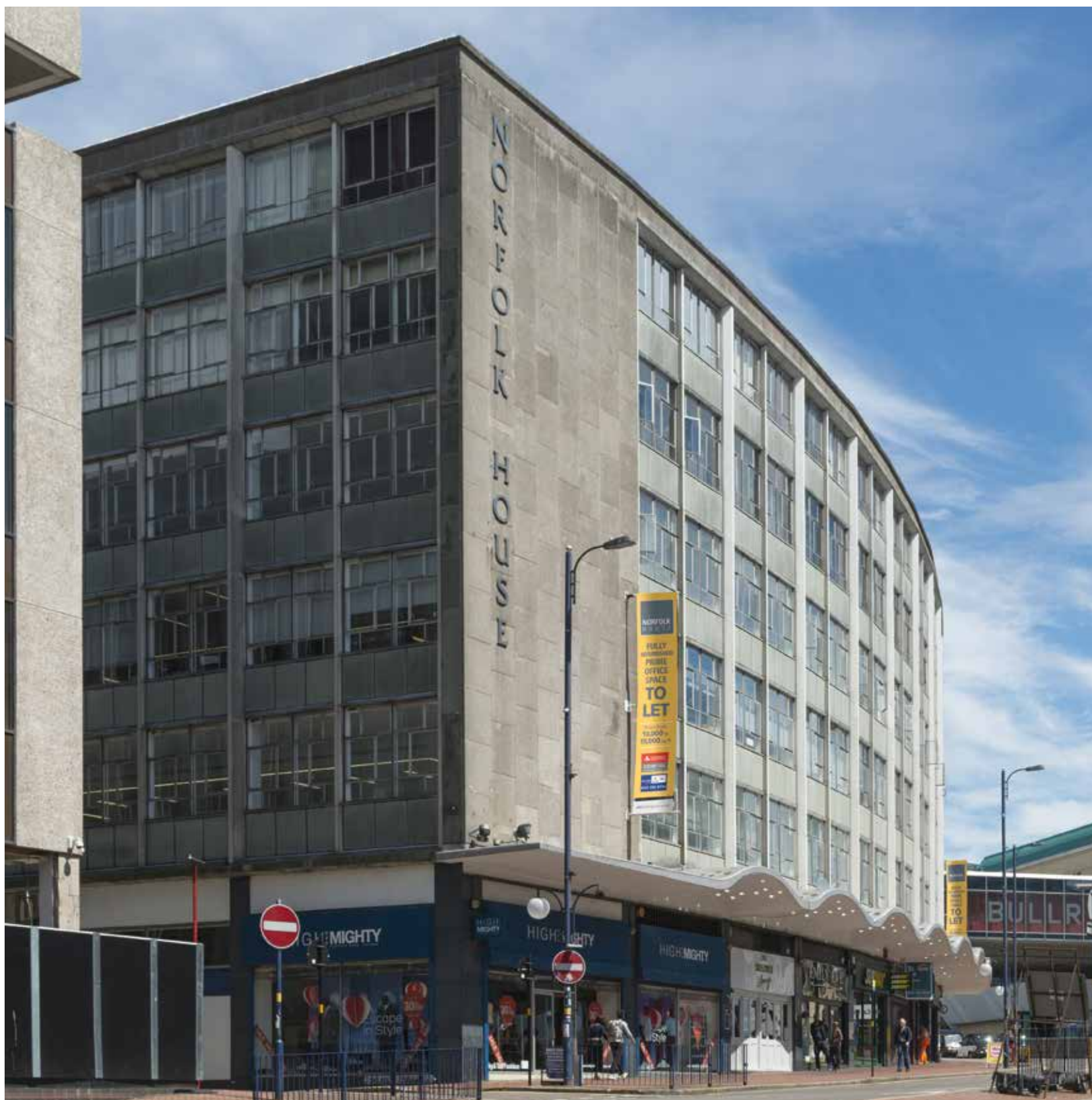


## FULLY REFURBISHED PRIME BIRMINGHAM OFFICE SPACE

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Floors from 7,213 to 50,660 sq ft

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## FOREWORD

Situated just seconds from the newly redeveloped Birmingham New Street Station and the vast Bullring Shopping Centre, Norfolk House is being transformed into contemporary Grade A office space.

Owners London & Scottish Investments is undertaking a full refurbishment of the vacant floors in the 80,000 sq ft building, along with comprehensive refurbishment of the central reception and core circulation areas, creating an appealing and contemporary environment across the building's six floors.

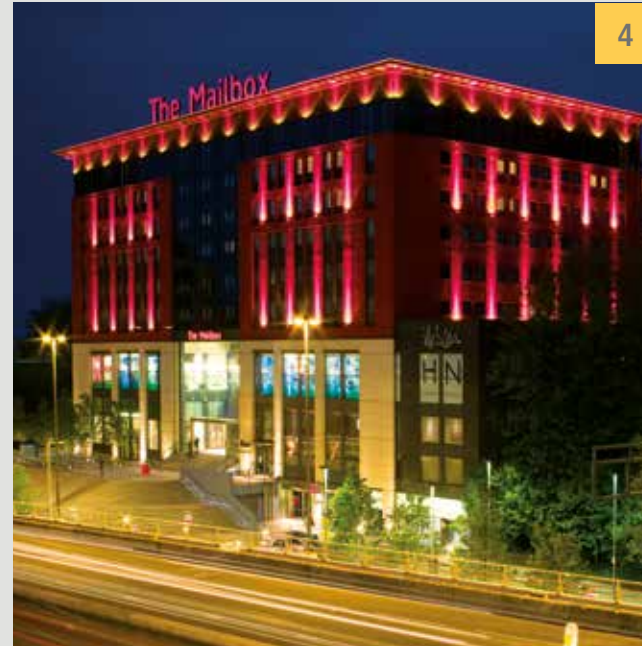
Norfolk House represents one of the few office buildings in the city that can satisfy large single floor plate enquiries of over 10,000 sq ft, with space available from suites of 10,000 sq ft, and full floorplates of 19,000 sq ft up to 48,000 sq ft. Current occupiers include marketing company Spark 44 and the Government Tribunal Service (HMTS).







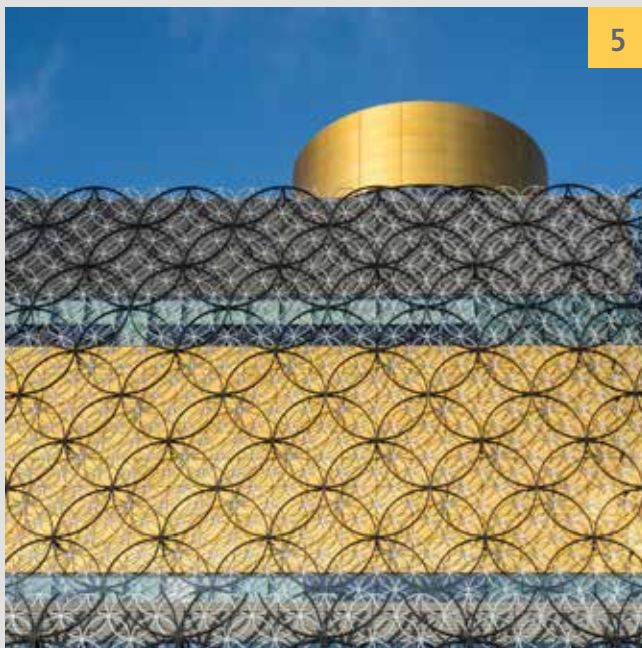
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## LOCATION

Birmingham is the regional centre of the West Midlands and is the second city in the UK in terms of both economic output and population. With the city's population expected to reach 1.17million by 2018 (ONS) it is the largest regional centre in the UK, with a catchment area of 4.3 million people of working age and over 100,000 graduates within an hour's drive.



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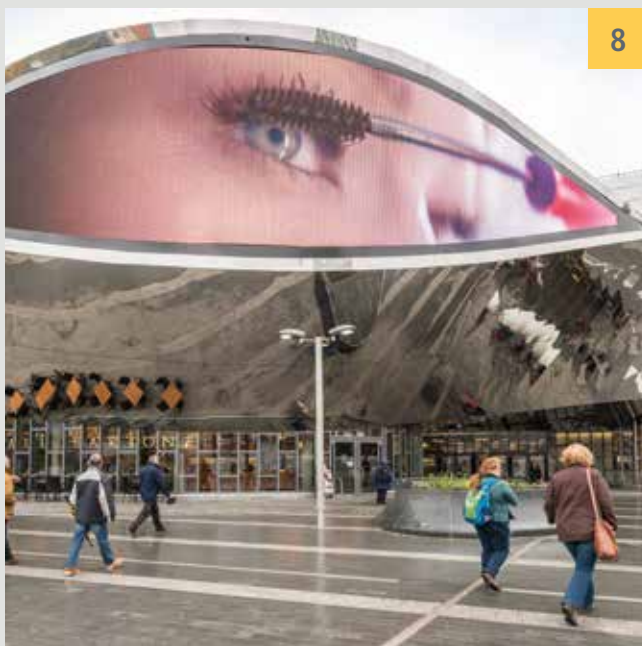


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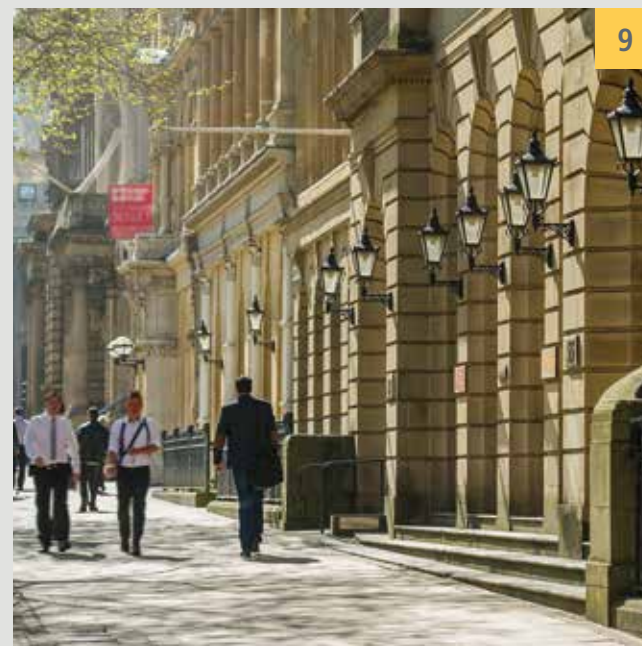
Norfolk House sits within Birmingham's Big City Plan; the largest master planning exercise in Europe that will shape and revitalize around 2,000 acres of Birmingham's city centre over the next 20 years. Spanning public transport, development, sustainability, culture, creativity, technology and enterprise, the plan aims to create a more appealing and prosperous city centre for workers, visitors and residents.

Located on Smallbrook Queensway, Norfolk House is strategically located at the heart of Birmingham city centre and is only a short distance from the bustling central business district. The building benefits from excellent public transport links, with local bus services, the Midland Metro and rail links from Birmingham New Street, Moor Street and Snow Hill railway stations. Just seconds away are the Bullring Shopping Centre and Birmingham New Street Station – one of the country's busiest train interchanges – which has itself recently undergone a £600m transformation and is now a focal point as the gateway to Birmingham and which offers direct services to Birmingham Airport in under 10 minutes.

Birmingham sits at the centre of the UK's motorway network, with the M5, M6 and M42 all encircling the city. The A38 Bristol Road/Aston Expressway from the M5 to the south and M6 to the north links directly to Smallbrook Queensway. Easily accessible by car, ample car parking is available in several nearby public car parks.



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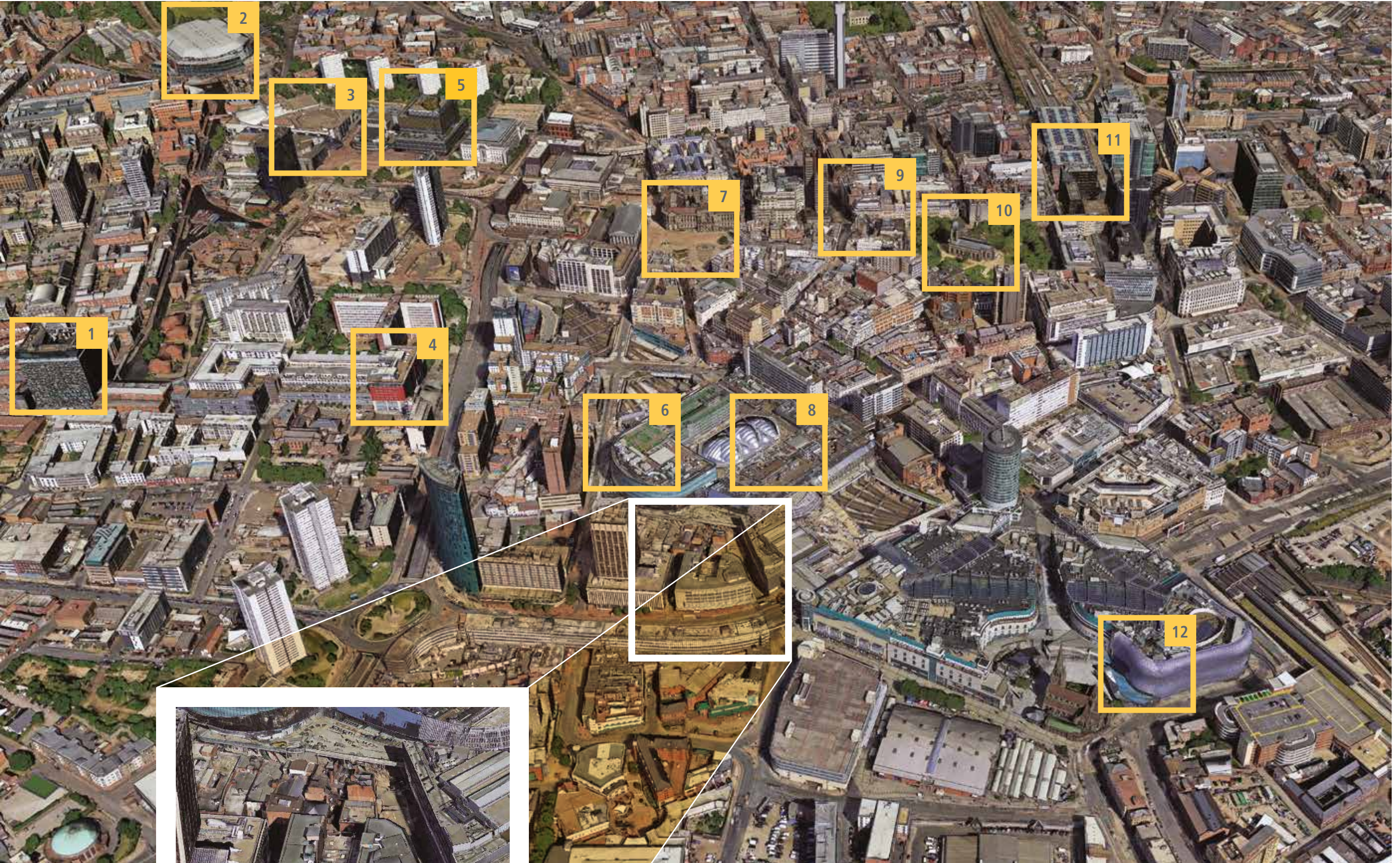


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NORFOLK  
HOUSE

## KEY LOCATIONS IN BIRMINGHAM

- |   |                                 |    |                        |
|---|---------------------------------|----|------------------------|
| 1 | The Cube                        | 7  | Victoria Square        |
| 2 | Barclaycard Arena               | 8  | New Street Station     |
| 3 | International Convention Centre | 9  | Colmore Row            |
| 4 | Mailbox                         | 10 | St. Philip's Cathedral |
| 5 | Library of Birmingham           | 11 | Snow Hill Station      |
| 6 | Grand Central                   | 12 | Selfridges             |



## NORFOLK HOUSE IS SET IN AN ATTRACTIVE CENTRAL LOCATION WITH UNRIVALLED TRANSPORT CONNECTIONS

The office building is adjacent to the Bullring Shopping Centre and just seconds from Birmingham New Street Station – one of the country's busiest train interchanges – which has itself recently undergone a £600m transformation and is now a focal point as the gateway to Birmingham.





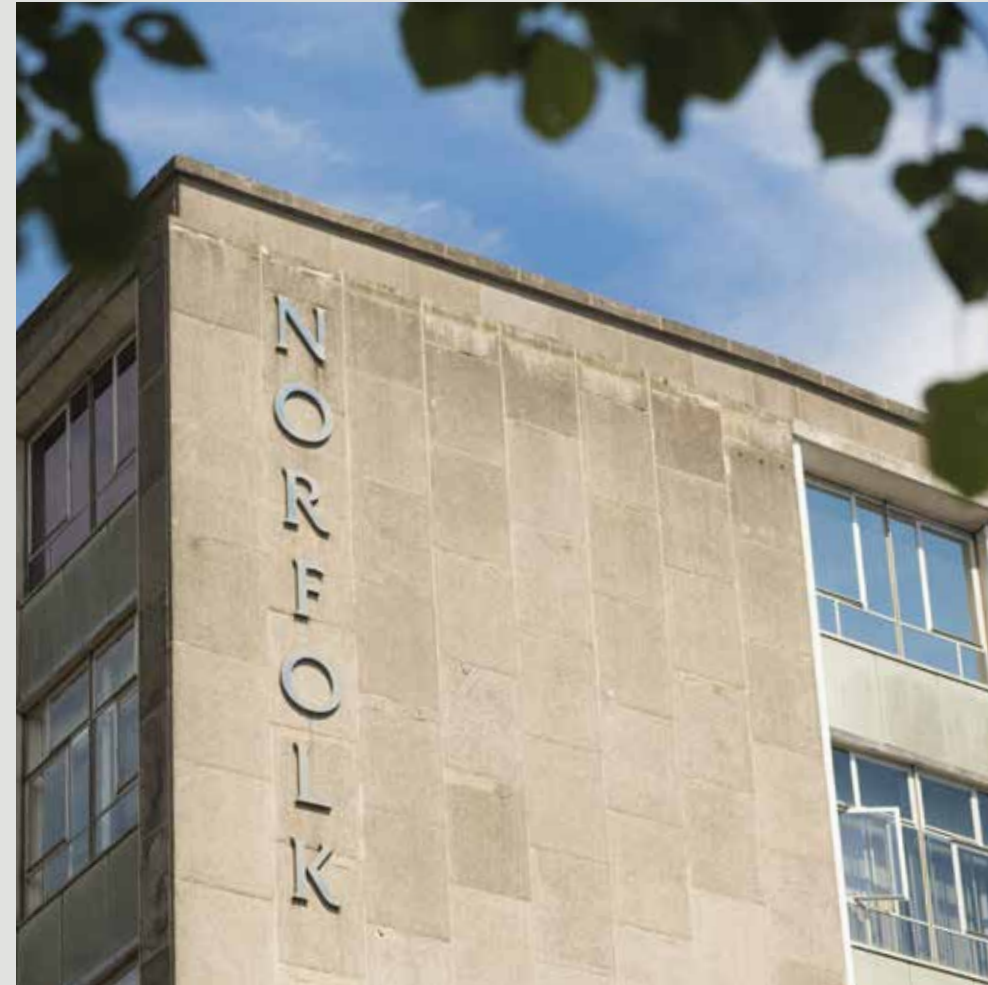
# THE BUILDING

With its curved façade, Norfolk House is a mixed use building of 1960s build, and offers 12 ground floor retail units along with 88,782 sq ft of office accommodation over 6 floors. The total building size is 112,424 sq ft and includes 13 car parking spaces.

The building has received substantial refurbishments over recent years, including recent improvements to 50,000 sq ft of office space to open up the floorplates and bring the space up to a Grade 'A' specification.

Comprehensive works have also been undertaken to common areas, providing a new and enlarged entrance and reception area offering clean lines and bright, open spaces, with three 18 person passenger lifts serving each floor. Disabled facilities are provided within the common areas, whilst male and female toilets can be found on each floor.

Norfolk House is located on Smallbrook Queensway, which provides principal access to the office reception and retail units. The basement and loading area is accessed via Hinckley Street whilst a secondary pedestrian access can be found on Dudley Street. A secondary core can be found at the rear of the building, with 2 goods lifts providing direct access from the basement loading area throughout the building. The basement area also provides 12 parking spaces.



SUMMARY SPECIFICATION

Norfolk House is a multi-tenanted building offering high quality office accommodation.

Having received substantive refurbishment, visitors to the building are welcomed by a new design-led feature reception with building concierge.

With a range of suite options available from 10,000 sq ft up to 48,000 sq ft, Norfolk House offers small and medium businesses the opportunity to occupy a high specification office space in a prime city centre location.

Floor	Sq ft	Sq m
Ground floor	10,567	982
First floor	18,704	1,738
Third floor	14,176	1,317
Fifth floor	7,213	670
TOTAL	50,660	4,707



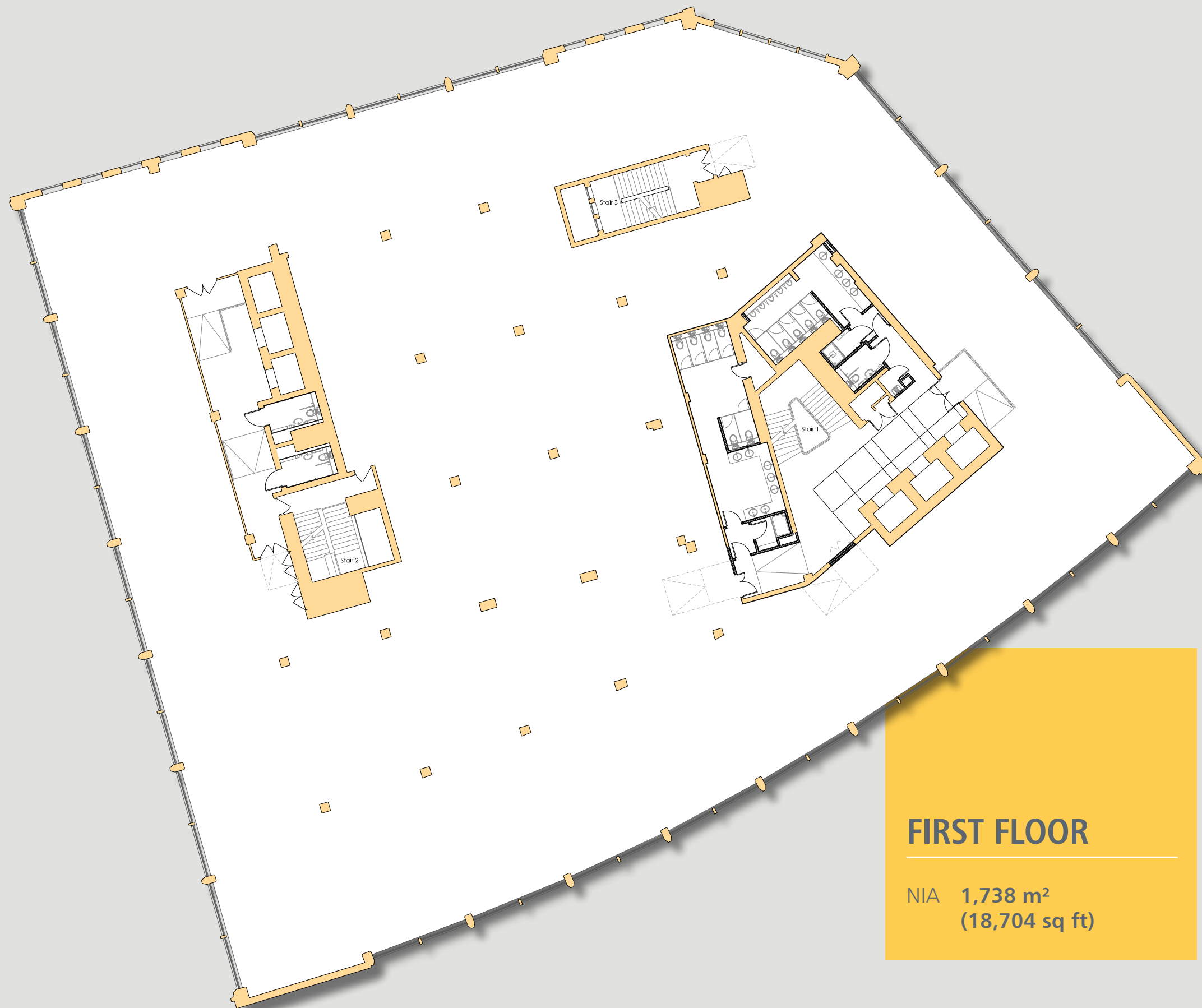


The building has been designed to create a distinctive sense of space and light and benefits from:

- High-quality finishes throughout
- 24 hour access with concierge support
- Impressive double height reception and waiting area
- Dedicated on-site security presence
- 3 x 13 person high speed passenger lifts
- 2 x goods lifts
- Open plan floor plate designed to a 1.5m space planning grid
- Secondary glazing
- 150mm full access raised floor
- 3.1m floor to ceiling height at perimeter
- LG7 compliant lighting providing up to 450 lux average illuminance at desktop height
- VRF heating and cooling system
- Male and female toilets, disabled toilets and showers
- EPC rating C
- Ventilation rate 12 litres per second, per person in office area; 10 air changes per hour
- Lighting controlled by combined dayligh/movement sensors
- Density 1 person per 10m<sup>2</sup>
- Male and female toilets at ratio 1 person per 7m<sup>2</sup>
- Disabled toilets
- Showers
- Ceiling tiles 1500 x 500 perforated metal, 1300 x 500 perforated metal



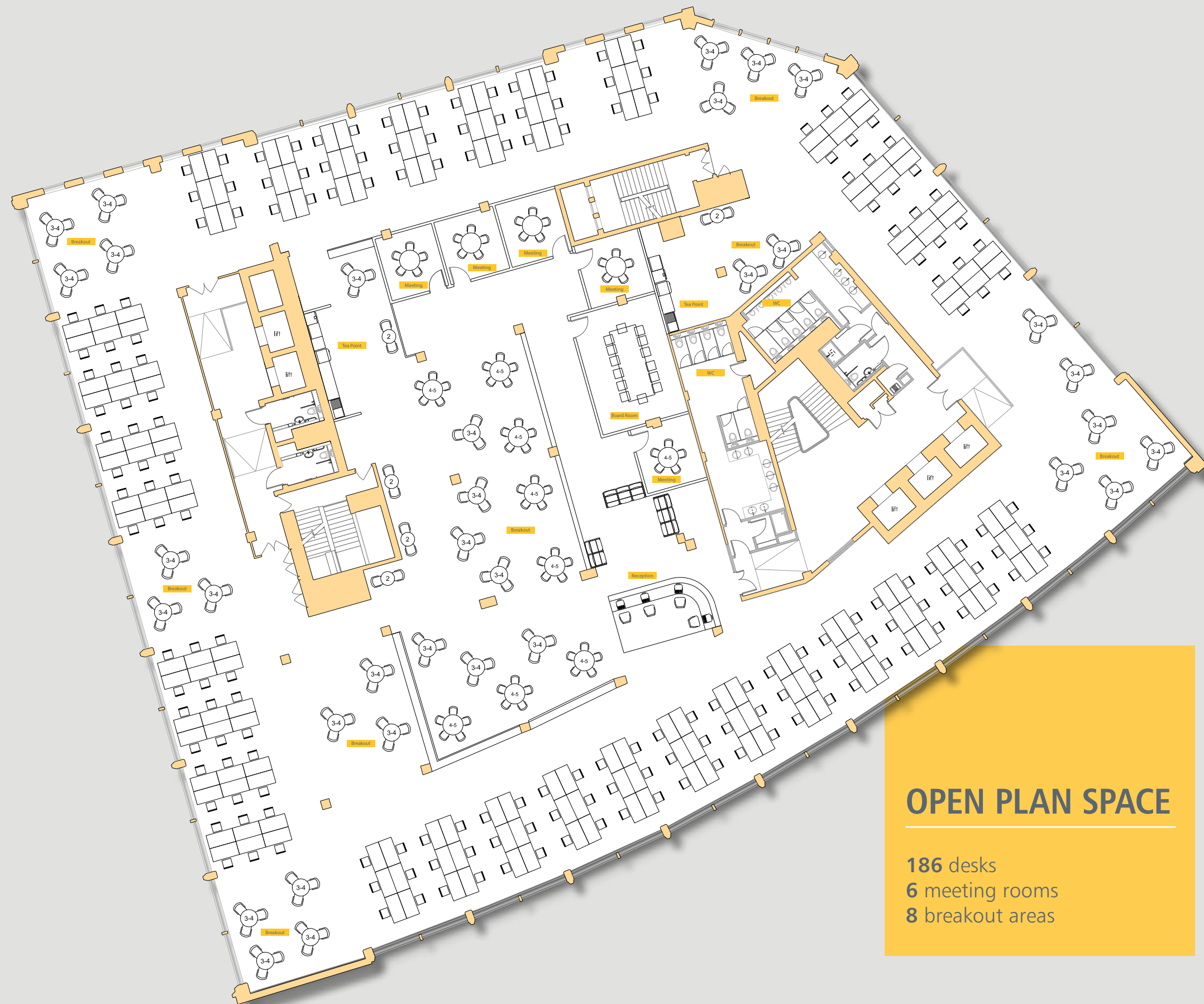




## FIRST FLOOR

NIA 1,738 m<sup>2</sup>  
(18,704 sq ft)





## OPEN PLAN SPACE

186 desks  
6 meeting rooms  
8 breakout areas



# DETAILED SPECIFICATION

## Outline Architectural Specification

### General

The development consists of the refurbished 1st and 3rd floors to match the 2nd floor. The refurbishment consists of the following: a reconfiguration of the inner core; all internal partitions within the existing office accommodation removed, existing raised access floor remains where possible, existing suspended ceilings removed and replaced in a new layout, removal of all window film, refurbishment and redecoration of existing crittall windows and inclusion of secondary glazing.

The format for the building structure retains the existing columns and structural walls including the existing lift shafts. Floor to ceiling heights to each floor are a minimum of 2.58m based upon the ceiling routed services. Exposure of the existing soffitt is optimized, creating greater volume and light through into the deep office space.

Office layouts remain flexible but are designed to a notional cellular layout based on the allowed air conditioning zones and lighting layout.

Hardwood doors, frames and architraves are provided throughout to all principal areas with painted softwood skirting to general office areas. Secondary staircases have MDF painted joinery.

Walls made good with skim coat and emulsion finish. Ceilings suspended MF with skim coat and emulsion finish. New linear light fittings are recessed as per 2nd floor.

Toilets have full height ceramic tiling with coved skirting to walls to match 2nd floor and non-slip ceramic tiling to floors. Ceilings are new suspended metal tile on tegular grid.

### Ceilings

To open plan office areas generally, proprietary linear plank system, SAS International System 330. Module size 1300x500mm, 1500x500mm. Fully demountable with 18x80kg Encapsulated Rockwool Pad.

Proprietary metal tile 600mm x 600mm to toilet WC ceilings and all core ceilings with MF plasterboard (moisture resistant to WCs) plasterboard border to perimeters ensuring no cut tiles. Fully accessible for services requirements with no access hatches permitted.

Installations include appropriate suspension system capable of supporting all specified mechanical/electrical fittings etc. where not independently supported and include all necessary edge /opening trims and cavity barriers within ceiling voids. Voids above all ceilings are suitably sealed relative to avoidance of sick building syndrome.

Installation of ceilings in strict accordance with manufacturer recommendations. All ceilings provide class 0 / class 1 surface spread of flame rating as defined by BS 476 parts 20, 21, 22 and 23.

Ceilings generally to be co-ordinated with services fittings to ensure symmetrical pattern wherever possible with fittings set out on centre lines of tiles and balanced to and between each grid and notional corridor.

All components are polyester powder coated minimum 60 microns thick. Edge trim in MF plasterboard suspended ceiling minimum 600mm deep, emulsion finish. Where tiled finish throughout, such as toilets, allow for Shadowline edge trim secured to vertical recessed batten, with laminate finish to visible face, plugged and screwed to wall. Laminate colour, matt black.

Plasterboard areas: Plasterboard ceilings are British Gypsum wallboard 12.5mm thick finished with 2mm thistle Multi-finish or equal approved to flat soffits and fascias. Glasroc GRG 6mm thick with seamless joints using Gyproc joint type and Gyproc jointex or equal approved to feature soffits and fascia. All plasterboard ceilings supported by Gyproc MF suspended ceiling system.

### Doors Internal

To central core and secondary cores to office; to WCs:

Quality solid core temperate hardwood veneered doors to match 2nd floor, flush fitting with solid hardwood lipping in matching frames.

Principal doors contain glazed panels, performance as required by the Building regulations. Provisionally vision panels slot type 1500mm x 100mm with clear Pyran/Pyroshield glazing.

Duct riser doors to office accommodation fire rated in accordance with current fire regulations, notionally FD30s. Finish of a high quality laminate – easy clean finish (provisionally white to match internal wall finish) with hardwood lipping to perimeter and budget lock arrangement.

Doors to all other areas are solid core, plywood faced with hardwood lipping and painted with painted MDF frames and architraves.

### Floor Finishes

Vinyl sheet to cleaner’s cupboards is heavy contract non-slip vinyl sheet from Altro ‘Mondopave’ range on precast concrete or screed surface. Sheets to comply with BS 3261 Part 1: 1973 with a class 1 rating to BS 476 part 7. Sheet thickness is 2mm bonded to substrate using manufacturers recommended adhesive.

Floor tiles to toilets/showers of Solus Ceramics ‘Basalt Range’, colour ref: ‘Element’ of various sizes, allow for stainless steel threshold strips, 100mm high matching coved tile skirting.

### Raised Access Floors

New raised access flooring fully encapsulated medium grade panels supported on a grid of adjustable metal pedestals fixed to sub-floor to a co-ordinating size of 600x600mm.

Existing raised access floors are approximately 190mm from the structural floor level. New raised access floor added to the centre of the office plan. Floor is fully accessible with fully encapsulated medium grade panels supported on a grid of adjustable metal screwjack type pedestals fixed to sub-floor.

Panel construction is solid core fully encased in sheet to a co-coordinating size of 600 x 600mm by Hewetson/Kingspan.

Voids below all raised floor areas are sealed to avoid Sick Building Syndrome.

Dust proofing with a Sealer: Colour tinted and as recommended by raised access floor manufacturer. Compatible with materials used to pack and/or fix pedestals.

### Wall Finishes

Office/staircases/lobbies finished in plasterboard and skim on plaster dabs. All columns stripped and dry lined, skimmed and painted to wall specification. Toilet walls stripped and sand and cement rendered for ceramic tile finish. All areas of new blockwork either dry lined or rendered in accordance with the above.

Plasterboard is British Gypsum wallboard 12.5mm thick or equal approved to BS 1230 part 1:1985 5mm smooth skim applied in 2 coats to BS 1191:part 1 Class B.

To external wall dry-lining is insulation backed plasterboard fixed to metal lath/block background with plaster dabs (approx 10mm thick) in accordance with manufacturer’s recommendation.

Plaster beads and stops galvanized steel to BS 6452 part 1. Beads used on all exposed external angles and back-to-back beads at all internal movement joints.

Feature shadow angle stop beads required to all plaster / specialized cladding junctions.

All beads are fixed in accordance with manufacturers recommendations (Expamet).

Painting: generally to all areas (including WCs) is vinyl matt white emulsion applied on prepared plaster finish as 1 mist coat and 2 topcoats. Stores, 2 coats to same specification on fair-faced blockwork. Ceilings receive 1 mist and 2 topcoats of white vinyl matt emulsion.

Feature lining to male and female wc walls; Altro Whiterock Chameleon colour: Moulin Rouge 6619 to female, Eau de Chic 6605 to male.



Joinery and Sundry Items

Skirtings: To main staircase and main core areas from moulded temperate hardwood (150 x 25mm) provisionally Black American Walnut generally fixed to treated softwood grounds. Skirting complies with BSD 1186 part 3 and BS 584. Finish, 1 initial coat (thinned) and 2-finish coats satin varnish Dulux interior varnish.

To office accommodation (and all areas not stated above) skirting is 15mm MDF to BS 1142, square profile, 130mm high prepared and primed for painting. 5mm feature bead to face. Finished in satin gloss.

Architraves to same areas as skirtings in profile and species but sized 130 x 25mm.

Perimeter columns to office floor lined at junction with glazing with 20mm MDF moisture resistant board with moulded edge.

Where sills are required, allowance for 20mm MDF to comply with BS 1186 part 3 and BS 584.

Mirrors: Full height and full width rectangular 400mm x 1500mm above each vanity unit basin to toilets.

Vanity unit mirrors have backlit light source to 2 edges with cold cathode light source.

Toilet cubicles from the Decra Ltd Stratum V range full height joinery cubicle with flush rebated doors and pilasters. Crown cut veneer finish to doors from Formica wood range (Black American Walnut finish). Door indicator bolt, hinges and associated ironmongery in brushed stainless steel. Partitions in laminate to match 2nd floor and as part of the full height Stratum V system.

Duct cover panels of high quality: Decra Stratum L Panelling system of 13mm solid phenolic laminate full height with vertical flash gaps and close butted horizontal joints from full colour range, provisionally Midnight black finish.

Vanity units: High quality solid-surfaced vanity unit by Decra Plastics Ltd – Provisionally Slabb range - with circular under-slung basins. Framework treated softwood frame and where exposed finished with a high-pressure laminate face. All exposed waste/traps and pipework serving basins chrome finished. Pre-formed upstand/splashback to rear of basin surface. Monobloc taps with integral waste operator with matching top-loading wall-mounted liquid soap dispenser in stainless steel.

Make good and redecoraton of existing concrete beams to 1st and 3rd floors.

Installation of new sills and the making good and redecorating of plaster below to all existing external walls.

All existing pipework to both 1st and 3rd floor removed with services being capped off where required.

Pop up services for the provision of tea points by others.

Fire Protection

Fire protection measures are incorporated in the scheme to comply with the requirements of the current Building regulations and BS 5588 Part 2 and Part 3:1985/1983.

Includes fire stopping around service penetrations of compartment and separation walls and floors, cavity walls and proprietary fire shutters.

½ hour FR cavity barriers to both ceiling and raised access floors at 20m intervals. All materials used as fire protection elements comply with the requirements of BS 476. Alarms and detectors are covered in M&E specification.

Ironmongery

Generally satin-brushed stainless steel – Tuscan Form function range. Stainless steel is 316 quality.

Hinges are stainless steel with suitable bushes on wearing edges, to match ironmongery and fixed with stainless steel screws, number of pairs of hinges and sizes to suit usage of doors. Door fitted with flush bolts where required, stainless steel to match ironmongery.

Overhead door closers are Tuscan Form function overhead concealed door closer, fire rated and stainless steel finish.

Panic bolts designed to meet BS5725 Part 1:1981 to fire authority approval.

Push and pull handles are vertical bar, brushed stainless steel finish fixed at 1200mm centre from FFL. Doorstops provided as necessary and are of polished stainless steel with black rubber buffers, floor mounted.

Toilets are lockable with high level lock.

Eye bolts supplied at agreed locations for abseiling.

Signage

Fire safety equipment signs suit open plan condition, conforming to BS5378 part 1 (not self adhesive type) but with polished stainless steel background with green letters and counter sunk fixings to all areas.

Fire exit signs over doors to all general areas are of hanging rod illuminated edge plate etched glass type with metal cover plates and edging of stainless steel/chrome to match ironmongery.

Sanitary Appliances Fittings

Sanitary fitting provision for the building designed in accordance with BS 6465 part 1:1984 and BS 5572:1978 and suit a notional occupancy of 1 person per 7.0sq m of nett lettable.

Sanitary ware is white vitreous china and includes all necessary fixings and sealants. All pipework (aside from basins) concealed within IPS paneling.

WC pan and cistern Armitage Shanks Accent back-to-wall close-coupled with chrome-plated lever, Accent seat and cover. Braemar WM wall mounted WC pan with concealed cistern, trap connection, and concealed fittings. Chrome lever handle to approval, from same range. Specification in accordance with BS 5503:1977 and BS 5504:1977 /1990.

Washbasins set under vanity unit as part of bespoke construction, ‘Nocturne’ white finish with exposed waste/ trap – chrome plated. Taps; high specification chrome plated stainless steel and wall mounted thermostatic Monobloc extended taps with proximity sensor controls. All fixtures and fittings including plug and chain chrome plated from high quality designer range, Sattinit Alchemy or similar.

To disabled toilet: Wall mounted disabled toilet: Armitage Shanks Doc M pack including WC, basin, white grab rails, seat, and white hinged support arm. All set out to part M of the current regulations.

To all cubicles (including disabled WC) is chrome toilet roll holder. Armitage Shanks IPS evolve accessories Jumbo range toilet roll holder with viewing window and keylock system. Reference S5095.

Mirror, nominally 700mm high and positioned above basin splash back to current part M guidelines, and chrome plated soap dispenser to disabled WC, to CA approval.

Urinal and cistern: Specification in accordance with BS 5520:1977. Cistern concealed complete with automatic siphon, lid, and support hangers, (height suits side overflow warning device). Armitage shanks Contour system with divisions.

Cleaner’s sink: Wall mounted including all fixing brackets. Pland stainless steel Janitorial Unit stainless steel cleaners sink or equal approved with integral stainless steel splashback and hand rinse facility.

Hand driers; Mitsubishi hand dryer ‘Jet Towel Generation 8’, wall mounted.

Existing Façade

All existing crittall windows at 1st and 3rd floors are refurbished and made good to receive spray paint finish (white) with secondary glazing included. Secondary glazing units are line through with existing windows as 2nd floor.



# DETAILED SPECIFICATION (CONTINUED)

## M&E specification

### Foul drainage above ground

#### System description

Complete foul drainage above ground system provided to serve all sanitary appliances shown on the architect’s drawings, and all engineering services described within the specification. All above ground drainage connects into the below ground foul drainage system via the existing above ground drainage system. All pipework constructed from solvent welded plastic including adequate rodding access.

All pipework concealed in risers and behind panelling allocated for this purpose by the architect. Access provided where necessary. All branch pipework concealed wherever possible, and installed utilising grey or white plastic pipe and fittings. One colour only used throughout. The pipework is solvent weld only, push fit fittings and strap on bosses not permitted. Exposed drainage pipework in toilets utilises chromed copper.

The contractor is including for the positioning and fixing of sanitaryware and brassware in accordance with the architect’s specification.

#### Condensate

Condensate produced by equipment listed in Section T62 and U10 is collected and removed by the above ground drainage system. When the required falls in condensate drainage pipework cannot be accommodated due to the available ceiling voids, the condensate may be pumped. Condensate pumps which are manufactured by Mitsubishi or recommended by Mitsubishi are only permitted to be installed.

#### Hot and cold water services

Sufficient potable and non-potable hot and cold water supplies provided to all outlets. The water supplies deliver the required service with minimum water usage including, but not limited to, sanitaryware and Engineering Services.

### Domestic hot and cold water

Hot Water Storage Temperature:	60°C ± 2.5°C
Hot Water Flow Temperature:	60°C
Hot Water Flow Temperature:	55°C furthest point away from hot water generators
Hot Water Outlet Temperature:	43°C Basin 43°C Shower 55°C Cleaner’s Sink

#### Cold water supply

Connection made to the existing landlord’s hot and cold water supply to serve all sanitary appliances and engineering services. Connection to the existing Landlord’s cold water supply is provided with isolation valves.

The maximum water pressure across the 1st and 3rd floors is limited to that required to deliver an adequate supply of water to the sanitaryware appliances, typically 0.5 to 1 bar. Where necessary, pressure reducing valves are installed on local branches at appropriate locations to reduce the supply pressure within the building to the minimum level required for adequate operation.

Excluding cleaners sinks where provided, hot water is limited to 43oC at all outlets by means of TMV3 approved blending valves or taps. The valves are located immediately below the outlet connections and are fitted strictly in accordance with the manufacturer’s recommendations, particularly with regards to equalised flow pressures. All parts of the thermostatic valve are WRAS approved and the valves are Type 3 approved and selected from the manufacturer’s schedule. The valves are complete with fine mesh strainer, isolations valves and flushing kit.

### General

All pipework is copper with soldered or crimped joints. Compression fittings are kept to a minimum, and only used where approved by the employer’s consultant.

Isolation valves are readily accessible and are provided on all pipework branches/legs and all connections to plant and equipment. All final connections to sanitaryware are installed with quarter turn ball-type isolation with integral thumb turns, refer to the manufacturer’s schedule.

All pipework is concealed in compartments that can be removed and replaced without damage to the building fabric or finishes, or within store cupboards and dedicated risers / ceiling voids. Exposed pipework is chrome plated for the entire visible length in all areas.

Hot and cold water services pipework are thermally insulated with foil faced mineral wool or foil faced phenolic foam. All valves are provided with thermal insulation jackets.

All horizontal hot and cold water distribution pipework installed with the hot water pipe above the cold pipe to limit heat transfer.

Adequate access is given for thermostatic mixing valves to allow for periodic inspection, removal and cleaning operations; likewise, all control or isolation valves.

If any draw-off points are subsequently omitted from the scheme during construction, the Mechanical Contractor shall ensure that the pipework is removed back to the main flow and returns to avoid dead legs.

### VRF System

#### 100.010 Performance objectives

##### Winter temperatures

External Winter Temperature:	-4°C saturated
Office:	21°C
Common parts e.g. toilets and corridors etc:	19°C
Riser/Void:	Uncontrolled

##### Summer temperatures

External Summer Temperature:	28°C dry bulb at 19°C wet bulb
Office:	23°C
Toilet:	Uncontrolled
Circulation:	Uncontrolled
Riser/Void:	Uncontrolled

##### Internal heat gains

Occupants:	1 person per 10 m² 75 W sensible / 55 W latent per person
Equipment:	20 W/m²
Lighting:	10 W/m²



System description

The offices are space heated and comfort cooled using Mitsubishi VRF multi-split heat recovery systems. Mitsubishi fan coil units (FCU) are horizontal chassis-type units located in ceiling voids to deliver treated air into the occupied spaces via through ducted ceiling mounted high-induction (swirl type) diffusers or linear slot grilles as per the design intent drawings. Room air returns to the FCUs using the ceiling void as a return air plenum via dedicated ceiling mounted non-vision egg crate grilles.

Each office demise, comprising North Office and South Office first floor, and third floor office demise is provided with its own independent VRF system comprising dedicated BC controllers and dedicated external air cooled condensing units.

Each FCU serves a floor area of approximately 40m², or one structural bay between grid lines. The systems are designed at an outdoor unit diversity of 100%, allowing additional units to be added to the system if required. The FCUs are fitted with filters that can be removed for cleaning or replacement. Access to the units is through removable ceiling tiles or casings. Condensate is taken away from the units through gravity drainage or pumped where necessary.

The entire Mitsubishi VRF System, including all systems described throughout the Specification, has been installed by a Mitsubishi Accredited Installer/Business Solutions Partner to provide a five year manufacturer’s warranty.

Refrigerant pipework

All pipework is refrigerant quality soft/medium drawn copper tubing to BS 2871 Part 2: 1972, complete with the appropriate headers and joints. Pipework installed by an Approved Engineer (qualifications submitted prior to installation commencement). The longest lengths of pipework possible utilised to minimise pipework joints. Appropriate refrigeration installation tools utilised.

All pipework (suction and liquid lines) insulated with slip on close cell elastomeric pipe insulation (as manufactured by Armaflex or equal and approved) with a fire performance Class 0 and a wall thickness of not less than 13mm.

Following pipework installation, and prior to sealing of insulation joints and starting of equipment, the pipework was pressure tested to 28Kg/cm2 (430psi), held for 24 hours and checked for leaks, vacuumed/dehydrated to (-752mm Hg) 2 torr, and held at that setting for 12 hours (minimum).

General ventilation

Performance objectives

To provide a supply of fresh air into occupied rooms and remove and replace foul air from toilets.

Ventilation rates

Office: 12 litres per second, per person

Toilet: 10 air changes per hour

Noise level

Office: NR40

Common areas: NR45

Plant areas: NR60

External noise criteria: As prescribed by the Local Authority

Ductwork

Maximum pressure drop: 1 pa/m

System description

Offices

The office areas are supplied with fresh air from Swegon (or equal and approved) packaged heat recovery air handling units as per the Design Intent Drawings. Fresh air drawn in and conditioned by the units, before being supplied through a system of ductwork delivered into the space through the FCUs. The air handling units serving the 1st floor offices are located within the lower ground floor plant areas. The air handling units serving the 3rd floor offices are located on the roof of the 2nd floor.

The heat recovery air handling units extract air from the office areas through light fittings via the ceiling void which is used as a return air plenum. The extract air is drawn in through the heat recovery unit and exhausted direct to atmosphere having first passed through the plate heat exchanger subject to suitable air temperatures.

Each office demise is provided with its own dedicated air handling unit.

Toilets

A new ducted supply and extract ventilation system installed in the toilets by means of connecting to the existing landlord’s toilet ventilation system.

General

All supply air diffusers, return air grilles and external weather louvers finished in a RAL or BS colour to the Architect’s specification, and where applicable, whole tile replacement. Plenum boxes incorporating perforated diffuser plates are provided, opposed blade dampers are not fitted to the rear of grilles.

Final ductwork connections to terminal devices in flexible ductwork do not exceed 250mm in length.

Attenuation is provided on all air handling systems to minimise noise transmission both into and out of the office and surrounding areas to achieve the specified noise criteria.

Control requirements

Refer to section W60.

Central control/building management

System description

A control system is provided to allow automatic control and monitoring of all Engineering Services.

The VRF system per office demise is fully controlled by Mitsubishi AG150-Energy controllers. Each defined zone is provided with the ability to be controlled as a separate time zone, with independent temperature and time controls. The control system provides central supervisory control and full fault analysis of the VRF systems. Each controller is linked to allow each floor to be accessed on either panel if a single Tenant were to occupy the entire first or third floors respectively.

The dipswitch setting on the condensing units is set to High Performance Heating mode.

All fan coil units operate under the dictates of remote return air temperature sensors securely positioned on the back of local return air grilles.

Metering

The electrical contractor has provided new MID compliant meters installed within each distribution boards enclosure on each floor.

General

Each distribution board/panel is complete with hinged metal cover and factory fitted locks, each of which is provided with 2No. keys.

Every distribution board and distribution panel is clearly labelled with a unique reference number mounted on the hinged door. Comprehensive typed circuit charts are located within each distribution board/panel, and provide the following details:

- A. Circuit reference and phase
- B. Device type
- C. Device rating (the minimum rating of a MCB MCCB device shall be not less than 10A)
- D. Circuit description
- E. Cable type
- F. Cable size
- G. CPC size
- H. Circuit load



# DETAILED SPECIFICATION (CONTINUED)

The heading of each distribution board schedule details the following:

- A. Project reference
- B. Incoming supply main switch size
- C. Location
- D. Distribution board type and size
- E. Distribution board reference
- F. Fault level
- G. Earth loop impedance
- H. Incoming cable size and type and supply origin

All distribution boards and circuit protective devices are of the same manufacture, and provided in the manufacturer’s standard colour. Each distribution board is provided with voltage warning notices and identification labels. All distribution boards are metallic and finished in the manufacturers’ standard finish.

All distribution panels, distribution boards and consumer units are capable of being expanded by the occupiers.

The entire LV Distribution System design includes an allowance of 25% spare capacity for future expansion (excluding the incoming supply).

Generally, the following distribution boards/supplies are provided (not exhaustive):

First Floor North Riser 1No. isolator feeding out to 1No. split load DB – Lighting and Power, separately metered.

First Floor South Riser 1No. isolator feeding out to 1No. split load DB – Lighting and Power separately metered.

Third Floor South Riser 2No. isolators feeding out to 2No. split load DB’s – Lighting and Power separately metered.

## Sub-main distribution

All sub-mains supply cables include an allowance of 20% load and space for extending the installation in the future.

The Electrical Contractor has sized and installed suitable metallic final distribution boards and supplies to serve all items of equipment, as necessary. Distribution boards are of the same manufacture as the Main LV Distribution Panel.

1st Floor - Existing supplies located in the north and south risers utilised to feed the 2 new 18 way TP&N split load distribution boards. The existing Lucy cut outs are used to supply new isolators. A new submain cable installed from each isolator to the new distribution boards.

3rd Floor - Existing supplies located in the north riser utilised to feed 2 new 18 way TP&N split load distribution boards. 2 new isolators installed in the north riser and new submain cables installed from each isolator to the new distribution boards.

Each distribution board is metered with MID compliant meters.

The Electrical Contractor provides split load lighting and power occupier distribution boards for each wing within each electrical cupboard to serve lighting and power throughout the building. These occupier distribution boards have sufficient spare ways for the future fit out works by the occupier.

## DB energy metering

The Electrical Contractor is designing, providing, installing and commissioning electricity energy meters within the design. This includes electricity energy meters for all electricity supplies to all distribution boards, items of plant, equipment and machinery.

The meters are installed locally to each distribution board. The meters are factory fitted to the panel.

The electricity meters are each provided with an output suitable for remote monitoring by a building management system (BMS), with connection made by either RS232 or RS485 connection, as required.

## Rubber matting

A rolled rubber mat is provided within each riser, for operatives and maintenance personnel to place on the floor when working on the panels.

The rubber mats are a minimum of 6mm in thickness and tested to 11,000 volts.

The rubber mats extend 900mm in front of the main LV panel openings and extend over the full width of the unit.

## Transient surge protection

The LV distribution panels incorporate integral surge protection equipment. The equipment provides protection of surge currents in excess of 10kA.

## Wiring

Wiring of the LV Distribution system is carried out utilising XPLE/SWA/LSF cables installed direct to the building fabric or fixed to a suitable cable tray and/or ladder rack systems where more than one cable is run in parallel.

## V21 General lighting

### 100.030 System description

#### General

The lighting scheme is designed to achieve the maintained levels of illuminance in accordance with SLL Code for Lighting, CIBSE LG7 and BS EN 1246-1 2011

All luminaires have addressable DALI/DIGITAL dimmable ballasts.

Where recessed luminaires penetrate ceiling fire compartments/barriers, the Electrical Contractor has supplied and installed suitable ‘fire hoods’ as to ensure that the integrity of the fire compartments is maintained. Where recessed light fittings penetrate air plenums the fittings are suitably sealed to prevent air leakage.

Where computer screens are likely to be regularly used, the lighting design complies with CIBSE LG7 and BS EN 1246-1 2011



Office areas

The lighting scheme within the office areas provides a maintained illuminance of 450lux on the working plane, at a uniformity of 0.8, in accordance with CIBSE LG3 2001 & CIBSE LG7 2005.

The lighting to all office areas is provided utilising an arrangement of recessed modular LED luminaries with combined daylight/movement sensors and DALI/ DIGITAL dimmable control gear, to meet the requirements of the Design Parameters. Perimeter continuous lighting is also required as detailed on the indicative drawing.

Luminaires are supplied via a fully addressable Dali based modular wiring system. Final connections are via plug and socket arrangement with heat resistant flexible cable. The flexible cable terminates directly into the body of the luminaire by means of suitable cable gland.

LED lamp types shall be utilised, having excellent lumen efficiency and lumen output.

General areas

Toilets - Recessed LED low energy luminaires to all areas, including one luminaire per cubicle.

Barrisol – LED strip behind the barrisol ceiling units.

Wiring

Wiring of the core and circulation area lighting system is being carried out utilising LSF/LSF Twin & CPC cables installed direct within the building fabric or fixed to the slab utilising a suitable fixing method.

All containment systems have an allowance of 20% spare capacity for future expansion of the system.

Modular wiring system

The modular wiring system comprises metallic LSF/LSF “Home Run” cables from the Distribution Boards to master distribution boxes (MDBs). The MDBs are suspended from the ceiling slab utilising a suitable threaded rod and support channel system.

Metallic LSF “Extender” cables are installed from the MDBs to supply the lighting distribution centres (LDCs). The LDCs are suspended from the ceiling slab utilising a suitable threaded rod and support channel system. The LDCs supply the luminaires by means of flexible connection.

The modular wiring system cables are fixed to the building fabric utilising suitable “caddy” type clips at intervals.

The electrical contractor is ensuring that each item of equipment supplied by the modular wiring system, comes complete with factory fitted ‘T’ piece.

The modular wiring system is as manufactured by ‘Modular Wiring Systems Ltd’, or approved equivalent.

Control requirements

System

Within the office areas, the lighting is controlled by daylight linked 360 degree presence detection with daylight regulation/photocell control and full communication functions to control the lighting levels within pre-determined limits. The lighting control system for the office area incorporates daylight linked controls to maintain the working plane lighting levels by dimming the lighting to pre-determined levels.

Within the goods lift core areas, the lighting is controlled by means of low profile semi-recessed ceiling mounted 360 degree occupancy detectors. The detectors are wired and mounted in a similar method to that of the luminaires.

Toilet areas utilise low profile semi-recessed ceiling mounted 360 degree PIR occupancy detectors.

General LV power

General

- A. 13A single switched socket outlets for cleaning purposes, such that there is full coverage for cleaning equipment with a 10m lead. Outlets protected by RCD/RCBO devices. Cleaners sockets engraved in black/red letters “CLEANERS ONLY”.
- B. Power supplies to hand dryers (comprising high level neon indicated switched fused connection unit with recessed conduit wire way linking to low level recessed box with outlet plate at hand dryer level) within each of the toilets and disabled toilets.
- C. Power supplies to disabled distress call systems and disabled refuge systems.
- D. Power supplies to SAVA flushing devices in male toilets.
- E. Power supplies to mechanical plant and equipment i.e. boilers, electric heaters, water heaters, fans, over door air curtains, pressurisation units etc... (the Electrical Contractor shall liaise with the Mechanical Contractor to establish their exact requirements, and provide suitable power supplies accordingly). Refer to the Mechanical Performance Specification and Indicative Mechanical Drawings for details.
- F. Power supply to fire alarm panel and remote devices.

Disabled WC distress call system

The electrical contractor is providing and installing a disabled distress call system within each of the disabled toilets.

The system generally comprises the following equipment:

- A. High visibility red pull cord, complete with bangle pulls and illuminated reassurance indicator.
- B. Flush audible and visual over-door indicator unit.
- C. Flush reset unit, located within each disabled toilet.
- D. Power supply unit.
- E. The system shall be capable of providing remote indication to a central location.

V40 Emergency lighting

100.030 System description

3 hour emergency lighting system comprises inverter modules within the general lighting luminaires, self- contained luminaires and internally illuminated exit signs.

The luminaires are supplied by the same circuit as the local general lighting. Wiring to emergency lighting is carried out using cables of the same cross sectional area (minimum) as the general lighting circuit to which they are connected.

# DETAILED SPECIFICATION (CONTINUED)

### Control requirements

All of the emergency lighting is controlled via secret key test switches. The switches are located centrally at the distribution boards. The switches are engraved as to clearly identify their purpose. Alternatively, a self-test emergency lighting system is provided.

All luminaires have a visible LED charging indicator.

### W50 Fire detection and alarm

#### System requirements

##### Control panel

The space has a recessed analogue addressable fire alarm panel and is provided with the following equipment and facilities:

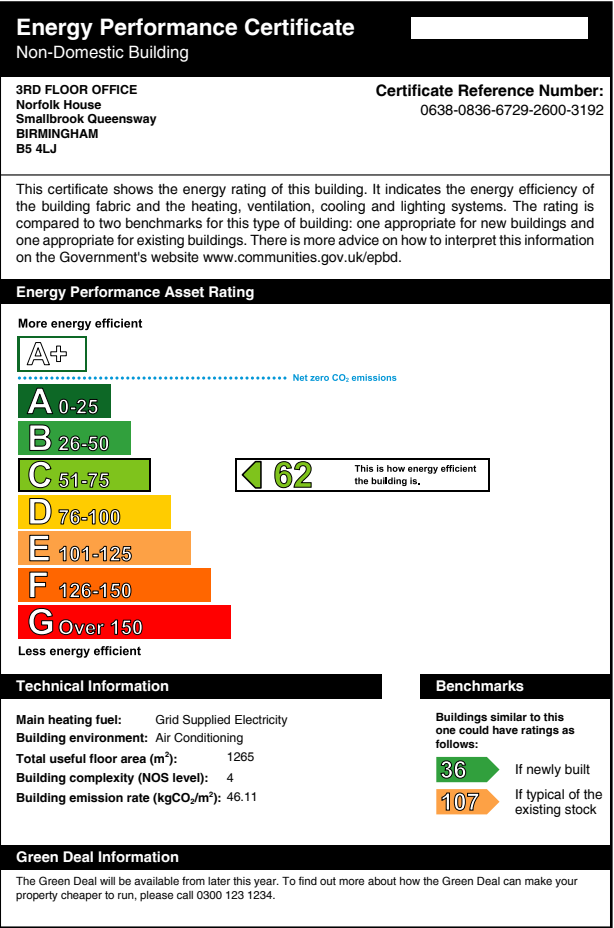
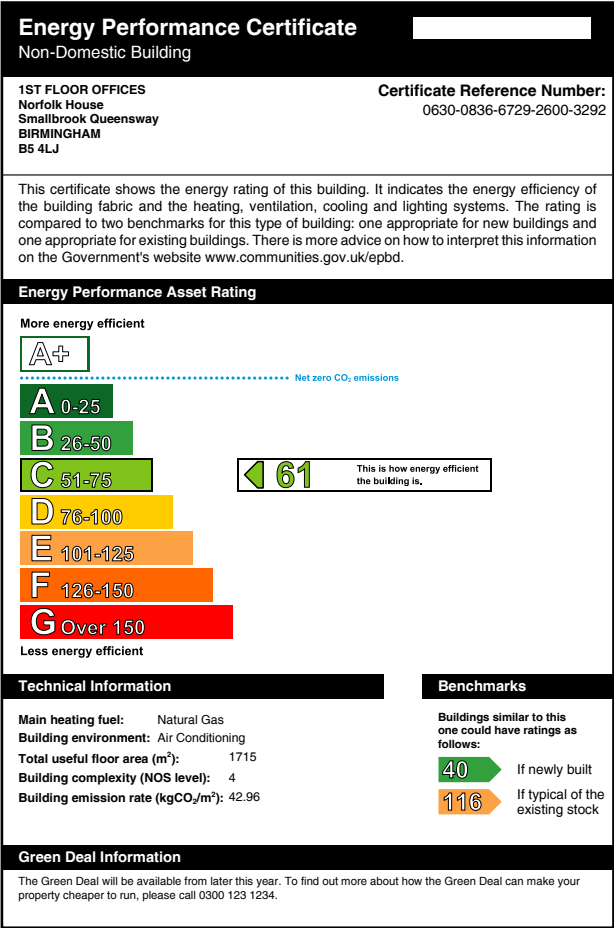
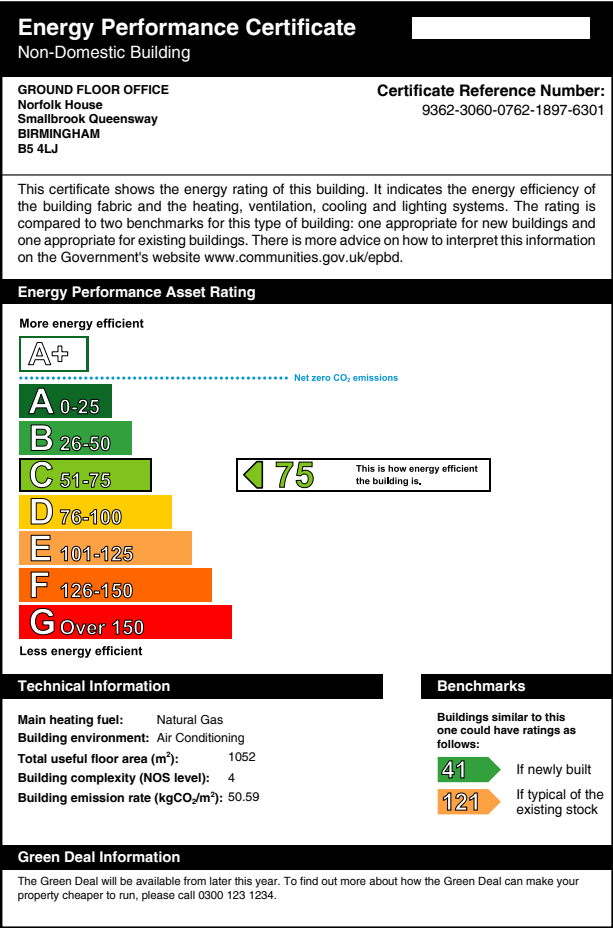
Batteries and chargers to suite the installation and design requirements. The batteries are capable of maintaining the complete fire alarm detection system for no less than 48 hours after a mains failure.

Zone indication in accordance with relevant interfaces.

3: LEDs to indicate the following:

- Fire/Fault.
- Zone of fire/fault
- "MAINS ON"
- "ALARM FAULT"
- "MAINS FAILED"
- "BATTERY FAULT"
- "EARTH FAULT"
- "SYSTEM FAULT"
- "ALARM ISOLATED"
- "ALARMS SILENCED"
- "EVACUATE"

### Energy Performance Certificates





# THE TEAM

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