THE LONDON DEVELOPMENT PROJECT

Shell & Core Base Build Definition
including Category A Specification

Rev G

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THE LONDON DEVELOPMENT PROJECT
BASE BUILD DEFINITION

The Building is to be a development of a high quality commercial office building.

This Definition of materials, equipment and finishes is indicative of the style and quality level intended for the building. It is generic in content but has been modified to suit the potential tenant's agreed specific requirements in addition to requirements of other tenants, i.e. legal, professional, financial, commercial, etc.. This document also reflects the current understanding of Conditions imposed by the City of London Planning Department as part of the Resolution to Grant Planning Permission for the Fleet Building and Plumtree Court Development. Additional obligations such as the Section 106 and Section 278 Agreements are also reflected here. Discussions with the City of London District Surveyor's Office are reflected in the contents of this document.

This Definition is intended to be a description of the scope and quality of the work to be carried out. Changes to the Definition may be necessary in response to further detailed design and statutory provisions.

Final selection of materials and equipment, details and specification are subject to design and construction development of the Base Building, by the appointed Consultants as well as Interior Design Consultants which may be appointed.

The Building is currently designed to achieve an excellent BREEAM rating (2011 New Construction) when assessed in conjunction with the tenants installations as well as achieve a 25% improvement over the 2010 of Part L as defined by the London Plan.

Design Team:

Project Manager	Tishman Speyer
Design Architect	Kohn Pedersen Fox Associates
Production Architect	Adamson Associates
Structural Engineer	WSP | Parsons Brinckerhoff
MEP Engineer	WSP | Parsons Brinckerhoff
Quantity Surveyor	Turner and Townsend
Planning Consultant	DP9
Rights of Light	Gordon Ingram Associates
Party Wall Surveyor	Gordon Ingram Associates
Accessibility Consultant	Arup Access
CDM-C	Buro Veritas
Environmental Impact	URS
Transport and Waste	Steer Davies Gleave
Façade Consultant	Arup Facades
Façade Access and Maintenance	Hoare Lea FA
Vertical Transportation	Hoare Lea VT
Acoustic Consultant	Sandy Brown Associates
Fire Engineering	WSP | Parsons Brinckerhoff
Security Consultant	WSP | Parsons Brinckerhoff
Landscape/Public Realm	Gross Max

1. GENERAL

1 General

1.1 Location

The Site comprises Fleet Building (40 Shoe Lane and 70 Farringdon Street) and Plumtree Court (42 Shoe Lane, 12 Plumtree Court and 57 Farringdon Street) London EC4A.

The Development is in the western part of the City of London and bounded by Farringdon Street to the east, the south by Stonecutter Street, the west by Shoe Lane and the north by Plumtree Court.

The two existing buildings on the site are to be demolished to provide a single building of approximately 80,000m2 net Internal Area Please refer to the Area Schedule in Appendix M.

1.2 The Base Building

Building Description:

The building is designed to spring from a stone plinth that starts as a base course at Shoe Lane and rises to the height of a full floor as the site slopes down east to Farringdon Street. Facing Shoe Lane, the mass of the building adopts the curve of the street, its smooth glass façade wrapping to the north and east where the mass of the building steps back at its uppermost level in deference to the even smaller width of Plumtree Court and the neighbouring listed buildings. At the centre of the Shoe Lane façade, a second sweeping curve undercuts the mass of the building to form the first of the project's two principal entrances.

Along Farringdon Street, the glass façade sets back above the full-height stone base to create a terrace that runs most of the length of the site. Two floors above the terrace, the curving glass envelope of the basic form of the building is clad with a bolder, more sculptural metal and glass element with its vision panels angled to the north to minimise solar gain. This element, which marks the principal office floors of the project, aligns with the height of the Holborn Viaduct at its lower soffit and rises to the project's penultimate floor, appearing to float above the base of the building as its 3 metre rhythm marches down Farringdon Street and up Stonecutter Street.

The Building's second principal entrance is marked by curving stone and glass at the corner of Farringdon and Stonecutter Streets. The massing of the proposed development is at its most expressive at the southwest corner opposite 1 New Street Square (which completes in June 2018). Here within the wider setting consultation area, the profile of the building rises to face its taller future neighbour to the west. Together, these new buildings will mark the five-way intersection of Stonecutter Street, St. Brides Street, Shoe Lane and Little New Street as well as forming a gateway to the north.

A third entrance for employees is also being provided centrally on Plumtree Court, This entrance is coupled with the cycle entrance and will most likely be used as a short cut to the Shoe Lane entrance. The entrance for vendors, couriers and external maintenance staff is situated adjacent to the vehicle entrance at the eastern end of Plumtree Court.

The uppermost floor of the proposed development sets back from the Listed buildings to the north and from the east and returns to the smooth curvilinear expression of its lower floors. The roofscape above, a consequence of the privileged view from Primrose Hill to St. Paul's Cathedral is the project's fifth elevation. This green roof will be viewed from surrounding buildings.

The base building includes an atrium. The atrium base is at Level 5 and the roof of the atrium occupies the same footprint as the atrium and is coincident with roof level. The risers and plant have been designed as if the atrium has been filled in at each floor.

The base building is to be finished to shell and core standard only and will consist of structural frame, floors, external enclosure, vertical ducts and shafts and internal walls enclosing pubic areas and core fit out.. Typically on 18m x 13.5m perimeter column spacing, the building will conform to a 1.5m x 1.5m internal planning grid. Please refer to item F in the Appendix for a sketch delineating the landlord and tenant areas per floor as well as the landlord/tenant division on the lower floors.

Site work within site ownership boundary includes paving, landscaping and utilities and services to the building. Distribution of services within the building is provided from mechanical and electrical plant rooms and extends to the office accommodation via vertical rises and terminated at each floor adjacent to the shaft and/or plant room wall. There is also work outside the site ownership boundary to be undertaken as part of the S106 and S278 agreements.

The Base Building includes the following:

a. 3 Entrances with the main entrance on Shoe Lane and additional entances on Farringdon Street and Plumtree Court. Public entry lobby to include:
   - Reception desks in main entry lobby to accommodate a minimum of 2 people
   - Directory board

b. Demising wall and doors or fire shutters between main entrance lobby and any accommodation space on ground floor.
c. Passenger, goods and fire-fighting lifts to all floors.
d. Vehicle Lifts serving the Loading Bay, disabled and service lifts serving the roof.
e. Toilet facilities on each office floor.
f. Core room enclosure walls.
g. Emergency escape stairs.
h. Shaft and riser enclosures for mechanical, plumbing, electrical and accommodation of telecommunications services.
i. Drylining prepared for painting at all perimeter enclosing walls. Columns within the office areas to be fire protected finish ready for tenant finish.
j. Drylining prepared for painting to tenant faces of core enclosures facing in the office areas.
k. Walls of stairs, plant rooms and service areas are painted masonry or drylining.
l. Mechanical plant rooms housing fans for air distribution, tank rooms, chillers and pumps.
m. Electrical equipment rooms housing generators, transformers, switchgear as required under statutory regulations.
n. Fire fighting and life safety system equipment to statutory requirements.
o. Fire Command Centre (FCC)
p. Security room with full CCTV coverage externally and to Landlord areas.
q. Building maintenance and management offices with identified contractors entrance.
r. A courier room with separate external access with bomb blast provision to accommodate the Landlords scanning/X-ray requirement.
s. Lavatories, shower and locker facilities for building management and maintenance personnel.
t. Dedicated cyclist facilities, showers and lockers will be provided.
u. Entry systems to secure the building from the exterior.
v. Window cleaning and external maintenance system.
w. Lighting of building external spaces to be code compliant.

1. GENERAL

x. Statutory signage
y. Loading and unloading dock, with dedicated compactor , recycling, and disabled car parking bays, with entrance shutters, automatic gates and signage.
z. Dock Master office with toilet facilities and recycle store room.
aa. Comprehensive building management system (BMS) for Base Building equipment.

1.3 General Standards

1.3.1 The Base Building

The base building will comply with all relevant Statutory Regulations, Building Acts, Building Regulations (including the latest edition of Part L (2010), The London Plan, Approved Documents B and M and the Disability Discrimination Act/Equality Act), British Standards and the British Standard Codes of Practice and Euro codes as appropriate and applicable, the requirements of the Fire Officer, Health and Safety at Work Act, workplace Regulations, CIBSE Guides, City of London Corporation (2012) Strategic Flood Risk Assessment (SFRA) produced by Halcrow in May 2012, Energy Networks and all other statutory and local authority requirements prevailing at the time of construction.

Period of Operation:

The building will be operated from 7.00am to 7.00pm.

1.3.2 BREEAM

The building is designed to achieve BREEAM Excellent.

1.3.3 Design Life

- The design life of the structure and cladding is to be 60 years
- The service life of the Cladding components shall be

Aluminium Frame	60 years
Fixing brackets, bolts, nuts etc.	60 years
Finishes	25 years
Double glazed units	25 years
Gaskets	20 years
Silicone Sealants	25 years

- The design life of other building components shall be

Suspended Ceilings	25 years
Raised Floors	25 years
Sanitary Fittings	25 years except moving parts
Roof coverings	25 years
Floor finishes to WC'S, entrances, Atriums,	
Floor slab sealant offices	25 years
Floor slab sealant paint areas	10-15 years water or chemical resistant paint

The above predicted design lives depend on following the recommended manufacturer's maintenance procedures.

1.4 Acoustic Criteria

- Building services internal residual noise levels will be the following maximum noise ratings when measured at normal seating height and at 3m from any plantroom:
- Open plan offices NR38 (when fitted out to the MSDF Cat A specification)
- Entrance lobbies NR40
- Toilets NR45
- External plant – Designed to be compliant with City of London planning requirements.

1.5 Provisions for sub-letting and tenant flexibility

- Riser provision are arranged to office floors to be split into four tenancies.
- Spare space left within plantrooms shall be available for tenants use on a pro-rata basis.
- Please refer to the building resilience as outlined in chapters 5 and 6.
- Please refer to Appendix E for tenant and landlord plant and riser allocations.
- The ability to expand toilet count to 72 fixtures per floor which is equivalent to 1 per 6m2 and a 60/60 male/female split to meet tenant requirements.
- Tenants have the option to provide cooling to the toilets by connecting to the landlords chilled water system and providing fan coils.
- Tenants have the option to provide fan coils or chilled beams as outlined in Chapter 5. Any decision to select an alternative method of air conditioning should condsider Part L and be agreed with Building Control.
- Tenants have the option of connecting to landlords ventilation, cold water and drainage systems to serve on floor tea points (4no. per floor).
- Space for tenant air cooled chillers (2no. within the Wider Consultation Area).
- Space allocation for 3no. kitchen exhaust risers and fans (at roof level).
- Space allocation for tenant gas supply installation.
- Diverse IT incoming rooms and distributon to risers.
- No specific 'soft spots' are provided but openings between floors are possible if the main structural beams are avoided.

2. STRUCTURE

2 Structure

2.1 Codes and standards

The structural design will be carried out in accordance with the Building Regulations. This is achieved by complying with the Eurocodes as 'approved documents'.

2.2 Substructure

a. General description

- The building will have a single storey basement structure extending generally to the boundary of the existing basement walls to Plumtree Court and the Fleet building.
- The substructure will reuse the existing basement walls and foundations of the Fleet building. BT tunnels, shafts, chamber and access routes are to be maintained.
- The substructure will be constructed in reinforced concrete

b. Foundations

- The building will be supported on a piled raft; piles are to be large diameter piles in the London Clay.
- The piled raft is to form the basement slab.
- The raft will comprise in-situ reinforced concrete and incorporate lift pits, sump pits and drainage manholes.

c. Basement Walls

- The existing reinforced concrete basement walls to the Fleet Building are to be re-used; these will be lined on the inside with a new reinforced concrete wall.
- Where the basement is to be lowered, to support the excavation and to prevent the ingress of ground water, a secant pile wall is to be formed to the inside face of the existing basement wall. To achieve a grade 3 waterproof environment the secant wall is to be lined with reinforced concrete. The perimeter wall to the basement will be designed to resist both earth and water pressure and will be propped by the floor slabs.

d. Basement Waterproofing

Basement waterproofing will be designed to achieve grade 3 throughout.

e. Ground Floor Slab

The ground floor slab will be constructed using a 300mm deep reinforced concrete flat slab except for the 350mm deep reinforced concrete flat slab at ground floor level east of gridline 4 and between grids H and M to provide flexibility for an auditorium and above the basement loading bay where a 250mm deep reinforced concrete slab spans onto 650mm deep reinforced concrete downstand beams.

f. Archaeology

Two areas of Archaeological interest were identified in the Molas report, of these only the area identified within Plumtree Court remains to be excavated.
.

g. BT and Third Party Interfaces

- A substantial cableway and a vertical shaft and separate lift shaft, which link to tunnels beneath the site, are present within the existing basement of Fleet Building. This cable chamber will remain active over the course of development and operation. The lift shaft has been closed and capped off for the demolition and construction phase but fire access must be maintained.
- An agreement is in place with British Telecom which defines how the cable chamber and access shafts are to be protected and maintained during and after construction.

h. Site Investigations

- A site investigation has been completed to confirm the ground, groundwater and ground gas regime beneath the site. Detailed geotechnical design, a ground gas risk assessment and an environmental assessment have been completed.

i. Structural Intrusive Investigations

- Structural investigations have been completed to inspect and test existing retaining wall structures within both the Fleet and Plumtree Court basements and the basement slab within the Fleet Building

2.3 Superstructure

The superstructure is to consist of a central reinforced concrete core with a surrounding floor plate constructed from cellular steel beams and composite metal decking supported by steel columns.

a. Upper Ground Slab

The upper ground floor will be constructed using a 300mm deep concrete flat slab and a 130mm deep composite deck over steel beams.

b. Upper Ground Mezzanine Slab

The upper ground mezzanine floor will be constructed using a 130mm deep composite deck over steel beams.

c. Typical Floor

Typical floor plate consists of a 130mm deep composite deck over 520mm deep cellular beams.

d. Atrium Levels

An atrium is to be provided through levels 6, 7 and 8, with its base at level 5 available for tenant office accommodation. The design of the superstructure frame is to include provision to infill or extend the atrium at a later date

e. Atrium Roof

Atrium roof is to be of glass and steel construction

f. Main Roof

- Roof structure is to consist of 130mm deep composite deck over 520mm deep cellular beams.

g. Wider Consultation Area

Enclosure is supported using cantilever steel columns.

h. Core

- Vertical elements are to be formed in reinforced concrete. Given the height of the building and the plan dimensions of the core, the amount of concrete walls will not be controlled by lateral loads, but rather gravity loading and robustness.
- Floor structure is to be a composite deck over steel beams.
- Stairs are to be pre-cast concrete or steel formed dependant on construction sequence.

2.4 Protection to structural steelwork

a. Fire protection

- Structural steel beams will be fire protected using intumescent paint in accordance with fire engineered solution.
- Structural steel columns will be fire protected using fire resistant board or intumescent paint.
- Composite slabs will achieve the required level of fire protection by adopting the additional reinforcement required by the decking manufacturer.

b. Corrosion protection to external steelwork

- Corrosivity categories to be determined in accordance with BS EN ISO 1294-2.

2.5 Stability and Robustness

a. Stability generally

- Lateral loads are to be carried from the façade through the floor plate to the central core. Reinforced concrete core walls act in shear to provide general stability by resisting the wind loading and code minimum notional loads. The walls are coupled via concrete link beams. The link beams leverage the full width of core to behave essentially as one large element to resist lateral loads.

b. Robustness

- Tie elements in the form of additional reinforcing between the slab and core will be provided for robustness.

c. Protective hardening

- Is to be provided, requirements are defined under separate cover

2.6 Structural Design Criteria

a. Loading General

- Design loads will be in accordance with BS EN 1991 and PD 6688

b. Dead Load

- Permanent loads (dead loads) are calculated from the known self-weight of the materials used for the construction of the frame.

c. Imposed Loading

- Typical office & trading floors
  Live Load 3.0kN/m²
  Demountable Partitions 1.0kN/m²

- Amenity floors
  Live Load 4.0kN/m²
  Demountable Partitions 1.0kN/m²
  (This can accommodate the following uses; assembly/multiuse, gymnasium, kitchens/dining rooms or office space)

- Mechanical Plant Rooms / Areas
  Live Load 7.5kN/m^2

- Accessible Roof and Roof Garden
  Assembly 4.0kN/m^2

d. Wind loads

- Wind loads acting on the main building frame and the various elements of cladding will be determined in accordance with the requirements of BS EN 1991-1-4 assuming the following:

Basic wind speed	V_b	= 21.5 m/s
Altitude factor	C_{alt}	= 1.0
Direction factor	C_{dir}	= 1.0
Seasonal factor	C_{season}	= 1.0
Probability factor	S_p	= 1.0

(corresponds to 50 year design life)

Building acceleration will be limited to 25mg for a 10 year return for the commercial occupancy.

e. Cladding loads

Double glazed curtain walling 1.50kN/m^2

f. BMU loads

BMU units are considered and will be provided

g. Lift loads

Are as defined by the vertical transport consultant, refer to section 10.

h. Movement Criteria

Lateral sway

- The deflection of the building due to design wind load is limited to H/500, where H is the building height
- The deflection of each storey, to be accommodated by the perimeter cladding, is limited to h/400 where h is the storey height.

Floor beams

- The variable load deflection for all internal beams not supporting cladding is span / 360
- Cumulative variable load deflection criteria for edge beams supporting cladding is typically a maximum deflection of 12mm except
  - at the line of the level 8 peel back façades where the deflection criteria is a maximum deflection of 15mm
  - at the tip of the level 1 cantilevers where the deflection criteria is a maximum deflection of 21mm
  - at the atrium façade where the deflection criteria is a maximum deflection of 33mm

i. Floor vibration

A response factor of 6 is to be achieved throughout

j. Tolerances

The tolerances adopted are based on the principles described in BS5606 and defined in the Movement and Tolerances report.

3. FACADES

3 Facades

Please refer to the Arup Facades Façade Matrix in Appendix N for further information.

3.1 Exterior Walls for Typical Floors – Farringdon Street/Stonecutter Street

The angled wall on Farringdon Street and Stonecutter Street begins at Level 1 and stops at Level 7, defining the office floors on the façade. It has a pronounced vertical reading and due to its orientation, gives a very different appearance when viewed from opposing directions. Looking north, finely curved vertical metal fins alternate with vertically oriented double glazed units. The metal fins are stainless steel or aluminium sheet with insulation and waterproofing behind. At their base, these planes end with splaying fillets that align with the stone base of the Ground Floor. Looking south, the glass panes merge so that metal fins read as thin vertical pinstripe. A stepped edge is visible in both instances against the sky. This façade system is based on a 3 metre module and the panels will be 4.395 metres high. The vision glass will be approximately 3.6 metres high to suit the floor to ceiling height with a glass spandrel to make up the difference.

This façade system shall comprise full floor to floor height unitised panels with high performance clear double glazed units with a laminated inner and monolithic heat-strengthened outer pane. The glass units span floor to ceiling in vision areas and the spandrel zone comprises a separate opaque glazed panel with a shadowbox and PPC insulated metal panel behind. The horizontal joints are to be flush glass to glass joints. All glazed units are to be structural silicone bonded to aluminium mullions and transoms. These units will be designed to meet a maximum average U-value of 1.3W/m^{2}K and the vision glass is to meet a G-value of 0.28 with a visible light transmission of 50%. All exposed aluminium is to be natural silver anodised. The columns at the perimeter are on 3 metre centres and within the façade zone. They are clad with insulated metal panels that curve in plan to mediate between the staggered glazed units.

This façade system also incorporates a stainless steel or aluminium skirt at the base of the type which terminates at the underside of Level 1. The soffit to Level 1 comprises stainless steel sheet or PPC aluminium panels with insulation and air seal behind. This soffit continues around the entire perimeter of the building and interfaces with the other main façade type to Shoe Lane and Plumtree Court.

3.2 Exterior Walls for Typical Floors – Shoe Lane/ Plumtree Court

The smooth wall to Shoe Lane and Plumtree Court is considered to be a background form and is a simple double glazed system that is structural silicone bonded with internal mullions and transoms. As such, it presents a smooth outer face with thin horizontal and vertical joints. The vertical panel module is a 3 metre grid and the vision glass is 3.6 metres high while the spandrel zone is glazed but opaque and insulated resulting in an overall panel height of 4.395 metres.

This façade system shall comprise full floor to floor height unitised panels with high performance clear double glazed units with a laminated inner and monolithic heat-strengthened outer pane. The glass spans floor to ceiling in vision areas while the spandrel zone comprises a separate opaque glazed panel with a shadowbox and insulated PPC metal panel behind. The horizontal joints are to be flush glass to glass joints. All glazed units are to be structural silicone bonded to aluminium mullions and transoms. These units will be designed to meet a maximum average U-value of 1.3W/m^{2}K and the vision glass is to meet a G-value of 0.28 with a visible light transmission of 50%. All exposed aluminium is to be natural silver anodised. These units are all flat panels and the large radius curve is incorporated by varying the angle between the panels in plan.

This façade type is also the enclosure to the terraces at Level 8 and incorporates double glazed, weather sealed doors. The extension of this type forms the edge of the building at roof level.

3.3 Base of Building

The form and massing of the Building is based on the intersection of two geometries and textures: a smooth, flowing form that provides background to a more articulated and angular façade element that is applied to both the Farringdon Street and Stonecutter Street elevations. A more solid, though perforated, base sets a datum at Upper Ground Level and appears as a single-storey stone base along Farringdon Street. This base steps up to the north end of the building and tapers to pavement level as Plumtree Court climbs towards Shoe Lane. At the southern end of Farringdon Street, the base wraps around the south-east corner and steps as well as tapers to pavement level as it climbs towards Shoe Lane. The stone base will be articulated with deep slots to recessed windows that will afford glimpses into the ancillary office spaces behind and provide street views from within. The Farringdon Street entrance is set deep within this stone base to provide shaded and dry access to the Building. Corresponding with the Upper Ground Level and therefore the entrance level at Shoe Lane, the flowing background form is expressed as a tall piano nobile revealing internal volumes containing enclosures with circulation in between. The Plumtree Court entrance is also set within this stone base.

Provision for flood risk is also provided behind the stone base along Farringdon Street to an elevation of +8.000AOD up Stonecutter Street and Plumtree Court.

3.3.1 Façade Types

The Base of Building facades are of two main types: The full-height glass facades and stone wall with punched openings.

The full-height glass facades are typically of a 3 metre module in plan and vary in height comprising high performance clear double glazed units with a laminated inner and monolithic heat-strengthened outer pane. The external joints are to be flush glass to glass joints. All glazed units are to be structural silicone bonded to glass fins or aluminium carriers with steel mullions or a combination of aluminium carriers and glass fins depending on the height. The units may also require a stainless steel 'T' to achieve the desired security rating. These units will be designed to meet a maximum average U-value of 1.3W/m^{2}K and the vision glass is to meet a G-value of 0.28 with a visible light transmission of 50%. Security rated glass revolving and pass doors will be incorporated within these facades.

The stone wall façade type with punched openings comprises jura limestone or similar set in a running bond within 6 metre bays and vary in height. The typical punched openings accommodate clear high performance double glazed units to resist the desired security rating at approximately 1.7 metres wide. The stone façade to Farringdon Street is backed by a structural concrete wall with waterproofing and insulation to resist hydrostatic pressure to a level of +8.000AOD.The glass within the recesses are also designed to resist hydrostatic pressure from a flood event. Steel channels are incorporated at recesses with door openings to relieve aluminium flood barriers. These are also incorporated at either end of the Farringdon Street entrance. Intake and exhaust louvres are provided to the horizontal surface to the top of this façade type. These take the form of stainless steel gratings with drained plenums behind. This façade system will also accommodate the steel security rated fire access/escape doors along Farringdon Street and the security rated fire escape doors on Stonecutter Street are also incorporated within this base. The vehicle entry doors to the east end of Stonecutter Street will be a bespoke horizontal folding door.The overall door size will have a minimum height of 4.5 metres and an approximate width of 13 metres. The doors will be clad in metal.

3. FACADES

3.4 Roofs and Terraces

The highest occupied floor, Level 8, includes terraces that are created by the long sweeping curves described by the flowing background form on all elevations. The terraces are an offset from the line of the facades below and provide access for building occupants along Plumtree Court, Farringdon Street and to a lesser extent Stonecutter Street. The terrace offsets gradually merge into the cladding of the south-west corner.

The terraces will be thermally insulated inverted type roofs with a continuous liquid applied waterproof membrane on a sloping in situ concrete slab with approximately 0.5 x 0.5 metre reconstituted stone paviours on pedestals over expanded polystyrene insulation. The inverted roof buildup is to meet a U-value of .15W/m^{2}K.

The terrace balustrades will comprise curved and facetted heat-strengthened cantilevered glass balustrades.

At roof level an amenity area for building users will be provided to the south-east. A green roof will be provided to all other areas where feasible. Over the core, lift overruns, exhaust plenums and extract fans will dominate. The atrium roof currently occupies a significant portion of the central area east of the core.

The main roof buildup will comprise a thermally insulated inverted type roof with a continuous liquid applied waterproof membrane on a sloping in situ concrete slab with a combination of intensive and extensive green roof, planting and reconstituted stone paviours on pedestals over expanded polystyrene insulation. The inverted roof buildup is to meet a U-value of 0.15W/m^{2}K. The perimeter zone of the roof will accommodate the BMU tracks and will be for maintenance access only. A combination of green roof and aggregate over the inverted roof will be used in these locations.

Over the core, the roof will be of the thermally insulated inverted type with a continuous liquid applied waterproof membrane on a sloping in situ concrete slab with approximately 0.5 x 0.5 metre precast concrete paviours on pedestals over expanded polystyrene insulation with ballast to perimeter zones. The inverted roof buildup is to meet a U-value of .15W/m^{2}K.

3.5 Wider Setting Consultation Area (WCA)

The southwest corner will be emphasised as a marker where the WCA allows for the massing to rise. The space created by this raised corner accommodates heat rejection plant and parking for façade maintenance equipment. The vertical sides of this raised zone are treated as a pure extension to the smooth façade type. The top and sides of this zone are screened by a louvred enclosure.

The roof buildup in this area will be of the thermally insulated inverted type with a continuous liquid applied waterproof membrane on a sloping in situ concrete slab with approximately 0.5 x 0.5 metre precast concrete paviours over expanded polystyrene insulation with ballast to perimeter zones. The inverted roof buildup is to meet a U-value of 0.15W/m^{2}K.

4. MEP SERVICES

4 MEP Services

4.1 Basis of Design

4.1.1 Design Standards and Codes

The design will comply with the following codes and standards:

- British Standards (BS) and European Standards (EN)
- British Standard Codes of Practice (BS CoP)
- CIBSE Guides to Current Practice and Technical Memoranda
- Institution of Electrical Engineers Regulations (IEE) – Requirements for Electrical Installations (BS 7671)
- Institute of Plumbing and Heating (IPHE) – Plumbing Engineering Services Design Guide
- Water Supply (Water Fittings) Regulations
- Water Byelaws
- Building Regulations
- Loss Prevention Council (LPC) and Loss Prevention Standards (LPS)
- BRE Digests, Information Papers, and Good Repair Guides
- Building Services Research and Information Association (BSRIA) Guides
- Local Bye-Laws and/or Regulations
- Manufacturer's instructions and recommendations for installation/testing
- Health and Safety at Work Act
- CDM Regulations
- Radiocommunications Agency
- British Council for Offices (BCO) – Guide to Specification (2009)
- The London Plan (2011)
- Secure by Design (2004)
- BREEAM New Construction (2011) – Excellent Rating
- Equality Act 2010

4.2 Tenant Load Requirements

The central plant has been designed to meet the requirements of a single tenant, with provisions to modify/upgrade the central services to cater for the requirements of multi-tenancy (max 4 per floor) and typical tenant /loads as noted in the document.

4.3 Design Criteria

4.3.1 External Design Conditions

Summer: 30˚Cdb/21ºCwb
40ºCdb/21ºCwb (heat rejection equipment)
Winter: -4ºCdb/saturated

4.3.2 Internal Design Conditions

Area	Summer	Winter
General Offices	24 ± 1oC, max RH 55%	22± 2oC, max RH 55%
Toilets	No temperature or RH control	180 C minimum. No temperature or RH control.
Lift lobbies	24 ± 2oC, no humidity control	22 ± 2oC, max RH 55%
Reception	24 ± 1oC, no RH control	20 ± 2oC control temperature at low outdoor wind speeds
Plant Rooms	Ventilation only. Cooling will be provided where necessary to ensure electrical and controls equipment is maintained within manufacturer's required operating conditions	Ventilation only. Cooling will be provided where necessary to ensure electrical and controls equipment is maintained within manufacturer's required operating conditions.

No humidity control is incorporated. Space provision will be incorporated into the air handling units to enable humidification to be installed at a later date.

4.3.3 Internal Heat Gains for Conditioned Areas

The following loads have been allowed for in calculating the maximum cooling loads for the building.

Area	Lighting	Equipment	People Sensible	People Latent
General office floor	8 W/m2	25 w/m2	75W/person	55W/person
Trading floor	8 W/m2	60 w/m2	75W/person	55W/person

Lighting efficiencies at 1.8w/m^2/100lux or better for Part L compliance.
The maximum loads noted above wil require the installation of an additional chiller

Occupancy Densities

The occupational density is an average of 1 per 8m^2 across the floors however the current base build configuration is split as follows to reflect the different types of occupiers on large floor plates and atrium floor plates

Area	Occupancy	Notes
General office floor	1 person per 10m^2 average	
Trading floor	1 person per 6m^2 average	Three floors of trading are included in the base calculations

4. MEP SERVICES

Minimum Fresh Air Ventilation Rate

Area	Fresh Air Provision
General offices and trading floors	base – 10 l/s per person at 1 person per 6m^2 on all floors with 67% applied diversity upgrade capability – 12l/s per person at above occupancy densities.
Toilets	6 AC/H extract, with make-up air from adjacent spaces
Tenant kitchens	40 AC/H (3 separate riser allowances available)
Tea points	10 AC/H (4 riser provisions per floor)
Loading bay	10 AC/H (smoke clearance)
Basement levels – including tenant spaces	2 AC/H background supply ventilation with 10 AC/H smoke clearance.

4.3.4 Air Permeability and Infiltration

For the purposes of assessing the heating and cooling loads only the following notional infiltration figures will be used.

Area	Fresh Air Provision
General office and trading floors	0.25 AC/H within 4.5 metres of perimeter
Main reception / entrance lobby	2 AC/H local to reception/lobby area

The target air tightness for the building will be 5m^3/h/m^2 at a positive pressure differential of 50Pa.

4.3.5 Public Health Design Criteria

- Cold Water Demand 25 l/person/day
- Domestic Cold Water Usage 15 l/person/day
- Tea Points/Catering/ Wellness 10 l/person/day
- Hot Water Demand 15 l/person/day
- Storage Size 18 hours

4.3.6 Noise Criteria

The following noise levels are attributed to the operation of M&E plant only:

Internal Areas

Area	Criteria
General Offices/Trading – open plan based on Cat A fitout	NR38
Meeting Rooms (subject to tenant fit-out)	NR35
Toilets	NR45
Entrance/Circulation	NR40
Loading Bay	NR55
Plant Rooms (except when generators operating)	NR75

External Areas

Noise levels generated by the building services to the external environment will be in accordance with the requirements of planning, the Local Building Control and the Environmental Health Officer.

4. MEP SERVICES

4.3.7 Building Thermal Characteristics

Envelope

Component	U Value
External Walls	0.35 W/m² K
Roof	0.15 W/m²K
Exposed Floor	0.25 W/m²K

Façade

U Value	1.3 W/m² K
g value	0.28
Light transmission	50%

5. MECHANICAL SERVICES

5 Mechanical Services

5.1 Central Plant

The major plant consisting of chillers, boilers, Combined Heat and Power (CHP) units, space for future tenant standby generators, central air handling units, economiser fans, pumps and tanks are all located in the basement.

The space for standby generators and the boiler plant including the CHP units are located at the South and West of the basement to ease the route of the flues rising up to the cooling tower compound in the WCA at the roof.The chillers are located at the North West of the basement with good connectivity to the main air handling plant and the cooling tower risers.

The future tenant standby generators will be cooled by a combination of condenser water and air. The cooling air will be derived from the main air supply system, when the generators operate the air economiser plant run and a proportion of that air serves the generator room. Whilst the generators are running the full extent of free cooling is not available. The main air handling systems will provide minimum fresh air. Air exhaust from the generator room will be provided by dedicated landlords exhaust fans located at basement level and a riser to the roof level. Refer to resiliency matrix in Appendix O.

The central air-handling units are located in the North West of the basement with a distribution plenum providing connectivity to air tower risers running up through the core of the building.

The UKPN intake and network substation rooms are located in the Northeast of the basement. They are located adjacent to the loading bay lifts which provide good access. The distribution substations, future space for tenants UPS equipment and the main LV panels are located at ground floor level along the West side.

The heat rejection plant is located on the roof within the WCA and is screened. Exhaust plant is also on the roof and generally located above the central core in a depressed area compared to the main roof to allow for plant screening above the equipment. The workspace general exhaust fans are located in the 8th floor air tower rooms and discharge vertically into acoustically treated plenums at roof level.

5.2 Chilled Water and Condenser System

The cooling towers are sized to meet the entire heat rejection load for the building.

The entire heat rejection load comprises the heat rejection from the chillers plus the heat rejection from the future tenant standby generators (maximum overall generation capacity of 10 MVA).

The chillers are designed for variable primary flow, fitted with variable speed drives to enable a turndown ratio to meet the lower winter cooling load currently assessed at 1MW. The system can also operate as a traditional primary-secondary system by running the chiller pumps at full capacity.
The chilled water temperature is scheduled in line with the external ambient to be 6/12°C at peak conditions rising to 10/12°C over the cooler months. This arrangement will maximise the potential for free cooling and still permit dehumidification in summer.

The heat rejection requirements are met by 4 no. cooling towers.

5.3 Air -Cooled Chillers

Space exists adjacent to the cooling towers in the WCA for 2 no. 500kW (size to be confirmed and dependent on acoustics) air-cooled chillers for future tenant critical IT loads.

5.4 Additional Tenant Cooling Loads

The maximum available cooling load is 8.6MW. The maximum available cooling capacity is 8.6MW. Due to landlord negotiations with an Anchor Tenant the total load that they require enables a single chiller to be omitted.The base chiller installation comprises 3 no. 2.2 MW chillers with spare space allocated for a future 2.2 MW chiller to meet the actual demand.

5.5 Combined Gas Fired Heat and Power (CHP) Units

CHP rated at 1 MW (thermal) has been incorporated in the scheme using modular CHP units that can be tuned to accurately match the load profile of the building. These units are located adjacent to the boiler plant room to integrate with the heating systems.

The 4No modular CHP units and the associated 5000 litre thermal store which is provided to optimize the run time of the CHP, operate as the lead heat source, i.e. first stage of heating for the building.

5.6 Boiler Plant

Gas fired modular central low temperature hot water (LTHW) boilers carry the majority of load requirement for heating and domestic hot water services with a total nominal installed output capacity of 6 MW.

The CHP and boilers are arranged on a common header such that the lead heating duty is always met by the CHP.

5.7 Incoming Gas Supply

The incoming gas supply to the building enters below ground from Stonecutter Street into the naturally ventilated gas meter room at Basement level. The gas supply is metered. It provides gas to the boiler plant and CHP units. Connections and riser space are allocated for 3 no. tenant kitchens.

5.8 Toilet Ventilation System

Toilet extract is provided by dedicated extract plant discharging at roof level to provide 6 air changes per hour. Low pressure toilet exhaust risers run vertically through the core with horizontal branch ductwork connecting exhaust grilles in each toilet. Volume control dampers are provided at all branch ductwork for balancing purposes. Acoustically lined transfer ducts will be provided above the ceiling of each toilet to allow air to transfer for toilet exhaust make-up air from the adjacent spaces.

5.9 Work Space Ventilation

The occupied work space ventilation is to be provided by a combination of variable air volume Air Handling Units (AHU's) and variable air volume Economiser Fan Units (EFU's) located within the basement with supply air being distributed throughout the building from the supply air plenum in the basement through 6 no. dedicated, acoustically treated, fire rated ductwork air shafts. These provide filtered and heated/or cooled air to the on-floor Air Tower (AT rooms) at a variable temperature within the

range of 5ºC to 18ºC, which is determined by the availability of free cooling and the demand for cooling in the space.

Space will be provided in the AHU's to enable humidification to be added in the future.

5.9.1 Workspace Cooling (Base Case) – Under Floor Air Distribution (UFAD)

Refer to Appendix H for further details of the Cat A works, however a summary is as follows:.

The base case is for the supply of conditioned air to be distributed through the floor void and enter the space through floor grilles. Extract air is drawn back to the AT rooms through ceiling tiles into a high level plenum within the AT room providing a return air path and/or extract to atmosphere via a series of vertical ducts.

There are 6 no. risers in the base scheme serving the office floors and adjacent to each riser on every floor is two or three AT's supplying conditioned air to the workspace on that floor. The AT's take the required volume of fresh air from the supply air shaft, which is a variable volume/temperature system (dependent upon the degree of free cooling that is available), and mix this with the return air from the space to provide a steady supply air temperature of 17ºC to the floor void.

Alternative supply air temperatures can be considered by tenants, however this will require a full comfort analysis and must be agreed with the landlord, prior to being implemented.

5.9.1.1 Perimeter Treatment

Refer to Appendix H for further details of the Cat A works however a summary is as follows:.

The perimeter system comprises fan powered boxes at 6 metre centres equipped with heating coils and ECM motors located within the floor void and connected the perimeter diffusers.

To offset the perimeter heat loss in winter the fan powered terminals require will be provided with a heating coil. Analysis has indicated that because the AT's are equipped with LTHW heating coils they can handle the morning warm-up cycle and hence the perimeter load is very low.

5.9.2 Workspace Cooling (Alternative Case) – Fan Coils/Chilled Beams

Refer to Appendix H for further details of the Cat A works, however a summary is as follows:

Fan coil units (FCUs) or chilled beams can be provided as an alternative to the AT/UFAD system by modifying the base build infrastructure building services to include the Installation of flat plate heat exchangers between the base building chilled water and LTHW systems and the tenant's tertiary systems in the AT rooms.

In these circumstances the tenant would be responsible for installing:

- Installation of on-floor AHU's to provide fresh air to back of FCU's via distribution ductwork.
- Terminal units located in the ceiling void throughout the floor, including chilled and LTHW piping, power and controls.
- Condensate piping back to drain points on the AT rooms.

It should be noted that the installation of different workspace cooling systems on the same floor will not be permitted.

5.10 Office Space Extract System

The building will be provided with a general exhaust system to maintain proper levels of pressurisation within each occupied area. Air will be exhausted through variable air volume general exhaust fans located at the top of each extract air riser within the adjacent air tower room. There are 6 no. acoustically treated low pressure fire rated extract ducts running vertically through the building. Volume dampers shall be provided at all branch ductwork that will be controlled in tandem with the supply air volumes from the AHU's and EFU's. These exhaust systems will discharge at roof level via acoustically treated plenums.

Heat recovery will be carried out at the on floor air towers through the recirculation of extract air that is already at space conditions

5.11 Landlord areas

Area	System
Lift lobbies	FCU's or underfloor air distribution being considered
Main reception/entry lobbies	All air systems no fresh air
Ancillary Extract Systems	
Tenant kitchen exhaust	Riser space and roof level plant areas for installation of tenant sytems
Tea point exhaust	Duct risers with volume dampers for tenant connection; roof level fans by landlord
Loading bay extract	Basement fans discharging through louvres

5.12 Basement Ventilation

Supply and exhaust fans will connect to the basement ventilation shafts and distribute air to various mechanical rooms, tenant areas and back of house areas within the basement and ground floor levels.

These areas will be ventilated in accordance with the design guidelines outlined in the above tables.

5. MECHANICAL SERVICES

5.13 Standby Generator Ventilation

The space provision and associated infrastructure for 5 no. 2 MVA high voltage diesel fuel generators is provided to meet future tenant standby requirements in addition to incoming main supplies in the base design.

Air for both combustion and engine block radiant cooling air is drawn from the main fresh air supply plenum and is exhausted through the basement ventilation shaft by a dedicated exhaust system installed by the landlord.

Engine heat rejection will be achieved by supplying condenser water from the base building cooling towers via the common condenser water riser plate heater exchangers in the generator room.

5.14 Tenant IT Cooling

Tenant IT spaces can be cooled from the main central condenser installation or from stand alone tenant supplied cooling equipment. The heat from this tenant system equipment can be rejected into the tenant condenser water system which has a capability of 120kW heat rejection per floor.

It is assumed that these rooms will be provided with minimum fresh air from a system installed by the tenant.

Free cooling is incorporated into the condenser water system to provide pre-cooling to the return chilled water when conditions allow.

The chilled water target temperature will vary with the outside air enthalpy to maximise the potential from free cooling.

5.15 Clearance

5.15.1 Work Space Smoke Clearance

The general exhaust fans located in the 8th floor air tower rooms will also be utilised as smoke clearance fans.

Manual control of smoke clearance dampers will be via the Fire Command Centre under the direction of the Senior Fire Office present at the time. The smoke clearance fans serving each riser will operate to clear smoke from any one floor at a time at a minimum of 6 air changes per hour. The smoke dampers on the vertical duct risers running through the building will be controlled to allow exhaust from any one floor. Make-up air will not be provided to the floor that is being cleared but will be drawn in from the adjacent staircase(s) as determined by the fire brigade.

5.15.2 Atrium Smoke Clearance

Atrium smoke clearance will be achieved using natural ventilators located at roof level, with purge air being provided in at low level from the fifth floor air supply system. During smoke exhaust the fifth floor air towers will not be available, the outside air introduced into the air tower rooms will be the make up to the atrium exhaust designed for 6 air changes per hour.

The atrium base is at Level 5 and the cut out is from Levels 6 to 8 and the roof of the atrium is a skylight occupying the same footprint as the atrium and coincident with roof level.

5.15.3 Basement/Plant Areas Smoke Clearance

The basement and plant floors will utilise the return system associated with each zone as smoke exhaust fans. Such systems have been appropriately fire rated. Each fan will exhaust air through the normal return air ductwork and discharge through the basement ventilation shaft. These systems will exhaust the specific smoke zone in the event of a fire at a minimum rate of 10 air changes per hour. Make-up air will not be provided to the area that is being cleared but will be drawn from adjacent basement areas.

5.16 Security Areas

The security control room will require a stand-alone air conditioning system to operate 24/7. The ventilation to this space is required to be CBRN protected, although the extent and method of control is yet to be determined.

5.17 Atrium

The atrium is located on the east side of the building from level five through to level eight capped with a glazed roof. The base of the atrium at level five is open to the general floor and will be used for general workspace and will be ventilated and cooled from the under floor air distribution system. The east wall of the atrium is largely glazed and to control the heat build-up above the occupied zone natural ventilators at roof level will be provided to maximise natural ‘stack effect’ ventilation. Perimeter heating will be included to offset downdrafts and the perimeter bridges will be serviced via the office floor UFAD system. The work space at levels six, seven and eight are not open to the atrium.

5.18 Building Management Systems

The Building Management System (BMS) will control and monitor the building engineering systems and services, providing feedback of plant, system performance, monitoring and energy management of the system. The BMS will analyse this data to enable optimum use of the engineering facilities within the building with minimum of human intervention, and maximising energy efficiency.

The system will consist of distributed outstations, connected by a data highway to enable central control and monitoring of each outstation. Each outstation will be capable of running independently. The BMS will be independent of the fire alarm, lift installation, lighting management system, LV load control/monitoring system and the security systems, but will interface with these systems and the standby generators and UPS plant to display the monitoring and alarm data at any designated supervisors station, i.e. the BMS head-end.

Building services central plant control and monitoring functions will be performed by BMS outstations. Outstations controlling central plant will generally be associated with motor control centres (MCC’s) located within each main plant room.

The Building Management System will provide a complete and fully automated DDC intelligent energy conscious command, control, monitoring and reporting system.

5. MECHANICAL SERVICES

5.19 Metering Strategy

To comply with Building Regulations Part L2A, the BREEAM credits for primary load metering and tenant metering, at least 90% of each fuel of the building energy will be sub-metered in compliance with CIBSE technical memorandum TM39:2006.

As required by Part L2A, all meters will have automatic electronic data collection, where this data collection is external to the default Power Management System (PMS) i.e. hours run data generated via the BMS, there will be an interface so that all the energy usage is ultimately all available from the PMS.

5.20 Plant Replacement Strategy

The design of the building has been developed to satisfy the need for effective and safe plant replacement and plant upgrading. In summary:

- Rooftop plant will normally be removed through a roof hatch and will be transferred to the basement via the goods lift. Replacement of a cooling tower will however require a crane.
- On floor plant will normally be removed through the appropriate door. End of life replacement of a full air tower will however require a wall to be demounted and replaced.
- Ground floor plant will be removed via the adjacent corridors and will be transferred to the basement via the goods lift.
- Basement plant will be removed via the adjacent corridors and the vehicle lifts. Lifting beams will be provided as required.

6. ELECTRICAL SERVICES

6 Electrical Services

6.1 Incoming Power Supply

The UK Power Networks (UKPN) incoming supply arrangement will provide duplicate 10 MVA supplies from two primary substations at 11kV. As part of the network reinforcement in the area UKPN will be creating a major primary double busbar 11 kV distribution switchboard within the basement that will be the source of the supplies to the building. HV Distribution
The UKPN incoming supplies will feed 2 no. 11 kV changeover switchboards which will facilitate the change from supply A to supply B in the event on a loss of one of the UKPN feeders. The inclusion of the changeover switchboards enables the transfer of load to take place at MV without the need to switch to single transformer operation downstream.

The two changeover switchboards will supply the main MV, A and B switchboards serving the building's main high voltage distribution. Each switchboard will provide supplies to the three, 11 kVA/400 V substations providing the low voltage distribution to the building.

The A and B MV switchboards will also provide the interface with the any 11 kV standby generating plant provided by tenants.

6.2 11 kV/400 V Substations

The LV distribution will be served by three substations, one serving the landlords supplies and two serving the tenants supplies. The ratings will be in the order of 2.5 MVA and the transformers will not be loaded to above 90% of the predicated demand.

Each of the 3 substations will comprise the following:

- Transformer 11kV isolators
- Duplicate cast resin transformers
- Low voltage switchboard

The duplicate transformers and associated isolators will be located within individual fire rated enclosures to prevent a fault on one transformer affecting the other transformer. The low tension side of each transformer will be connected to the associated side of the LV switchboard. Each side of the switchboard will be located within a dedicated fire rated switchroom with the 2 switchboard sections linked via double bus section switches, one within each enclosure.

Under normal operating conditions both transformers will share the load with the bus section switches open. If a transformer fails the load will be supported by a single transformer with the bus section switches closed, the transformers will be fully rated to support this load.

The substations will be divided between landlords and tenants services and cooled from the central cooling system via in-room FCU's.

6.3 LV Distribution

The LV distribution is divided between landlords and tenants services, each supplied via the associated substations.

6.3.1 Tenant's Distribution

There are four major rising busbars, which provide power to both landlord and tenant spaces. The power and lighting for the common parts will be supplied from distribution boards located within the riser rooms and fed from the riser using metered fused tap-offs. The power supplies for the tenant systems and the tenants fan towers will be sourced from switchrooms within the tenant's demise with power supplies extended from the riser using metered fused tap-offs.

A separate connection will be provided for the upper ground floor retail area.

Horizontal and riser distribution space will be provided for future tenants UPS distribution systems serving their critical loads.

6.3.2 Landlord's Distribution

The landlord's distribution will be defined as power supplies to the following services:

- Mechanical plant
- Vertical transportation
- Lighting and power to cores and landlord common parts
- Fire and life safety systems

6.3.3 Mechanical Plant

The disposition of the mechanical plant will require supplies to be provided to the basement, roof and the core at each floor level.

The basement will contain the chillers, air plant and pumps which will generate a significant demand. The chillers will be supplied directly from the main switchboards with the load divided across the landlord's substation to provide enhanced resilience. The air plant and pumping equipment will in general be supplied via motor control centres fed from the main switchboards.

The roof will contain cooling towers and air plant. The plant will be supplied via motor control centres, the supplies will originate from the substation main switchboards.

AT rooms will be located on each level with power derived from the on-floor switchrooms.

6.3.4 Vertical Transportation

Supplies to the lifts will be directly fed from the substation main switchboards. Lifts designated as fire fighting will be provided with duplicate fire rated dedicated supplies from different substations.

6.3.5 Lighting and power to cores and common areas

Supplies to the lighting and power are divided between the tenant's floors and those floors below level 1.

The landlord lighting and power requirements in the cores will be provided as described above.

The supplies to the lighting and power requirements within the upper ground, ground and basement levels are provided by a series of supplies fed from the main switchboards via sub-distribution boards.

6.3.6 Fire and life safety systems

Power supplies to fire and life safety systems will include:

- Sprinkler pumps
- Fire fighting lifts
- Smoke clearance fans

Life safety supplies will be provided via dedicated feeders from the main substation switchboards installed in fire rated cables terminating in automatic changeover switches (ATS) positioned adjacent to the plant. The duplicate feeders to each ATS will be supplied from different substations to meet the requirements of BS 9999; in addition the power supplies to the sprinkler pumps will be taken from the live side of the associated main switch and will be rated in accordance with BS9999.

6.4 Standby Generation

In addition to the 2 UKPN incoming supplies space provision for future tenant's Standby diesel generating plant will be provided capable of supporting the total predicated load of the building. These future generating sets will be provided with jacket cooling from the main cooling tower plant. The air for aspiration and the removal of radiated heat from the engine within the plant room will be achieved by forced ventilation through the landlord supply air plenum and extract air shafts. The generating plant will be supplied from a landlords bulk storage tank equivalent to 48 hour operation at 50% load or 24 hour at 100%. The generators installed will be operated by the landlord for the mutual benefit of all building occupiers.

6.5 UPS

Space provision for future tenants no break static UPS's will be provided.

6.6 Main Earthing System

A TN-S earthing system will be provided to ensure the fast and safe operation of the distribution systems protective devices under earth fault conditions.

6.7 Power Factor Correction

Automatic power correction equipment will be provided to ensure that power factor at the substation main switchboards is maintained at 0.95 or above. Power factor capacitors will be installed as part of the main substation switchboards and/or to local to high capacity e.g. chillers.

6.8 Harmonic Control

The HV/LV systems are designed to ensure that the recommendations of G5/4 for harmonic injection limits into the network are achieved.

6.9 SCADA/Power Control System (PCS)

A comprehensive control and monitoring system is provided to enable the building power systems to function automatically in the event of a loss of supply of network supply or a fault on the internal distribution system. The SCADA/PCS will also facilitate the monitoring of the systems by the FM team and enable maintenance regimes to be implemented.

6.10 Lighting

6.10.1 General

Lighting will generally comprise low energy luminaries either surface, recessed or suspended in accordance with current good practice, Building Regulations Part L, BCO and the CIBSE lighting guides LG3 and 7.

The lighting scheme will be designed to provide a safe, secure and functionally lit visual environment. Lighting levels within office areas will typically be 400 lux average maintained luminance at the working plane based on reflection values of 75:60:25 (Ceiling Reflectance: 75%, Wall Reflectance: 60%, Working Plane Reflectance: 75% at 0.75m and Floor Reflectance: 25%).

Generally lighting levels to be at Uniformity of 0.8.

Typically the open plan office lighting will be high frequency, dimmable luminaries utillising LED's. The lamp type will be selected on the basis of high efficacy and lamp life.

Circulation area lighting, depending on location within the office spaces the lighting levels will be maintained at the same level as the surrounding areas.

The tables below identifies proposed lighting levels

Area/space	Illumination level (lux)	Limiting glare index
Corridors	100 (floor)	28
Stairs	150	25
Lift lobbies	200	25
Toilets	200	25
Back of House Areas	200	25
Office Space Reception	350-500 100 - 300	19 22

6.10.2 Lighting Control Philosophy

A centralised addressable lighting management system is provided to enable the re-programming of the individual areas to suit both landlords and tenants requirements, including emergency lighting self-testing and monitoring.

The basis of control is by local occupancy sensors incorporating daylight control where appropriate. The sensors will dim the artificial light depending on the amount of daylight. This system will incorporate a 'soft' control system in that it operates continuously and gradually to regulate the lighting level per workstation.

6.10.3 Emergency Lighting

Emergency lighting will be provided in accordance with BSEN 1838 (BS 5266, Part 7 – 1999) and Local Authority requirements. Central battery systems will be provided for Landlord areas and self-contained 3 hour battery and inverter packs for tenant areas.

6.11 Small Power

The power systems to be provided include provisions for portable and fixed equipment, general purpose power systems and supplies to HVAC equipment to landlord areas.

a. General Purpose Power System

The general purpose power systems generally comprise an assortment of socket outlets, isolating switches and fused connection units etc. The small power system will be wired in XL-LSF single core cables, laid in the trunkings and/or drawn through conduits.

Socket outlet circuits will be wired in ring main form with the use of non-fused spurs expressly forbidden.

Standard 230 V/13 Amp socket outlets, BS 1363, and other wiring accessories in plant rooms, risers and ceiling voids will have metal clad face plate and will be fixed over a matching surface mounting back box. Socket outlets and other wiring accessories in all other areas will have flat faceplates and will be mounted over flush fitted pressed steel back boxes.

Connections between isolating, switches, fused connection units, etc. and the items controlled may be surface mounted in plant rooms, risers and floor/ceiling voids and will be concealed within the building finishes elsewhere.

b. Supplies to HVAC Equipment

The supplies to HVAC equipment will generally comprise the electrical supply to all control panels, plant, space heaters, water heaters and control equipment.

c. Uninterruptable Power Supplies (UPS)

The building's critical loads and critical life safety systems will be fully supported by separate and independent Uninterruptable Powers Supplies to serve individual systems/facilities that cannot accept a short duration power interruption, such as Fire Alarm, Security and Access Control Systems.

6.12 Fire Alarm System

A fully analogue addressable fire alarm and detection/voice alarm system complying with current British Standards BS 5839-1:2002+A2:2008 with detector coverage to an enhanced L2 standard will be provided in landlord's areas and each workspace floor with automatic detection in plant areas and lift lobbies and with break glass call points on all escape routes. For details of the Cat A works refer to Appendix H. The landlord's fire alarm system will incorporate multi-sensor detectors, manual call points/break glass units and air sampling systems.

A facility for the addition of tenant enhancements will be provided as it is a requirement that the Cat A fit-out follows the same principles.

Automatic detection will be provided throughout the building utilising multi-sensor detectors, with beam detection and aspiration systems to the atrium.

6.12.1 Voice Alarm System Control

The voice alarm system will comply with BS 5839 Parts 1, 4 & 8 and BS 7443 - Sound systems for emergency purposes, RASTI method as specified under BS6840 Part 16.

The VA system is designed to enable the evacuation profile to be adjusted due to a change in operational requirements. Initially the strategy is for a phased evacuation system, immediately for the floor with the fire detection, followed if required, by other floors in pairs at the discretion of the party managing the evacuation, i.e. the fire brigade or the building manager.

The voice alarm system is based on a distributed network system with field amplifiers linked together via data audio loops. It will be possible to configure and control each element of the system from the central control position.

Wiring for the VA system will be carried out using white sheathed cable of the enhanced standard to BS7629.

6.13 Communications Systems

6.13.1 General

4 no. carrier POE's (Point of Entry) will be provided at basement and ground floor level. These will link via a 'meet-me' room to a number of vertical risers through the building, comprising 2 no. diverse risers for landlord services and 6 no. tenant risers. Multiple sleeves will be provided for all POE's.

6.13.2 Landlord Systems

The provision of all primary containment routes for non-active equipment associated with the future provision of voice and data systems will be provided throughout the landlord areas of the building.

A primary containment system of cable trays for voice and data will be provided from the POE's via dedicated risers to serve all floors.

6.13.3 Tenant Systems

The provision of all primary containment routes for non-active equipment associated with the future provision of voice and data systems will be provided throughout the building.

A primary containment system of cable trays for tenant voice and data will be provided from the POE's to 4 the dedicated tenant risers serving all floors. Space will be provided in these risers to enable for future tenants to install their own IT cable containment. Primary containment will be provided by the landlord from each riser location to each office floor.

6.14 Induction Loop System

An induction loop sound enhancement system will be provided for each reception desk.

6.15 Disabled Toilet Alarm Systems

Disabled panic alarm system will be provided in the disabled toilets with the indication and control panel located in the security control room.

Each disabled WC will be provided with an alarm pull cord with integral reassurance lamp with a facility mounted within the toilet area to reset the system once assistance has been provided. The alarm pull cord will be connected to an indicator light and audible alarm mounted externally above the door and the system will raise an alarm in an indicator panel located in the Security Control Room. A repeater panel will be provided at the main reception desk.

6.16 Disabled Refuge System

A BS 5839-9: 2003 and BS 9999: 2008 compliant master control panel will be provided within the Fire Control Centre. This will enable the Fire Officers to keep in contact throughout an emergency with persons in disabled refuge areas, either on an individual area basis or all areas together.

A remote intercom station will be provided to the disabled refuge points located within the fire-fighting lobby.

The master control panel will have an indicator for each remote intercom unit which will be lit up when the remote intercom unit is activated in the event of a fire or other emergency. The activated refuge system will have an auto listening facility to monitor activity in the disabled refuge area.

A key operated switch will be provided on the remote intercom unit to reset the refuge system.

6.17 Fire Telephone System

A fire telephone system will be provided on each level of the building within the lobby of the fire fighting lift stairs. The system will comprise recessed telephone cabinets with hearing aid compatible earpiece and loudspeaker and be suitable for hands free use. The fire telephones will connect to a control panel located within the Fire Control Centre.

The cables for the fire telephone systems will be in red sheathed enhanced fire resisting cable (FP Plus or equal) in accordance with the requirements of BS 5839-1:2002+A2:2008.

6.18 Communal TV/Satellite Aerial System

A communal TV/satellite aerial system will be provided by the landlord for use by tenants.
The system will be capable of distributing satellite, TV, FM and DAB signals and will comprise of satellite receivers, distribution backbone and 4No tenant interface points on each floor. Space will also be provided in the tenants communication risers for the tenants to provide their own systems.

6.19 CCTV and Security

Extensive CCTV and security systems will be provided within the building with containment routes to tenant floors.

Power supplies to security equipment components will be individually fused to minimise the impact of a fault.

The CCTV and Security systems will be integrated with the fire alarm system such that fire detection can initiate local CCTV coverage.

6.20 Lightning Protection Installation

A lightning protection system is provided in accordance with BS EN 62305 for a calculated risk of R1 “Risk of Loss of Human Life” and a Lightning Protection Level of LPL1.

7. PUBLIC HEALTH SERVICES

7 Public Health Services

7.1 Public Health Systems

7.1.1 Above Ground Rainwater Disposal System

The exposed roof areas have a number of rainwater outlets selected and positioned to suit roof profiles and finishes. Rainwater pipes are routed from these outlets vertically through the building to basement level.

Based on the results of the City of London Flood Risk Assessment, rainwater attenuation is provided and is comprised of 2 no. tanks located in the basement, one at the Northwest and the other at Southeast.

Rainwater passes through filter sets to the harvesting tanks until such time as the tanks are full. Any excess rainwater then discharges through tank overflow system and is pumped to the sewer outfalls.

Rainwater runoff and disposal is designed in accordance with BS EN 12056 Part 3 “Gravity Drainage Systems Inside Buildings – Roof Drainage Layout and Calculation”.

Rainwater harvesting is designed in accordance with BS 8515 “Rainwater Harvesting Systems Code of Practice”.

7.1.2 Above Ground Sanitary Plumbing Installation

The above ground sanitary plumbing installation collects soil and waste discharge from sanitary appliances, toilet cores and plant areas throughout the building. A gravity system handles sanitary fittings from the ground floor up to the 8th floor. Soil and waste stacks are located within the cores, local to the sanitary fittings, are collected below each core and then run horizontally to one of the two combined sewer connections at the north and south of the building. Soil vent pipes and vent pipes from the foul, fire fighting and ground water sumps extend to roof level to discharge to atmosphere.

The sanitary fittings located below the ground floor are connected to one or more foul sumps recessed into the basement slab. This arrangement assumes the sewer will surcharge to the road level in Farringdon Street. The surcharge level is understood to be +8.00 metres.

The gravity soil and waste installation and the pumped soil and waste installation will be arranged as a secondary vented system as described in BS EN 12056 Part 2.

4 no. soil connections are provided at each floor level to enable the connection of future tenant tea point sanitary fittings.

2 no. soil connections stub into the upper ground floor retail area.

7.1.3 Below Ground-Level Sanitary Plumbing Installation

The below-ground sanitary plumbing installation collects the discharge from those levels that are below the surcharge level of the Thames Water sewer network.

The installation comprises a collection system cast into the basement slab that routes foul water to foul drainage sumps. The number and location of the foul sumps will be developed in conjunction with the structural engineer. The collection sumps will receive the discharge from all plant areas, toilets and other fittings not connected to the gravity drainage system.

7.2 Water Services

7.2.1 Cold Water Service Installation

The cold water service installation is designed and installed in accordance with the requirements of the current WRAS Water Regulation Guide, BS 8558 and BS EN 806.

The system is fed from 2 no. new 100mm diameter metered connections from Thames Water at the north and south of the building. A single 100mm diameter fire connection is also be provided at the same location in the south of the basement to supply water to the sprinkler storage tank.

The cold water distribution system operates as a pressurised system with a variable speed booster set located in the south of the basement level adjacent to the cold water storage tank. This booster set will supplies all potable water to the domestic water outlets, cold feed to the hot water generators, raw water (supplemented by the harvested rainwater system) to the cooling tower make-up tank, supply to the Cat 5 risk water supply tank and the make-up water supply to the rainwater harvesting tank.

The cold water storage tank will provide up to 16 hours water storage for the supply of domestic water to the building should the mains water supply to the building be interrupted.

4 no. valved cold water connections are provided at each floor level to enable connection of future tenant tea point sanitary fittings.

7.2.2 Cat 5 Non-Potable Cold Water Service

A Cat 5 cold water storage tank is provided in the basement, supplied from the boosted cold water service. The tank will incorporate a type AB air gap and will be utilised to supply mechanical quick fill points, planting irrigation systems and outlets fitted with hoses which require either a reduced pressure zone valve connection or an AB air break if connected direct to the potable water system. The Cat 5 water supply will operate as a pressurised system with a variable speed booster set located at basement level adjacent to the Cat 5 water storage tank. The service will distribute to the plant at basement and Lower Ground floors, rising in each core to the roof to supply wash down and mechanical plant connections. An allowance of 5000 litres for the Cat 5 tank has been allowed.

7.2.3 Rainwater Harvesting

The harvested rainwater collection tank provided to serve the cooling towers.

Rainwater from the roof will pass through an initial filter to remove floating debris. To maintain the quality of the stored rainwater it is circulated through filter and UV disinfection system. Water drawn off to supply the cooling tower make-up water tank is treated with an ozone injection system to ensure the water supply to the cooling tower supply tank is free of live bacteria.

7.2.4 Hot Water Service

The hot water service installation is designed and installed in accordance with the requirements of the current WRAS Water Regulations Guide and BS 8558 & BS EN 806

The domestic hot water installation comprises centralised unvented low volume hot water generators comprising a plate heat exchanger and buffer vessel.

The domestic hot water installation is a fully circulated system piped vertically through the building. Secondary circulation pumps are located adjacent to the hot water generators.

Branches to toilet areas are fitted with PRV's and IV's to ensure even pressure at all outlets. In order to achieve this requirement, dead leg lengths of pipework are to be fitted with self-regulating electric temperature maintaining tape.

All disabled toilet hot water outlets will be provided with thermostatic blending valves to ensure safe operating temperatures for the user.

7.3 Fire Protection Systems

7.3.1 Water Supplies

A fire main connection is provided to supply the sprinkler installation, with stop valves and non-return valves provided on entry to the building.

The incoming main is capable of supplying the sprinkler system in accordance with the requirements of BS EN 12845. The fire main is routed through the building to feed the sprinkler storage tanks located in the south of the basement.

7.3.2 Sprinkler Installation

The sprinkler installation is designed to BS EN 12845 providing a system to Ordinary Hazard Group 3 (Life Safety) classification.

7.3.3 Sprinkler Pumps

The sprinkler pumps comprise of run, standby and jockey multistage fire pumps that boost all fire water to the various building pressure zones.

A fall in system pressure due to the operation of a sprinkler or during a test sequence will energise the duty pump. If the duty pump fails to start the standby pump will energise to supply the system.

A jockey pump will be provided to maintain the system pressure during periods of non-use.

The sprinkler pumps are to be provided with a full flow test arrangement which when operated will discharge the water used back into the storage tank.

7.3.4 Installation Valve Sets

2 no. dual valve installation sets for life safety are provided, which will be located in a position to be agreed with the local fire authority.

Installation control valves are provided which will zone the building in accordance with life safety requirements.

The retail unit will be provided with a zone control valve located adjacent to (outside of) the retail unit. The retail supply will include a flow check valve assembly.

Landlord's areas, where protected, have zone control valves on a floor by floor basis.

All monitored control valves will include a test facility which will comprise a pump able to circulate water through the flow switch. Each "zone check" system shall be capable of being operated locally or remotely.

7.3.5 Dry Riser Installation

The dry riser installation is designed to the requirements of BS 5306 Part 1 and BS 5041 where this supersedes BS 5306 Parts.

The building has dry fire risers in each core with landing valves located in fire fighting lobbies on each floor. In addition the dry falling mains will extend to Basement levels to offer protection in these areas.

All landing valves are to be housed within purpose made cabinets which will be clearly labelled.

Each system will commence from a two way inlet breeching located on the external wall of the building.

The number and location of the dry risers, landing valves and inlets will be agreed with the local fire authority.

7.3.6 Foam System

A foam installation is provided specifically to protect the oil storage facility within the building.

The system comprises an inlet connection on the external façade of the building with a falling main terminating with foam outlet nozzles within the oil store.

The foam inlet system is designed in accordance with the requirements of BS5306 Part 1.

7.4 Flood Risk

7.4.1 General

The intention is to protect the building from flooding during a 1:200 year event, by relocating above and below ground penetrations through the perimeter walls and facades to areas outside of the flood risk areas. Where this cannot be done the incoming/outgoing services will be sealed against water entry. Doors and ducts above ground will also be provided with a mechanism for preventing the ingress of water.

7.4.2 Flood Levels

The external levels vary along the Farringdon Street Façade from +6.1m at the Junction with Stonecutter Street to +7.75m at the Junction with Plumtree Court. The current flood level has been assessed at +8.0 metres

7.4.3 Structural and Facade Issues

The areas of the building at risk are the length of the Farringdon Street Façade and the eastern end of Stonecutter Street and to a lesser extent the eastern end of Plumtree Court. The facades in the affected areas are designed to be capable of withstanding the pressure exerted by the water outside the building.

7.4.4 Incoming and Outgoing services

Service entry points entering or leaving the building in the flood affected areas will be relocated where possible to areas outside of the flood affected areas. Where this cannot be achieved the penetrations through the basement structure will be designed to prevent water penetration under external pressure.

7.4.5 Air intake & discharge openings

These have all been located above the flood level.

7.4.6 Internal Water Sources

7.4.6.1 Rainwater

Rainwater from the roof is diverted to harvesting and attenuation tanks in the basement. Discharge from these tanks is controlled by means of pumps. The rainwater pumps lift the rainwater above the external flood level before connecting to the sewer outfall to ensure water cannot flow back into the building through the sewer connection. Should the design rainfall intensity be exceeded and the tanks filled to their maximum capacity anti flood valves on the inlet to each tank will close. The rainwater pipework will surcharge to a level above the maximum external water level where it will discharge externally via an emergency relief drain.

7.4.6.2 Foul Water Sources

Soil and waste from the upper floors is connected to the foul sewer connections, as the lowest outlet is higher than the flood level no water can enter the building via this route.

Soil and waste from the levels of the building lower than the external flood water level drain to foul water collection sumps in the basement. These are pumped above the external flood level before connecting to the sewer outfall.

The fire lift pumps also connect to the sewer outfalls in the same way.

All pipework and fittings connected to the sewer outfall is to be installed in pressure rated pipe as there will be periods when this pipe is charged with water to the level of the external flooding.

8. RETAIL

8 Retail [Future option for tenant change in north west Upper Ground]

In the event the area changes to a retail demix, the retail space will be serviced as follows:

- Fresh air - capped duct connection from landlords fresh air shaft
-
  - Exhaust air – space allocation below bike store for fan room and riser shaft to roof
- Electrical – two options
  - sleeves for direct connection to UKPN
  - metered connection from landlord
- Cold Water – two options:
  - sleeves for direct connection to Thames Water
  - capped connection to landlords cold water service
- Sewer
  - 2 No capped stub stacks connected to the landlords soil and waste system
- Condenser Water – plate heat exchangers for connection to base building condenser water system

9. FIRE STRATEGY

9 Fire Strategy

The fire strategy for the building is based on the guidance of BS 9999. Where compliance with the guidance of BS 9999 cannot be achieved, alternative, fire engineered solutions (in accordance with BS 7974) have been adopted. A summary of the fire safety measures to be included in this development including those developed using the guidance given in BS 7974 is provided below.

9.1 Means of Warning and Escape

- The building will operate a phased evacuation strategy.
- All levels will be provided with an enhanced category L2 fire detection and alarm system in accordance with BS 5839 – Part 1: 2002 and a voice alarm system.
- Travel distances/exit widths and stair widths comply with the guidance given in BS 9999.
- Two of the six escape stairs will discharge via the reception area. This approach has been agreed with the Approving Authorities.
- Refuge spaces will be provided to assist with the evacuation of disabled people.

9.2 Internal Fire Spread (Linings and Structure)

- All ceiling and wall linings should meet the provisions set out in BS 9999.
- The fire resistance period of the building will be 90 minutes.
- All floors within the building will be fire compartment floors and have 90 minutes fire resistance.
- All areas of the building will be provided with a life safety sprinkler system designed in accordance with BS EN 12845.
- The atrium will be enclosed within fire resistance and provided with a smoke clearance system in accordance with BS 9999. The base of the atrium will be protected by a bespoke suppression system.
- All rooms that are designated as areas of high fire risk will be enclosed within fire resisting construction.
- The main bank of lifts will be provided with doors to lobbies and fire shutters at each floor level to prevent vertical fire spread via the lift shafts.

9.3 Smoke Control

- Basement smoke ventilation systems will be provided to address BS 9999 requirements.
- As an enhancement to the measures given in BS 9999, a mechanical smoke clearance system (6acph) will be provided to each storey level.

9.4 External Fire Spread

- The boundary distances for the building are in compliance with the figures given in BR 187 to allow a 100% unprotected façade.

9.5 Fire Fighting Provisions

- Two fire fighting shafts will be provided. Each shaft will be provided with a dry rising fire main and a fire fighting lift. In the basement, a number of additional dry rising mains will be provided within escape stairs in order to meet the hose distance guidance given in BS 9999.
- Fire appliance access will be provided to within 18m of the inlets for each dry rising main.

10. VERTICAL TRANSPORTATION

10 Vertical Transportation

10.1 General

The building is to be served by automatically programmed high efficiency Machine Room Less (MRL) gearless traction passenger, goods and fire elevators as required. All elevator systems will comply with the applicable range of BS EN81 Safety Rules.

The passenger elevator systems will be provided with Hall Call Allocation (HCA) destination based control systems, with TFT input screens at all levels. All other elevators will be provided with full collective control systems with push button controls.

The main entry level is UG, as such all passenger elevators serve UG level.Two passenger elevators in the North group shall go down to Basement level for restricted DDA access, two passenger elevators from the South group shall also serve Basement level for VVIP access.

Back of house elevators will have direction indicators either on the landings or in-car indicators for single units. All cars will be equipped with an intercom systems and necessary audible and visual signals. Where required, access control systems will be integrated.

Separate fire fighters' lifts will be provided to statutory requirements in accordance with the Fire Engineers recommendations.

Separate vehicle elevators are provided for truck access between street level and the basement loading bay.

Passenger car finishes are to be of a standard appropriate to a first class office building, and be compatible with the entrance lobby finishes, where the MRL car finishes weight allowance is maintained. The internal height will be 2650mm.

Goods and fire cars to have stainless steel walls; bump rails and finished with a checker plate floor and a white ceiling with integrated luminaires.

The passenger elevators will be provided to deliver service levels to comply with the recommendations of the British Council of Offices 2009 Guide to Specification – Best Practice in the Specification for offices.

A central elevator monitoring system will be located in the security room.

10.2 Passenger Elevators (PL1-16)

2 x 8-car groups of 33 person 2500kg MRL cars are provided arranged North to South with access routes between and adjacent.

Dimensions

Car width = 2.35m, depth = 2.1m and height = 2.65m. Doors are 1.2m wide x 2.65m high.

The cars serve all levels between UG and level 8 (with the exception of UG Mezz). Both groups of 8 lifts can also serve Ground Floor however this is limited to four cars in each group without a reduction in service. 2 cars only in heach group serve Basement Level.

The rated speed is 1.6m/s.

Passenger lift performance criteria:-

All 16 passenger elevators serve all office levels

Passenger elevator performance has been benchmarked against 3 occupancy scenarios. Market reflects a high density across all levels, with 12% Up-Peak HC. Base Case includes 3 higher density Trader floors with 12% HC and BCO 2009 provides standard density across all office levels with 15% HC.

Market

Office high density floors - 8 levels at 1 person per 8m^2 (at 80% space utilisation)

Base Case

Office and enhanced density floors - 5 levels at 1 person per 10m^2 and 3 levels at 1 person per 6m^2 (at 81% space utilisation)

Up peak:

Handling capacity	12%
Average waiting time	25 seconds

Lunch time

Handling capacity	12%
Average waiting time	40 seconds

BCO 2009

Office standard floors - 8 levels at 1 person per 10m^2 (at 80% space utilisation)

Up peak:

Handling capacity	15%
Average waiting time	25 seconds

Lunch time

Handling capacity	12%
Average waiting time	40 seconds

The cars will be finished internally to the Architect's specification.

10. VERTICAL TRANSPORTATION

10.2.1 Tenancy Flexibility

The passenger elevator systems can be sub divided to enable dedicated access to various levels and combinations of levels, as follows:

Option 1 PL4 & PL5 serving Level 8 & PL12 & PL13 serving Level 1. The Remaining elevators serving Levels 2 – 7 (2 x 6 car groups)

Option 2 4 elevators in each group serving 2 floors each.

The resultant traffic analysis for both options confirms that the elevator performance is in accordance with BCO 2009 requirements and indicates that the 16 cars can be sub divided to accommodate the tenancy split options as indicated above.

10.3 Plumtree Court Elevator (PL17)

A single passenger elevator linking the below ground back of house areas with the Plumtree Court entry at G mezz, serving all levels from basement to G mezz.

Capacity: 14-person 1050kg. Car width = 1.6m, depth = 1.4m and height = 2.3m. Doors are 1.1m wide x 2.2m high.

Speed: 1.0m/s

10.4 Fire Fighting Elevators (FF1-2)

Two dedicated passenger elevators that can be used for Fire Fighting will be provided in each of the North and South areas of the building.

Capacity: North – 8-person 630kg . Car width = 1.1m, depth = 1.4m and height = 2.3m. Doors are 0.9m wide x 2.2m high.

South – 8 person 630kg Car width = 1.1m, depth = 1.4m and height = 2.3m. Doors are 0.9m wide x 2.1m high.

Speed: 1.6m/s

10.5 Disabled Access (PL18-19)

All elevators will be provided in full compliance of BS EN81-70 for use by able and disabled persons.

The roof terrace will be provided with a dedicated glass scissor platform lift (PL19) that serves between level 8 and roof level.

There will be a specific elevator (PL18) provided to assist with DDA access at the main entry levels, this will serve all levels from G to UG Mezz

Capacity: 26-person 2000kg. Car width = 1.5m, depth = 2.55m and height = 2.4m. Doors are 1.1m wide x 2.2m high.

Speed: 1.0m/s

10.6 Goods Elevators (GL1-3)

Two dedicated primary goods passenger elevators will be provided in each of the North and South areas of the building. An additional smaller secondary goods passenger elevator is provided serving between level 8 and roof

Capacity: 2 x 4000kg (52-person) – Primary office goods elevators. Car width = 2.0m, depth = 3.4m and height = 2.75m. Doors are 1.8m wide x 2.75m high. Both cars can accommodate 3.2m long partition panels transported on the long side.

1 x 1000kg (13-person) – Secondary roof access freight elevator Car width = 1.6m, depth = 1.4m and height = 2.1m. Doors are 1.1m wide x 2m high.

Speed: 1.0m/s

10.7 Vehicle Lifts (VL1-2)

Two hydraulic vehicle lifts will link the ground floor vehicle access point and the basement loading bay. These large heavy duty lifts have been sized to accommodate large refuse trucks and also the specific BT truck and its associated (uncoupled) cable drum requirements.

Capacity 30,000kg (400-person). Car width = 4.5m, depth = 12m and height = 4.75m. Doors are 4.3m wide x 4.5m high.

Speed 0.2m/s

The car and landing entrance doors are 4500mm high to match the loading bay clear height. A separate pump room is been provided at the basement level 1 to accommodate the hydraulic tanks; pump motors, controllers and associated equipment.

10.8 Lift Car Finishes

Architect's schedule to be included.

10.9 Acoustic Performance

Elevator noise will be measured on the elevator lobby at 1.5m from the floor and 1m from the door face and from within the elevator car using a precision grade sound level meter set to "fast" meter response.

Measurements from the lobby will include a check on the noise levels as the elevator passes the floor and measurement of the door operating equipment as the doors open and close.

The maximum noise levels to be achieved are as follows;

Maximum noise level in elevator car during cycle – 55 dB(A)

Maximum noise level on lobby with elevator passing floor – 50 dB(A)

Maximum noise level on lobby during door operating cycle – 55dB(A)

10.10 Vibration

Vibration levels must be measured in accordance with the methodology detailed within British Standard (BS) ISO 18738:2003 "Lifts (elevators), Measurement of lift ride quality".

The horizontal vibration within the lift should not exceed a maximum (peak-to-peak) acceleration level of 12mgs in any 1/3 octave band over the frequency range of 1-80Hz, during anytime in a complete cycle.

At maximum lift speed, the vertical vibration should not exceed a maximum (peak-to-peak) acceleration level of 12mgs in any 1/3 octave band over the frequency range of 1-80Hz.

During acceleration/deceleration and start/stop periods, the vertical vibration within the lift should not exceed a maximum (peak-to-peak) acceleration level of 12mgs in any 1/3 octave band over the frequency range of 1-80Hz.

The elevator machine and drive unit will achieve an acceleration rate of between 0.8 and 1.0m/s^2.

The rate of change of acceleration/deceleration of the car (jerk) will be set to provide optimum ride quality throughout the elevator cycle and will not exceed 1.5 m/s^3.

10.11 Energy Saving Features

All elevators (with the exception of the vehicle lifts and platform elevators which are hydraulic) are designed as MRL with closed loop variable frequency permanent magnet machines. This coupled with microprocessor control systems with regenerative forward and reverse drives, is the most energy efficient system available to the project. The elevator systems incorporate further energy saving by active monitoring of demand, such that during periods of low demand, only the passenger elevators required to achieve the demand are in operation. All other elevators enter standby mode and are brought back on line as the demand increases.

The lighting systems for both the internal cars and shaft workspaces, will consist of high output LED's. The car lights will switch off after a period of inactivity, whilst the shaft lights will be manual control commensurate with maintenance requirements.

Each elevator will be fitted with a kWh meter that displays the regenerative power that each system provides back into the landlords building system, which can be quantified with unit kWh cost to indicate the value of the regenerated energy.

11. FAÇADE CLEANING SYSTEM AND GLASS REPLACEMENT

11 Facade Cleaning System and Glass Replacement

11.1 Typical Floors

The cleaning and glass replacement strategy for the typical floors is being finalised using a combination of BMUs and davit systems. In addition, some temporary cranes may be required for the glass replacement of units that are heavier than the allowances within the BS EN issued in March 2015.

11.2 Base of Building

Cleaning access to the Ground Floor glazing, beneath the over-hang created by the façade just below level 1, adjacent to Shoe Lane, can be achieved effectively with a 3.0m long handle squeegee; this will allow these publicly visible façades to be cleaned frequently and a high quality finish to be maintained.

As the landscape is inclined from West to East increasing the distance to the over-hang a spider type mobile platform, such as a Teupen Leo 13 GT, is used to access the façade below level 1, where it is not practicable to clean with a rigid long handle squeegee.

A short reach spider-type mobile elevated work platform (MEWP) will be used to access the façade with a maximum vertical reach of 13m and a maximum horizontal reach of 6m. The spider-type MEWP is also able to work on a slope with a maximum incline of 30°. This unit has a crawler base to cross landscaped areas and 4 outriggers (the load per outrigger is 1,75kN). To spread the loads spreader plates can be used.

Replacement glass to the ground floor will be hoisted by means of a spider-type mobile crane situated on the footpaths adjacent to the building.

11.3 Terraces

The façade is similarly recessed at high level, with a balcony or terrace area provided at level 8. It is proposed that the glazing within the boundary of the balcony will be cleaned by means of a 3.0m rigid long handled squeegee with cleaners working from the floor level of the terrace.

Replacement glass will be hoisted by means of a separate fixed jib glass replacement unit (GRU) situated on the BMU ‘track’ system.

11.4 Wider Consultation Area

A BMU will have a reach of 23,250mm and will provide cleaning access to the WCA. In order to access the highest point of the south west corner, the jib will be raised with an integrated hydraulic lowering device. The BMU will have a maximimum counterweight radius swing of 3,900mm.

To obscure the BMU from view when not in operation the machine willpark within the WCA enclosure in the South West corner.

As the maximum height of the building in the south west corner exceeds 40m the suspended cradle of the BMU will need to be tied into the façade during operation.

In order to mitigate the impact energy in the event that the cradle collides with the façade and to comply with the requirements of the relevant British Standards a single row of restraint sockets will be installed at level 6. The sockets will be located at 3.0m intervals, horizontally, to suit the cladding grid. This will ensure that the maximum outswing from the façade under gust conditions will be approximately 2.6m resulting in a maximum impact force of 503J on façade.

Replacement panels to the facade below the WCA are to be hoisted by means of an auxiliary lifting eye or hoist located on the jib arm or suspension head of the BMU.The permanent suspended platform will be used to guide replacement panels during hoisting and assist with final capping/sealing works.

11.5 Atrium

The skylight is to be designed to allow persons to walk across it. The design criteria are in accordance with the guidance stated in BS6399-3.

Height safety whilst persons are situated on the skylight is to be by means of a suitable safety-wire system. The safety-wire will be located central to each fold of glazing to allow persons to use a full body harness with a 2m lanyard and be protected by a fall restraint condition.

A fall restraint condition is to mitigate the risk of persons falling past the skylight edge. If operatives are able to fall past the edge condition this is indicated as fall arrest and there is increased risk to the health & safety of the operative through impact shock as the lanyard is pulled taught and the safety harness absorbs the energy generated by the fall.

The maximum span between the safety-wire up-stands is to be no greater than 10.0m.
Replacement glass will be hoisted by means of BMU.
Access to the underside of the skylight will be by means of a modular cradle traversing east to west. The platform will operate below the proposed louvres. The traverse action of the suspension points and suspended platform is to be by means of a synchronous powered drive unit.

The suspended platform will be rigged to rails located above the proposed louvres to allow the platform suspension ropes to pass through the gap created along the east to west path. Access hatches are to be provided at roof level allowing operatives to enter a rigging crawl space. The location of the rails and suspension points will allow the platform to be situated close the louvre blades with operatives working through them to access the skylight. Extensions poles will be required for access.

The modular cradle will be erected at level 5 atrium base before being rigged Nylon ropes will be lowered from level 8 to level 5 within the atrium, the hoisting ropes for the modular cradle will be attached to the nylon ropes and pulled up to level 8 where they can be connected to Suspension trolleys. When cleaning operations are complete the platforms are de-rigged and moved back to storage.

Access to the vertical elevations of the atrium will be by means of a series of monorails installed within the soffit adjacent to the level 8 glazing. Operatives will be suspended from the monorail by means of a cradle.

Full height access doors are proposed at level 8 along the south elevation to allow for rigging off the building floor.

12. INTERIOR MATERIALS AND FINISHES

Replacement internal atrium glazing panels will be delivered to the appropriate floor by the goods elevators. Suitable temporary ground floor cranes will be used to manoeuvre and position the glass panels whilst personnel guide the pane(s) into final position and carry out necessary capping/sealing works. Replacement external atrium glazing panels will be hoisted via BMU.

12. INTERIOR MATERIALS AND FINISHES

12 Interior Materials and Finishes

12.1 General

12.1.1 Partitions below ground

Partitions at Upper Ground, Ground and Basement levels are to be blockwork to suit fire, acoustic and robustness criteria. Rooms requiring a higher level of finish shall receive a plasterboard lining.

12.1.2 Partitions above ground

Partitions at Upper Ground Mezzanine and typical office floors shall be drylining.

12.1.3 Doors and frames below ground

Doors and frames to blockwork walls generally are to be painted metal to achieve the required fire, acoustic and security ratings.

12.1.4 Doors and frames above ground

Doors and frames above ground shall be painted timber to meet the required fire, acoustic and security ratings. veneered timber, polyester powder coated metal or clad metal as appropriate

12.1.5 External Doors

Exterior doors are to meet a security rating of SR2 or better.
Doors along Farringdon Street are to be flood-proof doors except where other means of flood protection are provided.

12.1.6 Ironmongery

a. Locksets where required are to be on a building master-key system for the public and service areas in the building.

b. Ironmongery to be stainless steel, by Allgood or equal for quality.

c. Entrance level exterior doors are to have concealed pivot hinge/closers.
All other doors will have ball – bearing butt hinges,

d. Surface mounted closers are to be used for core doors and in services areas, only in areas where not visible or seen in ordinary use.

e. Overhead hold opens, double door closing coordinators, buffers, stops, kick plates and armour plates will be used where necessary. i.e goods lift lobby doors

12.1.7 Painting

a. In back-of-house and services areas walls and ceilings are to be painted and finished with 2 coats of emulsion pained on 1 undercoat.

b. In other areas required to be painted, walls and ceilings are to be finished with 2, water based, eggshell finish coats on an undercoat.

12.2 Interior Finishes in Public Spaces

a. Shoe Lane Entrance Lobby

All lines of security to be finished in transparent glass, with the turnstiles themselves being finished in metal.
Floors are to be non-slip natural stone.
Walls are to be finished with natural stone.
Skirtings are to be contrasting natural stone.
Column enclosures are to be stainless steel with a satin or impact finishing.
Ceilings are to be painted skim-coated plasterboard.

b. Farringdon Street Entrance Lobby

Floor and skirtings as shoe lane.
walls as shoe lane.
ceilings as shoe lane.
All lines of security to be finished in transparent glass, with the turnstiles themselves being finished in stainless steel.
Columns to be clad in brushed stainless steel casings.

c. Plumtree Court Entrance Lobby

Floors are to be non-slip natural stone.
Walls are to be finished with natural stone.
Skirtings are to be contrasting natural stone.
Column enclosures are to be stainless steel with a satin or impact finishing.
Ceilings are to be painted skim-coated plasterboard.

d. Typical Lift Lobby

Floor is to be finished with non-slip natural stone, terrazzo or porcelain tile, aesthetically consistent with the stone used in the entrance lobbies.
Walls are to be finished with natural stone, aesthetically consistent with the stone used for the walls in the entrance lobbies.
All architraves and lift doors to be finished in stainless steel; the skirting and corner protection is also to be finished in stainless steel.
Ceilings in plasterboard and painted.

e. Core corridors

BOH Areas Walls are to be painted dry lining, floors are to be finished with carpet tiles, ceilings are to be painted dry lining with recessed fittings.
In the public realm walls are to be natural stone, floor to be non-slip natural stone, ceiling to be painted drylining (consistent with the finishes in the entrance lobbies).

f. Escape/Accommodation Stairs

ST2/5
Stair treads and risers are to be finished with non-slip natural stone or terrazzo or porcelain tile.
Balustrade to be finished in a decorative glass.
Enclosing walls to be finished with a painted drylining or polished plaster.

g. Main Fire Escape Stairs

Stair treads and risers are to be finished with vinyl.
Balustrade to be finished in painted mild steel upstand.
Handrail to be finished in brushed stainless steel.

12.3 Toilets, Showers and Locker rooms

a. Toilets provision will provide for the following

Typical office floors (Levels 5 to 8): 1 person/10m2 NIA 60%:60% male/female (120% provision) excluding the disabled provision (40 total fixtures) with capability to be expanded to 1 person per 6m^2 (72 fixtures).

Enhanced floors (Levels 1 to 4): 1 person per 6m^2 60%:60% male/female including the disabled provision (72 total fixtures).

b. Floors are to be finished with non-slip natural stone or ceramic porcelain tiles and will have waterproof membranes where occupied space occurs below.

c. Walls are to be finished with polished natural stone, decorative glass or ceramic porcelain tiles.

d. Ceilings are to be suspended metal tile or drylining with lighting over basins, urinals and WC's

e. Toilet cubicles will have full height, high quality hardwood veneer partitions or equivalent with matching full height doors, with stainless steel ironmongery.

f. Toilets need to be equipped with visual alarms.

g. All sanitary appliances are to be wall mounted and all branding and manufacturers identification to be removed. Basins are to be set in natural stone vanity tops.

h. Sensor type taps to be provided.

i. High quality accessories will comprise:

- A full height/width mirror over the basins extending to ceiling level.
- Vanity or wall mounted soap dispensers.
- Paper towel dispensers and waste bins and/ or hand dryers.
- Double toilet roll holders.
- Coat hooks on cubicle doors.
- Electric fused outlet for hand dryer
- Electric outlets for hair dryer, shaver etc. to be provided within the shower facilities.
- Full height wall mounted mirror.
- Coat hooks near the vanity area.
- Provision for client supplied vending machine in the women's toilets

j. Accessible toilet provision will comply with Approved Document M, which is inclusive of the DDA requirements for accessible toilets, and match in finish to the base build toilets where possible. Lighting shall be switched by PIR. Disabled person alarm with facility link to BMS or fire alarm panel. Disabled WC should provide the same provision and accessories as above.

k. Servicing – all ceiling, plumbing and drainage containment, i.e. ducts and casings, to be fully accessible for future maintenance/renewal.

12.4 Typical Tenant Areas

a. Floors are to be finished and sealed exposed concrete to accept raised flooring, (provided within the Category "A" works), with tolerances to the Movements and Tolerances Report.

b. Soffits are to be exposed metal deck and fire protected structure.

c. Columns will be fire protected only.

d. Walls of core facing into tenant space will be drylining prepared for decorating.

e. Passenger lift entrance doors will be a stainless steel finish on the Basement, Ground Floor, Upper Ground and Office Floors. All other lift entrance doors will be stainless steel on all levels.

f. Typical office floors will provide for a .410 metre raised floor zone (top of the slab to floor finish) together with a raised floor to ceiling height of 3.200 metres. On Level 1, the area east of the core will have a raised floor zone of .310 metres.

12.5 Atrium

a. The internal atrium glazing is a custom designed system with engineered mullion frame sections.

12.6 Back of House Areas

a. Fire escape stairs

- Stair flights and landings are to be painted metal with precast terrazzo treads and landings with integral, contrasting colour, anti-slip nosing strips.
- Walls are to be painted and dry-lined masonry or concrete.
- Handrails and balustrades are to be stainless steel or painted tubular steel with welded joints ground smooth.
- Lighting will be wall mounted fluorescent fixtures at floor and intermediate landings with a minimum illuminance of 100 lux. Including emergency lighting provision.

b. Goods lift lobbies

Walls are to be painted drylining with stainless steel protection to 1.400 metres high, floors are to be raised floors with sheet vinyl and vinyl skirtings, ceilings are to be drylined with recessed fittings and surface mounted light fittings.

c. Fire lift lobbies

Walls are to be painted drylining, floors are to be terrazzo, tile or stone with complimentary skirtings, ceilings are to painted drylining with recessed fittings.

d. Core electrical rooms

Walls are to be sealed concrete, blockwork or drylining, floors are to be raised floors where required or two-part epoxy painted concrete floors, ceilings are to be left unfinished in the case of metal deck otherwise sealed concrete.

e. Core mechanical rooms

Walls are to be sealed concrete, blockwork or drylining, floors are to be raised floors where required or two-part epoxy painted concrete floors, ceilings are to be left unfinished.

f. Core IT/comms rooms (Category A)

Walls are to be sealed concrete, blockwork or drylining, floors are to be raised floors where required or two-part epoxy painted concrete floors, ceilings are to be left unfinished.

g. Basement electrical rooms

Walls are to be sealed concrete or blockwork, floors are to be two-part epoxy painted concrete floors, ceilings are to be sealed concrete.

h. Basement mechanical rooms

Walls are to be sealed concrete or blockwork, floors are to be two-part epoxy painted concrete floors, ceilings are to be sealed concrete.

i. Loading Bay/Disabled Parking/Vehicle entrance

Walls are to be painted concrete or blockwork, floors are to be hard-wearing and waterproof car park paint with roadmarking paint, ceilings are to be left unfinished.

j. Waste rooms

Walls are to be waterproof painted concrete or blockwork, floors are to be waterproof painted concrete floors, ceilings are to be painted concrete.

k. Security rooms

Walls are to be painted blockwork or dylining, floors are to be carpet tiles on raised access floors, ceilings are to be acoustic lay in ceilings.

l. Fire Control Room

Walls are to be painted blockwork or concrete, floors are to be vinyl, ceilings are to be painted concrete or exposed metal deck.

13. EXTERNAL WORKS

13 External Works

13.1 Section 278 Works

a. Proposed Highway Enabling Works

The following locations and items detail both CoLC and TfL Section 278 requirements and are subject to agreement with CoLC..

b. Shoe lane – north of junction with St Andrew Street

- Re-alignment of east kerbline of Shoe Lane, including radius of St. Andrew Street and Shoe Lane and radius of Shoe Lane and Plumtree Court junction using new kerbline in granite.
- New surfacing to eastern footway between St. Andrew Street and Plumtree Court in yorkstone.
- Provision of security bollards, planting, lighting and other street furniture.

c. Plumtree Court

- Extension of the eastern extent of the Plumtree Court carriageway.
- Minor re-alignment of southern footway using new granite kerbs, including footway crossover for access to loading bay.
- New surfacing to southern footway in yorkstone.
- Provision of security and access control bollards, planting and lighting and other street furniture.

d. Shoe Lane – between Stonecutter Street and St. Andrew Street

- Extension of eastern footway and realignment of Shoe lane carriageway.
- New surfacing to eastern footway in yorkstone and new kerbline in granite.
- Removal of 2 no. ‘disabled’ parking bays and 6 no. parking bays on the east side of Shoe Lane.
- Removal of existing CoLC cycle stands and provision of security bollards, planting and lighting and other street furniture.

e. Stonecutter Street – between Farringdon Street and Shoe Lane

- Re-alignment of north kerbline radius of the Stonecutter Lane and Shoe Lane junction.
- New surfacing to north footway between Shoe Lane and Farringdon Street.
- Relocate TfL’s cycle hire docking station located on north side of Stonecutter Street onto the southern side.
- Removal of all existing ‘Sheffield type’ steel cycle stands from northern side of Stonecutter Street.
- Removal of Police CCTV camera mast and connections from northern side of Stonecutter Street.
- New security bollards and planters along the kerbline of Stonecutter Street on the north side.
- Provision of security and access control bollards, planting, lighting and other street furniture.

13.2 Environmental Improvement Works

a. St. Andrew Street – north of junction with Shoe Lane

- Re-alignment of north kerbline radius of St. Andrew Street and Shoe Lane junction.
- New surfacing to eastern footway between St. Andrew Street and Shoe Lane in yorkstone.
- Re-configuration of existing ‘Police’ checkpoint.
- Existing carriageway surface material to be replaced.

b. Shoe Lane – north of junction with St Andrew Street

- Re-alignment of north kerbline radius of St. Andrew Street and Shoe Lane using new granite kerbs.
- New surfacing to western footway between St. Andrew Street and Plumtree Court in yorkstone.
- Raising of carriageway to provide a flush surface from building to building to act as a shared space

c. Plumtree Court

- Replacement surfacing to northern footway in yorkstone and replacement of northern kerbline in granite.
- Raising of carriageway to provide a flush surface from building to building to act as a shared space

d. Shoe Lane – between Stonecutter Street and St. Andrew Street

- Raising of carriageway to footway level to provide a flush surface
- Surface dressing / coloured asphalt to define carriageway space

e. Stonecutter Street – between Farringdon Street and Shoe Lane

- Eastern end of Stonecutter Street to be re-configured in conjunction with TfL s278 works.
- Provide new flush level surface across carriageway and footway areas of Stonecutter Street and resurface carriageway area of roundabout using of granite surfacing materials.
- Provide a 7 vehicle taxi rank on the north side of Stonecutter Street.
- Relocate TfL’s cycle hire docking station located on the north side of Stonecutter Street onto the Southern side.

f. Farringdon Street

- Provide a Toucan crossing between the east and west side of Farringdon Street, replacing the previous signal controlled junction at Stonecutter Street.
- Re-alignment of east and west side kerbline of Farringdon Street.

14. TRANSPORTATION

14 Transportation

14.1 Delivery and Service Plan

14.1.1 Proposed Servicing Areas

The servicing area will be located at basement level. Vehicular access will be from Plumtree Court to the north of the Proposed Development. Two lifts are provided, set back from the highway, and these can accommodate both 10 m rigid HGVs and large refuse vehicles. These lifts can carry loads up to
30,000kg.
All vehicles will enter and exit the site in a forward gear.

a. Servicing Basement

The Proposed Development includes five servicing bays which is sufficient to cater for the peak daily demand (unmanaged).

In addition five motorcycle courier bays will be provided at ground level.

b. Servicing Area Facilities

Two of the five bays will be able to accommodate a 10 m rigid and three will be designed for a transit or medium goods vehicle (MGV).

An unloading area is provided behind the loading bays to allow for the safe unloading and manoeuvring of goods. This area will be at the same level of the loading area since most modern delivery vehicles are equipped with tail gates. To enable drivers to know when to stop reversing it is proposed that kerb blocks are placed on the ground.

c. Clear Heights

A minimum clear height of 4.5 metres has been provided through the servicing areas. The area around the compactors has a clear height of 5 metres and the lift has an entrance height of 4.5 metres.

d. Vehicle Rejection

It is proposed to provide operable bollards at the western end of Plumtree Court. Access will be managed by an agent of the CoLC to restrict access to only those vehicles permitted under the Highway Order, such as vehicles serving adjacent premises.

With the implementation of this control infrastructure, vehicles refused entry from the Proposed Development or Morley House would undertake a three-point turn at the junction of Shoe Lane and Plumtree Court and to leave the area. This manoeuvre would be supervised by the staff controlling access.

14.2 Management Proposals

The servicing management proposals aim to:

a. Minimise disruption to local residents and businesses from delivery, servicing and waste removal vehicles;
b. Avoid peaks in demand for servicing activity;
c. Ensure fast turn-around of servicing vehicles, making best use of servicing bays;
d. Increase building security
e. Provide feedback/monitoring to ensure that the service area operates effectively.

These aims will be achieved by:

a. **Delivery pre-booking** –the loading bay has been designed to accommodate peak deliveries without the need for scheduling, however, deliveries will be scheduled to spread the peak activity. All deliveries will be allocated into 1 hour slots.
Admittance to the loading area will be at the discretion of the loading area supervisor – if a vehicle arrives that is not scheduled to do so, the loading bay supervisor will turn the vehicle around and send it away. In the case of deliveries that arrive outside of their allocated time-slot, the loading bay supervisor will decide whether to admit the vehicle depending upon how busy the service area is at that time.

b. **Security checking** – in line with the rejection process, vehicles will be security checked at the western end of Plumtree Court, behind the access only control point.

c. **Goods-in authorisation procedure** – to ensure rapid turnaround of delivery vehicles it is expected that service area personnel will be authorised to receive goods for all occupants of the building.

d. **Size of vehicle policy** – the use of only 10 m rigid HGV or smaller vehicles will be managed by the loading area supervisor through the Delivery and Servicing Plan. The supervisor will also ensure that any companies providing deliveries or servicing to the building are aware of the vehicle size constraint.

e. **Monitoring** - service area activity will be regularly monitored to ensure that it is operating in an efficient way.

14.3 Waste Strategy

Based on the volumes predicted, two 10 cubic metre compactors, a eurobin compactor and between 28 and 46 (dependent on the use of a eurobin compactor) large (1,100 Litre) eurobins are recommended to accommodate up to two days storage.

The skip compactors have a maximum compaction ratio of 4:1 and the eurobin compactors 3:1, however, these ratios vary depending on the composition of the waste.

a. Waste Facilities

All refuse will be stored and collected within the curtilage of the development.

14. TRANSPORTATION

Access to the waste stores will be via the servicing entrance and lifts off Plumtree Court.
Two lifts are provided, set back from the highway, and these can accommodate both 10m rigid HGVs and large refuse vehicles. These lifts can carry loads up to 30,000kg.

Bin stores are located in the Proposed Development in the area to the west of the servicing bays and the two compactor bays. These stores have been designed to provide easy and direct access to the servicing bay for collection.

The four stores could be merged or altered in shape in future to accommodate changing demands but have been initially designated for the separation of rubbish.

It is intended that waste will be separated into recyclable and non-recyclable waste. Non-recyclable waste will be stored in the skip compactors and recyclable waste will be stored in the compacted eurobins.

The building management team will ensure that all waste is stored in the bins and compactors in the appropriate areas. If the building is occupied by multiple organisations the management team will ensure that all organisations have access to and are required to use the waste facilities.

Waste will be moved by trolley to the basement using the internal lifts. Waste will be stored in either the skip compactor or the eurobin stores. The eurobins will be wheeled to the large servicing bay for collections. The skip compactors will be replaced from the loading bay.

15. CATEGORY ‘A’ WORKS

15 Category ‘A’ Works

15.1 Introduction

The purpose of this Specification is to describe works by the landlord in finishing the work space areas to Category ‘A’ standard.

The Category A Fit out assumption for the purposes of this document on the typical office are a .410 metre raised floor zone. The ceiling zone (including the ceiling construction, lighting and sprinkler zone) is .135 metre from the underside of the structural beams. The assumed ceiling is a perforated acoustic concealed grid metal ceiling. For the Amenity floors the floor zone has been assumed as a .150 metre raised floor throughout. The ceiling zonevaries depending on the use of the space.

15.2 Architecture

15.2.1 Ceilings

Category 'A' suspended ceiling to be 1500 x 750 module fully accessible perforated metal ceiling system. Category 'A' lighting to be linear pendant light fittings on regular grid with fittings providing up and down light, together with perimeter feature lighting.

15.2.2 Raised Floors

Office floors are formed of modular fully medium duty encapsulated raised access floor on a .600 x .600 metre grid. Floor tiles are comprised of dense chipboard encapsulated in galvanised steel to PSA MOB PF2 PS/SPU performance specification.

Each office floor is provided with areas of increased floor loading capacity equating to 5% of the floor area. This floor has a bearing capacity of 7.5kN/m^2.

15.2.3 Columns

Column casings within the floor plate are to be circular GRG and painted.

The perimeter columns to Shoe Lane and Plumtree Court will have a drylined and painted finish to minimize the impact to perimeter offices and will accommodate a partition interface detail.

The perimeter columns to Farringdon and Stonecutter Streets will be drylined on the exposed sides and will accommodate a partition interface detail.

15.2.4 Perimeter Blinds

Perimeter blinds will be provided in the Category 'A' works. Category 'A' blinds to be motorized roller blinds located between mullion/column positions

15.3 Air Conditioning – UFAD system (base solution)

The work space areas will be ventilated and cooled by a UFAD system which distributes conditioned air to the work space via a pressurized floor void and associated floor grilles.

Air will be distributed to floor void from 6No air tower (AT) rooms each containing 2 or 3 AT units via an air highway with modulating dampers. The AT’s take the required volume of fresh air from the landlord’s supply airshaft and mixes this with return air to provide a steady supply air temperature to the floor void.

15.3.1 Slab Insulation

Slab insulation will be provided on the underside of each floor to prevent heat migration to the floor void above.

15.3.2 Controls

Every AT room will be provided with an intelligent outstation and associated controls to control the space temperature, AT’s and all relevant dampers. Every fan powered box will be provided with an electronic direct digital (ddc) controller.

The Category ‘A’ controls will be fully compatible with the landlord’s BMS and interface will be provided with this system for warm up/cool down and fire mode functions.

15.3.3 Heating Pipework

Heating pipework will be provided from the landlord’s riser within each AT room to serve each AT.

All heating pipework will be insulated.

15.3.4 Chilled Water Pipework

Chilled water pipework will be provided from the landlord’s riser within each AT room to serve each AT.

All chilled water pipework will be insulated.

15.3.5 Condensate Pipework

Condensate pipework will be provided from the landlord’s riser within each AT room to serve each AT.

All condensate pipework will be insulated.

To provide flexibility for tenant fit out, the UFAD can be replaced by or adapted to supplement either of the following alternative systems.

15.4 Air Conditioning – fan coil system (alternate 1)

The work space areas will be heated and cooled by fan coil units within the ceiling void. Fan coils at the perimeter will be 4-pipe types to provide both heating and cooling. Fan coils in internal areas will be 2-pipe types and will provide cooling only. Heated or cooled ventilation air will be provided via low pressure sheet metal ductwork extended from on floor air handling plant located in the AT rooms.

Chilled water and low pressure hot water pipework distribution is provided on each floor to serve fan coil units.

The fan coil units around the perimeter are generally spaced at one per 6.0 by 4.5m deep zone (27m2) and in interior zones at a maximum of 1 per 80m2.

The sizing of the fan coil units includes for the cooling loads due to solar gain, small power and lighting and for the population density specified under the services design criteria sub-section of the Base Building Definition.

Air will be supplied via diffusers. The air will be returned to the void via return air grilles.

In interior office areas air will be supplied via ceiling supply grilles. Air in interior offices is returned to the ceiling void via return air grilles.

All insulation material will be sealed or otherwise stabilised to prevent migration of fibre particles into the return air ceiling plenum.

Extract air will be removed from the ceiling void via sheet metal ductwork at the AT rooms.

15.4.1 Controls

Every fresh air unit and fan coil unit will be provided with an electronic ddc and an associated temperature sensor with a length coiled cable to allow for partition or column mounting at a later date.

The heating and cooling coils in the fan coil units will be sequentially modulated in order to maintain room set point conditions.

The Category ‘A’ controls will be fully compatible with the landlord BMS and interface is provided with this system for warm up / cool down and fire mode functions.

15.4.2 Heating Pipework

All heating pipework will be insulated.

All insulation material will be sealed or otherwise stabilised to prevent migration of fibre particles into the return air ceiling plenum.

The fan coil unit heating coils will be served with low temperature hot water from a pipework distribution system located in the ceiling void.

15.4.3 Chilled Water Pipework

All chilled water pipework will be insulated and vapour sealed.

All insulation material will be sealed or otherwise stabilised to prevent migration of fibre particles into the return air ceiling plenums.

The fan coil unit chilled water coils will be served with chilled water from a pipework distribution system located in the ceiling void.

15.5 Air Conditioning – chilled beam system (alternate 2)

The work space area will be cooled by chilled beams within the ceiling void. Underfloor convector heaters at the perimeter will provide heating.Ventilation air will be provided via low pressure sheet metal ductwork extended from on floor air handling plant located in the AT rooms.

Chilled water and low pressure hot water pipework distribution will be provided on each floor to he chilled beams and underfloor convectors.

The sizing of the chilled beam unit will include for the cooling loads due to solar gain, small power and lighting and for the population density specified under the services design criteria sub-section of the Base Building Definition.

Air will be supplied via diffusers. The air will be returned to the void via return air grilles.

In interior office areas air will be supplied via ceiling supply grilles. Air in interior offices is returned to the ceiling void via return air grilles.

All insulation material will be sealed or otherwise stabilised to prevent migration of fibre particles into the return air ceiling plenum.

Extract air will be removed from the ceiling void via sheet metal ductwork at the core.

15.5.1 Controls

Every fresh air unit and chilled unit will be provided with an electronic ddc and an associated temperature sensor with a length coiled cable to allow for partition or column mounting at a later date.

The Category ‘A’ controls are fully compatible with the landlord BMS and interface is provided with this system for warm up / cool down and fire mode functions.

15.5.2 Heating Pipework

All heating pipework will be insulated.

All insulation material will be sealed or otherwise stabilised to prevent migration of fibre particles into the return air ceiling plenum.

The perimeter convector will be served with low temperature hot water from a pipework distribution system located in the floor void.

15.5.3 Chilled Water Pipework

All chilled water pipework will be insulated and vapour sealed.

All insulation material will be sealed or otherwise stabilised to prevent migration of fibre particles into the return air ceiling plenums.

The chilled beams will be served with chilled water from a pipework distribution system located in the ceiling void.

15.6 Sprinkler Installation

Sprinklers and associated pipework protecting the useable office areas are extended from the termination points of the landlord system.

This work includes piping and connections to the sprinkler piping left at the core to be extended to the office floor.

Sprinkler spacing in the work space areas will be on the basis of Ordinary Hazard Classification and is generally laid out on a 4m x 3m grid with additional capped connections at the perimeter.

The sprinkler heads will be of the semi recessed flushed plate life safety type, subject to DS and insurer approval.

15.7 Lighting Installation

Work space lighting will be wired in flexible plug-in wiring is configured from circuits on Tenants lighting distribution boards located in on-floor electrical riser cupboards. Switching is by central on-floor control.

Typically the open plan office lighting will be high frequency, dimmable luminaries utilising LED’s. The lamp type will be selected on the basis of high efficacy and lamplife.
Luminaires at emergency exits and 5% of the total on-floor are provided with self contained battery-invertor packs giving 3 hours emergency operation necessary for escape lighting. The emergency lighting circuits will be un-switched and run separately.

The average lighting level in open plan office spaces (at desk height) will be approximately 350 lux. The emergency lighting level is 1 lux.

Daylight controlled dimming and occupancy-sensing switching will be provided to aid compliance with Building Regulations Part L2.

15.8 Fire and Voice Alarm System

A fully addressable fire alarm, detection and voice alarm system complying with BS 5839 with detector coverage to an enhanced L2 standard will be provided in each work space area.

Life safety system voice alarm speakers will be provided throughout to achieve a minimum of 65dba for open plan offices. The speakers will be connected to the voice evacuation system provided on each office floor as part of the works covered by the Base Building Definition.

15.9 Earthing

Raised floors and suspended ceilings are earthed in accordance with the requirements of BS7671.

Underfloor systems will be earthed once for every 13m²

The shell and core power installations will consist of a rising bus bar in the landlord’s electrical riser. The category ‘A’ installation will consist of a tap off box on the bus bar and a distribution board to serve the lighting and the fan coils. Small power distribution, including the distribution board tap off box and outgoing electrical circuits, will be provided by the tenant as Category ‘B’ works.

16. APPENDICES

16 Appendices

A. General Arrangement Plans

B. Sections and Elevations

C. Structural Loading Diagrams

D. MEP Schematics

E. Tenant and Landlord Plant and Riser Allocation

F. Demise Plans per floor

G. Demise Sections

H. Category A Typical Design Drawings

I. Indicative Tenant Separation

J. Fire Strategy

K. Tenant Design Guidelines

L. Tenant Fit-out Guide

M. Area Schedule

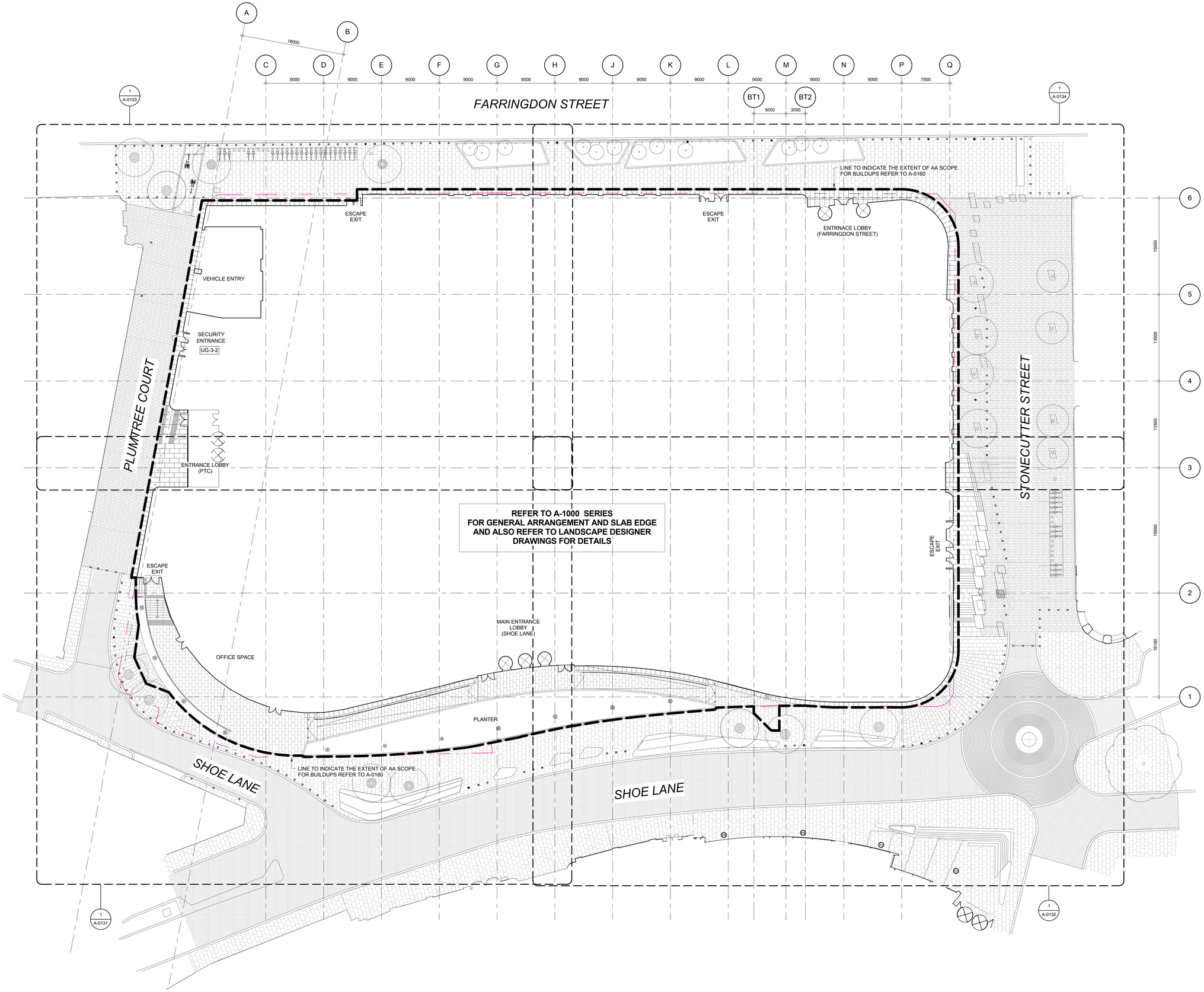
N. Façade Matrix

O. Resilience Matrix

P. Tenants IT Distribution Routes

16. APPENDICES

A. General Arrangement Plans



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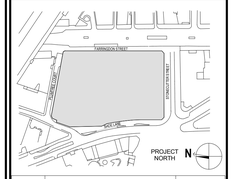

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OVERALL SITE PLAN

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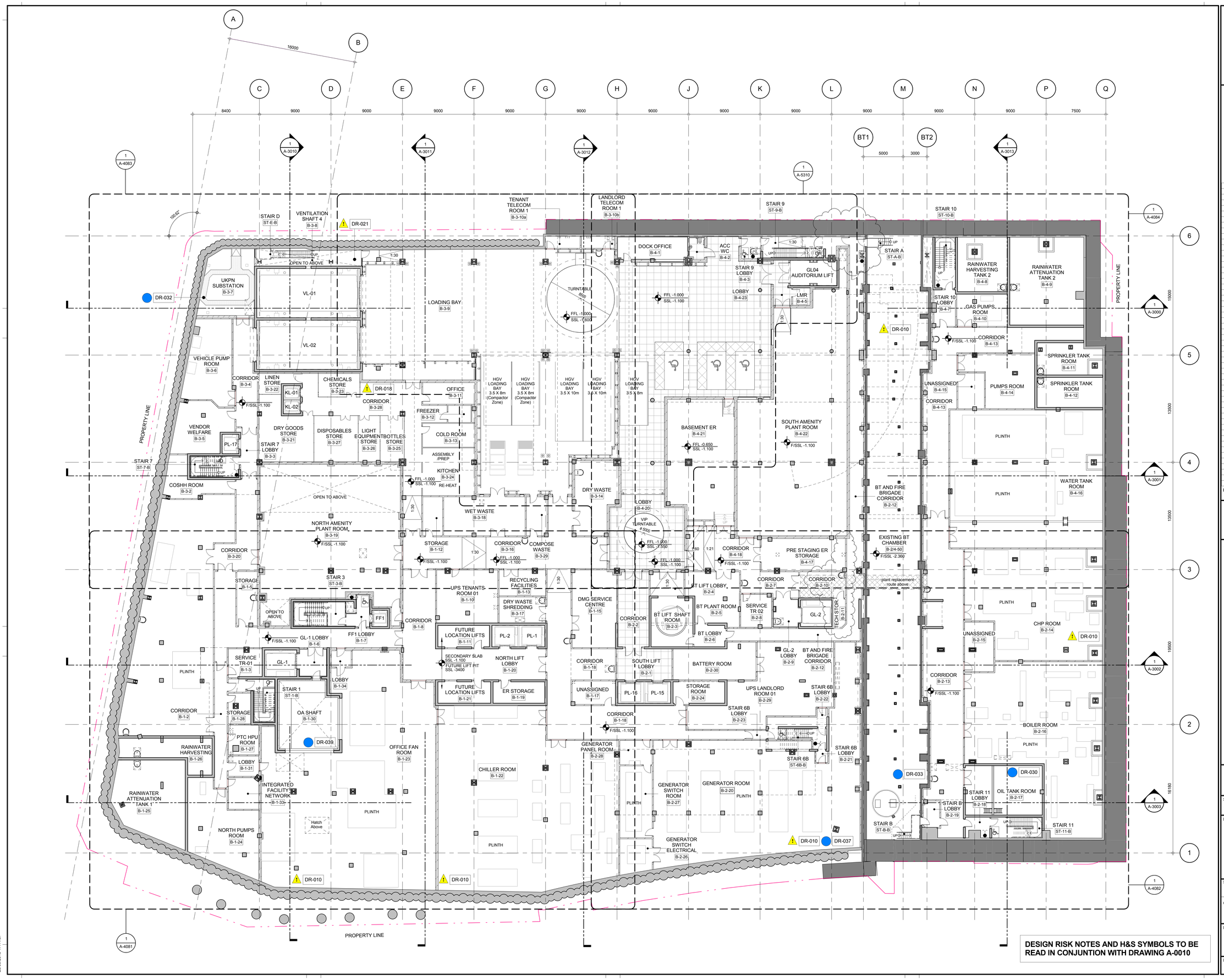

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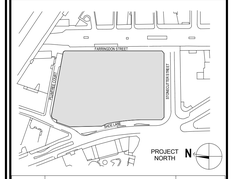

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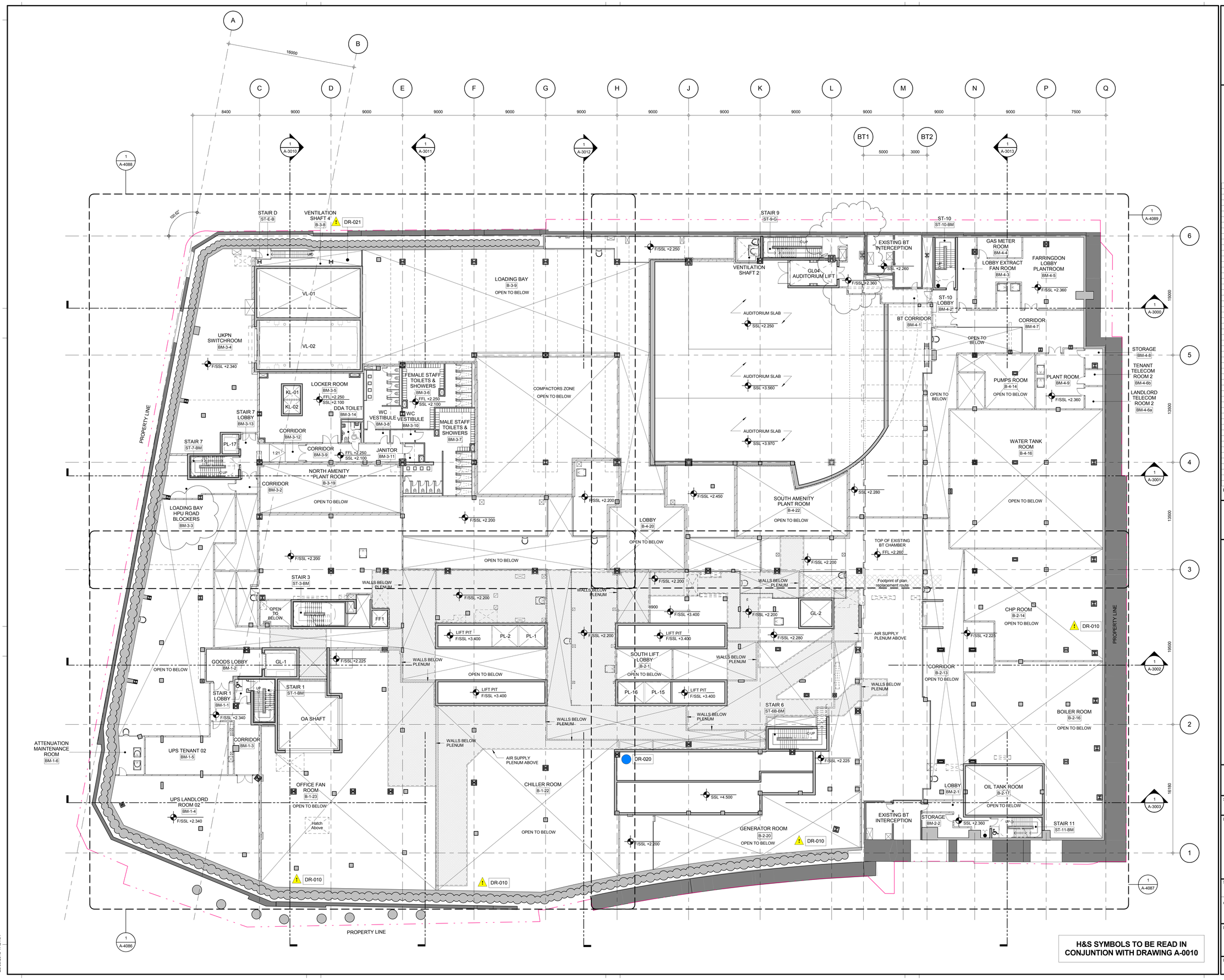

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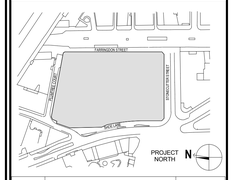

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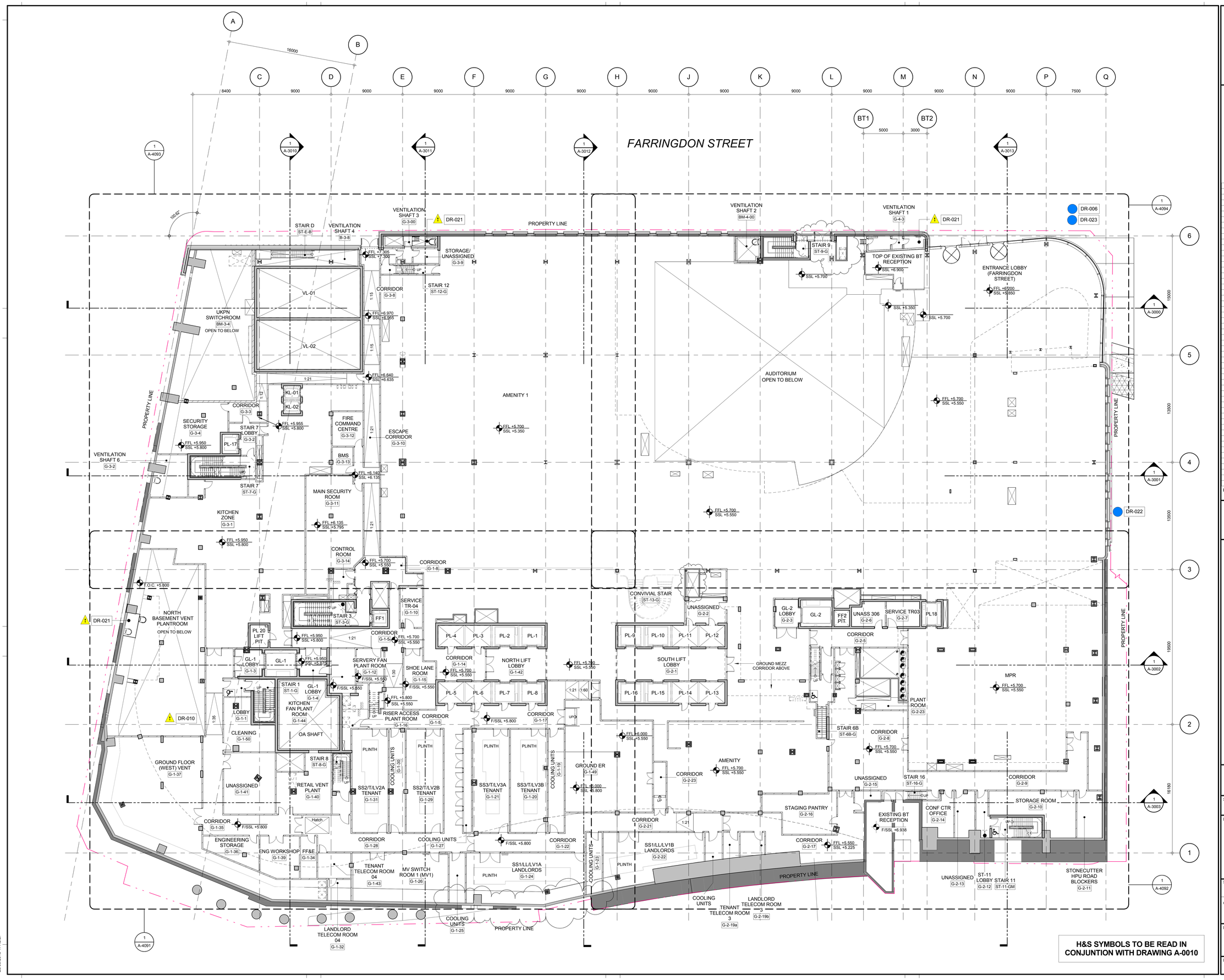

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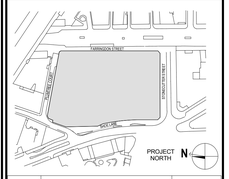

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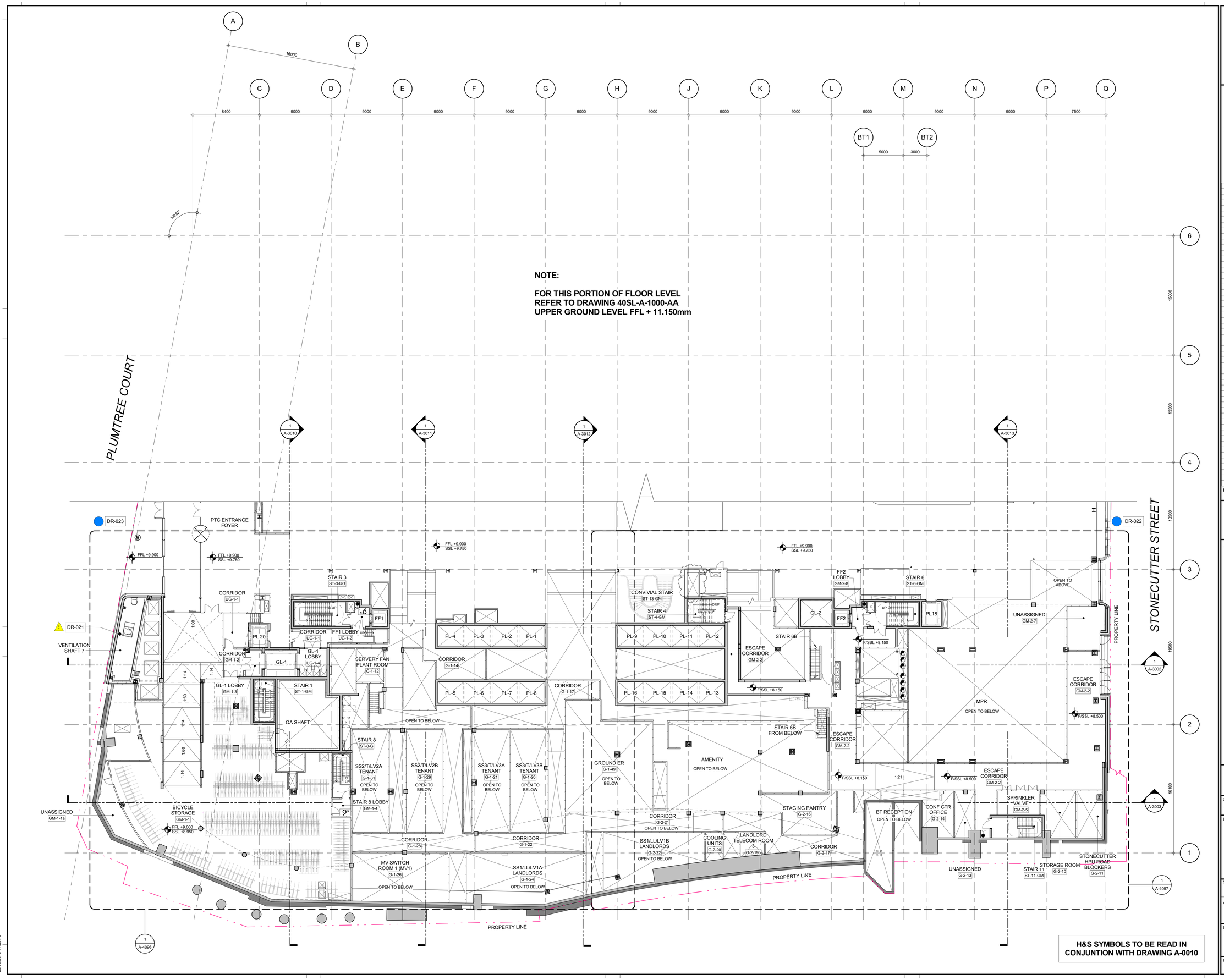

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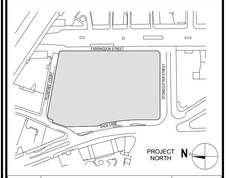

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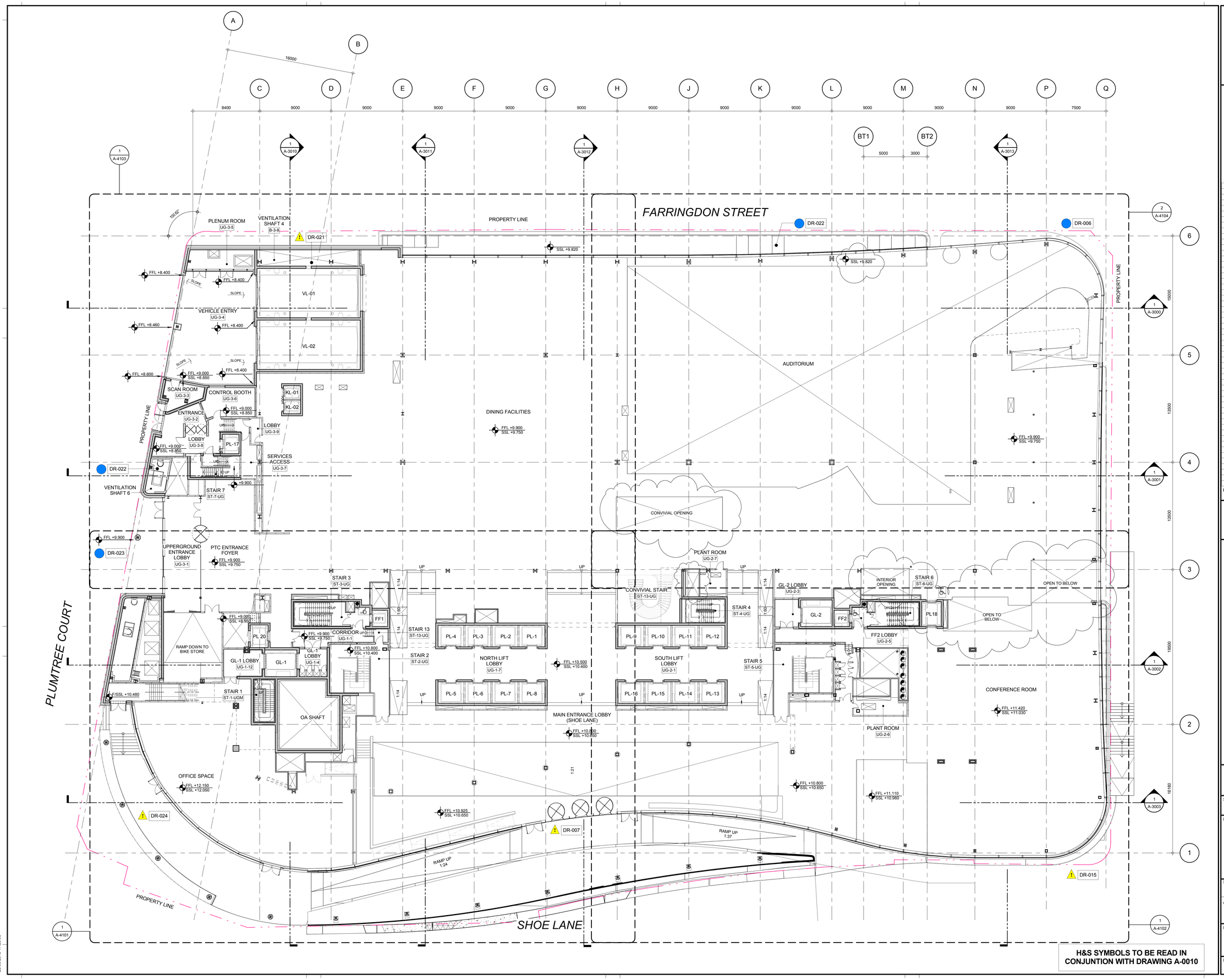

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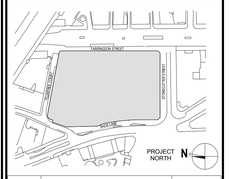

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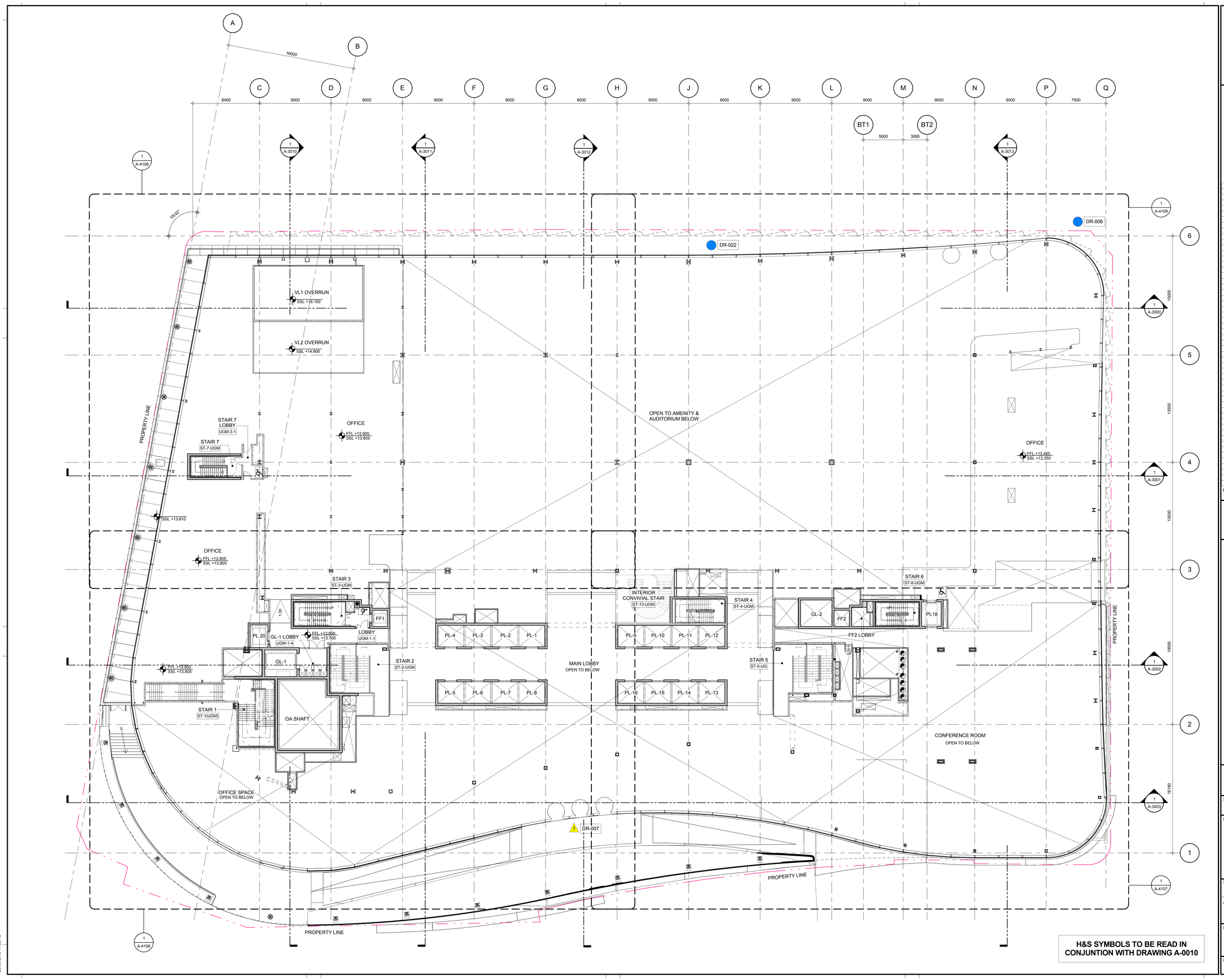

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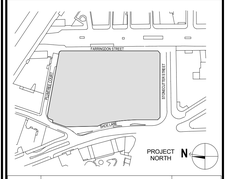

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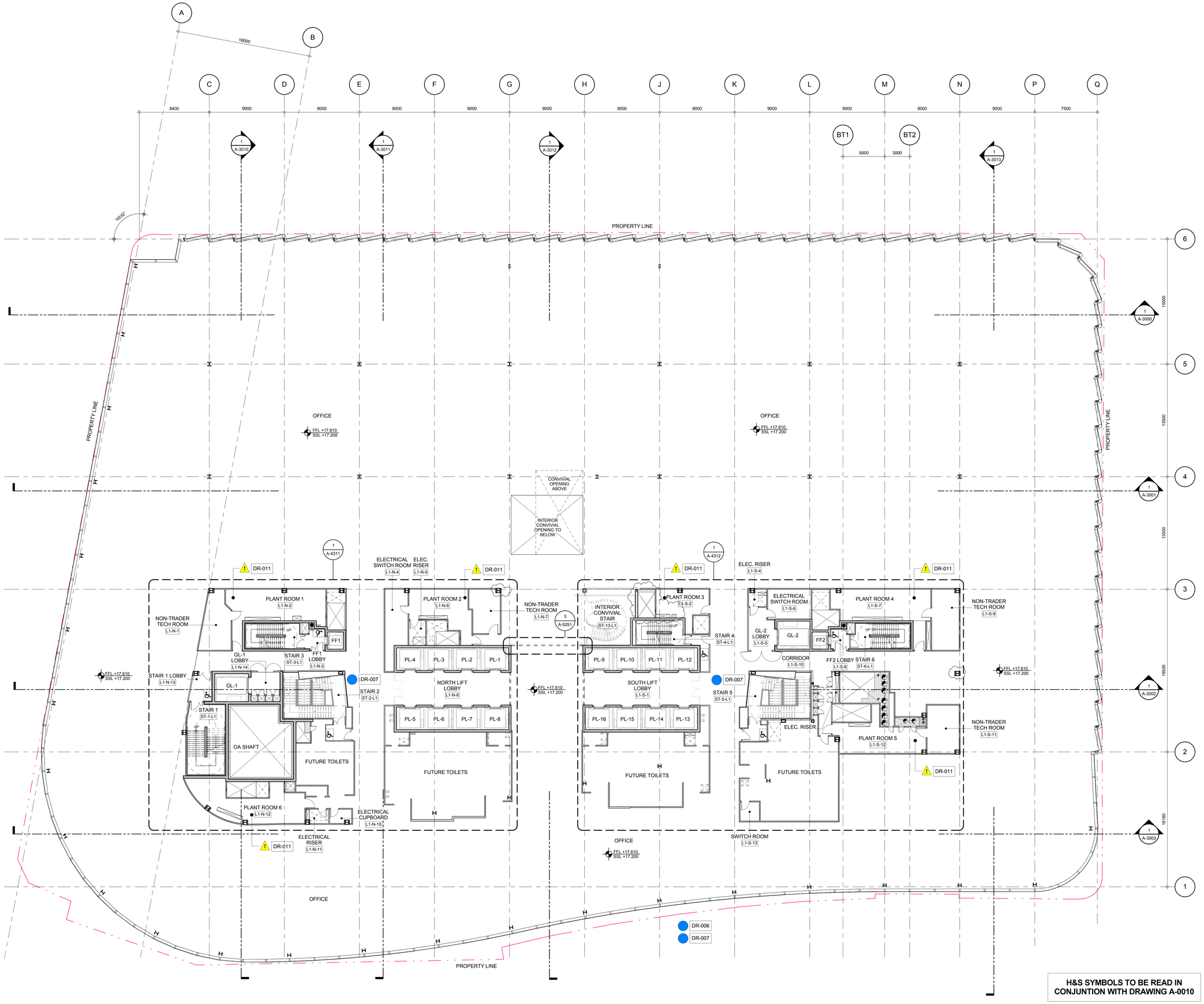

H&S SYMBOLS TO BE READ IN CONJUNTION WITH DRAWING A-0010

NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

REVISIONS

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Vertical Transportation
HOARE LEA
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SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN LEVEL 1 FFL +17610

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
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SCALE IN METRES

DRAWING NO.
40SL - A-1010 - AA

PROJECT NO. 1209-00

REVISION **02**

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DATE	DRAWN	CHECKED
	Author	Checker

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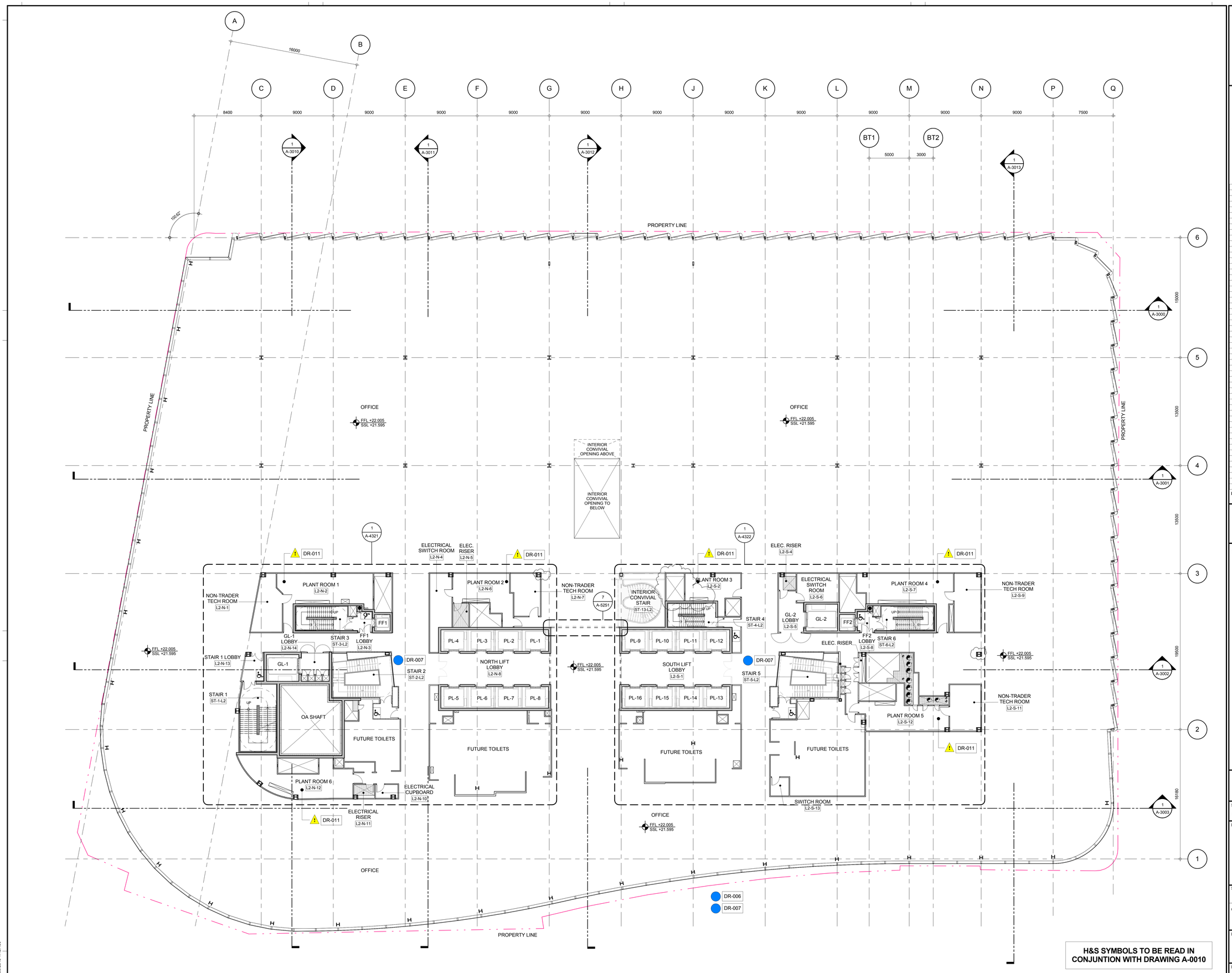

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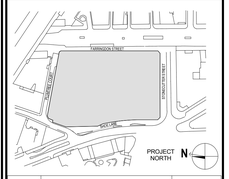
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

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SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN LEVEL 2 FFL +22005

SCALE: A0
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DATE:
01 DEC 2013

GRAPHIC SCALE
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SCALE IN METRES

DRAWING NO.
40SL - A-1020 - AA

PROJECT NO.
1209-00

REVISION
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	Author		

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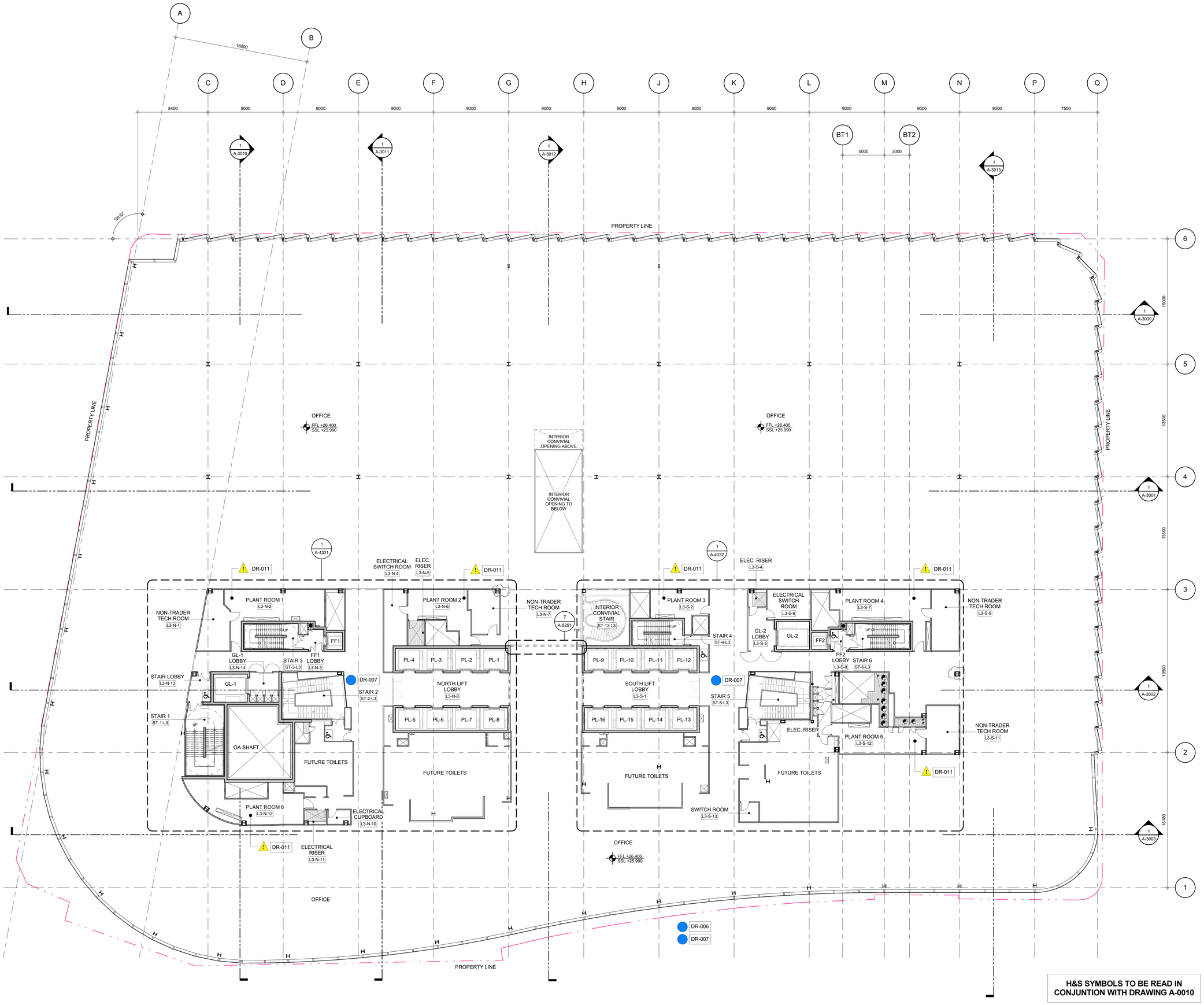

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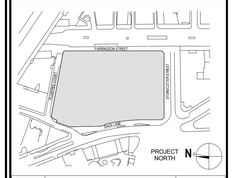
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
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01	DRAFT STAGE F	13 AUG 2015

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SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN LEVEL 3 FFL +26400

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
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SCALE IN METRES

DRAWING NO.
40SL - A-1030 - AA

PROJECT NO. 1209-00

REVISION **02**

H&S SYMBOLS TO BE READ IN CONJUNTION WITH DRAWING A-0010

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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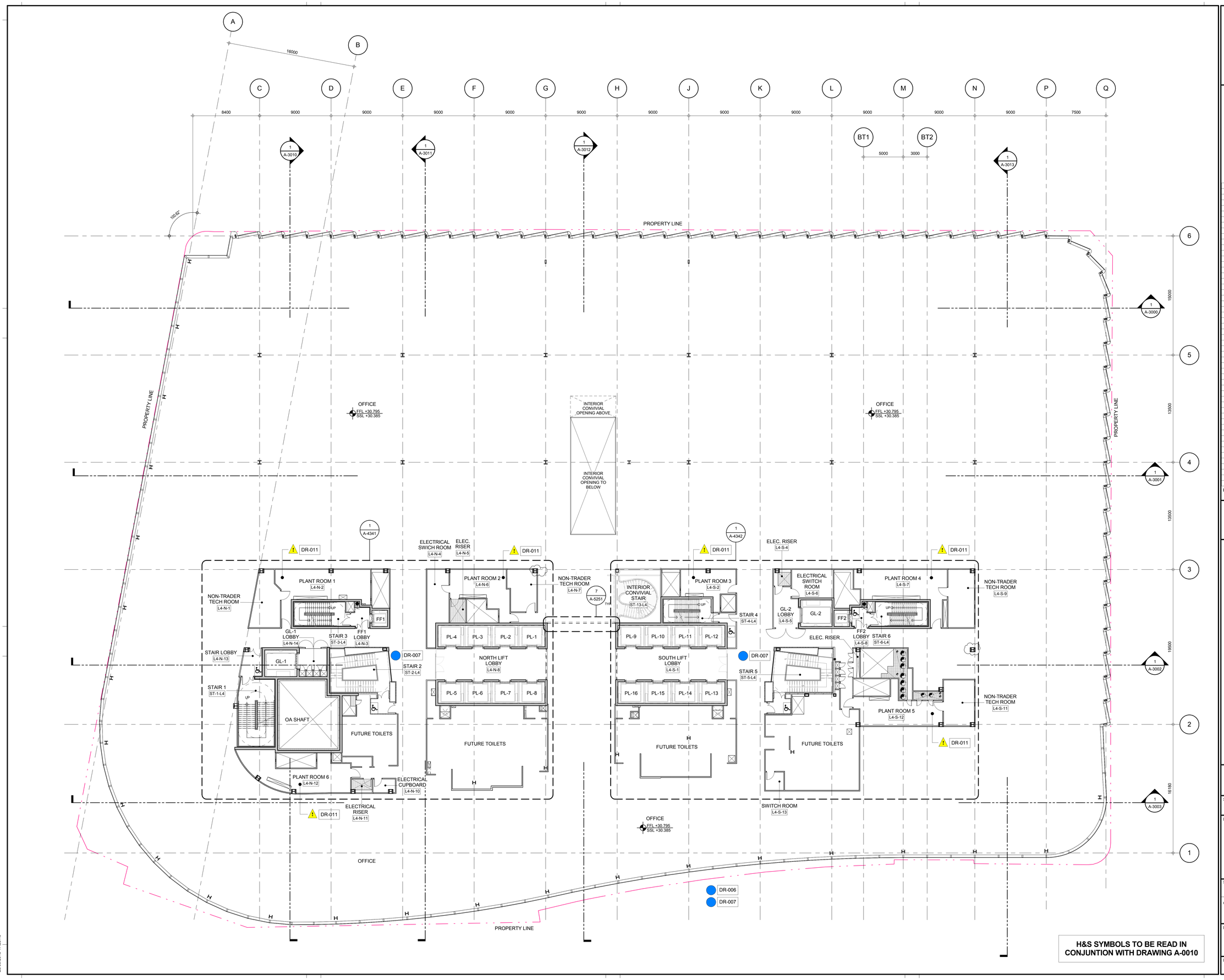

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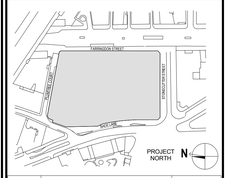
LONDON DEVELOPMENT PROJECT



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01	DRAFT STAGE F	13 AUG 2015

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HOARE LEA
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SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN LEVEL 4 FFL +30795

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
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SCALE IN METRES

DRAWING NO.
40SL - A-1040 - AA

PROJECT NO. 1209-00

REVISION 02

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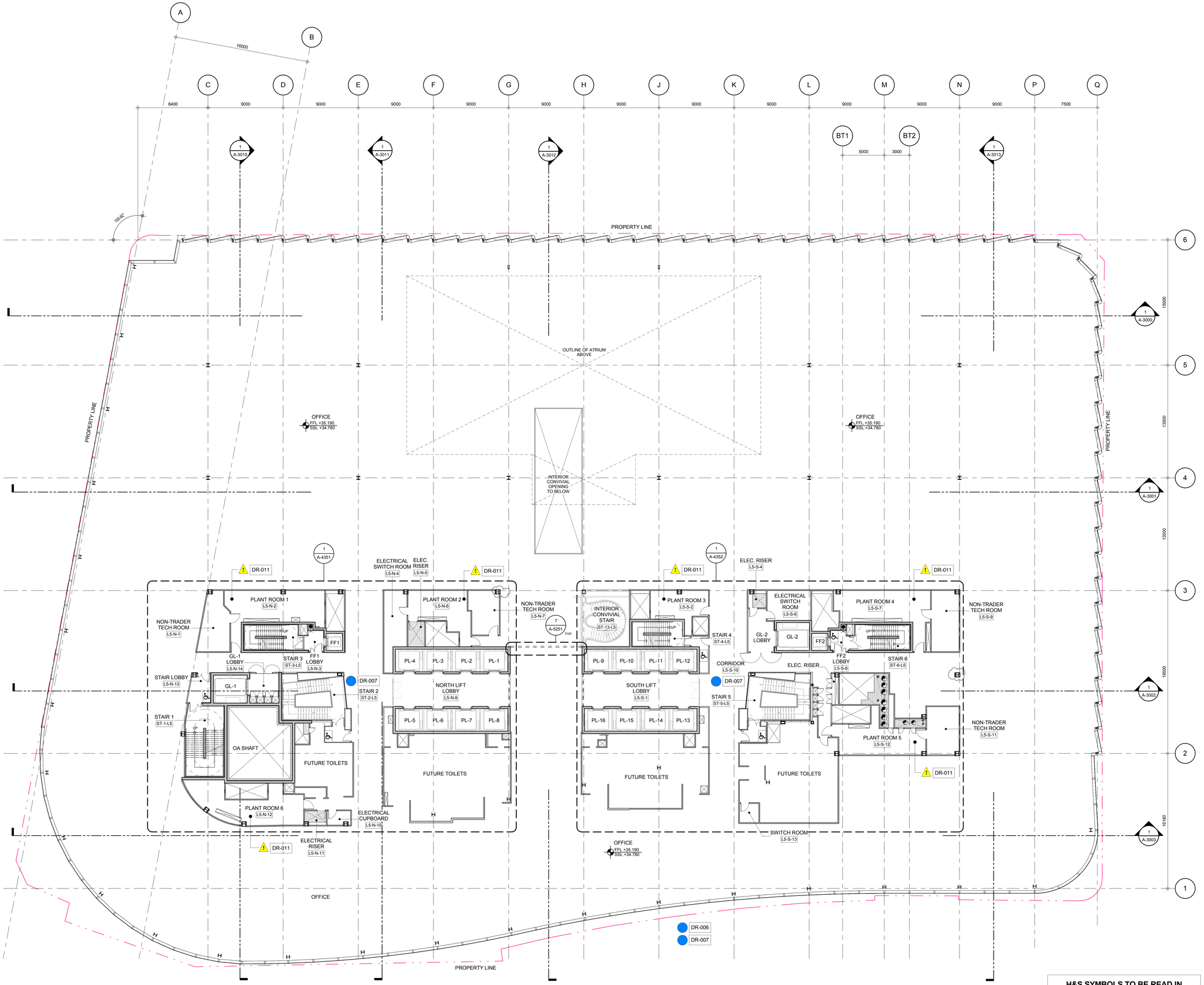

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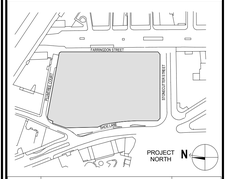
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
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01	DRAFT STAGE F	13 AUG 2015

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Vertical Transportation
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Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

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SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN LEVEL 5 FFL +35190

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
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SCALE IN METRES

DRAWING NO.
40SL - A-1050 - AA

PROJECT NO. 1209-00

REVISION **02**

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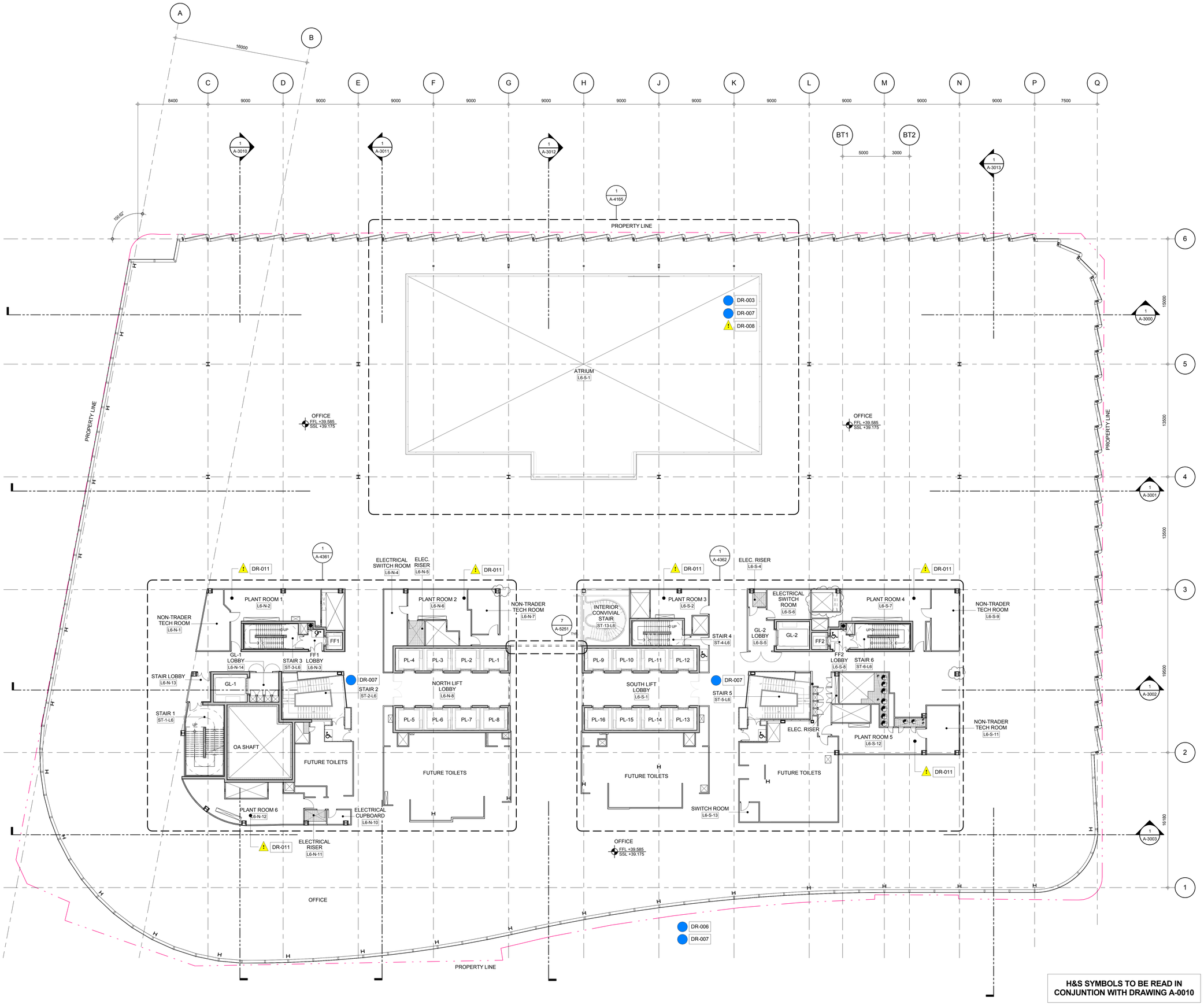

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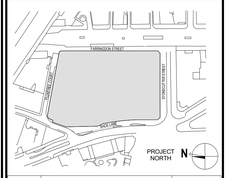
LONDON DEVELOPMENT PROJECT



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Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN LEVEL 6 FFL +39585

SCALE: A0 1 : 150

DATE: 01 DEC 2013

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DRAWING NO.
40SL - A-1060 - AA

PROJECT NO. 1209-00

REVISION 02

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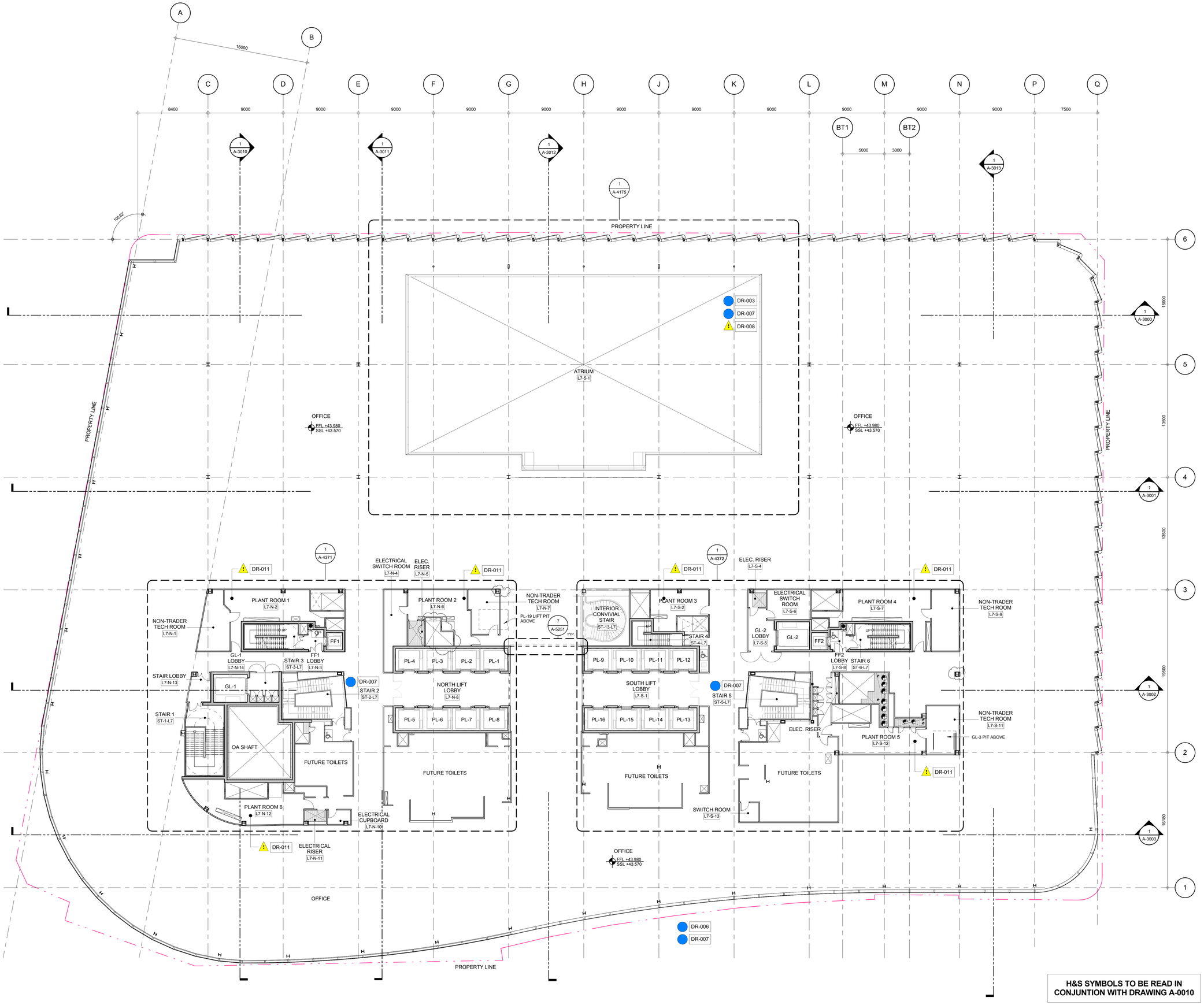

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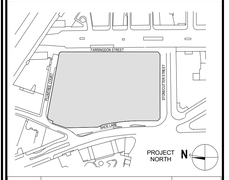

NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

REVISIONS

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SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN LEVEL 7 FFL +43980

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
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DRAWING NO.
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PROJECT NO. 1209-00

REVISION **02**

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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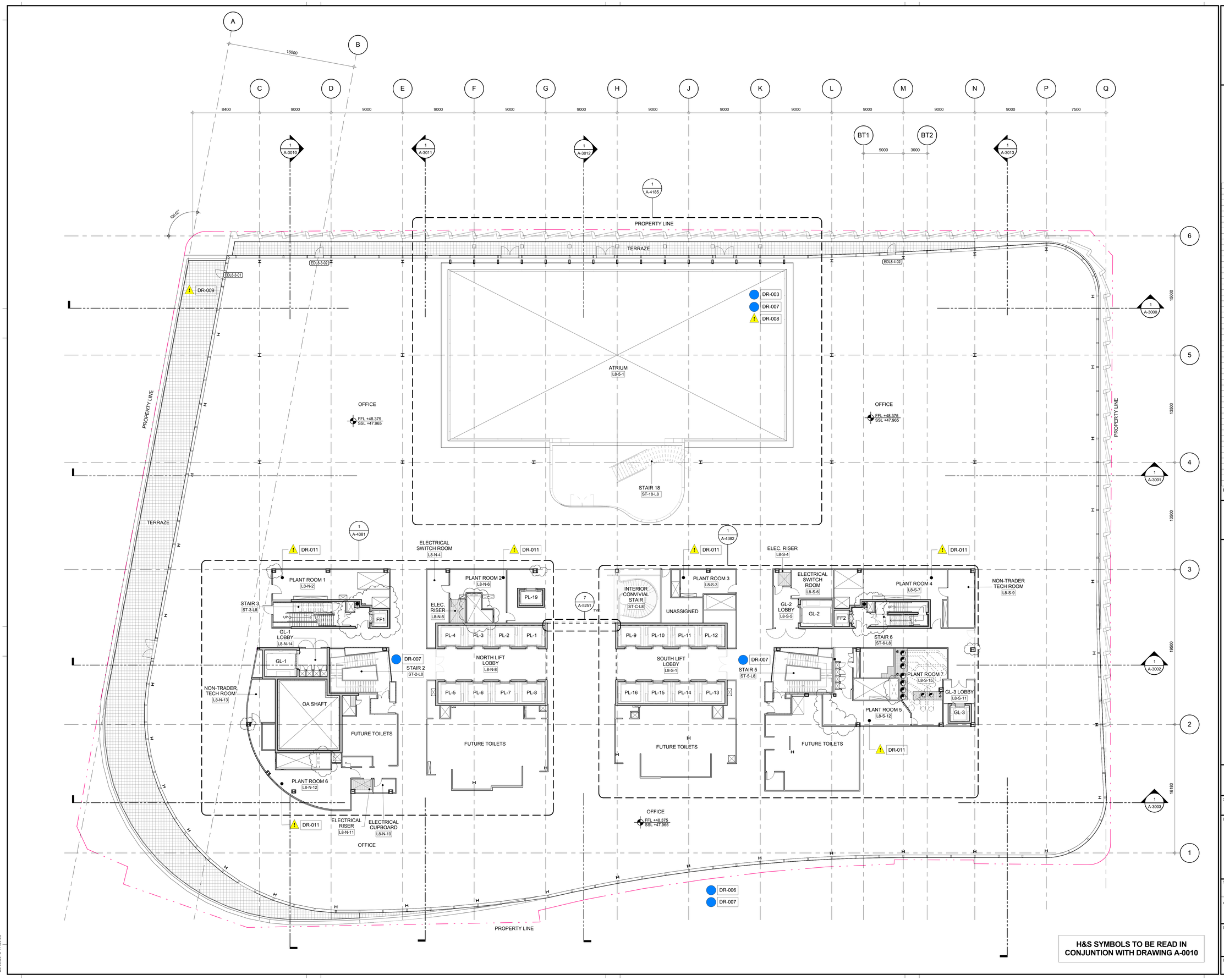

H&S SYMBOLS TO BE READ IN CONJUNTION WITH DRAWING A-0010

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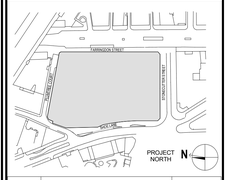
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

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SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN LEVEL 8 FFL +48375

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
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SCALE IN METRES

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PROJECT NO. 1209-00

REVISION **02**

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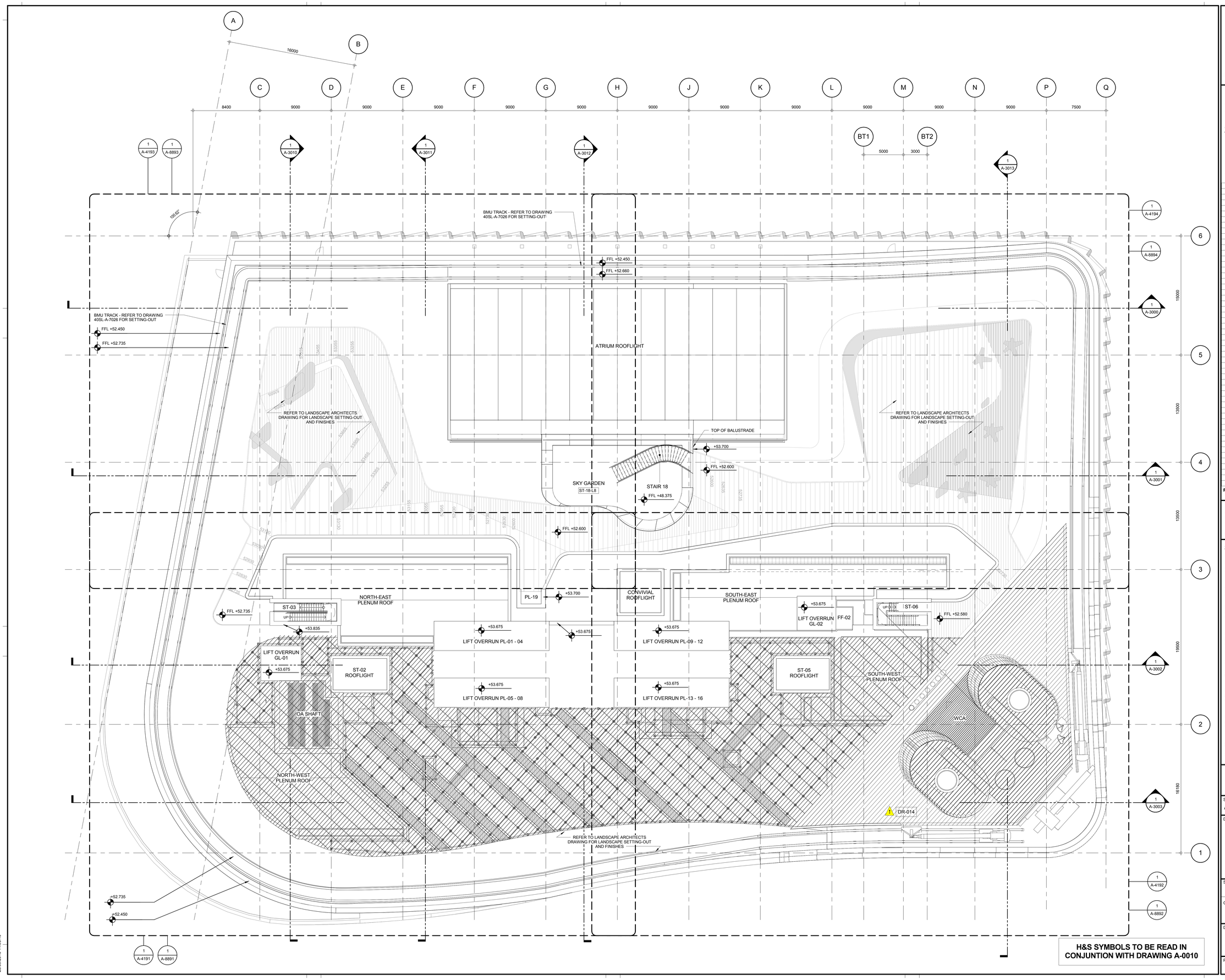

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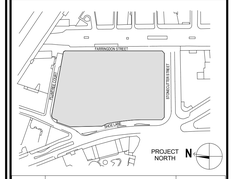
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
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01	DRAFT STAGE F	13 AUG 2015

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adamson ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:
A-1000 - GENERAL ARRANGEMENT PLANS

DRAWING TITLE:

GENERAL ARRANGEMENT PLAN ROOF LEVEL FFL +52760

SCALE: A0 1 : 150

DATE: 01 APR 2015

GRAPHIC SCALE
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SCALE IN METRES

DRAWING NO.
40SL - A-1090 - AA

PROJECT NO. 1209-00

REVISION **02**

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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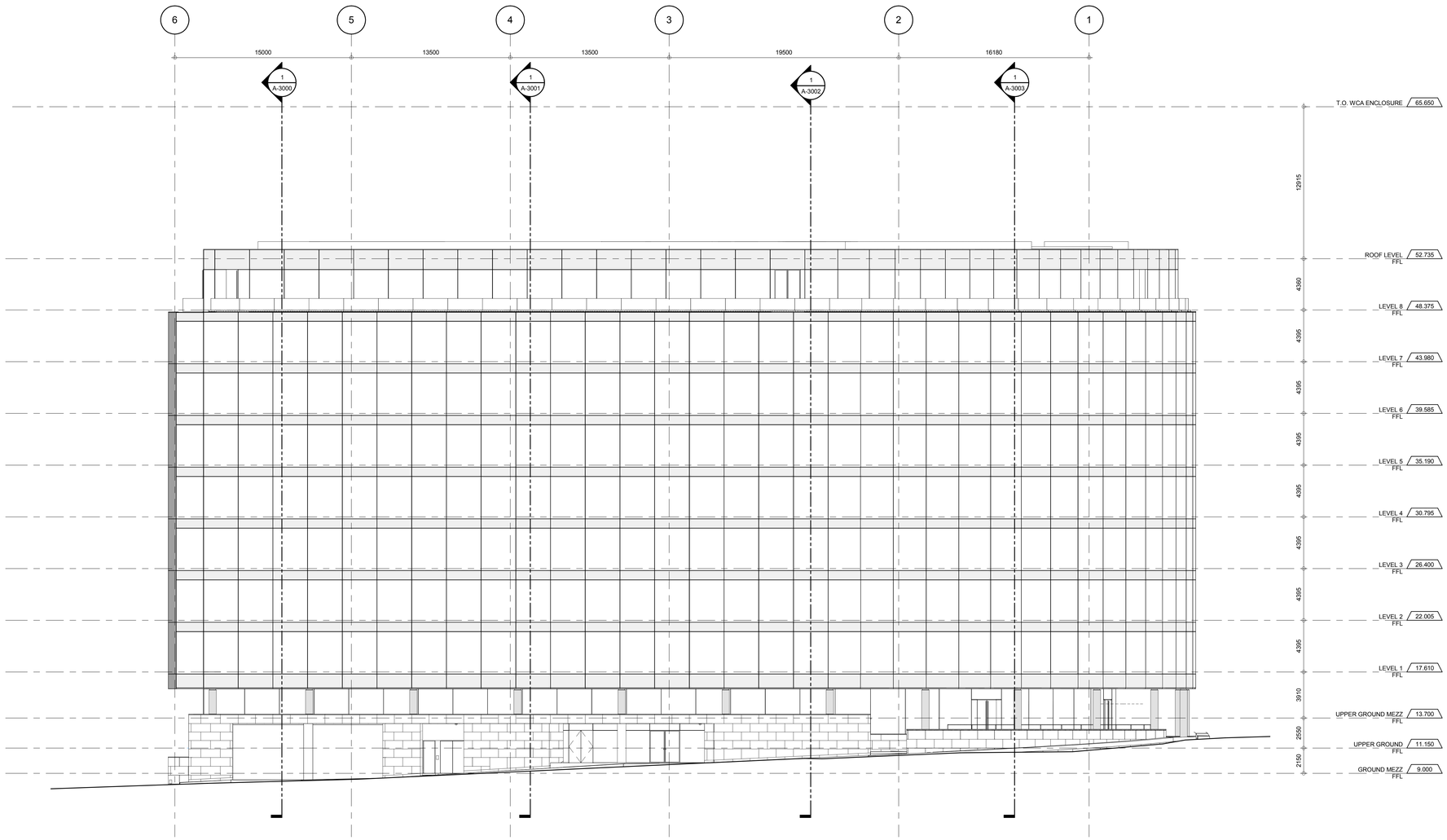
16. APPENDICES

B. Sections and Elevations

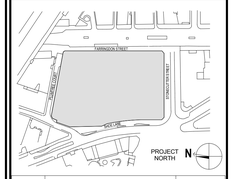


PLUMTREE COURT

FOR CLADDING DETAILS REFER TO A-7050

LDP

LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
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01	DRAFT STAGE F	13 AUG 2015

REVISIONS

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Western Transit Shed, 12-13 Stable Street,
London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:
A-2000 - ELEVATIONS

DRAWING TITLE:

NORTH ELEVATION - PLUMTREE COURT ELEVATION

SCALE: A0
1 : 150

DATE:
01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 0m
SCALE IN METRES

DRAWING NO.
40SL - A-2000 - AA

PROJECT NO.
1209-00

REVISION
02

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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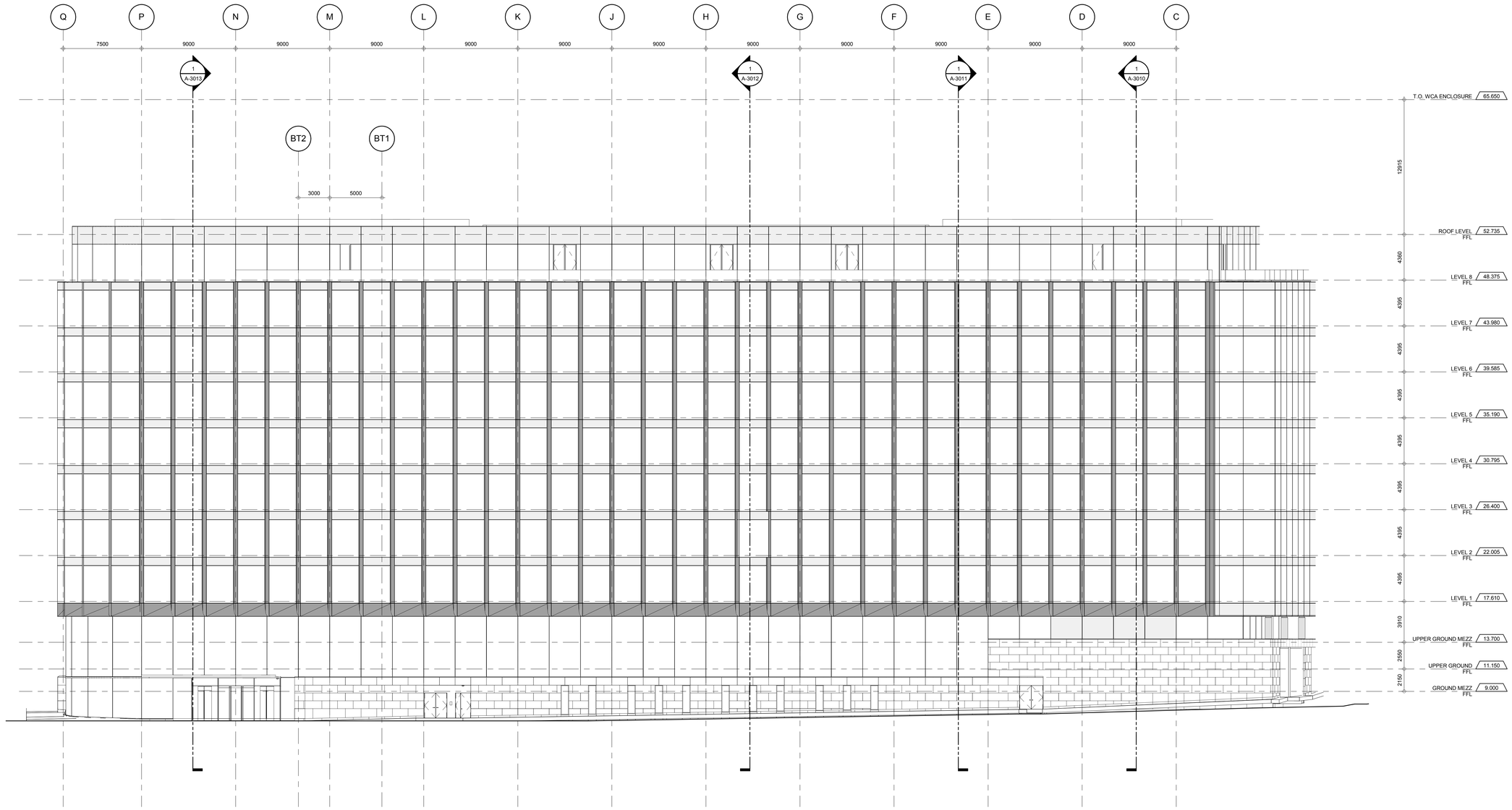
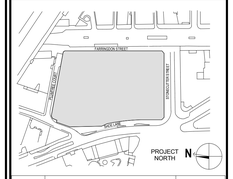


FARRINGDON STREET

FOR CLADDING DETAILS REFER TO A-7051

LDP

LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

REVISIONS

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ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:
A-2000 - ELEVATIONS

DRAWING TITLE:

EAST ELEVATION - FARRINGDON STREET ELEVATION

SCALE: A0
1 : 150

DATE:
01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SL - A-2001 - AA

PROJECT NO.
1209-00

REVISION
02

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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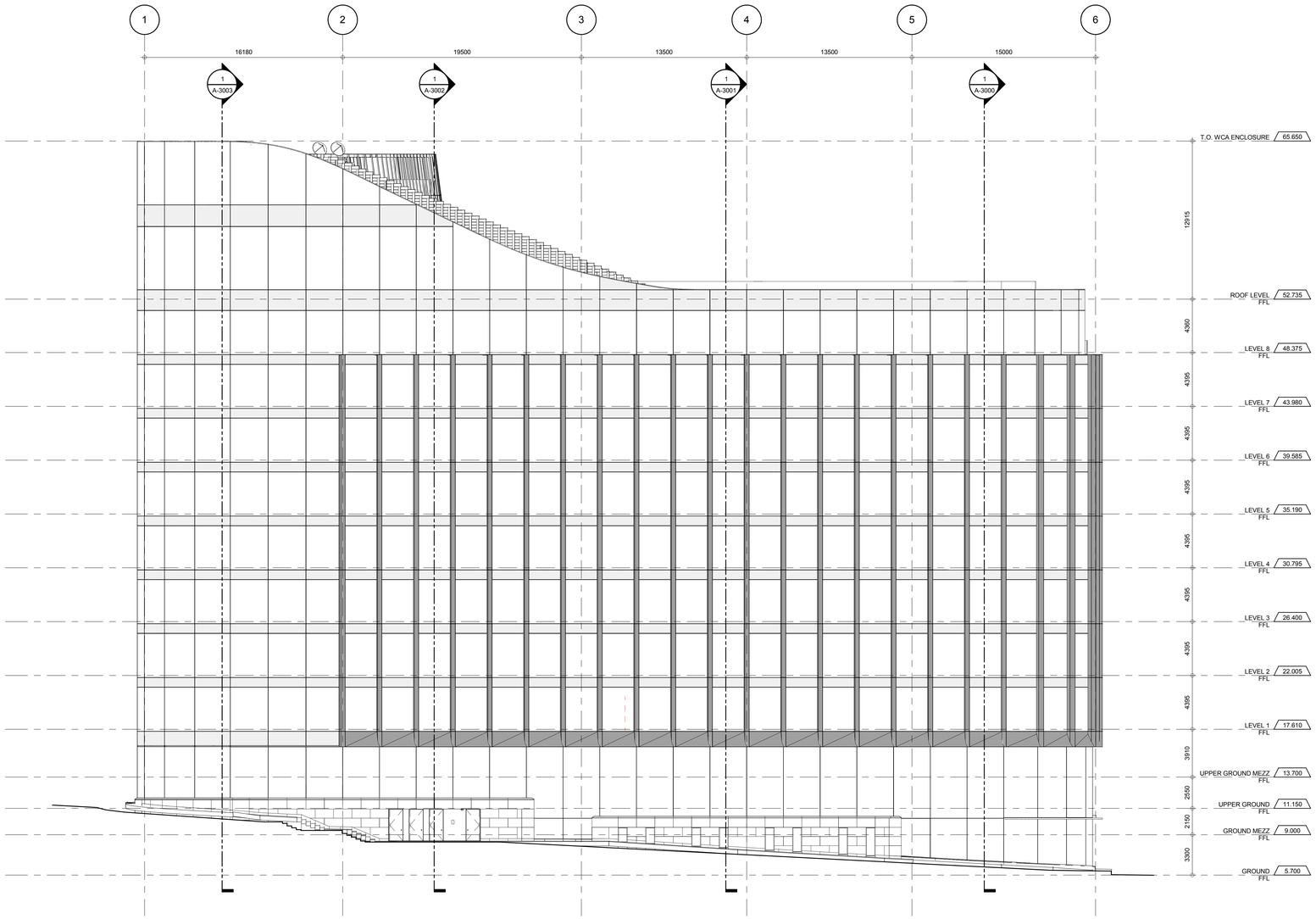
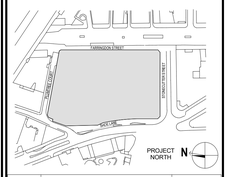


STONECUTTER STREET

FOR CLADDING DETAILS REFER TO A-7052

LDP

LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

REVISIONS

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SERIES:
A-2000 - ELEVATIONS

DRAWING TITLE:

SOUTH ELEVATION - STONECUTTER STREET ELEVATION

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SL - A-2002 - AA

PROJECT NO. 1209-00

REVISION ***02***

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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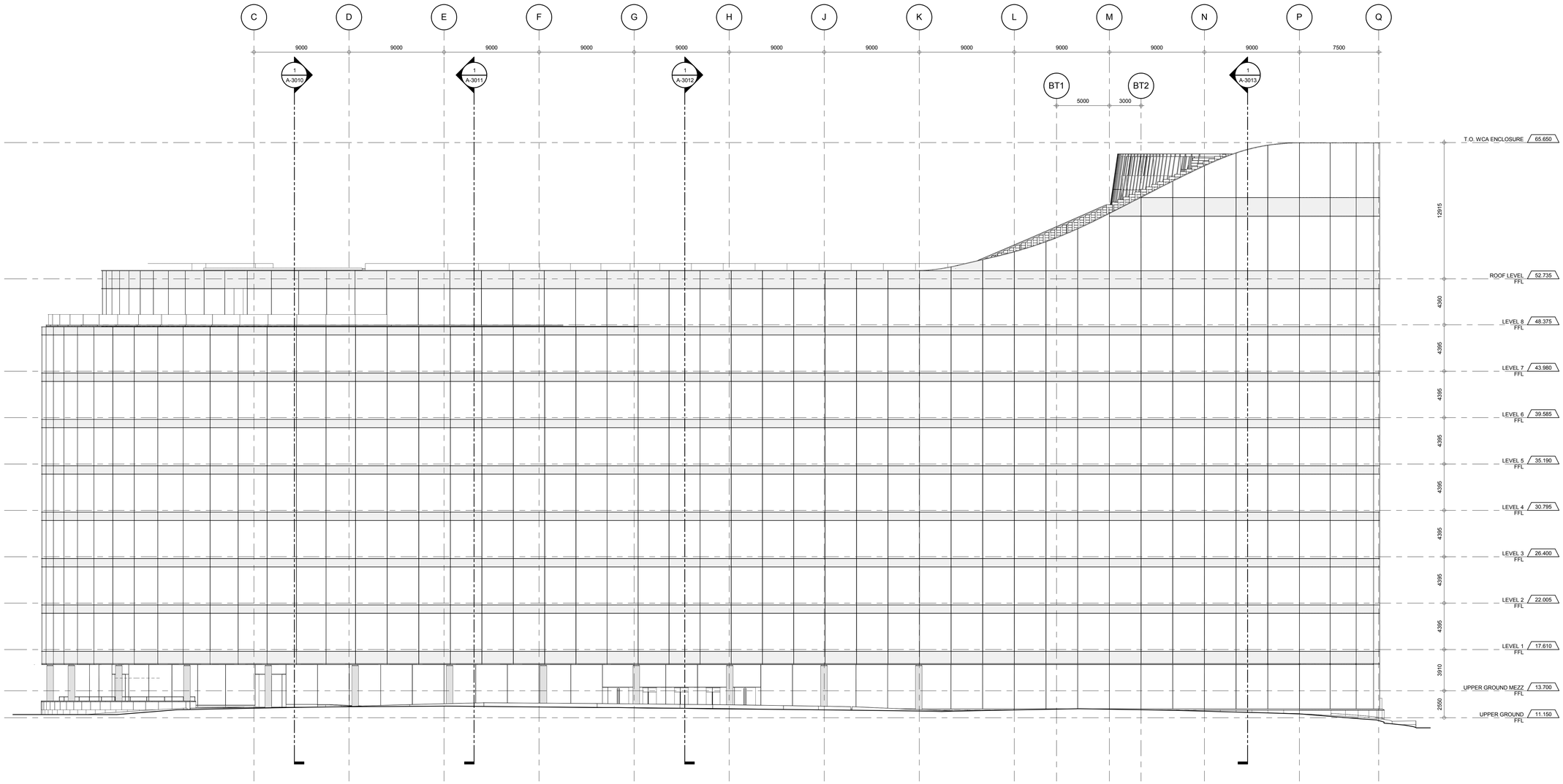
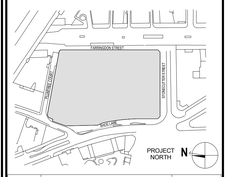


SHOE LANE

FOR CLADDING DETAILS REFER TO A-7053

LDP

LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

REVISIONS

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SERIES:
A-2000 - ELEVATIONS

DRAWING TITLE:

WEST ELEVATION - SHOE LANE ELEVATION

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SL - A-2003 - AA

PROJECT NO. 1209-00

REVISION ***02***

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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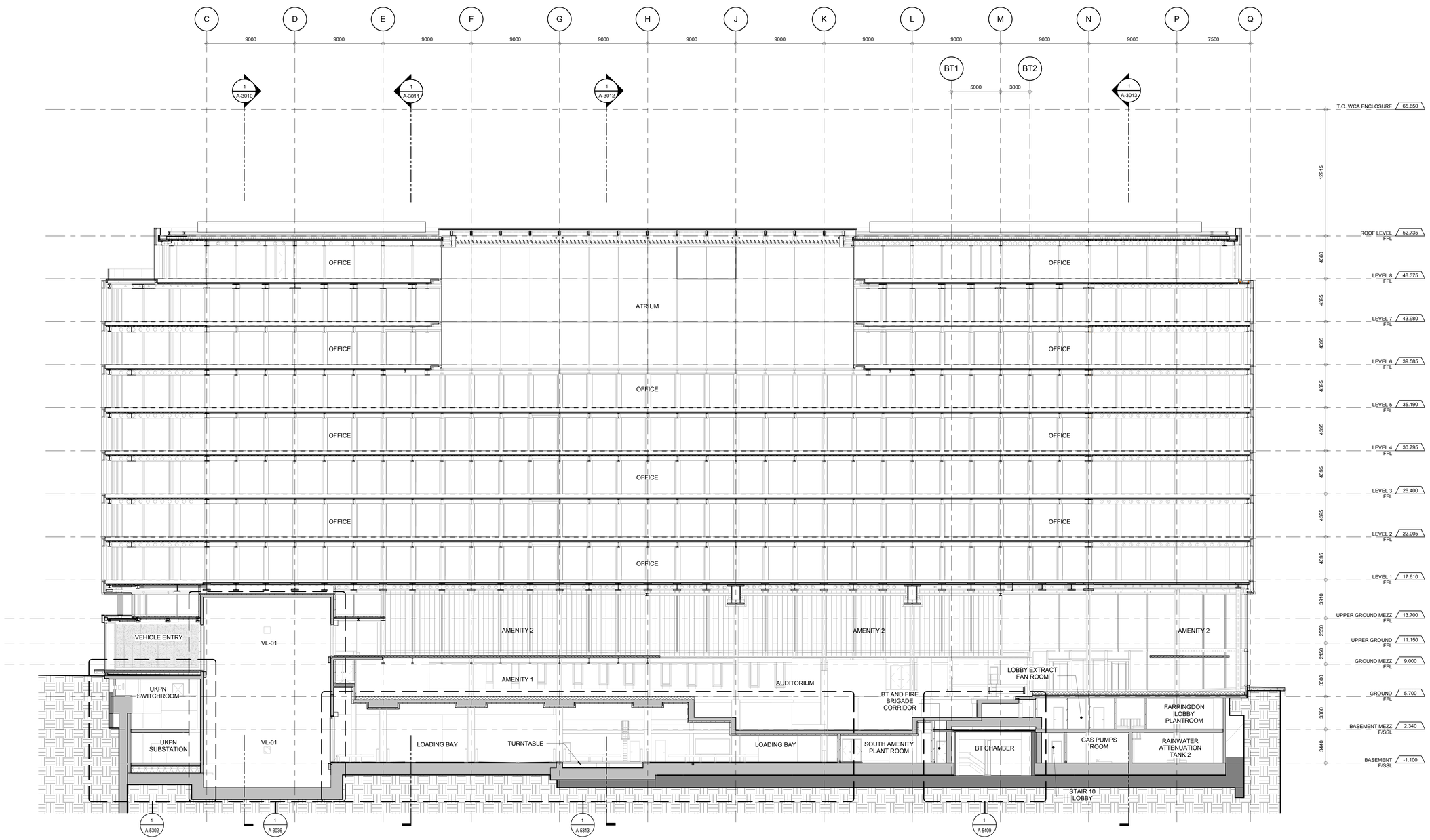

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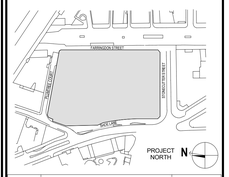
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

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SERIES:
A-3000 - SECTIONS

DRAWING TITLE:

NORTH / SOUTH BUILDING SECTION THROUGH ATRIUM

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 0m
SCALE IN METRES

DRAWING NO.
40SL - A-3000 - AA

PROJECT NO. 1209-00

REVISION **02**

QUALITY CHECK

DATE	DRAWN	CHECKED	Checker
	Author		

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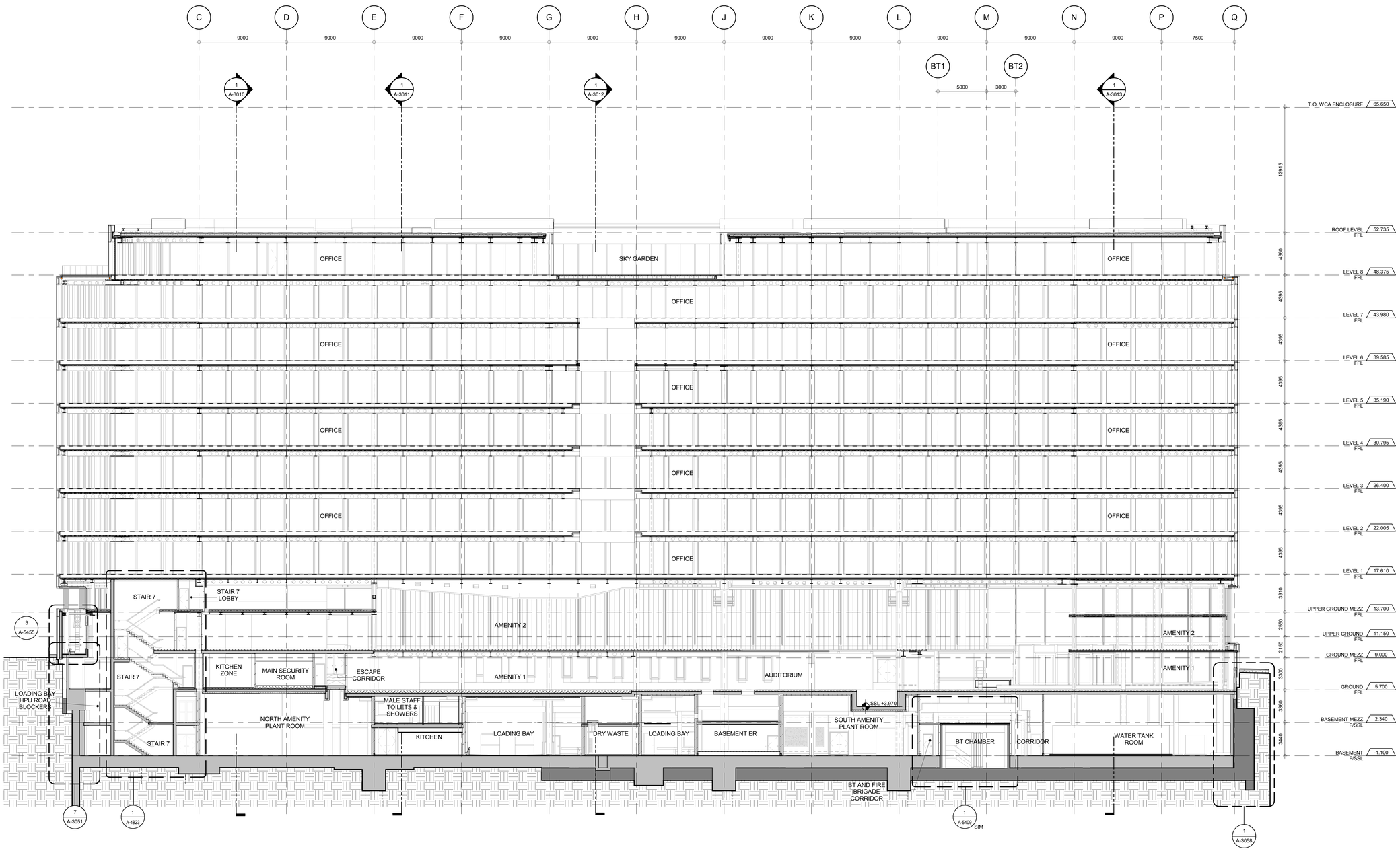

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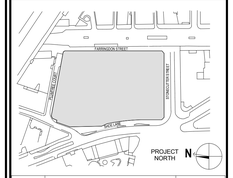
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

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SERIES: A-3000 - SECTIONS

DRAWING TITLE:

NORTH / SOUTH BUILDING SECTION THROUGH AUDITORIUM

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE: 0 1 2 4 6 8 9m SCALE IN METRES

DRAWING NO. **40SL - A-3001 - AA**

PROJECT NO. 1209-00

REVISION 02

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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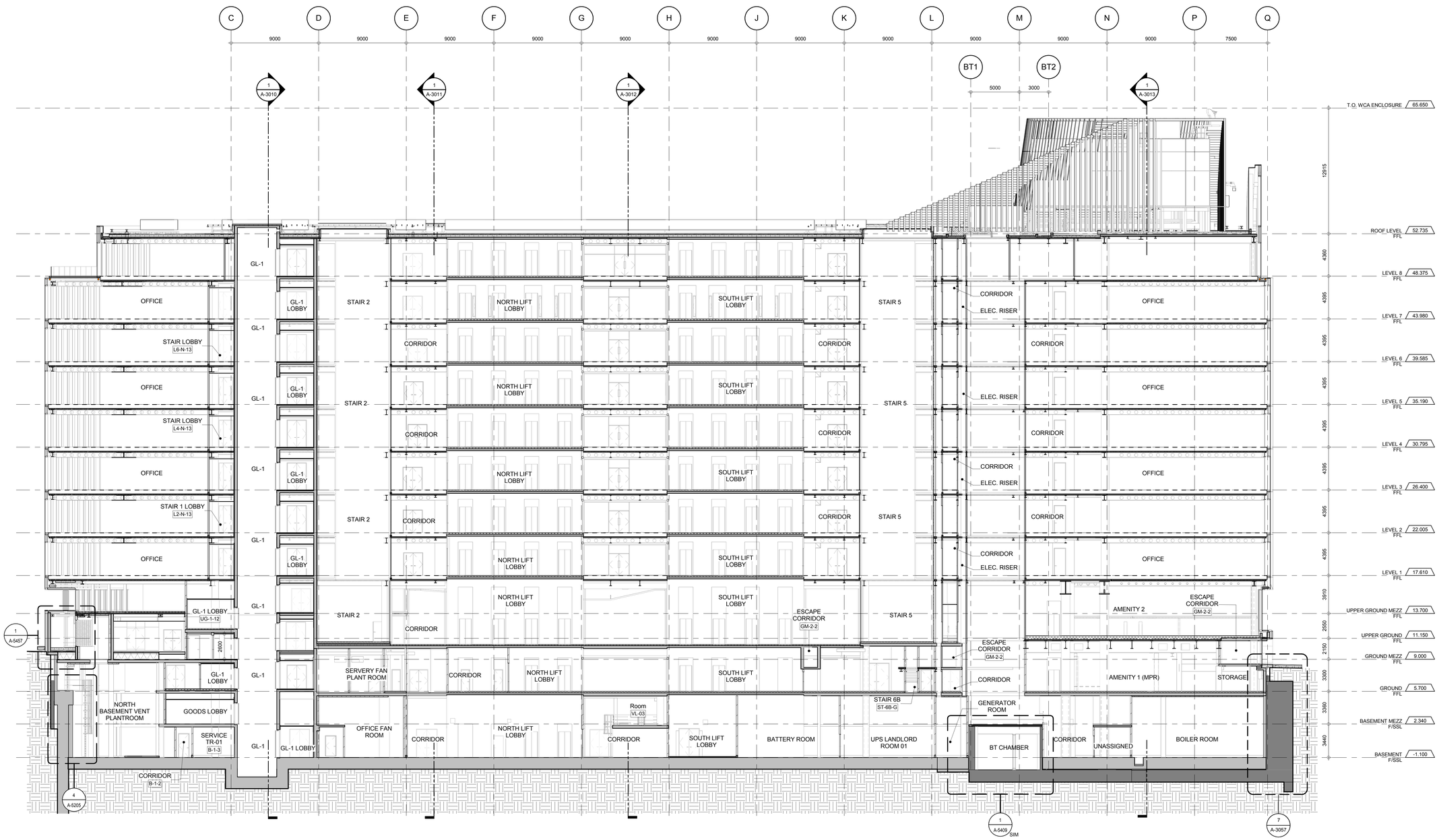

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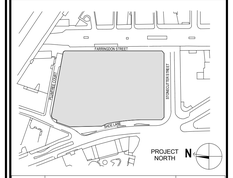
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

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SERIES: A-3000 - SECTIONS

DRAWING TITLE:

NORTH / SOUTH BUILDING SECTION THROUGH STAIRS 03, 04 & 06

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE 0 1 2 4 6 8 9m SCALE IN METRES

DRAWING NO. **40SL - A-3002 - AA**

PROJECT NO. 1209-00

REVISION **02**

QUALITY CHECK

DATE	DRAWN	CHECKED
	Author	Checker

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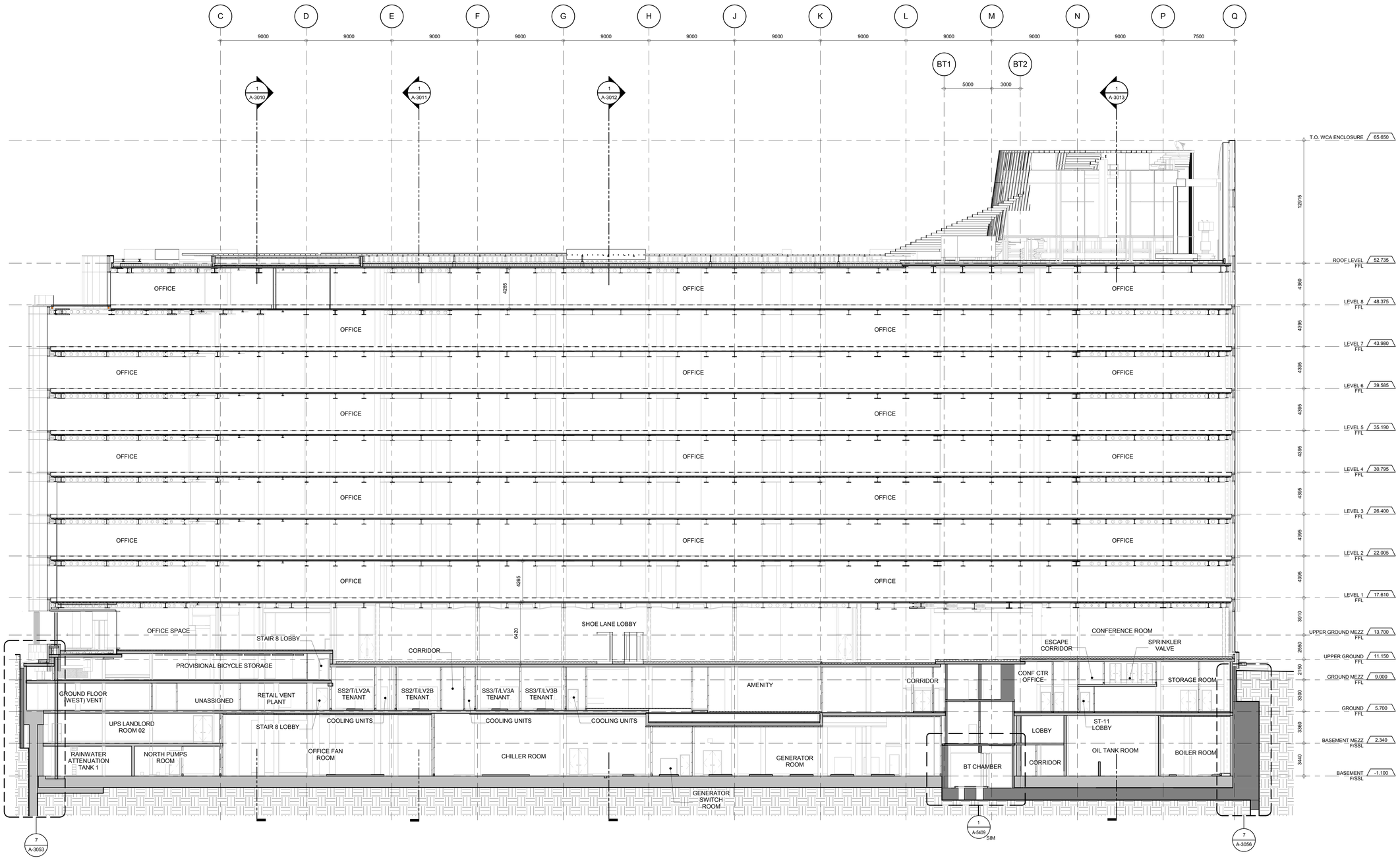

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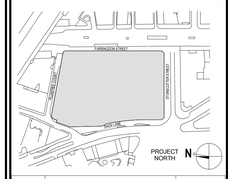
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

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SERIES:
A-3000 - SECTIONS

DRAWING TITLE:

NORTH / SOUTH BUILDING SECTION THROUGH MAIN LOBBY ENTRANCE

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SL - A-3003 - AA

PROJECT NO. 1209-00

REVISION 02

QUALITY CHECK
DATE
DRAWN
Author
CHECKED
Checker

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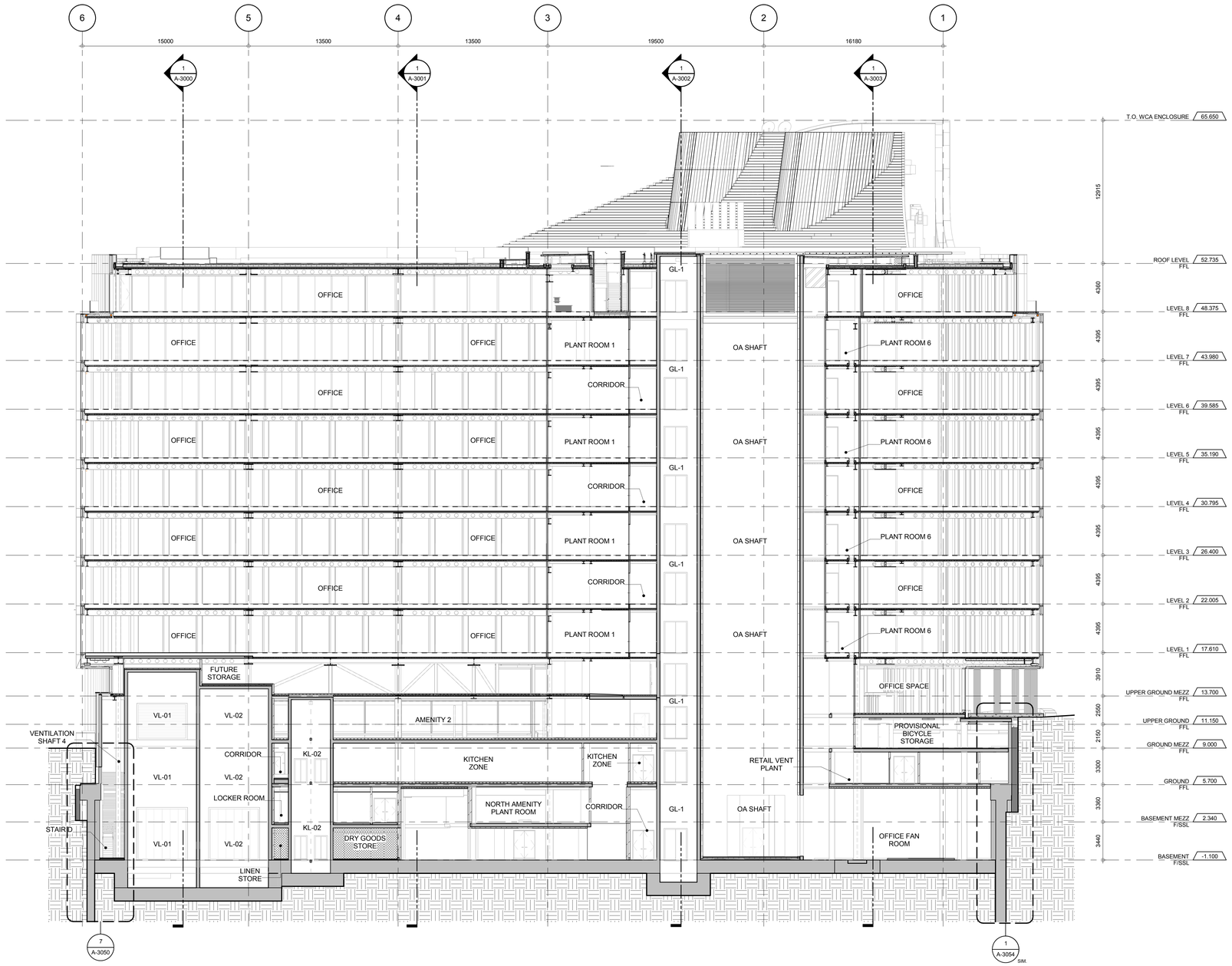
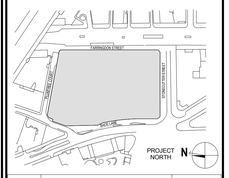


LDP

LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
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01	DRAFT STAGE F	13 AUG 2015

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SERIES:
A-3000 - SECTIONS

DRAWING TITLE:

EAST / WEST BUILDING SECTION THROUGH VEHICLE LIFT

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SL - A-3010 - AA

PROJECT NO. 1209-00

REVISION **02**

QUALITY CHECK

DATE	DRAWN	CHECKED
	Author	Checker

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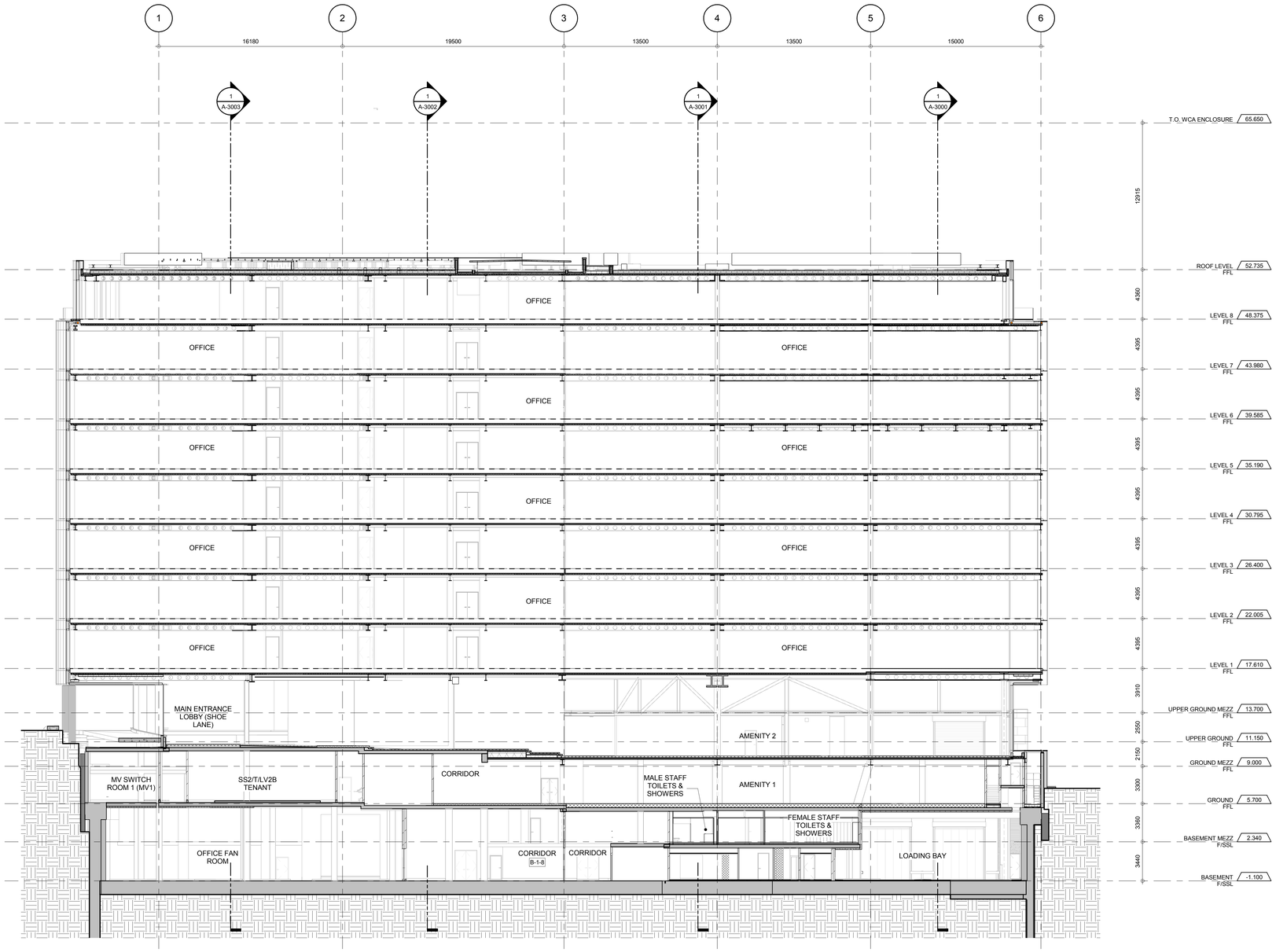

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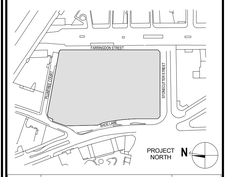

NO.	ISSUED	DATE
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London, N1C 4AB

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ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:
A-3000 - SECTIONS

DRAWING TITLE:

EAST / WEST BUILDING SECTION THROUGH NORTH CORE

SCALE: A0
1 : 150

DATE:
01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SL - A-3011 - AA

PROJECT NO.
1209-00

REVISION
02

QUALITY CHECK

DATE	DRAWN	CHECKED
	Author	Checker

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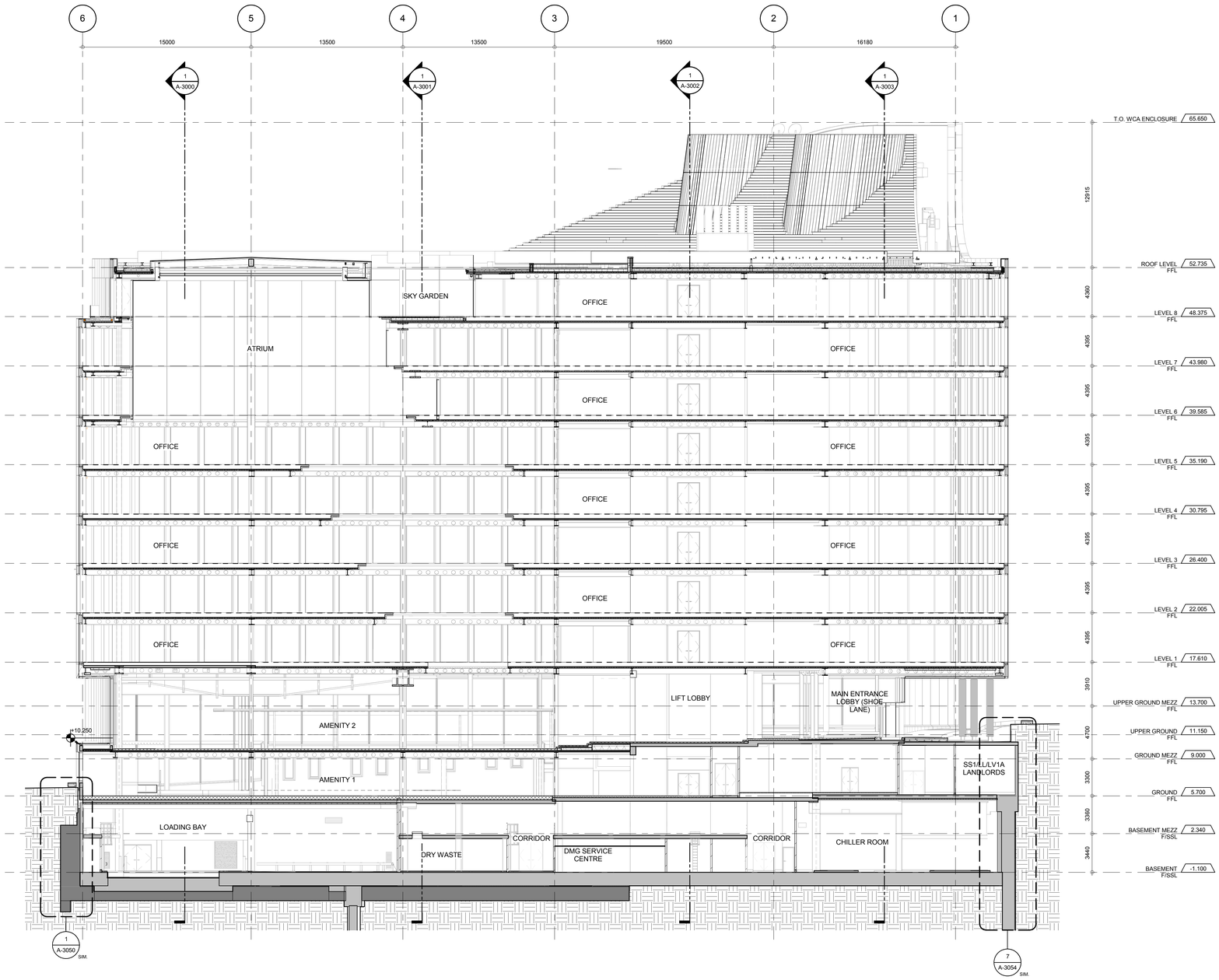
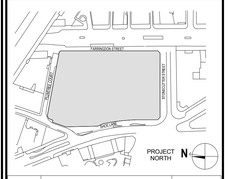


LDP

LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

REVISIONS

Discrepancies must be reported immediately to the Architect before proceeding. Only figured dimensons are to be used. Contractors must check all dimensions on site. This drawing is protected by copyright.

ALL DIMENSIONS ARE SHOWN IN METRIC.

CONSULTANTS

Design Architect
Kohn Pedersen Fox Associates
7a Langley Street, London, WC2H 9JA
11 West 42nd Street New York, NY 10036

Executive Architect
Adamson Associates (International) Ltd
6th Floor, One Canada Square, Canary Wharf, London, E14 5AB

Structural Engineer
WSP | Parsons Brinckerhoff
WSP House, 70 Chancery Lane, London, WC2A 1AF

MEP
WSP | Parsons Brinckerhoff
WSP House, 70 Chancery Lane, London, WC2A 1AF

Quantity Surveyor
Turner & Townsend
7 Savoy Court, Strand, London, WC2R 0EX

Fire Consultant
WSP | Parsons Brinckerhoff
WSP House, 70 Chancery Lane, London, WC2A 1AF

Facade Consultant
ARUP
13 Fitzroy Street, London, W1T 4BQ

Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:
A-3000 - SECTIONS

DRAWING TITLE:

EAST / WEST BUILDING SECTION THROUGH SOUTH CORE

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SL - A-3012 - AA

PROJECT NO. 1209-00

REVISION **02**

QUALITY CHECK

DATE	DRAWN	CHECKED
	Author	Checker

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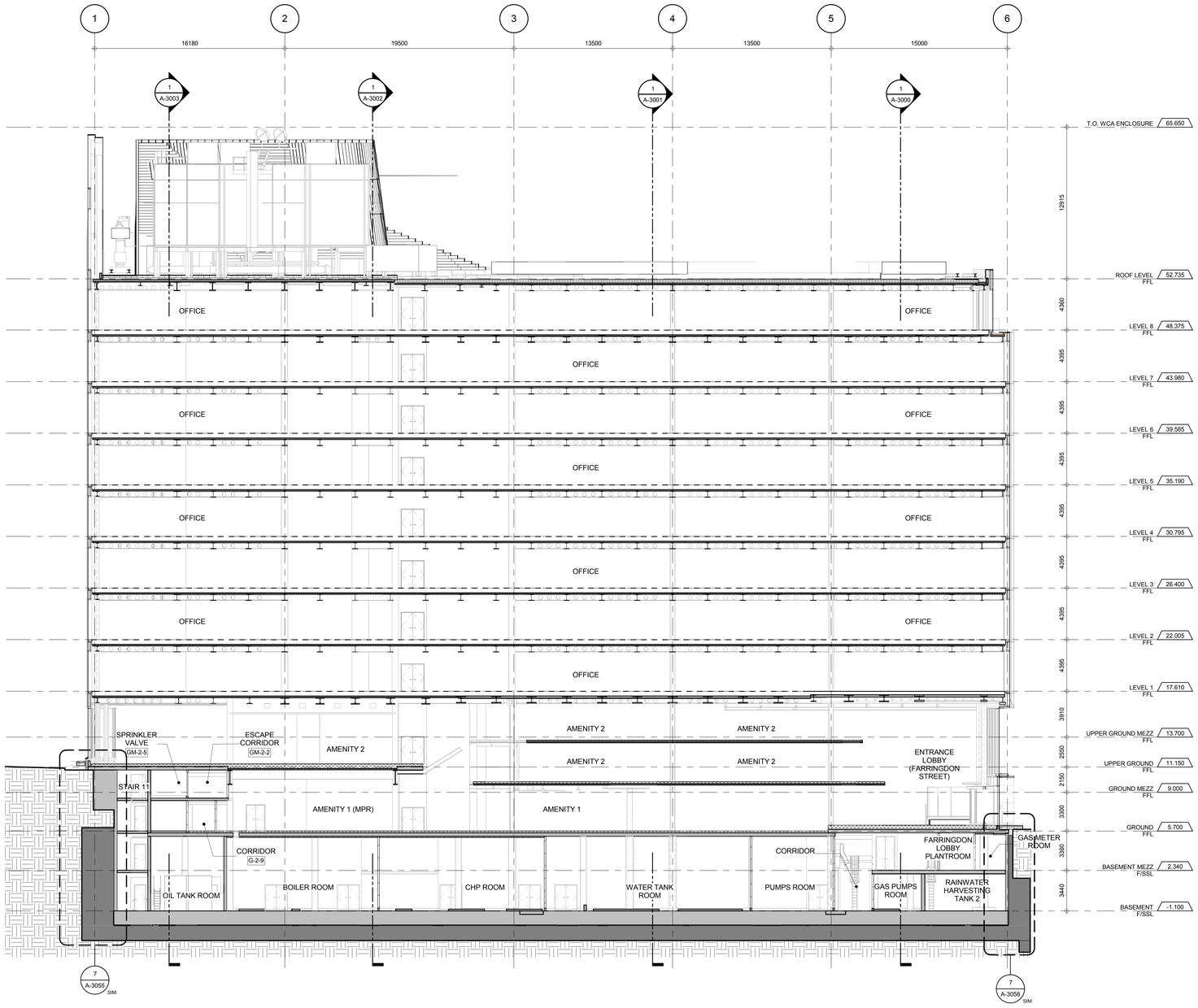

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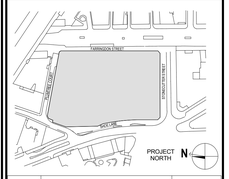
LONDON DEVELOPMENT PROJECT



NO.	ISSUED	DATE
02	STAGE F	25 SEP 2015
01	DRAFT STAGE F	13 AUG 2015

REVISIONS

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MEP
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Fire Consultant
WSP | Parsons Brinckerhoff
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Facade Consultant
ARUP
13 Fitzroy Street, London, W1T 4BQ

Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:
A-3000 - SECTIONS

DRAWING TITLE:

EAST / WEST BUILDING SECTION THROUGH EAST LOBBY ENTRANCE

SCALE: A0 1 : 150

DATE: 01 DEC 2013

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SL - A-3013 - AA

PROJECT NO. 1209-00

REVISION 02

QUALITY CHECK
DATE | DRAWN | CHECKED
Author | Checker

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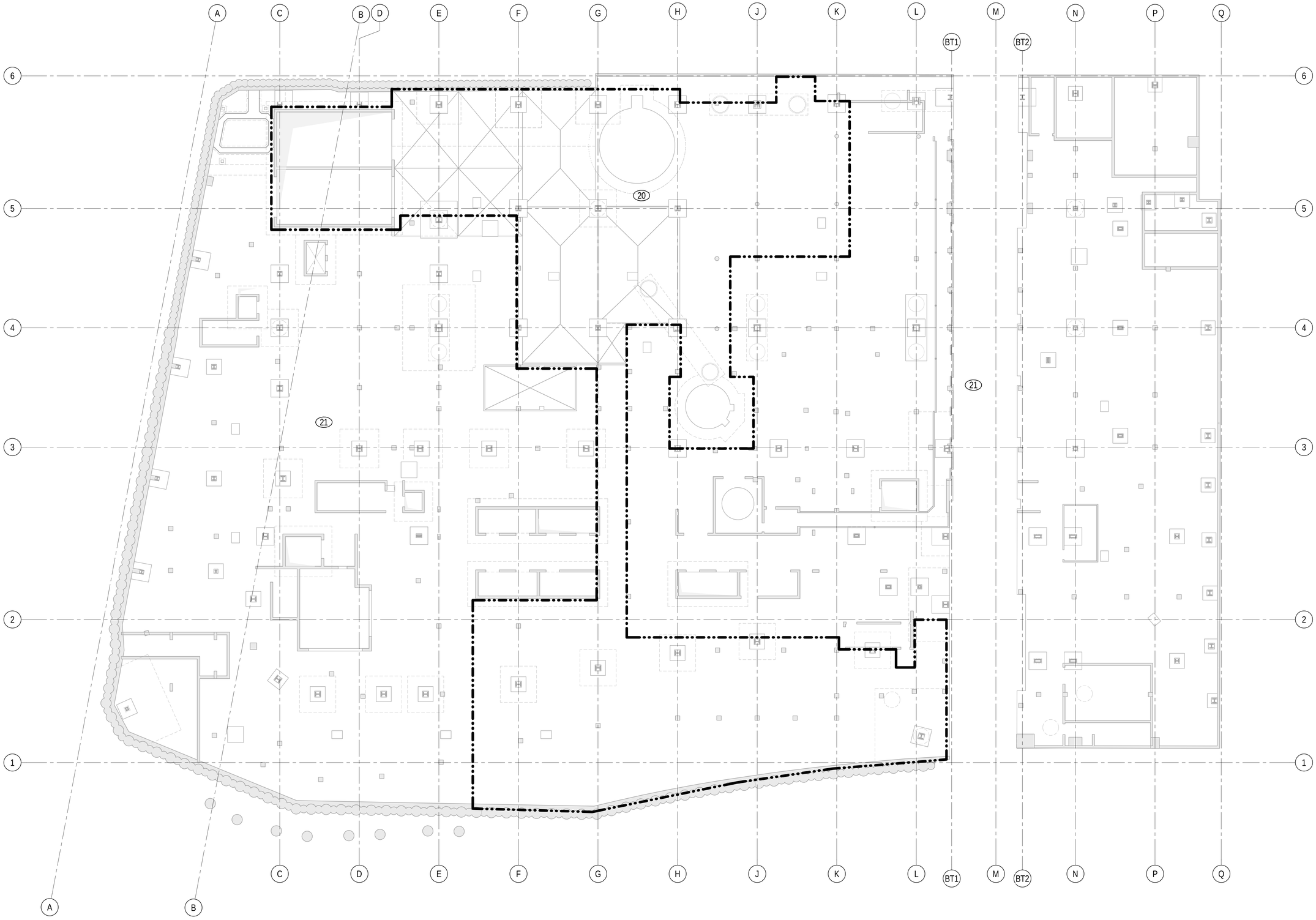
16. APPENDICES

C. Structural Loading Diagrams



DO NOT SCALE

NOTES:

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3. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 40SL-S-0001WS & 40SL-S-0002WS.

UNFACTORED DESIGN LOADS:

THE SUPERIMPOSED DEAD LOAD DOES NOT INCLUDE THE SELF-WEIGHT OF THE STRUCTURE.

LOADING BOUNDARY
5.2kN/m LINE LOAD. (GLAZING)
7.2kN/m LINE LOAD.

1	AMENITY AREA - STONE FINISH	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	5.00kN/m²
2	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	5.50kN/m²
		LIVE	7.50kN/m²
3	AMENITY AREA - GENERAL FINISH	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
4	LOBBY & GROUND FLOOR	SUPERIMPOSED DEAD	3.30kN/m²
		LIVE	5.00kN/m²
5	CORE AREAS / STAIRS / TOILETS	SUPERIMPOSED DEAD	4.10kN/m²
		LIVE	3.00kN/m²
6	BT INCEPTION CHAMBER	SUPERIMPOSED DEAD	4.30kN/m²
		LIVE	2.50kN/m²
7	BT CHAMBER	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	4.00kN/m²
8	AMENITY AREA - STONE FINISH 2	SUPERIMPOSED DEAD	3.70kN/m²
		LIVE	5.00kN/m²
9	CORE AREAS / STAIRS / TOILETS 2	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
10	LOBBY & GROUND FLOOR 2	SUPERIMPOSED DEAD	2.00kN/m²
		LIVE	5.00kN/m²
11	AMENITY AREA - GENERAL FINISH 2	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	5.00kN/m²
12	SHOE LANE / PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
13	PLINTH SLAB	SUPERIMPOSED DEAD	3.35kN/m²
		LIVE	1.5kN/m²
14	CORE AREAS / STAIRS / TOILETS 3	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	3.00kN/m²
15	LOADING BAY	SUPERIMPOSED DEAD	9.00kN/m²
		LIVE	15.00kN/m²
16	PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
17	PLANTER	SUPERIMPOSED DEAD	12.00kN/m²
		LIVE	5.00kN/m²
18	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	4.20kN/m²
		LIVE	7.50kN/m²
19	BASEMENT MEZZANINE SLAB	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	1.50kN/m²
20	LOADING BAY / PLANT REPLACEMENT ROUTE	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	15.00kN/m²
21	BASEMENT PLANT / MECH FLOORS	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	7.50kN/m²
-	VOID		

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	DH	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	17.07.2015	AM	PACKAGE 1: STAGE 1 RIP	DH	AJW

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http://www.wspgroup.com

CLIENT:

ARCHITECT: KPF

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: BASEMENT B1 LOADING PLAN

SCALE @ A0:	CHECKED:	APPROVED:
1:150	JC	AJW

PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
50200153	DH	AM	JULY 2015

DRAWING No:	REV:
40SL-S-8011WS	03

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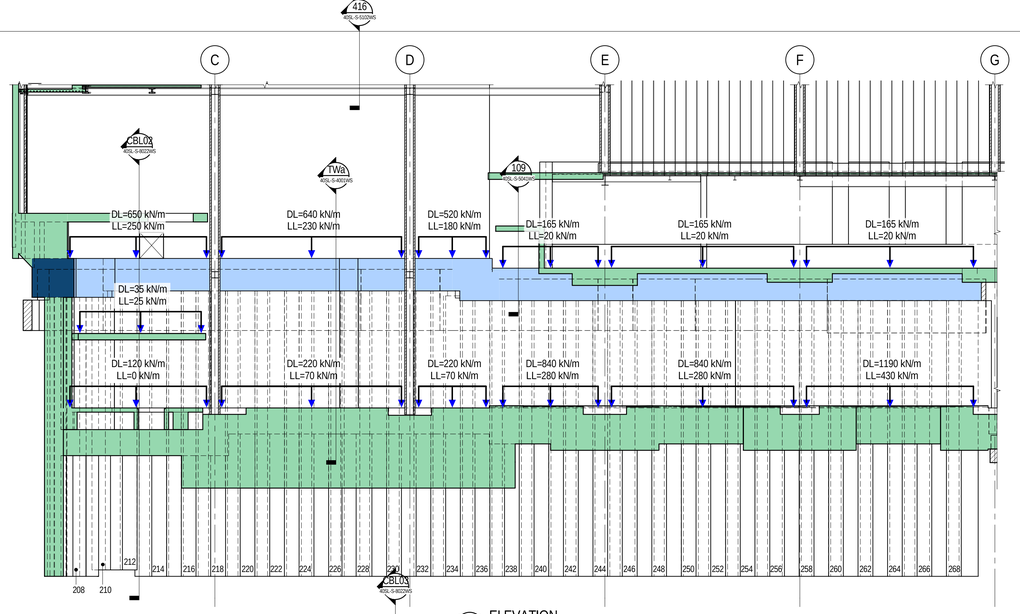
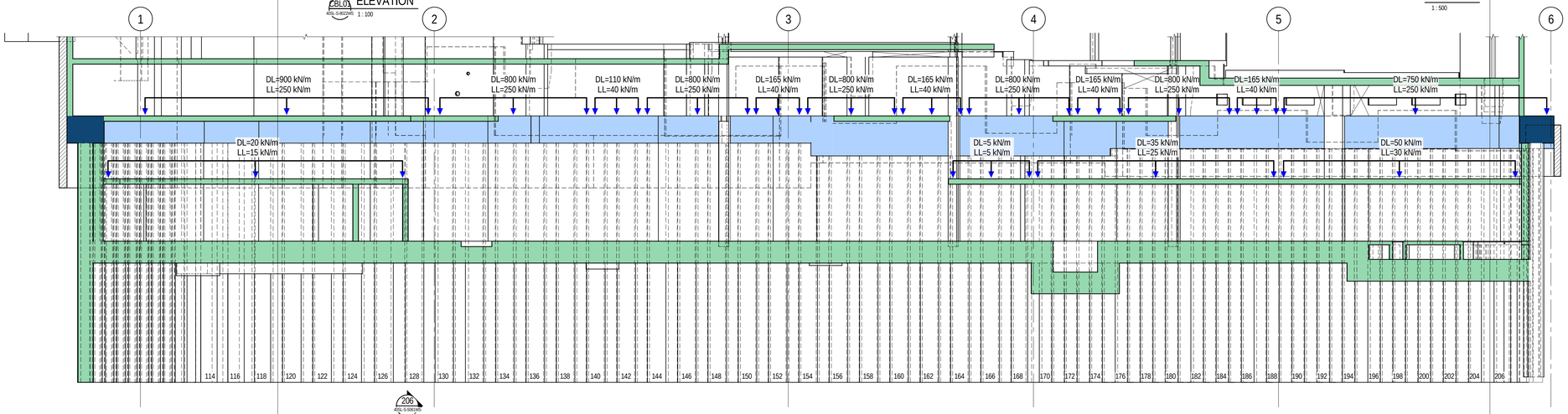


CBL01 ELEVATION
40SL-S-8022WS 1 : 100

KEYPLAN
1 : 500



CBL02 ELEVATION
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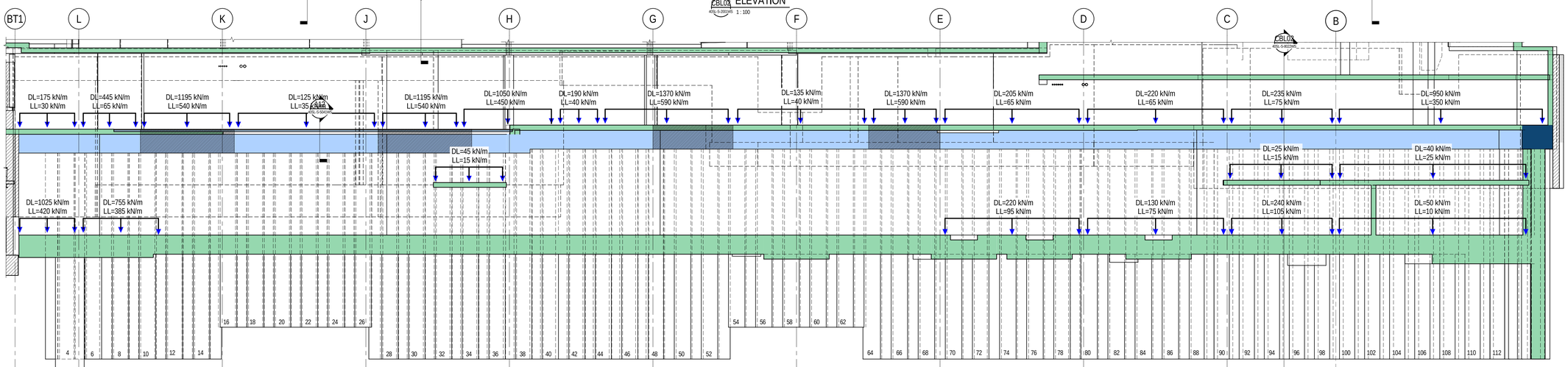

LOCATION OF BT TUNNELS
BELOW SECANT PILE WALL

CBL03 ELEVATION
40SL-S-8024WS 1 : 100

DO NOT SCALE

NOTES:

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3. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 40SL-S-0001WS & 40SL-S-0002WS.
4. CAPPING BEAM DESIGN ASSUMES COLUMN POINT LOADS SPREAD TO 3 MALE PILES.
5. UNIFORMLY DISTRIBUTED LOADS SHOWN AS AVERAGE LOAD BETWEEN GRIDLINES.
6. LOADING ASSUMES 1000mm DIAMETER PILES @ 1700mm c/c.
7. ALL LOADS UNFACTORED.
8. 2000mm EXCLUSION ZONE ASSUMED EITHER SIDE OF BT TUNNELS FOR REDUCED LOADING.

	INDICATES UNIFORMLY DISTRIBUTED LOAD
	INDICATES EXISTING STRUCTURE
	INDICATES PROPOSED PERMANENT STRUCTURE IN SECTION
	INDICATES CAPPING BEAM
	INDICATES CAPPING BEAM IN SECTION
	INDICATES LENGTH OF CAPPING BEAM SUPPORTING TRANSFER LOAD
DL	INDICATES DEAD LOAD
LL	INDICATES LIVE LOAD

KEY TO HEALTH & SAFETY SYMBOLS

WARNING RISK
INDICATES A RESIDUAL RISK AS A WARNING.

COMPULSORY RISK
INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION.

PROHIBITIVE RISK
INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.

INFORMATION RISK
INDICATES A RESIDUAL RISK FOR INFORMATION.

THIS DRAWING PROVIDES LOADING INFORMATION FOR THE SECANT WALL DESIGN. DUE TO INTERACTION OF THE SECANT PILE WALL AND THE RAFT, ADDITIONAL SHEAR FORCES NEED TO BE CONSIDERED AT THIS CONNECTION

REV	DATE	BY	DESCRIPTION	CHK	APP
02	25.08.2015	JW	STAGE F	CH	JC
01	11.08.2015	JW	STAGE F	KS	AJW
D	08.07.2015	JW	PILE REFERENCE NUMBERS ADDED	JC	AJW
C	05.06.2015	JW	AMENDMENTS MADE WHERE CLOUDED	AC	JC
B	30.04.2015	JW	AMENDMENTS MADE WHERE CLOUDED	AC	JC
A	02.04.2015	JW	ISSUED FOR INFORMATION	AC	JC

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http://www.wspgroup.com

CLIENT:

ARCHITECT: KPF

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: CAPPING BEAM LOADING ELEVATIONS

SCALE @ A0:	CHECKED: JC		APPROVED: AJW
PROJECT NUMBER: 50200153	DESIGNED: AC	DRAWN: JW	DATE: MARCH 2015
DRAWING No: 40SL-S-8022WS			REV: 02

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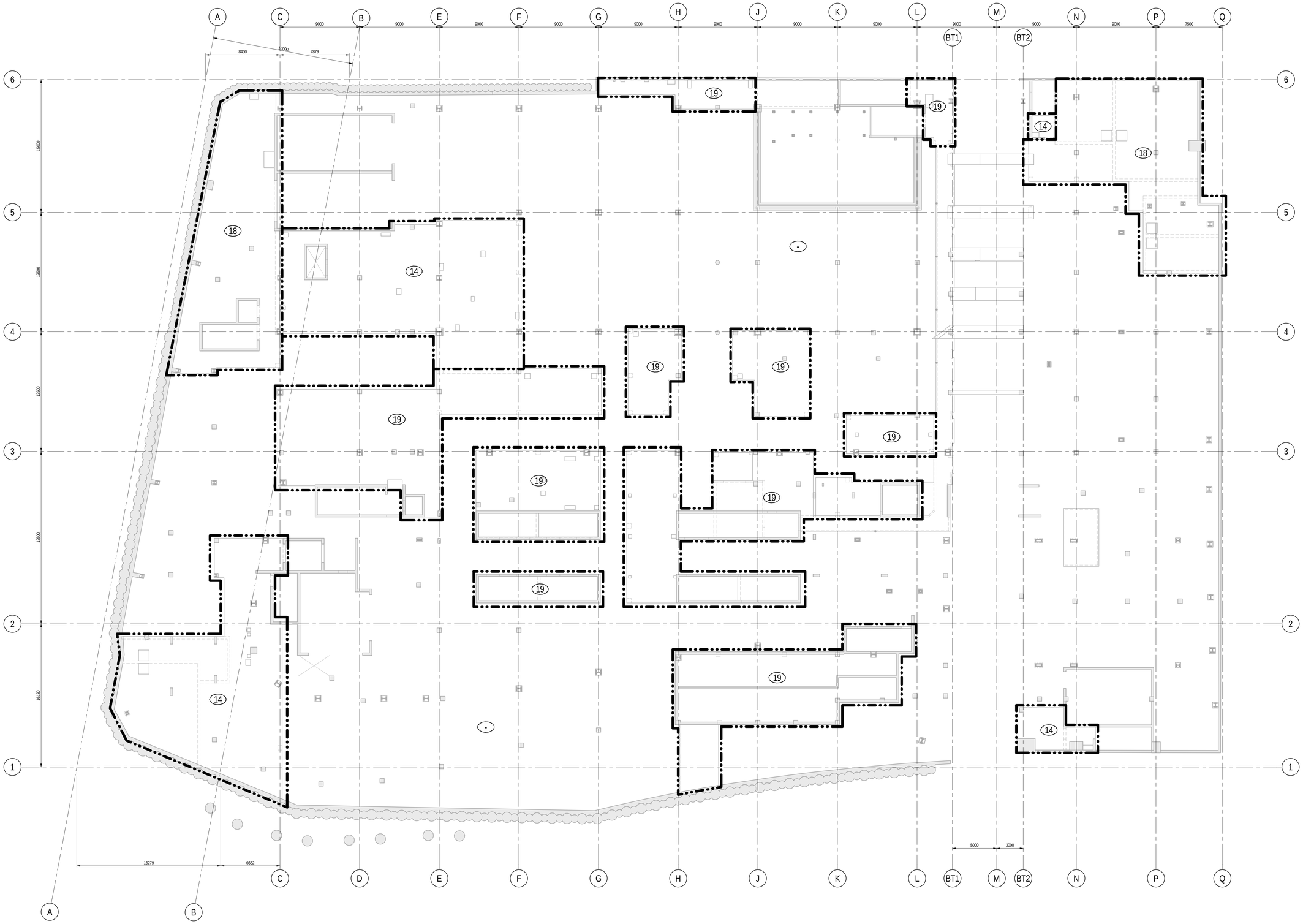

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UNFACTORED DESIGN LOADS:

THE SUPERIMPOSED DEAD LOAD DOES NOT INCLUDE THE SELF-WEIGHT OF THE STRUCTURE.

- LOADING BOUNDARY
- 5.2kN/m LINE LOAD. (GLAZING)
- 7.2kN/m LINE LOAD.

1	AMENITY AREA - STONE FINISH	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	5.00kN/m²
2	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	5.50kN/m²
		LIVE	7.50kN/m²
3	AMENITY AREA - GENERAL FINISH	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
4	LOBBY & GROUND FLOOR	SUPERIMPOSED DEAD	3.30kN/m²
		LIVE	5.00kN/m²
5	CORE AREAS / STAIRS / TOILETS	SUPERIMPOSED DEAD	4.10kN/m²
		LIVE	3.00kN/m²
6	BT INCEPTION CHAMBER	SUPERIMPOSED DEAD	4.30kN/m²
		LIVE	2.50kN/m²
7	BT CHAMBER	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	4.00kN/m²
8	AMENITY AREA - STONE FINISH 2	SUPERIMPOSED DEAD	3.70kN/m²
		LIVE	5.00kN/m²
9	CORE AREAS / STAIRS / TOILETS 2	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
10	LOBBY & GROUND FLOOR 2	SUPERIMPOSED DEAD	2.00kN/m²
		LIVE	5.00kN/m²
11	AMENITY AREA - GENERAL FINISH 2	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	5.00kN/m²
12	SHOE LANE / PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
13	PLINTH SLAB	SUPERIMPOSED DEAD	3.35kN/m²
		LIVE	1.5kN/m²
14	CORE AREAS / STAIRS / TOILETS 3	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	3.00kN/m²
15	LOADING BAY	SUPERIMPOSED DEAD	9.00kN/m²
		LIVE	15.00kN/m²
16	PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
17	PLANTER	SUPERIMPOSED DEAD	12.00kN/m²
		LIVE	5.00kN/m²
18	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	4.20kN/m²
		LIVE	7.50kN/m²
19	BASEMENT MEZZANINE SLAB	SUPERIMPOSED DEAD	1.5kN/m²
		LIVE	1.5kN/m²
20	LOADING BAY / PLANT REPLACEMENT ROUTE	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	15.00kN/m²
21	BASEMENT PLANT / MECH FLOORS	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	7.50kN/m²
-	VOID		

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	DH	JC
02	11.08.2015	JW	STAGE F	KS	AJW
01	17.07.2015	AM	PACKAGE 1, STAGE 2 RIFP	DH	AJW

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http://www.wspgroup.com

CLIENT:

ARCHITECT: KPF

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: BASEMENT MEZZANINE LOADING PLAN

SCALE @ A0:	CHECKED:	APPROVED:
1:150	JC	AJW

PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
50200153	DH	AM	JULY 2015

DRAWING No:	REV:
40SL-S-8031WS	03

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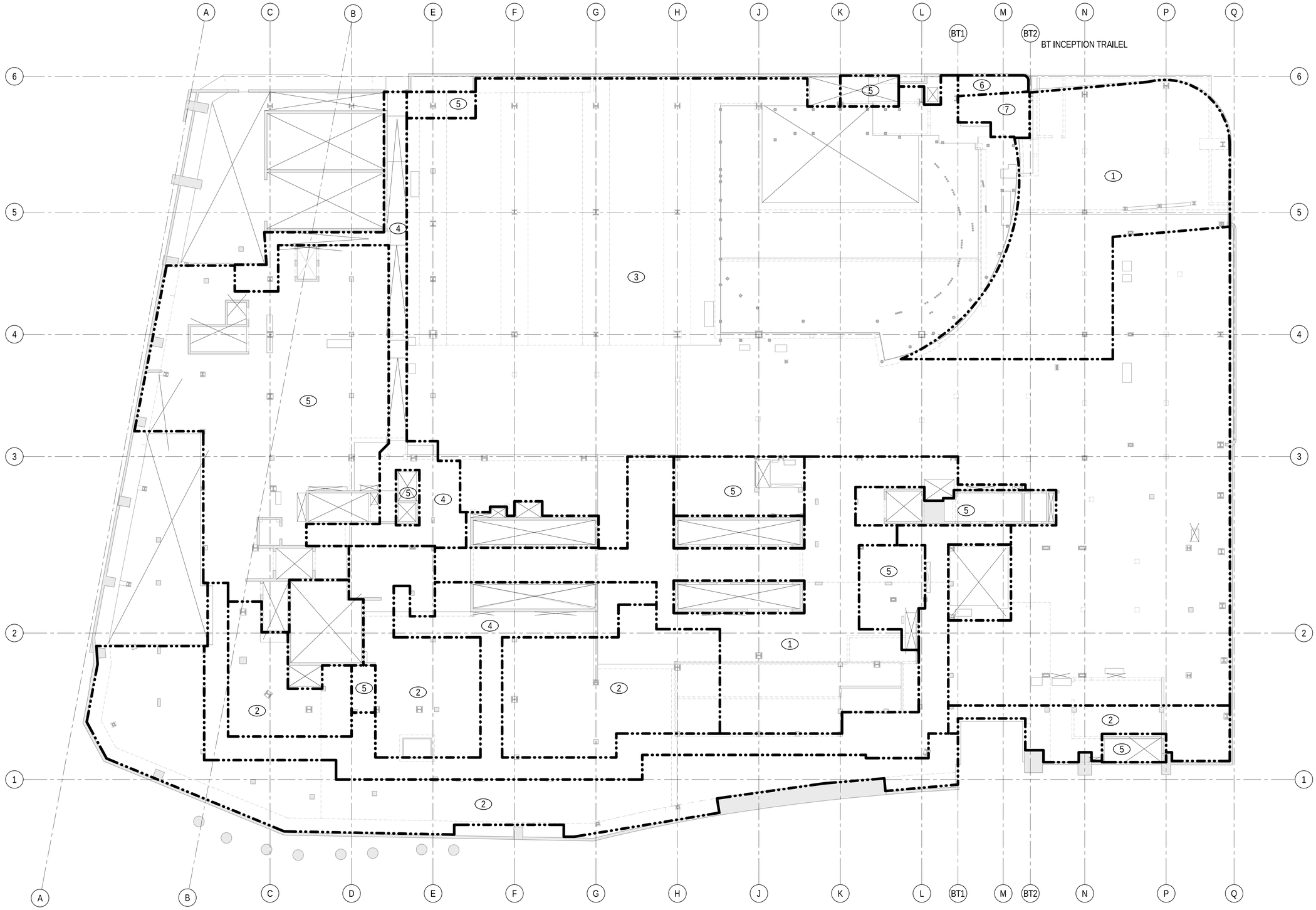

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UNFACTORED DESIGN LOADS:

THE SUPERIMPOSED DEAD LOAD DOES NOT INCLUDE THE SELF-WEIGHT OF THE STRUCTURE.

LOADING BOUNDARY
5.2kN/m LINE LOAD. (GLAZING)
7.2kN/m LINE LOAD.

1	AMENITY AREA - STONE FINISH	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	5.00kN/m²
2	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	5.50kN/m²
		LIVE	7.50kN/m²
3	AMENITY AREA - GENERAL FINISH	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
4	LOBBY & GROUND FLOOR	SUPERIMPOSED DEAD	3.30kN/m²
		LIVE	5.00kN/m²
5	CORE AREAS / STAIRS / TOILETS	SUPERIMPOSED DEAD	4.10kN/m²
		LIVE	3.00kN/m²
6	BT INCEPTION CHAMBER	SUPERIMPOSED DEAD	4.30kN/m²
		LIVE	2.50kN/m²
7	BT CHAMBER	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	4.00kN/m²
8	AMENITY AREA - STONE FINISH 2	SUPERIMPOSED DEAD	3.70kN/m²
		LIVE	5.00kN/m²
9	CORE AREAS / STAIRS / TOILETS 2	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
10	LOBBY & GROUND FLOOR 2	SUPERIMPOSED DEAD	2.00kN/m²
		LIVE	5.00kN/m²
11	AMENITY AREA - GENERAL FINISH 2	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	5.00kN/m²
12	SHOE LANE / PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
13	PLINTH SLAB	SUPERIMPOSED DEAD	3.35kN/m²
		LIVE	1.5kN/m²
14	CORE AREAS / STAIRS / TOILETS 3	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	3.00kN/m²
15	LOADING BAY	SUPERIMPOSED DEAD	9.00kN/m²
		LIVE	15.00kN/m²
16	PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
17	PLANTER	SUPERIMPOSED DEAD	12.00kN/m²
		LIVE	5.00kN/m²
18	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	4.20kN/m²
		LIVE	7.50kN/m²
19	BASEMENT MEZZANINE SLAB	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	1.50kN/m²
20	LOADING BAY / PLANT REPLACEMENT ROUTE	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	15.00kN/m²
21	BASEMENT PLANT / MECH FLOORS	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	7.50kN/m²
-	VOID		

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	DH	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	17.07.2015	AM	PACKAGE 1, STAGE 1 RIFP	DH	AJW

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WSP House, 70 Chancery Lane, London WC2A 1AF
Tel: +44 20 7314 5000 Fax: +44 20 7314 5111
http://www.wspgroup.com

CLIENT:

ARCHITECT: KPF

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: GROUND LOADING PLAN

SCALE @ A0:	CHECKED:	APPROVED:
1:150	JC	AJW

PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
50200153	DH	AM	JULY 2015

DRAWING No:	REV:
40SL-S-8041WS	03

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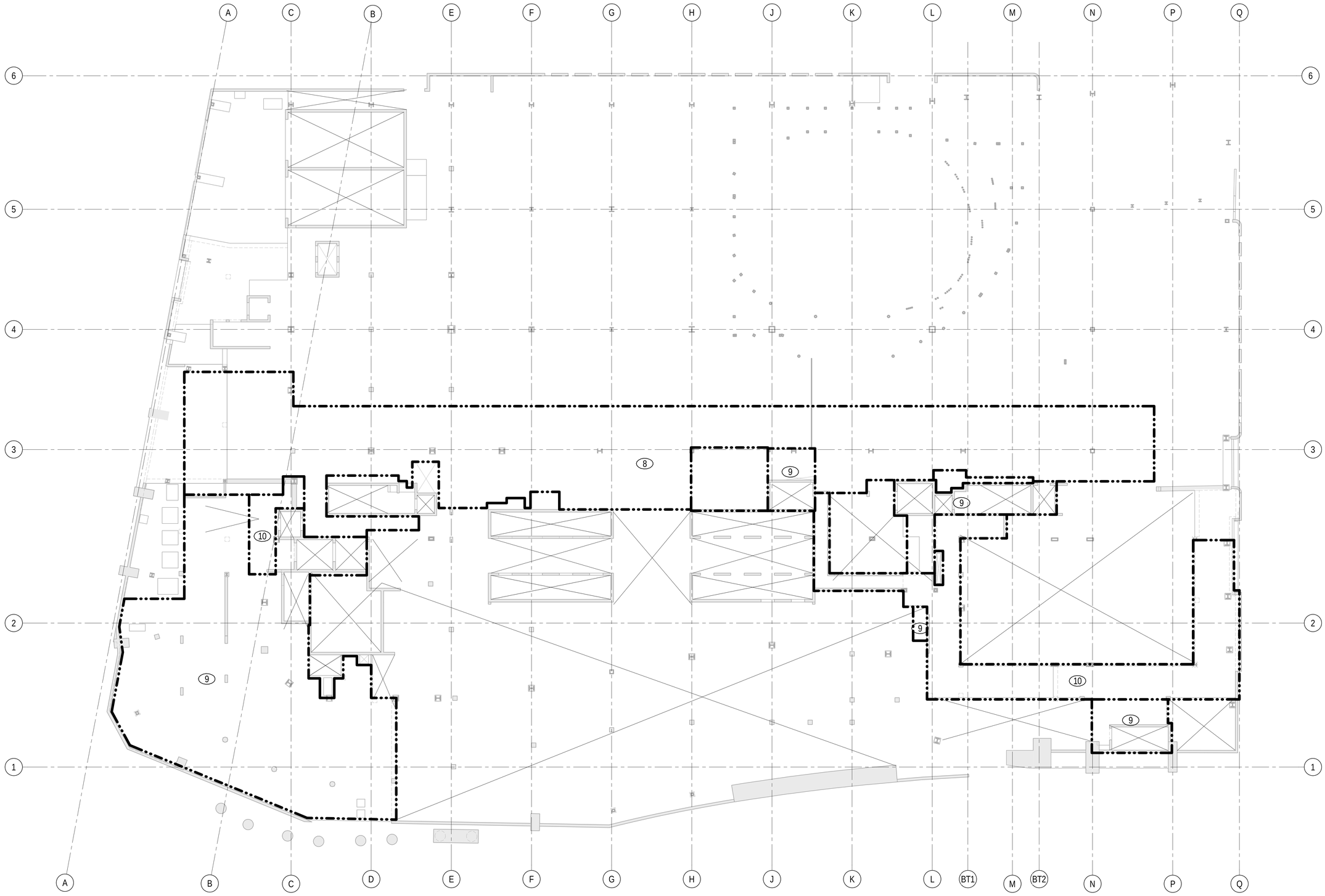

DO NOT SCALE

NOTES:

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2. DIMENSIONS ARE NOT TO BE SCALED FROM THIS DRAWING.
3. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 40SL-S-0001WS & 40SL-S-0002WS.

UNFACTORED DESIGN LOADS:

THE SUPERIMPOSED DEAD LOAD DOES NOT INCLUDE THE SELF-WEIGHT OF THE STRUCTURE.

LOADING BOUNDARY
5.2kN/m LINE LOAD. (GLAZING)
7.2kN/m LINE LOAD.

1	AMENITY AREA - STONE FINISH	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	5.00kN/m²
2	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	5.50kN/m²
		LIVE	7.50kN/m²
3	AMENITY AREA - GENERAL FINISH	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
4	LOBBY & GROUND FLOOR	SUPERIMPOSED DEAD	3.30kN/m²
		LIVE	5.00kN/m²
5	CORE AREAS / STAIRS / TOILETS	SUPERIMPOSED DEAD	4.10kN/m²
		LIVE	3.00kN/m²
6	BT INCEPTION CHAMBER	SUPERIMPOSED DEAD	4.30kN/m²
		LIVE	2.50kN/m²
7	BT CHAMBER	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	4.00kN/m²
8	AMENITY AREA - STONE FINISH 2	SUPERIMPOSED DEAD	3.70kN/m²
		LIVE	5.00kN/m²
9	CORE AREAS / STAIRS / TOILETS 2	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
10	LOBBY & GROUND FLOOR 2	SUPERIMPOSED DEAD	2.00kN/m²
		LIVE	5.00kN/m²
11	AMENITY AREA - GENERAL FINISH 2	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	5.00kN/m²
12	SHOE LANE / PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
13	PLINTH SLAB	SUPERIMPOSED DEAD	3.35kN/m²
		LIVE	1.5kN/m²
14	CORE AREAS / STAIRS / TOILETS 3	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	3.00kN/m²
15	LOADING BAY	SUPERIMPOSED DEAD	9.00kN/m²
		LIVE	15.00kN/m²
16	PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
17	PLANTER	SUPERIMPOSED DEAD	12.00kN/m²
		LIVE	5.00kN/m²
18	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	4.20kN/m²
		LIVE	7.50kN/m²
19	BASEMENT MEZZANINE SLAB	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	1.50kN/m²
20	LOADING BAY / PLANT REPLACEMENT ROUTE	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	15.00kN/m²
21	BASEMENT PLANT / MECH FLOORS	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	7.50kN/m²
-	VOID		

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	DH	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	17.07.2015	AM	PACKAGE 1, STAGE 1 RIFP	DH	AJW

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WSP House, 70 Chancery Lane, London WC2A 1AF
Tel: +44 20 7314 5000 Fax: +44 20 7314 5111
http://www.wspgroup.com

CLIENT:

ARCHITECT: KPF

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: GROUND MEZZANINE

SCALE @ A0:	CHECKED:	APPROVED:
1:150	JC	AJW

PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
50200153	DH	AM	JULY 2015

DRAWING No:	REV:
40SL-S-8051WS	03

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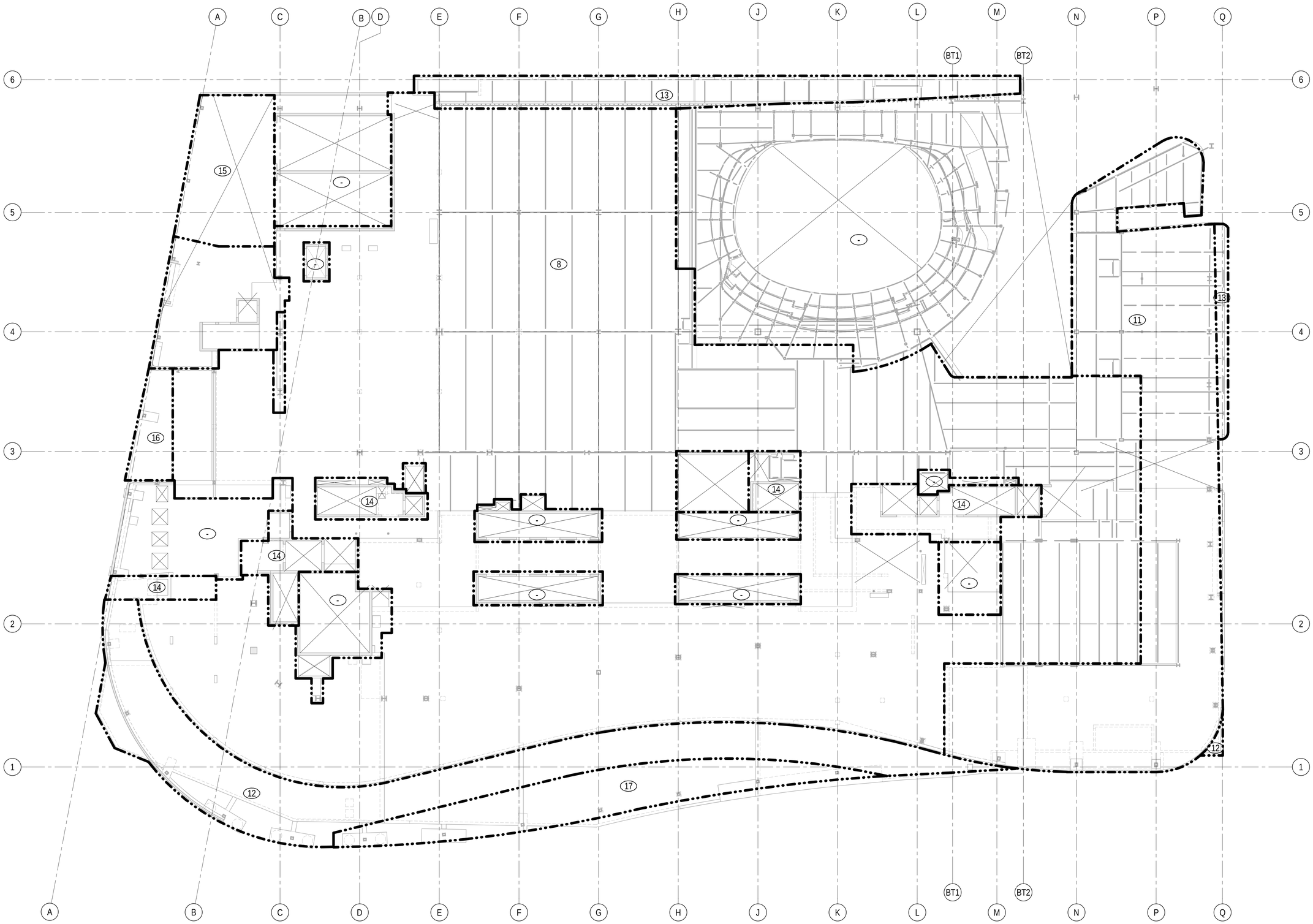

DO NOT SCALE

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UNFACTORED DESIGN LOADS:

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LOADING BOUNDARY
5.2kN/m LINE LOAD. (GLAZING)
7.2kN/m LINE LOAD.

1	AMENITY AREA - STONE FINISH	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	5.00kN/m²
2	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	5.50kN/m²
		LIVE	7.50kN/m²
3	AMENITY AREA - GENERAL FINISH	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
4	LOBBY & GROUND FLOOR	SUPERIMPOSED DEAD	3.30kN/m²
		LIVE	5.00kN/m²
5	CORE AREAS / STAIRS / TOILETS	SUPERIMPOSED DEAD	4.10kN/m²
		LIVE	3.00kN/m²
6	BT INCEPTION CHAMBER	SUPERIMPOSED DEAD	4.30kN/m²
		LIVE	2.50kN/m²
7	BT CHAMBER	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	4.00kN/m²
8	AMENITY AREA - STONE FINISH 2	SUPERIMPOSED DEAD	3.70kN/m²
		LIVE	5.00kN/m²
9	CORE AREAS / STAIRS / TOILETS 2	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	5.00kN/m²
10	LOBBY & GROUND FLOOR 2	SUPERIMPOSED DEAD	2.00kN/m²
		LIVE	5.00kN/m²
11	AMENITY AREA - GENERAL FINISH 2	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	5.00kN/m²
12	SHOE LANE / PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
13	PLINTH SLAB	SUPERIMPOSED DEAD	3.35kN/m²
		LIVE	1.5kN/m²
14	CORE AREAS / STAIRS / TOILETS 3	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	3.00kN/m²
15	LOADING BAY	SUPERIMPOSED DEAD	9.00kN/m²
		LIVE	15.00kN/m²
16	PTC ENTRANCE	SUPERIMPOSED DEAD	8.00kN/m²
		LIVE	5.00kN/m²
17	PLANTER	SUPERIMPOSED DEAD	12.00kN/m²
		LIVE	5.00kN/m²
18	PLANT / MECHANICAL FLOORS	SUPERIMPOSED DEAD	4.20kN/m²
		LIVE	7.50kN/m²
19	BASEMENT MEZZANINE SLAB	SUPERIMPOSED DEAD	1.50kN/m²
		LIVE	1.50kN/m²
20	LOADING BAY / PLANT REPLACEMENT ROUTE	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	15.00kN/m²
21	BASEMENT PLANT / MECH FLOORS	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	7.50kN/m²
-	VOID		

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	DH	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	17.07.2015	AM	PACKAGE 1, STAGE 1 RIPP	DH	AJW

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Tel: +44 20 7314 5000 Fax: +44 20 7314 5111
http://www.wspgroup.com

CLIENT:

ARCHITECT: KPF

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: UPPER GROUND LOADING PLAN

SCALE @ A0:	CHECKED:	APPROVED:
1:150	JC	AJW

PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
50200153	DH	AM	JULY 2015

DRAWING No:	REV:
40SL-S-8061WS	03

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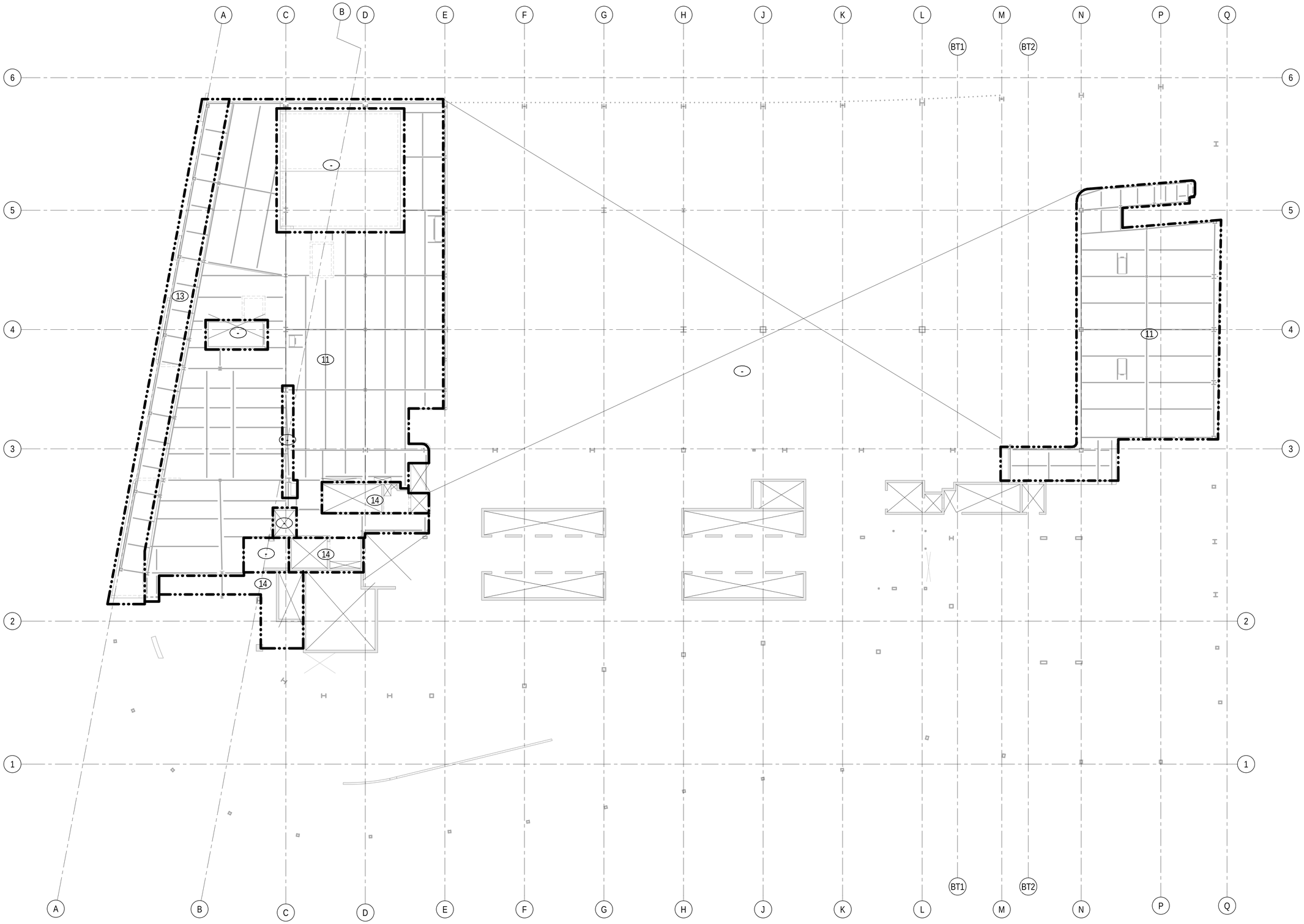

DO NOT SCALE

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UNFACTORED DESIGN LOADS:

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LOADING BOUNDARY
5.2kN/m LINE LOAD. (GLAZING)
7.2kN/m LINE LOAD.

1 AMENITY AREA - STONE FINISH
SUPERIMPOSED DEAD 5.00kN/m²
LIVE 5.00kN/m²

2 PLANT / MECHANICAL FLOORS
SUPERIMPOSED DEAD 5.50kN/m²
LIVE 7.50kN/m²

3 AMENITY AREA - GENERAL FINISH
SUPERIMPOSED DEAD 2.80kN/m²
LIVE 5.00kN/m²

4 LOBBY & GROUND FLOOR
SUPERIMPOSED DEAD 3.30kN/m²
LIVE 5.00kN/m²

5 CORE AREAS / STAIRS / TOILETS
SUPERIMPOSED DEAD 4.10kN/m²
LIVE 3.00kN/m²

6 BT INCEPTION CHAMBER
SUPERIMPOSED DEAD 4.30kN/m²
LIVE 2.50kN/m²

7 BT CHAMBER
SUPERIMPOSED DEAD 1.00kN/m²
LIVE 4.00kN/m²

8 AMENITY AREA - STONE FINISH 2
SUPERIMPOSED DEAD 3.70kN/m²
LIVE 5.00kN/m²

9 CORE AREAS / STAIRS / TOILETS 2
SUPERIMPOSED DEAD 2.80kN/m²
LIVE 5.00kN/m²

10 LOBBY & GROUND FLOOR 2
SUPERIMPOSED DEAD 2.00kN/m²
LIVE 5.00kN/m²

11 AMENITY AREA - GENERAL FINISH 2
SUPERIMPOSED DEAD 1.50kN/m²
LIVE 5.00kN/m²

12 SHOE LANE / PTC ENTRANCE
SUPERIMPOSED DEAD 8.00kN/m²
LIVE 5.00kN/m²

13 PLINTH SLAB
SUPERIMPOSED DEAD 3.35kN/m²
LIVE 1.5kN/m²

14 CORE AREAS / STAIRS / TOILETS 3
SUPERIMPOSED DEAD 2.80kN/m²
LIVE 3.00kN/m²

15 LOADING BAY
SUPERIMPOSED DEAD 9.00kN/m²
LIVE 15.00kN/m²

16 PTC ENTRANCE
SUPERIMPOSED DEAD 8.00kN/m²
LIVE 5.00kN/m²

17 PLANTER
SUPERIMPOSED DEAD 12.00kN/m²
LIVE 5.00kN/m²

18 PLANT / MECHANICAL FLOORS
SUPERIMPOSED DEAD 4.20kN/m²
LIVE 7.50kN/m²

19 BASEMENT MEZZANINE SLAB
SUPERIMPOSED DEAD 1.50kN/m²
LIVE 1.50kN/m²

20 LOADING BAY / PLANT REPLACEMENT ROUTE
SUPERIMPOSED DEAD 5.00kN/m²
LIVE 15.00kN/m²

21 BASEMENT PLANT / MECH FLOORS
SUPERIMPOSED DEAD 5.00kN/m²
LIVE 7.50kN/m²

- VOID

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	DH	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	17.07.2015	AM	PACKAGE 1, STAGE 1 RFP	DH	AJW

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http://www.wspgroup.com

CLIENT:

ARCHITECT:
KPF

PROJECT:
LONDON DEVELOPMENT PROJECT

TITLE:
UPPER GROUND MEZZANINE
LOADING PLAN

SCALE @ A0:	CHECKED:	APPROVED:
1:150	JC	AJW

PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
50200153	DH	AM	JULY 2015

DRAWING No:	REV:
40SL-S-8071WS	03

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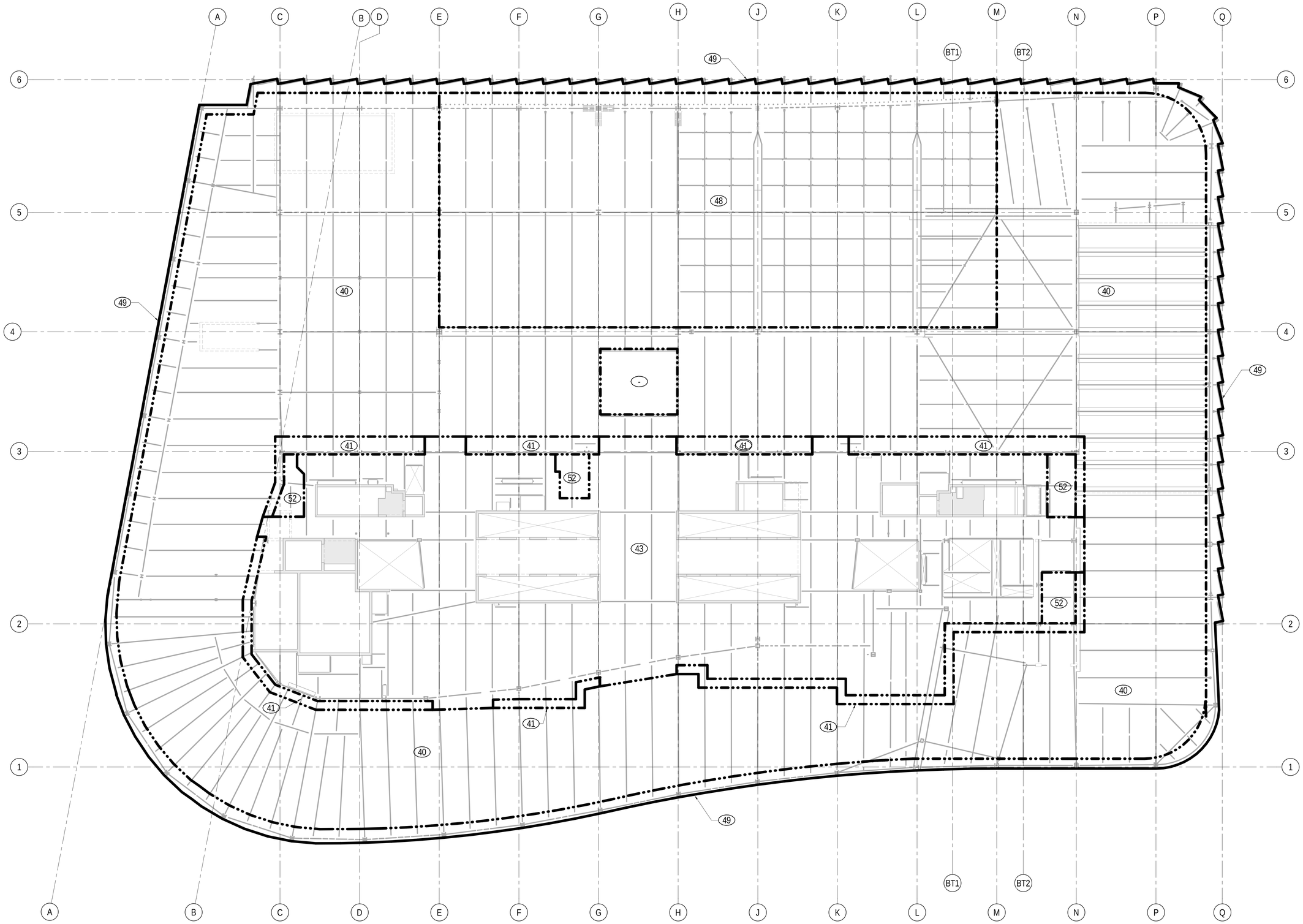

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NOTE:

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UNFACTORED DESIGN LOADS:

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LOADING BOUNDARY
5.2kN/m LINE LOAD. (GLAZING)
7.2kN/m LINE LOAD.

40 OFFICE / TRADING FLOORS - TYPICAL
SUPERIMPOSED DEAD 1.00kN/m²
LIVE 4.00kN/m²

41 OFFICE / TRADING FLOORS - HIGH LL LOAD TO 5% OF LETTABLE AREA
SUPERIMPOSED DEAD 1.00kN/m²
LIVE 7.50kN/m²

42 ATRIUM / CONVIVIAL OPENING NOTCHED EDGES
SUPERIMPOSED DEAD 2.00kN/m²
LIVE 4.00kN/m²

43 CORE LEVELS 01-08: CORRIDORS & LOBBIES
SUPERIMPOSED DEAD 2.00kN/m²
LIVE 4.00kN/m²

44 LEVEL 08 PEEL BACK TERRACE
SUPERIMPOSED DEAD 3.80kN/m²
LIVE 4.00kN/m²

45 SUNKEN GARDEN - TREE AREA
SUPERIMPOSED DEAD 20.60kN/m²
LIVE 4.00kN/m²

46 SUNKEN GARDEN - LANDSCAPED AREA
SUPERIMPOSED DEAD 7.50kN/m²
LIVE 4.00kN/m²

47 SUNKEN GARDEN - PAVED AREA AT EDGE
SUPERIMPOSED DEAD 4.20kN/m²
LIVE 4.00kN/m²

48 LEVEL 01 DINING ROOM
SUPERIMPOSED DEAD 3.50kN/m²
LIVE 4.00kN/m²

49 CLADDING - TYPICAL FLOOR
SUPERIMPOSED DEAD 6.60kN/m²
LIVE 0.00kN/m²

50 CLADDING - ATRIUM INTERIOR GLAZING
SUPERIMPOSED DEAD 6.30kN/m²
LIVE 0.00kN/m²

51 CLADDING - LEVEL 08 PEEL BACK
SUPERIMPOSED DEAD 7.60kN/m²
LIVE 0.00kN/m²

52 CORE LEVELS 01-08: TECH / SERVER ROOMS
SUPERIMPOSED DEAD 2.00kN/m²
LIVE 7.50kN/m²

- VOID

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	DH	JC
02	11.09.2015	JW	STAGE F	KJS	AJW
01	03.08.2015	AM	PACKAGE 1, STAGE 1 RIPP	JC	AJW

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http://www.wspgroup.com

CLIENT:

ARCHITECT:
KPF

PROJECT:
LONDON DEVELOPMENT PROJECT

TITLE:
LEVEL 1
LOADING PLAN

SCALE @ A0:	CHECKED:		APPROVED:
1:150	JC		AJW
PROJECT NUMBER: 52000153	DESIGNED: KJS	DRAWN: AM	DATE: AUGUST 2015

DRAWING No: 40SL-S-8101WS
REV: 03

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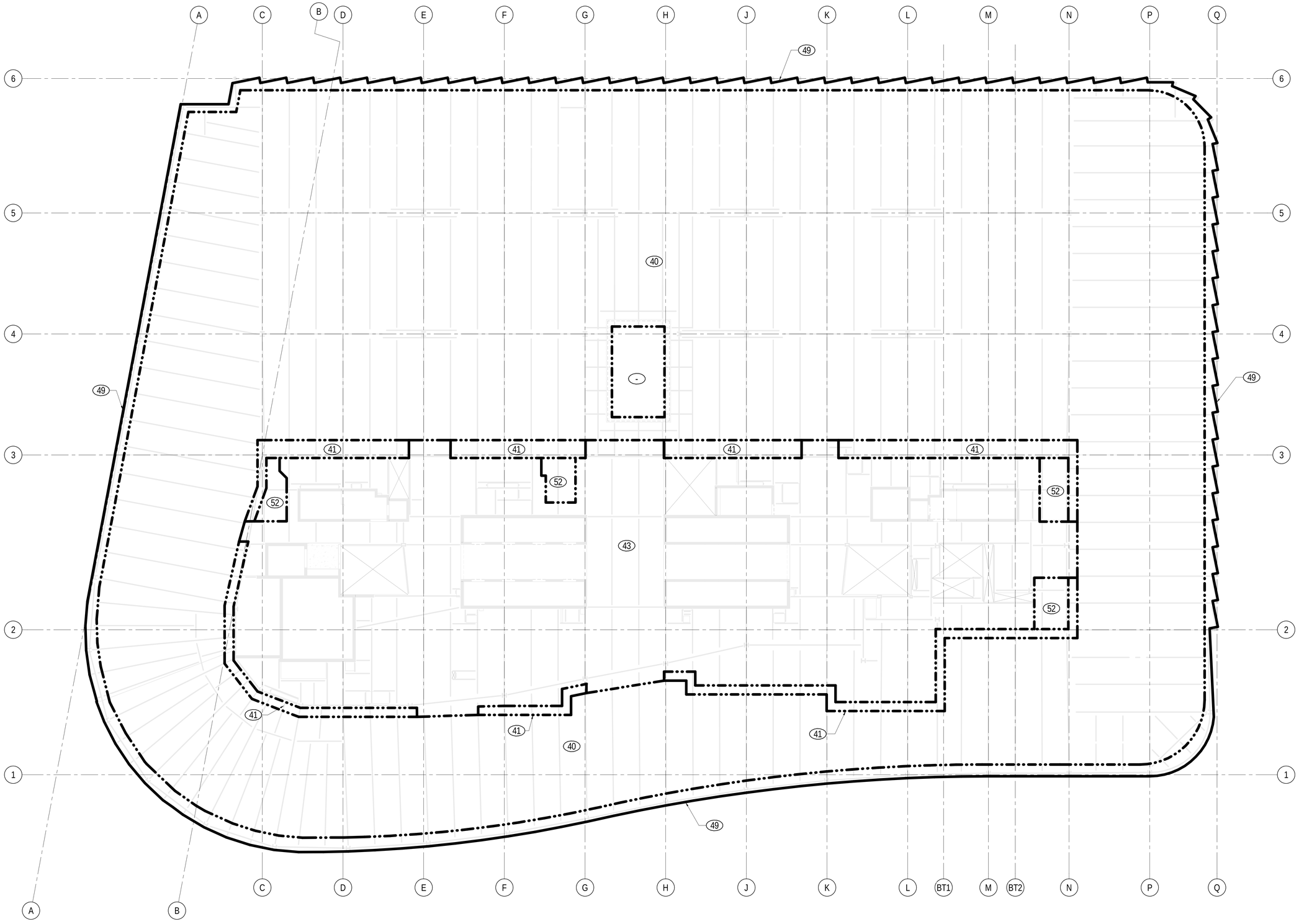

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UNFACTORED DESIGN LOADS:

THE SUPERIMPOSED DEAD LOAD DOES NOT INCLUDE THE SELF-WEIGHT OF THE STRUCTURE.

LOADING BOUNDARY

CLADDING LINE LOAD. REFER TO LEGEND.

40 — OFFICE / TRADING FLOORS - TYPICAL
SUPERIMPOSED DEAD 1.00kN/m²
LIVE 4.00kN/m²

41 — OFFICE / TRADING FLOORS - HIGH LL LOAD TO 5% OF LETTABLE AREA
SUPERIMPOSED DEAD 1.00kN/m²
LIVE 7.50kN/m²

42 — ATRIUM WALKWAY WITH STEEL PLATES (EXCLUDES PROTECTIVE HARDENING)
SUPERIMPOSED DEAD 2.00kN/m²
LIVE 4.00kN/m²

43 — CORE LEVELS 01-08: GENERAL
SUPERIMPOSED DEAD 2.80kN/m²
LIVE 4.00kN/m²

44 — LEVEL 08 PEEL BACK TERRACE
SUPERIMPOSED DEAD 3.80kN/m²
LIVE 4.00kN/m²

45 — SUNKEN GARDEN - TREE AREA
SUPERIMPOSED DEAD 20.60kN/m²
LIVE 4.00kN/m²

46 — SUNKEN GARDEN - LANDSCAPED AREA
SUPERIMPOSED DEAD 7.50kN/m²
LIVE 4.00kN/m²

47 — SUNKEN GARDEN - PAVED AREA AT EDGE
SUPERIMPOSED DEAD 4.20kN/m²
LIVE 4.00kN/m²

48 — LEVEL 01 ABOVE AUDITORIUM / DINING ROOM
SUPERIMPOSED DEAD 3.50kN/m²
LIVE 4.00kN/m²

49 — CLADDING - TYPICAL FLOOR (LINE LOAD)
SUPERIMPOSED DEAD 6.60kN/m
LIVE 0.00kN/m

50 — CLADDING - ATRIUM INTERIOR GLAZING (LINE LOAD)
SUPERIMPOSED DEAD 6.60kN/m
LIVE 0.00kN/m

51 — CLADDING - LEVEL 08 PEEL BACK (LINE LOAD)
SUPERIMPOSED DEAD 7.60kN/m
LIVE 0.00kN/m

52 — CORE LEVELS 01-08: TECH / SERVER ROOMS
SUPERIMPOSED DEAD 2.80kN/m²
LIVE 7.50kN/m²

- VOID

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	KS	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	03.08.2015	AM	PACKAGE 1, STAGE 1 RFP	JC	AJW

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Tel: +44 20 7314 5000 Fax: +44 20 7314 5111
http://www.wspgroup.com

CLIENT:

ARCHITECT: KPF

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: LEVEL 02-05 LOADING PLAN (TYPICAL FLOOR)

SCALE @ A0	CHECKED	APPROVED
1:150	JC	AJW

PROJECT NUMBER	DESIGNED	DRAWN	DATE
50200153	KJS	AM	AUGUST 2015

DRAWING No: 40SL-S-8201WS REV: 03

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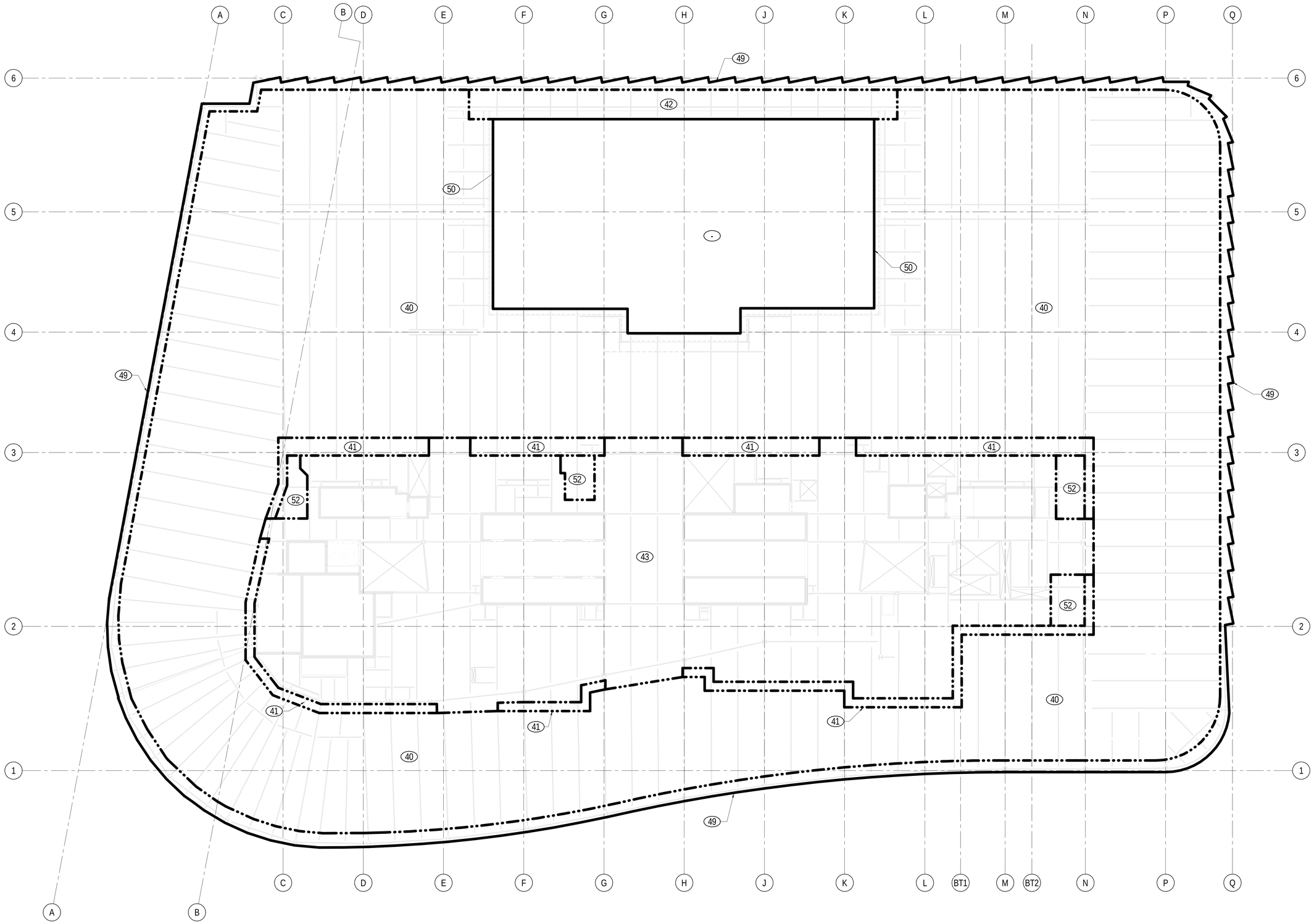

DO NOT SCALE

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UNFACTORED DESIGN LOADS:

THE SUPERIMPOSED DEAD LOAD DOES NOT INCLUDE THE SELF-WEIGHT OF THE STRUCTURE.

LOADING BOUNDARY

CLADDING LINE LOAD. REFER TO LEGEND.

40	OFFICE / TRADING FLOORS - TYPICAL	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	4.00kN/m²
41	OFFICE / TRADING FLOORS - HIGH LL LOAD TO 5% OF LETTABLE AREA	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	7.50kN/m²
42	ATRIUM WALKWAY WITH STEEL PLATES (EXCLUDES PROTECTIVE HARDENING)	SUPERIMPOSED DEAD	2.00kN/m²
		LIVE	4.00kN/m²
43	CORE LEVELS 01-08: GENERAL	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	4.00kN/m²
44	LEVEL 08 PEEL BACK TERRACE	SUPERIMPOSED DEAD	3.80kN/m²
		LIVE	4.00kN/m²
45	SUNKEN GARDEN - TREE AREA	SUPERIMPOSED DEAD	20.60kN/m²
		LIVE	4.00kN/m²
46	SUNKEN GARDEN - LANDSCAPED AREA	SUPERIMPOSED DEAD	7.50kN/m²
		LIVE	4.00kN/m²
47	SUNKEN GARDEN - PAVED AREA AT EDGE	SUPERIMPOSED DEAD	4.20kN/m²
		LIVE	4.00kN/m²
48	LEVEL 01 ABOVE AUDITORIUM / DINING ROOM	SUPERIMPOSED DEAD	3.50kN/m²
		LIVE	4.00kN/m²
49	CLADDING - TYPICAL FLOOR (LINE LOAD)	SUPERIMPOSED DEAD	6.60kN/m
		LIVE	0.00kN/m
50	CLADDING - ATRIUM INTERIOR GLAZING (LINE LOAD)	SUPERIMPOSED DEAD	6.60kN/m
		LIVE	0.00kN/m
51	CLADDING - LEVEL 08 PEEL BACK (LINE LOAD)	SUPERIMPOSED DEAD	7.60kN/m
		LIVE	0.00kN/m
52	CORE LEVELS 01-08: TECH / SERVER ROOMS	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	7.50kN/m²
-	VOID		

REV.	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	KS	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	03.08.2015	AM	PACKAGE 1; STAGE 1 IFFP	JC	AJW

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http://www.wspgroup.com

CLIENT:

ARCHITECT:
KPF

PROJECT:
LONDON DEVELOPMENT PROJECT

TITLE:
LEVEL 06-07
LOADING PLAN
(TYPICAL FLOOR)

SCALE @ A0:	CHECKED:		APPROVED:
1:150	JC		AJW
PROJECT NUMBER: 50200153	DESIGNED: KJS	DRAWN: AM	DATE: AUGUST 2015

DRAWING No: 40SL-S-8601WS

REV: 03

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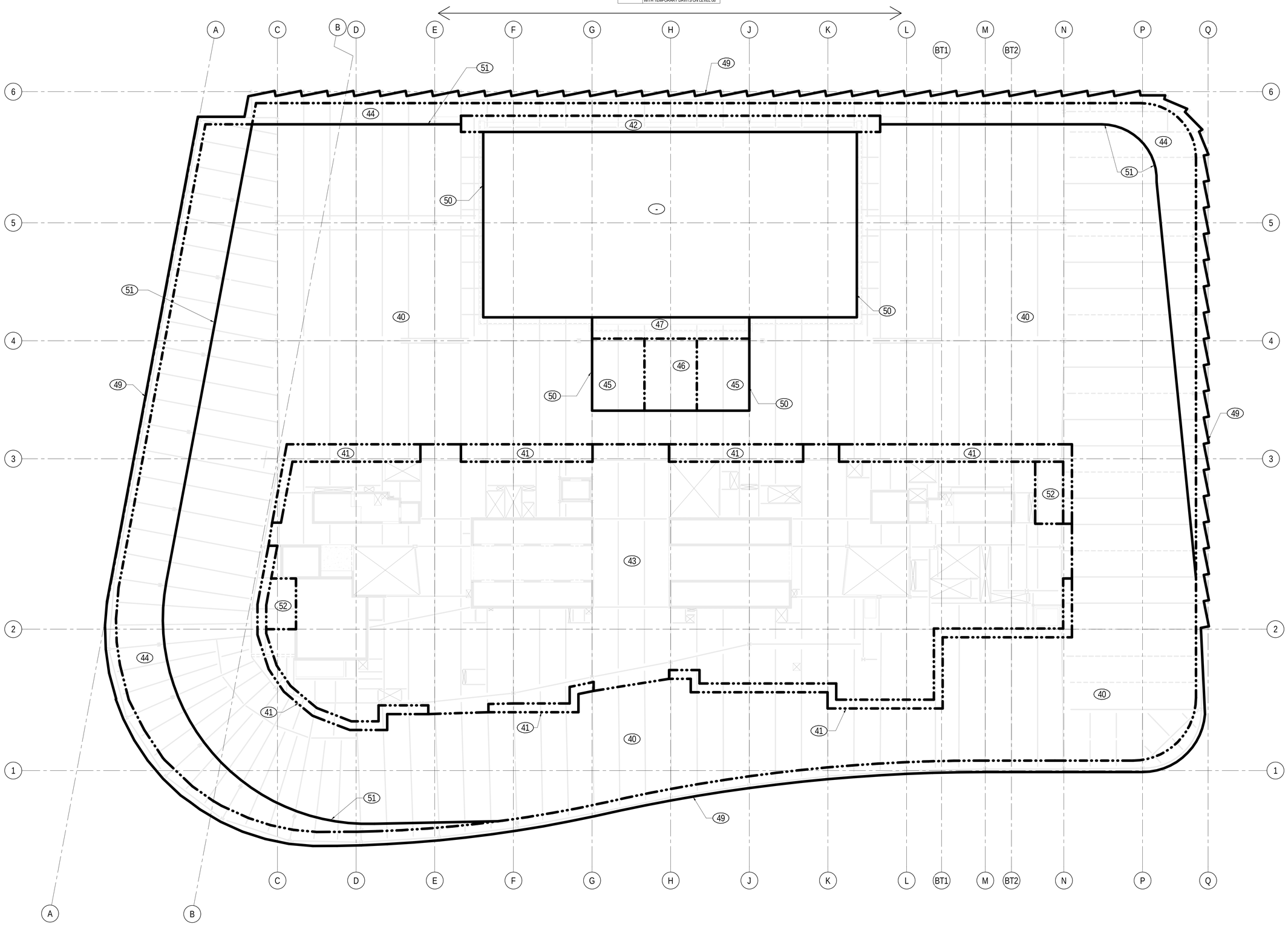
DRAWING CREATED IN REVIT

CONTRACTOR IBMU SPECIALIST TO DESIGN FACADE MAINTAINENCE STRATEGY SO THAT THE ATRIUM VIERENDEEL TRUSS AND STRUCTURE BETWEEN GRIDS E AND L ARE LIMITED TO:
-GRU TRAVERSING /IN OPERATION ONLY
-BMU TRAVERSING/IN OPERATION ONLY WITH TEMPORARY DAVITS ON LEVEL 08



DO NOT SCALE

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH RELEVANT SPECIFICATIONS.
2. DIMENSIONS ARE NOT TO BE SCALED FROM THIS DRAWING.
3. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 40SL-S-0001WS & 40SL-S-0002WS.

NOTE:

ALL STAIRWAYS TO BE DESIGNED FOR AN UNFACTORED IMPOSED/LIVE LOAD OF 4kN/m². FINISHES AS PER ARCHITECTS DRAWINGS.

UNFACTORED DESIGN LOADS:

THE SUPERIMPOSED DEAD LOAD DOES NOT INCLUDE THE SELF-WEIGHT OF THE STRUCTURE.

LOADING BOUNDARY

CLADDING LINE LOAD. REFER TO LEGEND.

40	OFFICE / TRADING FLOORS - TYPICAL	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	4.00kN/m²
41	OFFICE / TRADING FLOORS - HIGH LL LOAD TO 5% OF LETTABLE AREA	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	7.50kN/m²
42	ATRIUM WALKWAY WITH STEEL PLATES (EXCLUDES PROTECTIVE HARDENING)	SUPERIMPOSED DEAD	2.00kN/m²
		LIVE	4.00kN/m²
43	CORE LEVELS 01-08: GENERAL	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	4.00kN/m²
44	LEVEL 08 PEEL BACK TERRACE	SUPERIMPOSED DEAD	3.80kN/m²
		LIVE	4.00kN/m²
45	SUNKEN GARDEN - TREE AREA	SUPERIMPOSED DEAD	20.60kN/m²
		LIVE	4.00kN/m²
46	SUNKEN GARDEN - LANDSCAPED AREA	SUPERIMPOSED DEAD	7.50kN/m²
		LIVE	4.00kN/m²
47	SUNKEN GARDEN - PAVED AREA AT EDGE	SUPERIMPOSED DEAD	4.20kN/m²
		LIVE	4.00kN/m²
48	LEVEL 01 ABOVE AUDITORIUM / DINING ROOM	SUPERIMPOSED DEAD	3.50kN/m²
		LIVE	4.00kN/m²
49	CLADDING - TYPICAL FLOOR (LINE LOAD)	SUPERIMPOSED DEAD	6.60kN/m
		LIVE	0.00kN/m
50	CLADDING - ATRIUM INTERIOR GLAZING (LINE LOAD)	SUPERIMPOSED DEAD	6.60kN/m
		LIVE	0.00kN/m
51	CLADDING - LEVEL 08 PEEL BACK (LINE LOAD)	SUPERIMPOSED DEAD	7.60kN/m
		LIVE	0.00kN/m
52	CORE LEVELS 01-08: TECH / SERVER ROOMS	SUPERIMPOSED DEAD	2.80kN/m²
		LIVE	7.50kN/m²
-	VOID		

REV	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	KS	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	03.08.2015	AM	PACKAGE 1, STAGE 1 RFP	JC	AJW

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CLIENT:

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PROJECT:
LONDON DEVELOPMENT PROJECT

TITLE:
LEVEL 08
LOADING PLAN

SCALE @ A0	CHECKED	APPROVED
1:150	JC	AJW

PROJECT NUMBER	DESIGNED	DRAWN	DATE
50200153	KJS	AM	AUGUST 2015

DRAWING No	REV
40SL-S-8801WS	03

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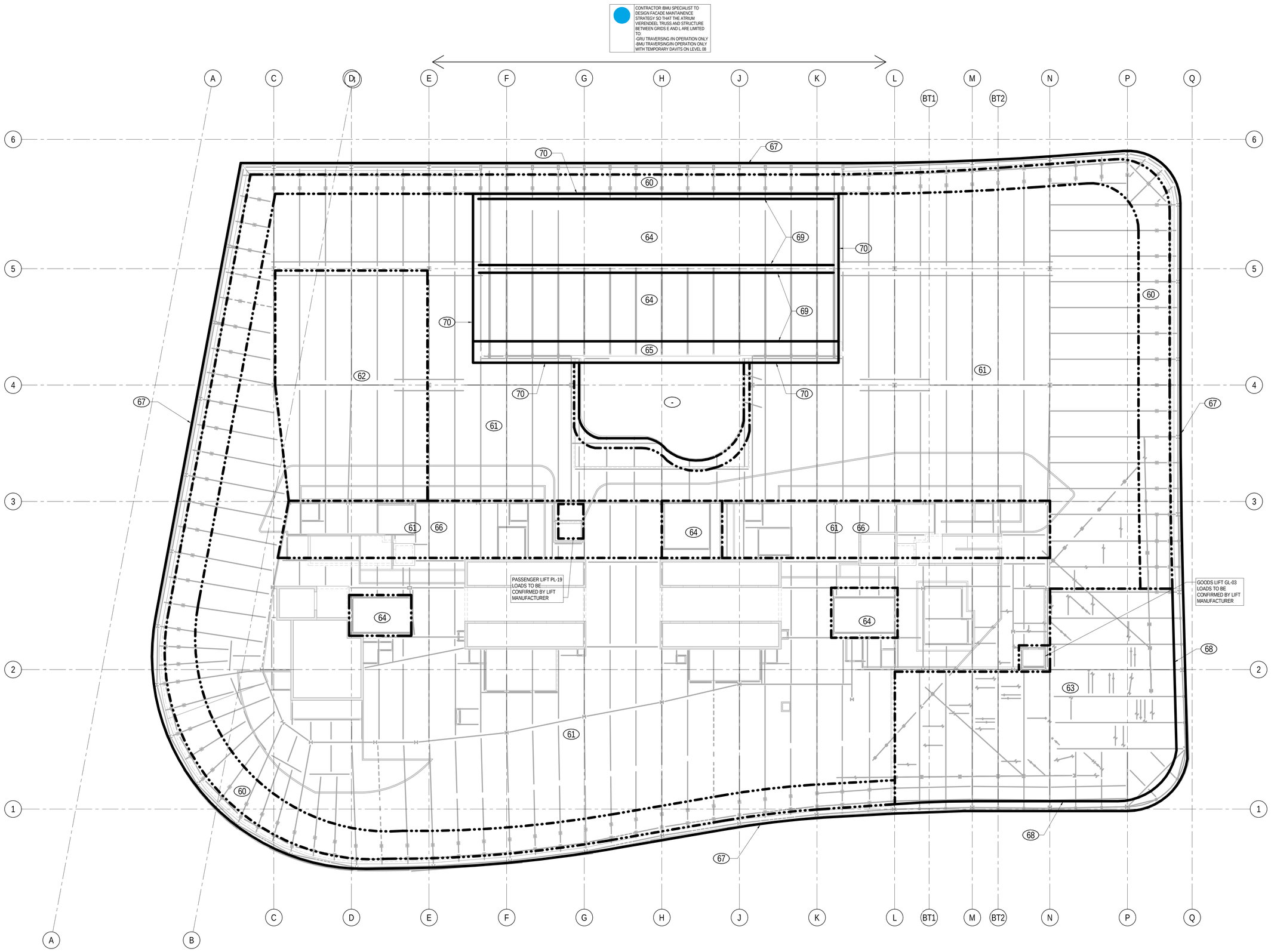

DO NOT SCALE

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH RELEVANT SPECIFICATIONS.
2. DIMENSIONS ARE NOT TO BE SCALED FROM THIS DRAWING.
3. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 40SL-S-0001WS & 40SL-S-0002WS.

NOTE:

ALL STAIRWAYS TO BE DESIGNED FOR AN UNFACTORED IMPOSED/LIVE LOAD OF 4kN/m². FINISHES AS PER ARCHITECTS DRAWINGS.

UNFACTORED DESIGN LOADS:

THE SUPERIMPOSED DEAD LOAD DOES NOT INCLUDE THE SELF-WEIGHT OF THE STRUCTURE.

LOADING BOUNDARY

CLADDING LINE LOAD. REFER TO LEGEND.

60	BMU PLANTING	SUPERIMPOSED DEAD	9.10kN/m²
		LIVE	1.50kN/m²
61	ROOF TOP PLANTING	SUPERIMPOSED DEAD	12.80kN/m²
		LIVE	1.50kN/m²
62	RAISED PAVING WITH DETAINING WALL SEATS AREA	SUPERIMPOSED DEAD	13.60kN/m²
		LIVE	4.00kN/m²
63	WCA AREA	SUPERIMPOSED DEAD	5.00kN/m²
		LIVE	1.50kN/m²
64	ATRIUM ROOF / ROOFLIGHT GLAZING	SUPERIMPOSED DEAD	1.25kN/m²
		LIVE	0.60kN/m²
65	ATRIUM ROOF: ROOF EDGE MAINTENANCE ZONE ALLOWANCE	SUPERIMPOSED DEAD	1.00kN/m²
		LIVE	1.50kN/m²
66	WSP ADDITIONAL 300mm SOIL PLANTING ALLOWANCE	SUPERIMPOSED DEAD	4.50kN/m²
		LIVE	0.00kN/m²
67	TYPICAL ROOF PARAPET & CLADDING	SUPERIMPOSED DEAD	8.50kN/m
		LIVE	0.00kN/m
68	WCA PARAPET & CLADDING (ESTIMATED TOTAL)	SUPERIMPOSED DEAD	24.60kN/m
		LIVE	0.00kN/m
69	ATRIUM ROOF LOUVRES @ END SUPPORTS	SUPERIMPOSED DEAD	1.30kN/m
		LIVE	0.00kN/m
70	ATRIUM PERIMETER EDGE LOADS	SUPERIMPOSED DEAD	1.80kN/m
		LIVE	0.00kN/m
-	VOID		

REV.	DATE	BY	DESCRIPTION	CHK	APP
03	25.09.2015	JW	STAGE F	KS	JC
02	11.09.2015	JW	STAGE F	KS	AJW
01	03.08.2015	AM	PACKAGE 1, STAGE 1 RIPP	JC	AJW

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CLIENT:

ARCHITECT: KPF

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ROOF LOADING PLAN

SCALE @ A0:	CHECKED:		APPROVED:
1:150	JC		AJW
PROJECT NUMBER: 52000153	DESIGNED: KJS	DRAWN: AM	DATE: AUGUST 2015

DRAWING No: 40SL-S-89001WS REV: 03

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DRAWING CREATED IN REVIT

16. APPENDICES

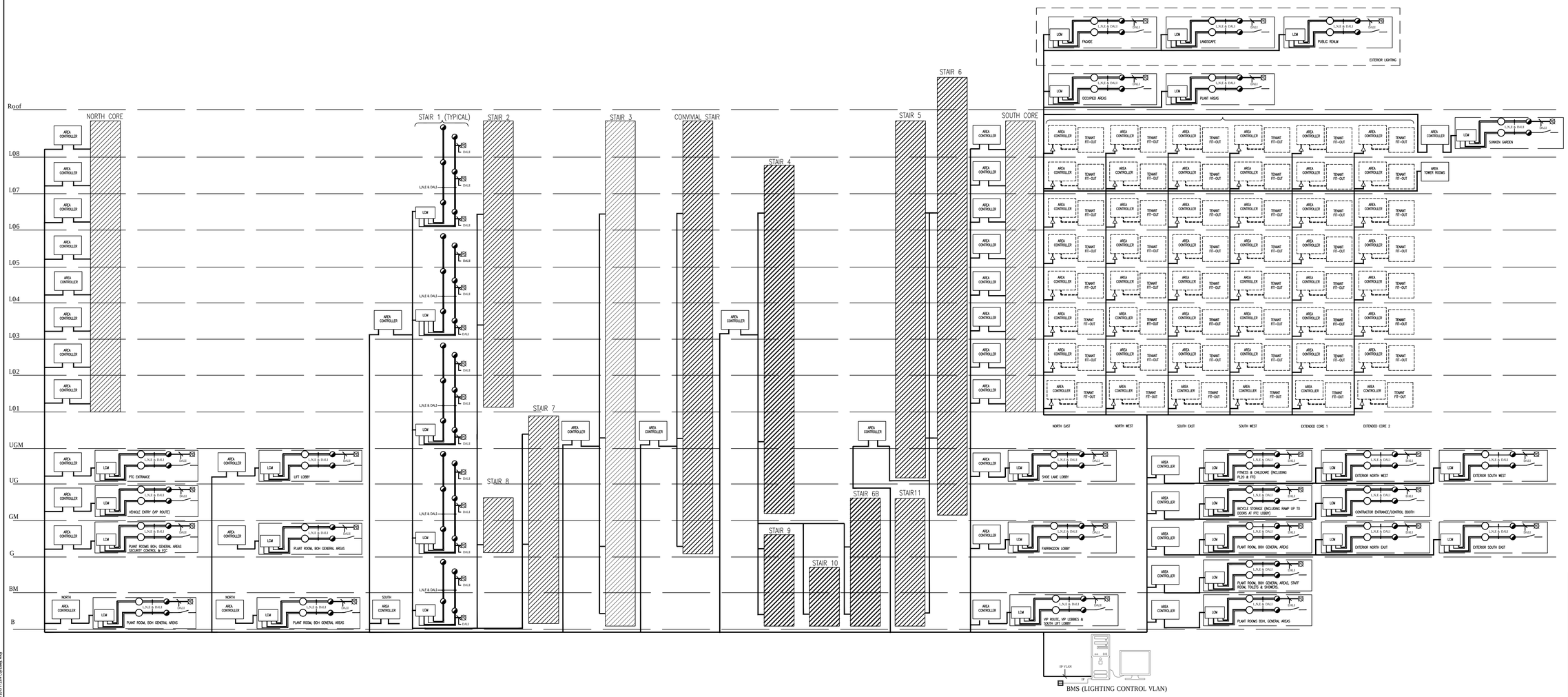
D. MEP Schematics

DO NOT SCALE

NOTES:

1. FOR FINAL QUANTITIES AND LOCATIONS OF DEVICES REFER TO LIGHTING GENERAL ARRANGEMENT DRAWINGS.
2. EQUIPMENT SHOWN DASHED SHALL BE APPROVED BY THE MODULAR WIRING SUPPLIER.
3. THE LIGHTING CONTROL NETWORK CABLE FROM THE MDB TO THE LCM's SHALL BE AND ENCLOSED IN THE MODULAR FIELD WIRING.
4. THE LIGHTING CONTROL NETWORK CABLE FROM THE AREA CONTROLLER TO THE MDB SHALL BE FORMING PART OF THE MODULAR WIRING SYSTEM BUT SECURED EXTERNALLY OF THE HOME RUN.
5. ALL LIGHTING CONTROLLABLE SYSTEM ACCESSORIES SHALL BE MOUNTED ON THE BUILDING STRUCTURE.
6. ALL LCM's SHALL HAVE THERE SYSTEM REFERENCE AND CIRCUIT REFERENCE DISPLAYED UTILISING A "BRADY" TYPE LABEL AT EACH LCM.
7. THIS DRAWING IS FOR DESIGN INTENT ONLY. THE ELECTRICAL CONTRACTOR INCLUDE IN THEIR CONTRACT FOR ALL LIGHTING CONTROL EQUIPMENT AND ACCESSORIES TO PROVIDE A FULLY FUNCTIONAL LIGHTING CONTROL SYSTEM IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATION AND DRAWINGS.

PASSIVE MOVEMENT DETECTOR
AC AREA CONTROLLER
LCM LIGHTING CONTROL MODULE
MDB MODULAR WIRING MAIN DISTRIBUTION BOX



REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SA	STAGE F	NP	TA
01	25.09.2015	SA	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: LIGHTING CONTROL SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
NTS	NP	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	RB	CAD	SEP 2014

DRAWING No: 40SL-E-6202 WS

REV: 02

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File name G:\C3-LONDON\WSL\ETS\50200153\03 - PROJECT A\BAGAJE DRAWINGS\ELECTRICAL\DWG\BAGAJE-6-6202-WS.DWG, printed on 29 September 2015 17:29:41, by Elder, Andy

REFERENCE	FEEDER SIZE (mm, NUMBER OF CORES)	FROM	TO
1	95 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-OFFICE FAN ROOM SMB01
2	185 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-OFFICE FAN ROOM SMB02
3	25 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-OFFICE FAN ROOM SMB03
4	2 - 240 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-CHILLER 1
5	2 - 240 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-CHILLER 2
6	3 - 240 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-CHILLER ROOM SMB04
7	3 - 240 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-CHILLER ROOM SMB05
8	120 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-GENERATOR SWITCHROOM SMB06
9	25 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-OIL TANK SMB07
10	185 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-BOILER ROOM SMB09
11	25 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-BOILER ROOM SMB10
12	25 mm2 x 4 x 1c + CPC 16mm2	LV1A	BASEMENT-CHP ROOM SMB12
13	25 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-WATER PUMP ROOM SMB13
14	150 mm2 x 4 x 1c + CPC SWA	LV1A	BT SUPPLY
15	25 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-WATER PUMP ROOM SOUTH SMB14
16	35 mm2 x 4 x 1c + CPC SWA	LV1A	ROOF-ROOF FANS SOUTH CORE SMB17
17	50 mm2 x 4 x 1c + CPC SWA	LV1A	GROUND FLOOR-VENTILATION PLANTROOM SMB18
18	25 mm2 x 4 x 1c + CPC SWA	LV1A	GROUND FLOOR-LV1 SWITCHROOMS SMB19A
19	25 mm2 x 4 x 1c + CPC SWA	LV1A	GROUND FLOOR-LV3 SWITCHROOMS SMB20
20	25 mm2 x 4 x 1c + CPC SWA	LV1A	GROUND FLOOR-LV2 SWITCHROOMS SMB21
21	25 mm2 x 4 x 1c + CPC SWA	LV1A	GROUND FLOOR-SHOE LANE ENTRANCE SMB22
22	50 mm2 x 4 x 1c + CPC 25mm2	LV1A	ROOF-COOLING TOWER SMB23A
23	25 mm2 x 4 x 1c + CPC 16mm2	LV1A	ROOF-SMOKE VENT SMB27A
24	25 mm2 x 4 x 1c + CPC 16mm2	LV1A	ROOF-FIRE FIGHTING LIFT SMB28A
25	35 mm2 x 4 x 1c + CPC 16mm2	LV1A	BASEMENT-CAR PARK SMB29
26	240 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-VEHICLE PUMP ROOM SMB30
27	35 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT - BT STAIR FIRE LOBBY EXTRACT SMB31
28	25 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT-ER CRAC SMB32
29	25 mm2 x 4 x 1c + CPC SWA	LV1A	DB-B-L1
30	25 mm2 x 4 x 1c + CPC SWA	LV1A	DB-B-L2
31	25 mm2 x 4 x 1c + CPC 16mm2	LV1A	DB-B-P1
32	25 mm2 x 4 x 1c + CPC SWA	LV1A	DB-B-P2
33	25 mm2 x 4 x 1c + CPC SWA	LV1A	DB-G-L1
34	25 mm2 x 4 x 1c + CPC SWA	LV1A	DB-G-P1
35	25 mm2 x 4 x 1c + CPC SWA	LV1A	DB-UG-L1
36	25 mm2 x 4 x 1c + CPC SWA	LV1A	DB-UG-P1
37	25 mm2 x 4 x 1c + CPC SWA	LV1A	UPPER GROUND-VEHICLE ENTRANCE SMB34
38	2 - 300 mm2 x 4 x 1c + CPC SWA	LV1A	SPRINKLER PUMP 01 SUPPLY A
39	2 - 300 mm2 x 4 x 1c + CPC SWA	LV1A	SPRINKLER PUMP 02 SUPPLY A
40	185 mm2 x 4 x 1c + CPC SWA	LV1A	WATER MIST PUMP 01 SUPPLY A
41	185 mm2 x 4 x 1c + CPC SWA	LV1A	WATER MIST PUMP 02 SUPPLY A
42	70 mm2 x 4 x 1c + CPC SWA	LV1A	BASEMENT - CHP/B1/01 CHP 1 MAIN SUPPLY
43	240 mm2 x 4 x 1c + CPC 120 mm2	LV1A	LIFTS BOARD-SMB35
44	10 mm2 x 4 x 1c + CPC 16mm2	LV1A	BASEMENT - CHP/B1/01 CHP 1 ANCILLARY SUPPLY
45	2 - 185 mm2 x 4 x 1c	LV1A	ACTIVE HARMONIC FILTERING
47-50		LV1A	SPARE

REFERENCE	FEEDER SIZE (mm, NUMBER OF CORES)	FROM	TO
51	2 - 185 mm2 x 4 x 1c	LV1B	ACTIVE HARMONIC FILTERING
52	95 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-OFFICE FAN ROOM SMB01
53	185 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-OFFICE FAN ROOM SMB02
54	2 - 240 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-CHILLER 3
55	2 - 240 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-CHILLER 4 (FUTURE)
56	3 - 240 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-CHILLER ROOM SMB05
57	120 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-GENERATOR SWITCHROOM SMB06
58	25 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-OIL TANK SMB07
59	25 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-FARRINGDON LOBBY VENT SMB08
60	25 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-WATER PUMP ROOM SOUTH SMB14
61	70 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT - CHP/B1/02 CHP 2 MAIN SUPPLY
62	50 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT-VENTILATION PLANTROOM SMB15
63	25 mm2 x 4 x 1c + CPC SWA	LV1B	GROUND FLOOR-LV1 SWITCHROOMS SMB19B
64	25 mm2 x 4 x 1c + CPC SWA	LV1B	GROUND FLOOR-LV3 SWITCHROOMS SMB20
65	25 mm2 x 4 x 1c + CPC SWA	LV1B	GROUND FLOOR-LV2 SWITCHROOMS SMB21
66	50 mm2 x 4 x 1c + CPC 25mm2	LV1B	ROOF-COOLING TOWER SMB23B
67	50 mm2 x 4 x 1c + CPC SWA	LV1B	ROOF-COOLING TOWER SMB24
68	25 mm2 x 4 x 1c + CPC SWA	LV1B	UPPER GROUND-VEHICLE ENTRANCE SMB34
69	25 mm2 x 4 x 1c + CPC SWA	LV1B	ROOF-ROOF FANS NORTH CORE SMB26
70	25 mm2 x 4 x 1c + CPC 16mm2	LV1B	ROOF-SMOKE VENT SMB27B
71	25 mm2 x 4 x 1c + CPC 16mm2	LV1B	ROOF-FIRE FIGHTING LIFT SMB28B
72	35 mm2 x 4 x 1c + CPC SWA	LV1B	BASEMENT - BT STAIR FIRE LOBBY EXTRACT SMB31
73	25 mm2 x 4 x 1c + CPC SWA	LV1B	GROUND-ER CRAC SMB33
74	25 mm2 x 4 x 1c + CPC SWA	LV1B	DB-B-L3
75	35 mm2 x 4 x 1c + CPC SWA	LV1B	DB-B-L4
76	35 mm2 x 4 x 1c + CPC SWA	LV1B	DB-B-P3
77	35 mm2 x 4 x 1c + CPC 16mm2	LV1B	DB-B-P4
78	25 mm2 x 4 x 1c + CPC SWA	LV1B	DB-G-L2
79	35 mm2 x 4 x 1c + CPC SWA	LV1B	DB-G-P2
80	35 mm2 x 4 x 1c + CPC SWA	LV1B	DB-UG-L2
81	35 mm2 x 4 x 1c + CPC SWA	LV1B	DB-UG-P2
82	2 - 300 mm2 x 4 x 1c + CPC SWA	LV1B	SPRINKLER PUMP 01 SUPPLY B
83	2 - 300 mm2 x 4 x 1c + CPC SWA	LV1B	SPRINKLER PUMP 02 SUPPLY B
84	150 mm2 x 4 x 1c + CPC SWA	LV1B	WATER MIST PUMP 01 SUPPLY B
85	150 mm2 x 4 x 1c + CPC SWA	LV1B	WATER MIST PUMP 02 SUPPLY B
86	240 mm2 x 4 x 1c + CPC 120 mm2	LV1B	LIFTS BOARD-SMB36
87	2 - 240 mm2 x 4 x 1c + CPC SWA	LV1B	RETAIL SUPPLY
88	10 mm2 x 4 x 1c + CPC 16mm2	LV1B	BASEMENT - CHP/B1/02 CHP 2 ANCILLARY SUPPLY
90-100		LV1B	SPARES

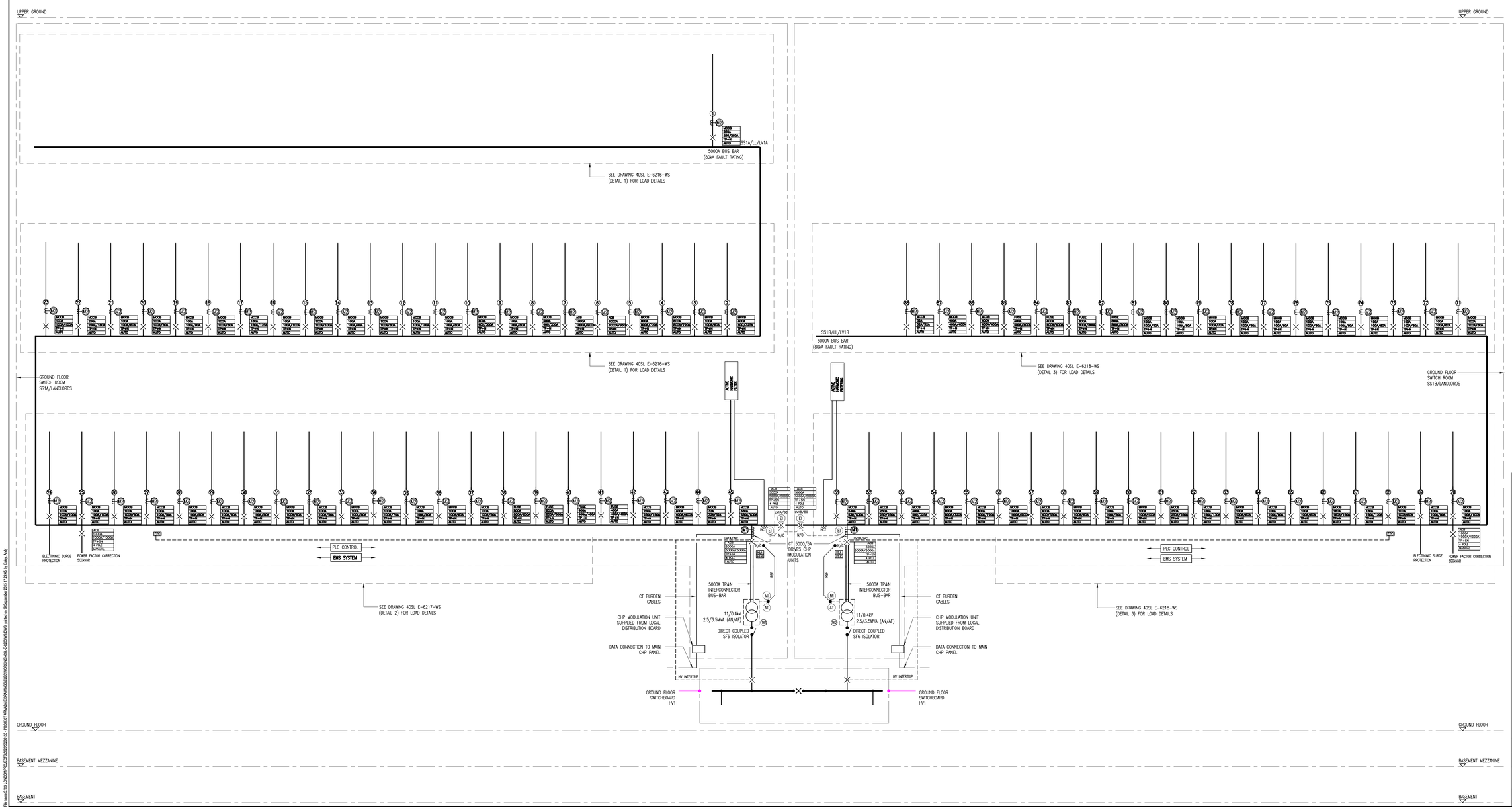
DO NOT SCALE

NOTES:

1. REFER TO DRAWING NO: 40SL-E-6201-WS FOR ELECTRICAL SYMBOLS & LEGEND.
2. FOR DETAILS OF PLC SYSTEM AND SWITCHBOARD OPERATION REFER TO THE SPECIFICATION.
3. UNLESS OTHERWISE SHOWN ALL DEVICES WILL BE 3 POLE.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER WSP SPECIFICATIONS AND ASSOCIATED DRAWINGS.
5. ALL CABLES FROM TAPOFF TO LIGHTING DISTRIBUTION BOARD ARE 4Cx25mm² XLPE/SWA/LSF.
6. ALL CABLES FROM TAPOFF TO POWER DISTRIBUTION BOARD ARE 4Cx35mm² XLPE/SWA/LSF.
7. TP+N BOARD REF. SCHNEIDER ELECTRIC ACTI 9 ISOBAR B TYPE DB SEA9BN12 EQUIPPED WITH SINGLE PHASING KIT REF. SEA91255PEV.

LEGEND

SYMBOL	NOTES
M1	DIGITAL METER TYPE 1
M2	DIGITAL METER TYPE 2
MCCB 160A 100A/80 TP+N AUTO	TYPE FRAME SIZE TRIP/SETTING NUMBER OF POLES OPERATION
REF 255	RESTRICTED EARTH FAULT PHASE FAILURE RELAY
D	ELECTRICAL INTERLOCK- BETWEEN MAIN INCOMING MCCB AND BUS-BAR BUS SECTION SWITCHES
MI AT	MECHANICAL INTERLOCK - ENCLOSURE ACCESS INTERLOCKED WITH HV AND LV CIRCUIT BREAKERS - ANTI TAMPER SWITCH
EPO	EMERGENCY POWER OFF
REF -	RESTRICTED EARTH FAULT



REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SA	STAGE F	NP	TA
01	25.09.2015	SA	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES LANDLORDS SS1 LV DISTRIBUTION SCHEMATIC

SCALE @ A0:	CHECKED:		APPROVED:
N.T.S.	AL		TA
PROJECT No: 50200153	DESIGNED: SZ	DRAWN: CAD	DATE: NOV 2014

DRAWING No: 40SL-E-6203-WS

REV: 02

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DO NOT SCALE

NOTES:

1. REFER TO DRAWING NO: WSP-0755-GA-601-E-001 FOR ELECTRICAL SYMBOLS & LEGEND.
2. FOR DETAILS OF PLC SYSTEM AND SWITCHBOARD OPERATION REFER TO THE SPECIFICATION.
3. UNLESS OTHERWISE SHOWN ALL DEVICES WILL BE 3 POLE.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER WSP SPECIFICATIONS AND ASSOCIATED DRAWINGS.
5. ALL CABLES FROM TAPOFF TO LIGHTING DISTRIBUTION BOARD ARE 4Cx25mm² XLPE/SWA/LSF.
6. ALL CABLES FROM TAPOFF TO POWER DISTRIBUTION BOARD ARE 4Cx35mm² XLPE/SWA/LSF.
7. TP+N BOARD REF. SCHNEIDER ELECTRIC ACTI 9 ISOBAR B TYPE DB SEA9BN12 EQUIPPED WITH SINGLE PHASING KIT REF. SEA91255PEV.

ROOF

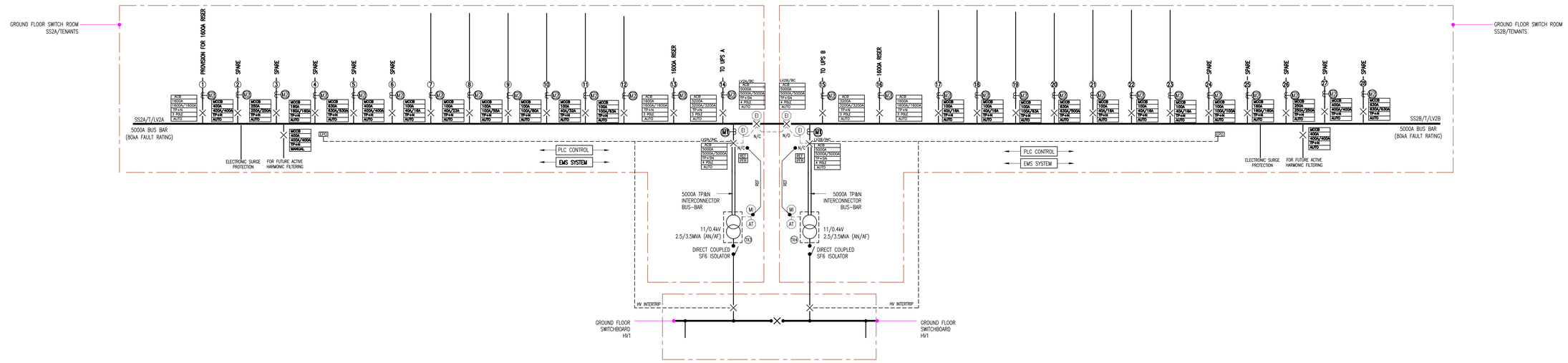
REFERENCE	FEEDER SIZE	FROM	TO	NOTES
1		LV2A	PROVISION FOR 1600A BUS RISER	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
2		LV2A	SPARE	
3		LV2A	SPARE	
4		LV2A	SPARE	
5		LV2A	SPARE	
6		LV2A	SPARE	
7		LV2A	UPPER GROUND-CONFERENCING	
8		LV2A	UPPER GROUND-FCR'S	
9		LV2A	UPPER GROUND-DINING/SERVERY LTG AND GEN PWR	
10		LV2A	BASEMENT-NORTH PLANT ROOM	
11		LV2A	BASEMENT-CATERING	
12		LV2A	BASEMENT-IDS COMMS ROOM/TENANT	
13		LV2A	1600A BUS RISER 1	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
14		LV2A	UPS A – FEEDER 1	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
15		LV2B	UPS B – FEEDER 1	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
16		LV2B	1600 A BUS RISER 2	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
17		LV2B	GROUND FLOOR-SERVICE TECH ROOM	
18		LV2B	GROUND FLOOR –SERVICE TECH ROOM	
19		LV2B	GROUND FLOOR –PRE-FUNCTION	
20		LV2B	UPPER GROUND –SERVERY	
21		LV2B	UPPER GROUND MEZZANINE –SERVICE TECH ROOM	
22		LV2B	UPPER GROUND MEZZANINE –SERVICE TECH ROOM	
23		LV2B	UPPER GROUND MEZZANINE –CATERING	
24		LV2B	SPARE	
25		LV2B	SPARE	
26		LV2B	SPARE	
27		LV2B	SPARE	
28		LV2B	SPARE	

UPPER GROUND MEZZANINE

UPPER GROUND

LEGEND

SYMBOL	KEY
M1	DIGITAL METER TYPE 1
M2	DIGITAL METER TYPE 2
ACB/MCCB	TYPE FRAME SIZE OVERLOAD/SETTING NUMBER OF POLES DIVERSION
RCD / EFR	INTENSIVES EARTH FAULT PHASE FAILURE RELAY
EI	ELECTRICAL INTERLOCK – BETWEEN MAIN INCOMING CIRCUIT BREAKERS AND BUS SECTION SWITCHES.
MI / AT	MECHANICAL INTERLOCK – BETWEEN MAIN INCOMING INTERLOCKED WITH HV AND LV CIRCUIT BREAKERS MAIN TRANFER SWITCH
EPO	EMERGENCY POWER OFF



GROUND

BASEMENT MEZZANINE

BASEMENT

GROUND FLOOR

BASEMENT MEZZANINE

BASEMENT

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SA	STAGE F	NP	TA
01	25.09.2015	SA	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES
TENANTS SS2
LV DISTRIBUTION SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
N.T.S.	AL	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	SZ	CAD	NOV 2014

DRAWING No: 40SL-E-6204-WS

REV: 02

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DO NOT SCALE

NOTES:

1. REFER TO DRAWING NO: WSP-0755-GA-601-E-001 FOR ELECTRICAL SYMBOLS & LEGEND.
2. FOR DETAILS OF PLC SYSTEM AND SWITCHBOARD OPERATION REFER TO THE SPECIFICATION.
3. UNLESS OTHERWISE SHOWN ALL DEVICES WILL BE 3 POLE.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER WSP SPECIFICATIONS AND ASSOCIATED DRAWINGS.
5. ALL CABLES FROM TAPOFF TO LIGHTING DISTRIBUTION BOARD ARE 4Cx25mm² XLPE/SWA/LSF.
6. ALL CABLES FROM TAPOFF TO POWER DISTRIBUTION BOARD ARE 4Cx35mm² XLPE/SWA/LSF.
7. TP+N BOARD REF. SCHNEIDER ELECTRIC ACTI 9 ISOBAR B TYPE DB SEA9BN12 EQUIPPED WITH SINGLE PHASING KIT REF. SEA91255PEV.

ROOF

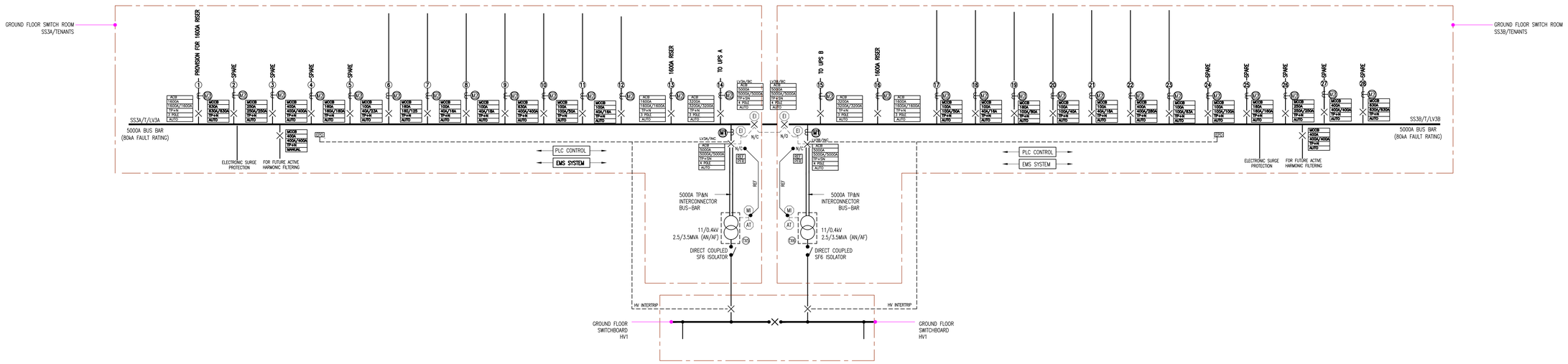
REFERENCE	FEEDER SIZE	FROM	TO	NOTES
1		LV3A	PROVISION FOR 1600A BUS RISER	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
2		LV3A	SPARE	
3		LV3A	SPARE	
4		LV3A	SPARE	
5		LV3A	SPARE	
6		LV3A	GROUND FLOOR- AUDITORIUM GEN LTG & PWR	
7		LV3A	GROUND FLOOR-AUDITORIUM STAGE LTG & AV	
8		LV3A	GROUND FLOOR-MPR + FCR'S	
9		LV3A	GROUND FLOOR-KITCHEN	
10		LV3A	GROUND FLOOR-KITCHEN CATERING	
11		LV3A	UPPER GROUND-AUDITORIUM GEN LTG & PWR	
12		LV3A	UPPER GROUND-SERVICE TECH ROOM	
13		LV3A	1600A TENANTS RISING BUS RISER 3	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
14		LV3A	UPS A – FEEDER 2	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
15		LV3B	UPS B – FEEDER 2	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
16		LV3B	1600A TENANTS RISING BUS RISER 4	FEEDER BUS BAR FROM SWITCHBOARD TO BASE OF RISING BUS BAR TO BE CARRIED OUT IN CAST RESIN INSULATED BUS BAR. SWITCHBOARD TRANSITION TO BE SUITABLE FOR CAST RESIN CONNECTION.
17		LV3B	GROUND FLOOR-GYM	
18		LV3B	UPPER GROUND-SERVICE TECH ROOM	
19		LV3B	UPPER GROUND-PANTRIES	
20		LV3B	UPPER GROUND MEZZANINE-CONFERENCING (THREE TEIR)	
21		LV3B	UPPER GROUND MEZZANINE -CHILD CARE	
22		LV3B	BASEMENT-SOUTH PLANT ROOM	
23		LV3B	BASEMENT-ER ROOM	
24		LV3B	SPARE	
25		LV3B	SPARE	
26		LV3B	SPARE	
27		LV3B	SPARE	
28		LV3B	SPARE	

UPPER GROUND MEZZANINE

UPPER GROUND

LEGEND

SYMBOL	KEY
M1	DIGITAL METER TYPE 1
M2	DIGITAL METER TYPE 2
ACB/MCCB	TYPE FRAME SIZE OVERLOAD/SETTING NUMBER OF POLES OPERATION
REF (PT2)	RESTRICTED EARTH FAULT PHASE FAILURE RELAY
E	ELECTRICAL INTERLOCK- CONTACTS MOUNTED ON CIRCUIT MOUNTED AND BUS SECTION SWITCHES
MI AT	MECHANICAL INTERLOCK – DALOUNAC ACCESS INTERLOCKED WITH HV AND 3-4 CIRCUIT BREAKERS – ANTI TAMPER SWITCH
EPO	EMERGENCY POWER OFF



GROUND

BASEMENT MEZZANINE

ROOF

UPPER GROUND MEZZANINE

UPPER GROUND

GROUND FLOOR

BASEMENT MEZZANINE

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SZ	STAGE F	NP	TA
01	25.09.2015	SZ	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES
TENANTS SS3
LV DISTRIBUTION SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
N.T.S.	AL	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	SZ	CAD	NOV 2014

DRAWING No: 40SL-E-6205-WS

REV: 02

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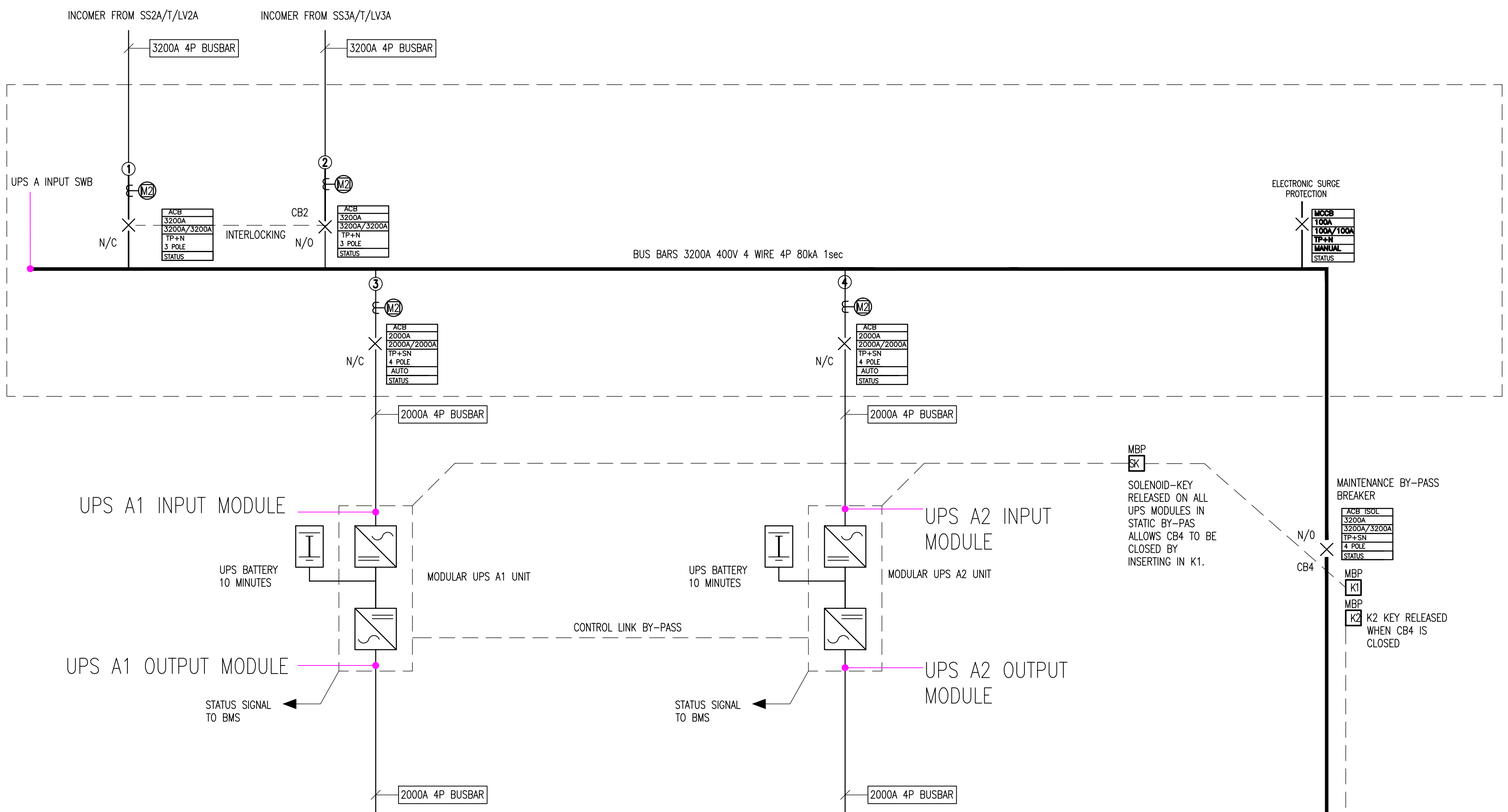

REFERENCE	FEEDER SIZE	FROM	TO
UPS A INPUT SWITCHBOARD			
1		SS2A/T/LV2A	UPS A INPUT SWB
2		SS3A/T/LV2A	UPS A INPUT SWB
3		UPS A INPUT SWB	UPS A1 INPUT MODULE
4		UPS A INPUT SWB	UPS A2 INPUT MODULE
UPS A OUTPUT SWITCHBOARD			
5		UPS A1 OUTPUT MODULE	UPS A OUTPUT SWB
6		UPS A2 OUTPUT MODULE	UPS A OUTPUT SWB
7		UPS A	GROUND FLOOR-SERVICE TECH ROOM
8		UPS A	GROUND FLOOR-SERVICE TECH ROOM
9		UPS A	GROUND FLOOR-AUDITORIUM AV RACK
10		UPS A	GROUND FLOOR-FCRs/MPR
11		UPS A	UPPER GROUND FLOOR-SERVICE TECH ROOM
12		UPS A	UPPER GROUND FLOOR-SERVICE TECH ROOM
13		UPS A	MEZZANINE-SERVICE TECH ROOM
14		UPS A	MEZZANINE-SERVICE TECH ROOM
15		UPS A	BASEMENT-SERVICE TECH ROOM
16		UPS A	BASEMENT-SERVICE TECH ROOM
17		UPS A	BASEMENT-SERVICE TECH ROOM
18		UPS A	BASEMENT-ER1
19		UPS A	GROUND FLOOR-ER2
20	BUS RISER 2000A	UPS A	UPS RISER A SUPPLY
21		UPS A	-CRACS TBC - MIGRATED TO SS
22	25 mm2 x 4 x 1c + CPC SWA	UPS A	DB-G-SECURITY
23	25 mm2 x 4 x 1c + CPC SWA	UPS A	DB-B-BMS1
24	25 mm2 x 4 x 1c + CPC SWA	UPS A	DB-B-BMS2
25	25 mm2 x 4 x 1c + CPC SWA	UPS A	DB-G-BMS1
26	25 mm2 x 4 x 1c + CPC SWA	UPS A	DB-UG-BMS1
27		UPS A	SPARE

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SERVICES SPECIFICATIONS AND WHERE APPLICABLE ALL OTHER DRAWINGS/SKETCHES AND SPECIFICATIONS THAT FORM PART OF THE CONTRACT FOR THE PROJECT.
2. ANY DISCREPANCY OR CONFLICT IS TO BE REFERRED TO WSPUK LTD.
3. THIS DRAWING SHALL NOT BE USED FOR CO-ORDINATION OR WORKING DRAWINGS.
4. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
5. NEUTRALS TO BE 100% RATED.

LEGEND

SYMBOL	KEY
M1	DIGITAL METER TYPE 1
M2	DIGITAL METER TYPE 2
ACB/MCCB	TYPE FRAME SIZE OVERLOAD/SETTING NUMBER OF POLES OPERATION
RPF PPR	RESTRICTED EARTH FAULT PHASE FAILURE RELAY
EI	ELECTRICAL INTERLOCK-BETWEEN MAIN INCOMING CIRCUIT BREAKERS AND BUS SECTION SWITCHES
MI AT	MECHANICAL INTERLOCK - ENCLOSURE ACCESS INTERLOCKED WITH HV AND LV CIRCUIT BREAKERS ANTI TAMPER SWITCH
EPO	EMERGENCY POWER OFF
Kn	CASTELL KEY INTERLOCK (n DENOTES KEY REFERENCE)

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SZ	STAGE F	NP	TA
01	25.09.2015	SZ	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES UPS A DISTRIBUTION SCHEMATIC

SCALE @ A1:	CHECKED:	APPROVED:
NTS	AL	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	SZ	CAD	NOV 2014

DRAWING No: 40SL-E-6206-WS

REV: 02

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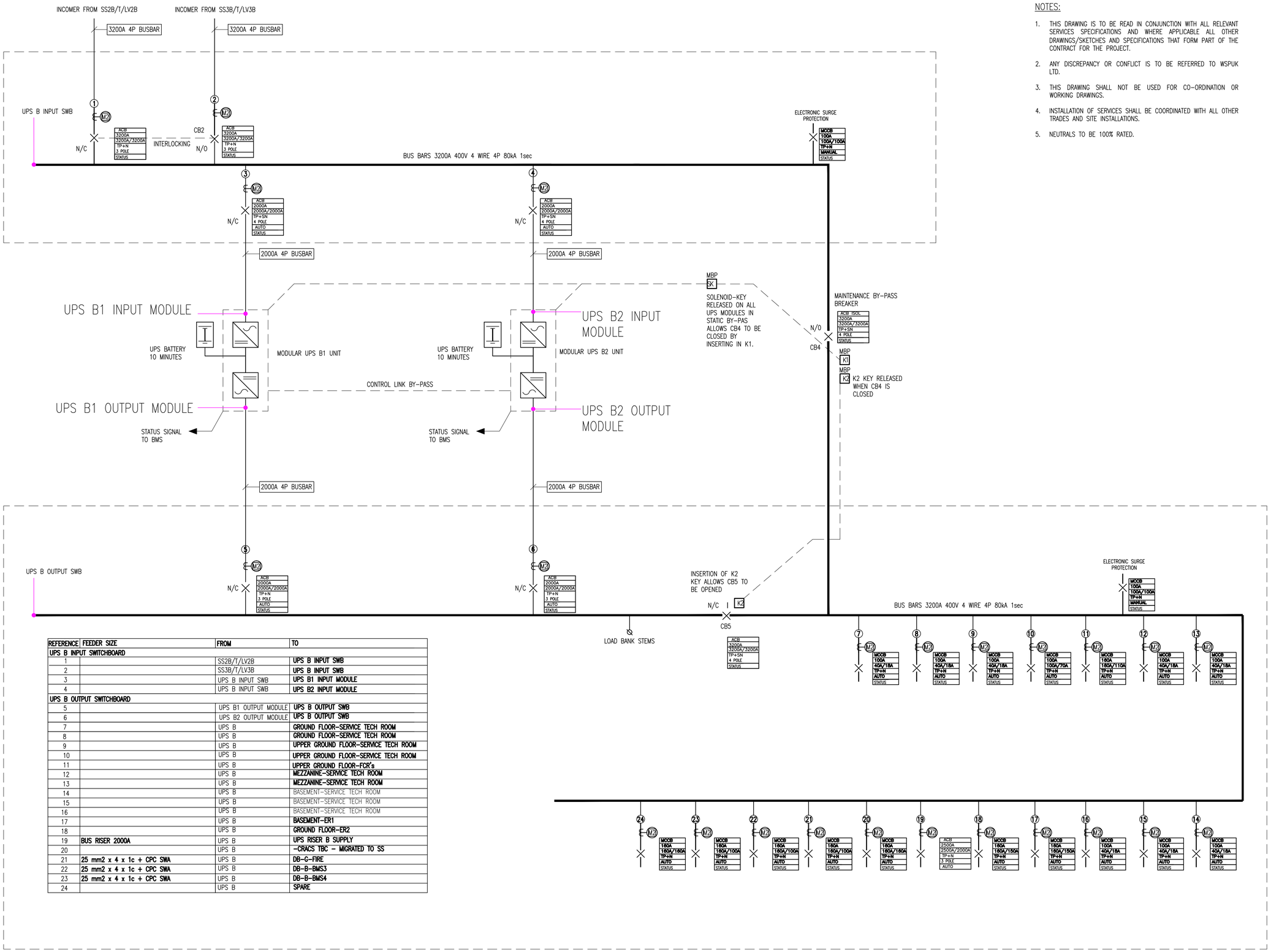

REFERENCE	FEEDER SIZE	FROM	TO
UPS B INPUT SWITCHBOARD			
1		SS2B/T/LV2B	UPS B INPUT SWB
2		SS3B/T/LV3B	UPS B INPUT SWB
3		UPS B INPUT SWB	UPS B1 INPUT MODULE
4		UPS B INPUT SWB	UPS B2 INPUT MODULE
UPS B OUTPUT SWITCHBOARD			
5		UPS B1 OUTPUT MODULE	UPS B OUTPUT SWB
6		UPS B2 OUTPUT MODULE	UPS B OUTPUT SWB
7		UPS B	GROUND FLOOR-SERVICE TECH ROOM
8		UPS B	GROUND FLOOR-SERVICE TECH ROOM
9		UPS B	UPPER GROUND FLOOR-SERVICE TECH ROOM
10		UPS B	UPPER GROUND FLOOR-SERVICE TECH ROOM
11		UPS B	UPPER GROUND FLOOR-FCR's
12		UPS B	MEZZANINE-SERVICE TECH ROOM
13		UPS B	MEZZANINE-SERVICE TECH ROOM
14		UPS B	BASEMENT-SERVICE TECH ROOM
15		UPS B	BASEMENT-SERVICE TECH ROOM
16		UPS B	BASEMENT-SERVICE TECH ROOM
17		UPS B	BASEMENT-ER1
18		UPS B	GROUND FLOOR-ER2
19	BUS RISER 2000A	UPS B	UPS RISER B SUPPLY
20		UPS B	-CRACS TBC - MIGRATED TO SS
21	25 mm2 x 4 x 1c + CPC SWA	UPS B	DB-G-FIRE
22	25 mm2 x 4 x 1c + CPC SWA	UPS B	DB-B-BMS3
23	25 mm2 x 4 x 1c + CPC SWA	UPS B	DB-B-BMS4
24		UPS B	SPARE

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SERVICES SPECIFICATIONS AND WHERE APPLICABLE ALL OTHER DRAWINGS/SKETCHES AND SPECIFICATIONS THAT FORM PART OF THE CONTRACT FOR THE PROJECT.
2. ANY DISCREPANCY OR CONFLICT IS TO BE REFERRED TO WSPUK LTD.
3. THIS DRAWING SHALL NOT BE USED FOR CO-ORDINATION OR WORKING DRAWINGS.
4. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
5. NEUTRALS TO BE 100% RATED.

LEGEND

SYMBOL	KEY
M1	DIGITAL METER TYPE 1
M2	DIGITAL METER TYPE 2
ACB/MCCB	TYPE FRAME SIZE OVERLOAD/SETTING NUMBER OF POLES OPERATION
REF PFR	RESTRICTED EARTH FAULT PHASE FAILURE RELAY
EI	ELECTRICAL INTERLOCK-BETWEEN MAIN INCOMING CIRCUIT BREAKERS AND BUS SECTION SWITCHES
MI AT	MECHANICAL INTERLOCK - ENCLOSURE ACCESS INTERLOCKED WITH HV AND LV CIRCUIT BREAKERS ANTI TAMPER SWITCH
EPO	EMERGENCY POWER OFF
KY	CASTELL KEY INTERLOCK (= DENOTES KEY REFERENCE)

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SZ	STAGE F	NP	TA
01	25.09.2015	SZ	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

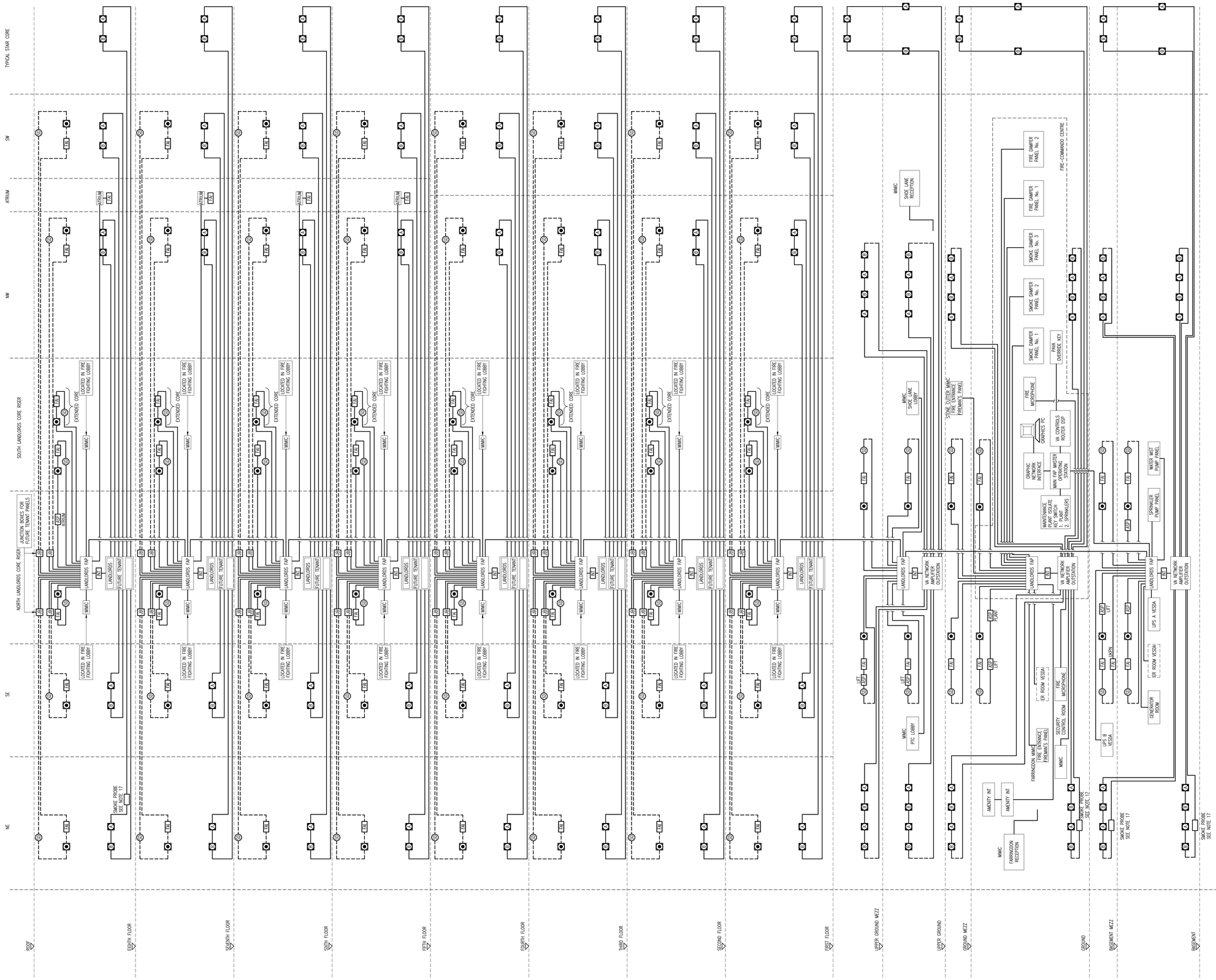
TITLE: ELECTRICAL SERVICES UPS B DISTRIBUTION SCHEMATIC

SCALE @ A1:	CHECKED:		APPROVED:
NTS	AL		TA
PROJECT No: 50200153	DESIGNED: SZ	DRAWN: CAD	DATE: NOV 2014

DRAWING No: 40SL-E-6207-WS

REV: 02

File name S:\CS LONDON\PROJECTS\50200\50200153 - PROJECT ARMADA\E DRAWING\SSELEC\WORKING\SL-E-6207 WS.DWG, printed on 29 September 2015 17:30:04, by Elsley, Andy



DO NOT SCALE

NOTES:

1. WITH THE EXCEPTION OF THE TENANT LOOP ISOLATION J8, J8'S SHALL NOT BE UTILISED FOR THE FIRE ALARM SYSTEM INSTALLATION.
2. WHERE MORE THAN 2 FIRE ALARM CABLES ARE RUN IN PARALLEL THE FIRE ALARM SYSTEM CABLING SHALL BE INSTALLED ON DEDICATED STAND ALONE HD REF GALVANISED TRAY. (NOTE THE FIRE ALARM, VOICE ALARM & FIRE PHONE SYSTEM CABLING MAY UTILISE THE SAME CONTAINMENT.
3. STEEL CABLE TIES & CLEATS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
4. FIRE ALARM CABLING SHALL CONFIRM TO THE REQUIREMENTS OF 'PH120' TO ENHANCED PERFORMANCE AS DETAILED IN BS 5839, E.G. FP+ SHALL BE ENCLOSED IN A RED SHEATH.
5. THIS DRAWING IS FOR DESIGN INTENT PURPOSES ONLY. THE FIRE ALARM SPECIALIST CONTRACTOR SHALL INCLUDE IN THEIR CONTRACT FOR EXACT QUANTITIES OF DEVICES & ACCESSORIES TO COMPLY WITH BS 5839 CAT L1 & THE REQUIREMENTS OF THE BUILDING FIRE STRATEGY.
6. FOR FINAL LOCATION OF DEVICES & ACCESSORIES REFER TO ARCHITECTS SETTING OUT &/OR ELEVATION DRAWINGS.
7. ALL J8'S TO LABELLED WITH MECHANICALLY FIXED TRAFFOLYTE LABLES STATING 'FIRE ALARM JUNCTION BOX.
8. ALL CONNECTORS WILL BE PERMANENTLY MECHANICALLY SECURED TO THE JUNCTION BOX.
9. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER WSP SPECIFICATIONS AND ASSOCIATED DRAWINGS.
10. FIRE/VOICE ALARM NETWORK CABLING TO BE ROUTED IN DIVERSE CABLE ROUTED FOR SYSTEM ROBUSTNESS.
11. PROPOSED MICROPHONES ARE TO BE BUILT INTO PANEL ENCLOSURE.
12. FIREMAN"S SWITCHES 1,2 & 3 SHALL FORM PART OF THE PANEL FACIA.
13. REFER TO DRAWING NO: WSP-0153-SC-600-XX-100 FOR ELECTRICAL SYMBOLS & LEGEND.
14. FIREMANS SWITCH 1 SHALL BE LINKED TO THE BASEMENT AHU MCC.
15. FIREMANS SWITCH 2 SHALL BE LINKED TO THE BASEMENT SMOKE VENTILATION MCC.
16. FIREMANS SWITCH 3 SHALL BE LINKED TO THE ROOF LEVEL STAIR SMOKE VENTILATION MCC.
17. FOR LOCATIONS OF SMOKE PROBES SEE MECHANICAL SERVICES SCHEMATICS AND LAYOUT DRAWINGS.

ASP ASPIRATING SMOKE PANEL

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SA	STAGE F	NP	TA
01	25.09.2015	SA	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES FIRE ALARM & PA/VA SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
NTS	NP	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	RB	CAD	SEP 2014

DRAWING No: 40SL-E-6208 WS REV: 02

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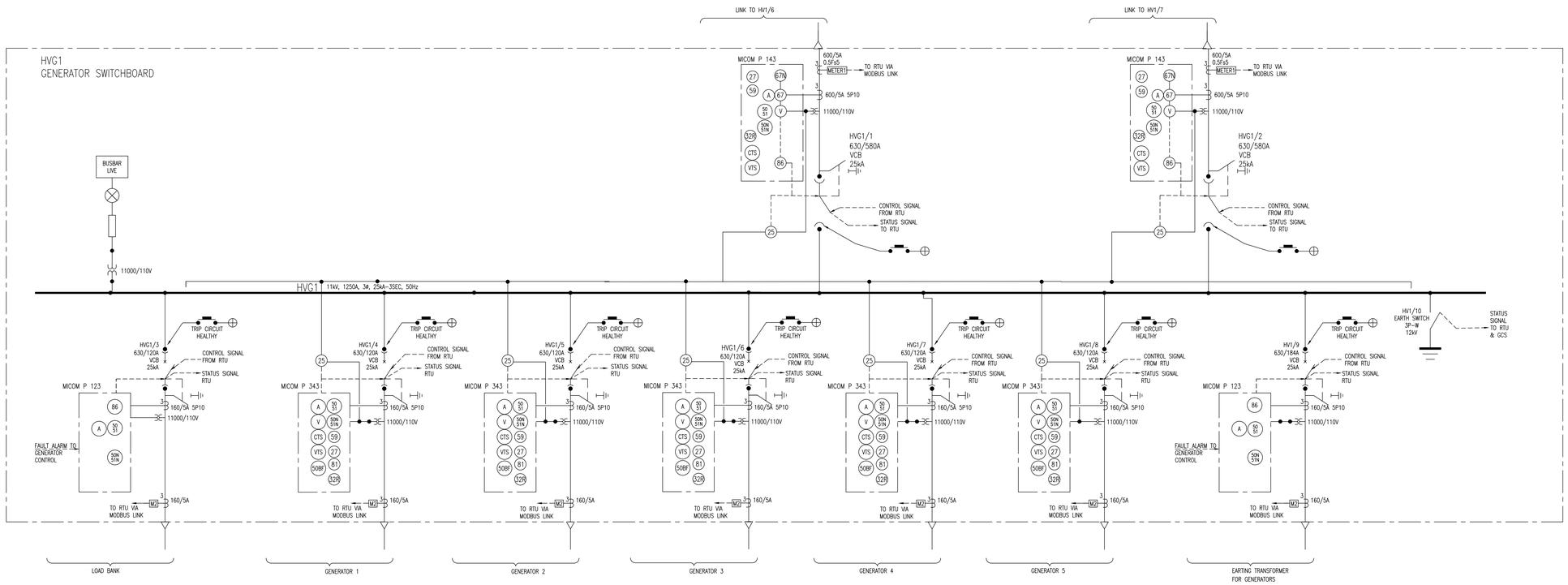

LEGEND:

- SHROUDED EMERGENCY PUSH BUTTON
- WITHDRAWABLE CIRCUIT BREAKER
- EARTHING CIRCUIT SWITCH
- VOLTAGE TRANSFORMER
- CURRENT TRANSFORMER
- CABLE CONNECTION
- A — CURRENT MEASUREMENT
- V — VOLTAGE MEASUREMENT
- kW — KILOWARR MEASUREMENT
- kVAr — kVAr MEASUREMENT
- pf — POWER FACTOR MEASUREMENT

ABBREVIATIONS

21	–	UNDER IMPEDANCE
24	–	OVER FLUXING
25	–	CHECK SYNCHRONISATION
27	–	UNDER VOLTAGE
38	–	BEARING OVER TEMPERATURE
40	–	LOSS OF FIELD
46	–	NEGATIVE PHASE SEQUENCE
32R	–	REVERSE POWER
32L	–	LOW FORWARD POWER
32O	–	OVER POWER
51V	–	VOLTAGE DEPENDANT OVERPOWER
50	–	OVERCURRENT INSTANTANEOUS
51	–	OVERCURRENT TIME DELAYED
CTS	–	CURRENT TRANSFORMER SUPERVISION
VTS	–	VOLTAGE TRANSFORMER SUPERVISION
59	–	OVER VOLTAGE
67	–	DIRECTIONAL OVERCURRENT
81	–	UNDER/OVER FREQUENCY
ISOL	–	ISOLATOR
WD	–	WITHDRAWABLE
MWS	–	MOTOR WOUND STORAGE
ST	–	SHUNT TRIP
SCC	–	SOLENOID CLOSING COIL
86	–	LOCK-OUT
RTD	–	RESISTIVE TEMPERATURE DEVICE
50N	–	RESIDUAL EARTH OVERCURRENT INSTANTANEOUS
51N	–	RESIDUAL EARTH OVERCURRENT TIME DELAYED
67N	–	DIRECTIONAL RESIDUAL EARTH OVERCURRENT
KSMA	–	KEY SWITCH MANUAL/AUTO
87	–	DIFFERENTIAL PROTECTION

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SA	STAGE F	NP	TA
01	25.09.2015	SA	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES
HV GENERATOR SYSTEM
SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
N.T.S.	AL	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	JCG	CAD	NOV 2014

DRAWING No: 40SL-E-6209-WS

REV: 02

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DO NOT SCALE

NOTES

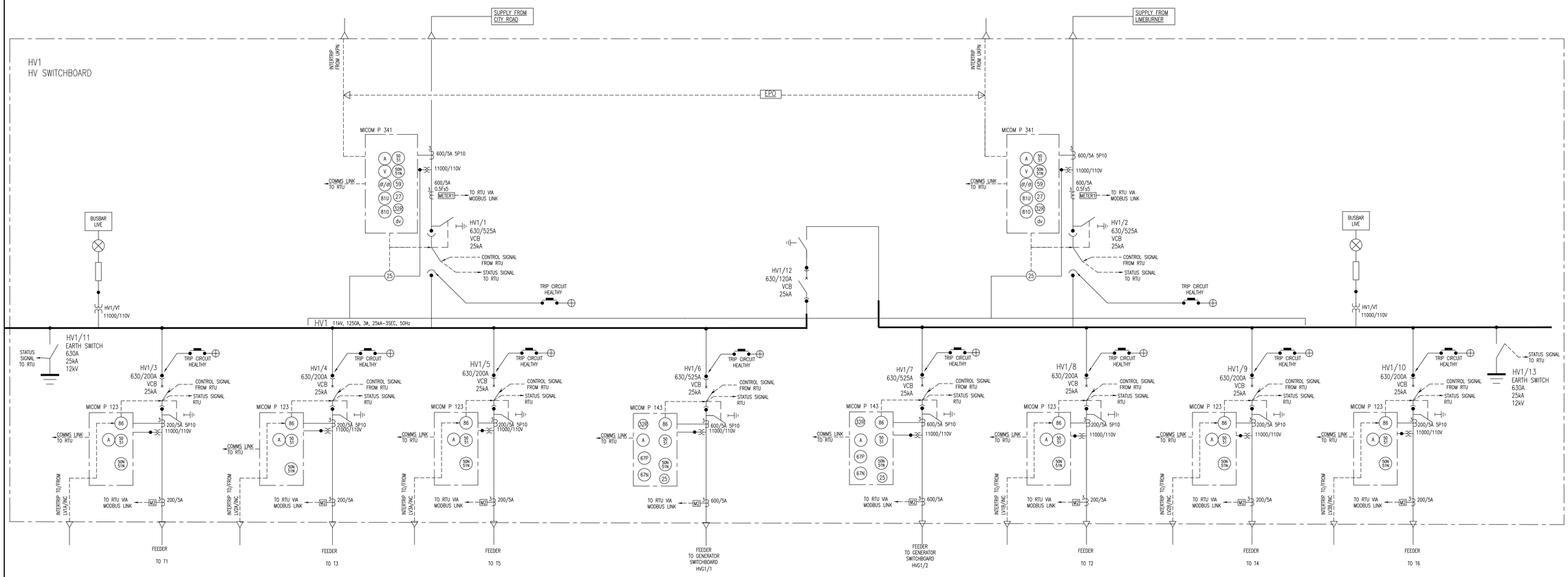
1. ALL RELAYS TO HAVE TRIP CIRCUIT SUPERVISION FACILITY.
2. ALL VCB'S TO HAVE LOCAL/REMOTE SWITCH.INTERLOCKS AND PROCEDURE FOR EARTHING OF BUS BARS TO BE IMPLEMENTED.
3. INTERLOCKS AND PROCEDURE FOR EARTHING OF BUS BARS TO BE IMPLEMENTED.
4. FIVE LMB VTS TO BE PROVIDED FOR DIRECTIONAL EARTH FAULT PROTECTION.
5. ALL RELAYS TO HAVE DEDICATED MMLG TEST BLOCK.
6. CABLES INTO BREAKERS VIA TOP ENTRY.
7. EPO BUTTON TO ISOLATE INCOMER BREAKERS TO BE LOCATED IN THE PLANT ROOM NEAR THE ACCESS DOOR. EPO BUTTON TO INTERTRIP UK POWER NETWORKS SUPPLY.

LEGEND:

- SHROUDED EMERGENCY PUSH BUTTON
- WITHDRAWABLE CIRCUIT BREAKER
- EARTHING CIRCUIT SWITCH
- VOLTAGE TRANSFORMER
- CURRENT TRANSFORMER
- CABLE CONNECTION
- (A) CURRENT MEASUREMENT
- (V) VOLTAGE MEASUREMENT
- (kW) KILOWARR MEASUREMENT
- (kVAr) kVAr MEASUREMENT
- (pf) POWER FACTOR MEASUREMENT

ABBREVIATIONS

21	–	UNDER IMPEDANCE
24	–	OVER FLUXING
25	–	CHECK SYNCHRONISATION
27	–	UNDER VOLTAGE
38	–	BEARING OVER TEMPERATURE
40	–	LOSS OF FIELD
46	–	NEGATIVE PHASE SEQUENCE
32R	–	REVERSE POWER
32L	–	LOW FORWARD POWER
320	–	OVER POWER
51V	–	VOLTAGE DEPENDANT OVERPOWER
50	–	OVERCURRENT INSTANTANEOUS
51	–	OVERCURRENT TIME DELAYED
CTS	–	CURRENT TRANSFORMER SUPERVISION
VTS	–	VOLTAGE TRANSFORMER SUPERVISION
59	–	OVER VOLTAGE
67	–	DIRECTIONAL OVERCURRENT
81O	–	OVER FREQUENCY
81U	–	UNDER FREQUENCY
ISOL	–	ISOLATOR
WD	–	WITHDRAWABLE
MWS	–	MOTOR WOUND STORAGE
ST	–	SHUNT TRIP
SCC	–	SOLENOID CLOSING COIL
86	–	LOCK–OUT
RTD	–	RESISTIVE TEMPERATURE DEVICE
50N	–	RESIDUAL EARTH OVERCURRENT INSTANTANEOUS
51N	–	RESIDUAL EARTH OVERCURRENT TIME DELAYED
67N	–	DIRECTIONAL RESIDUAL EARTH OVERCURRENT
KSMA	–	KEY SWITCH MANUAL/AUTO
87	–	DIFFERENTIAL PROTECTION
32R	–	POWER
dv	–	VOLTAGE VECTOR SHIFT
df/dt	–	RATE OF CHANGE OF FREQUENCY



REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SA	STAGE F	NF	TA
01	25.09.2015	SA	STAGE F	NF	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES HV DISTRIBUTION SCHEMATIC

SCALE @ A0:	CHECKED:		APPROVED:
N.T.S.	AL		TA
PROJECT No: 50200153	DESIGNED: JCG	DRAWN: CAD	DATE: NOV 2014

DRAWING No: 40SL-E-6210-WS

REV: 02

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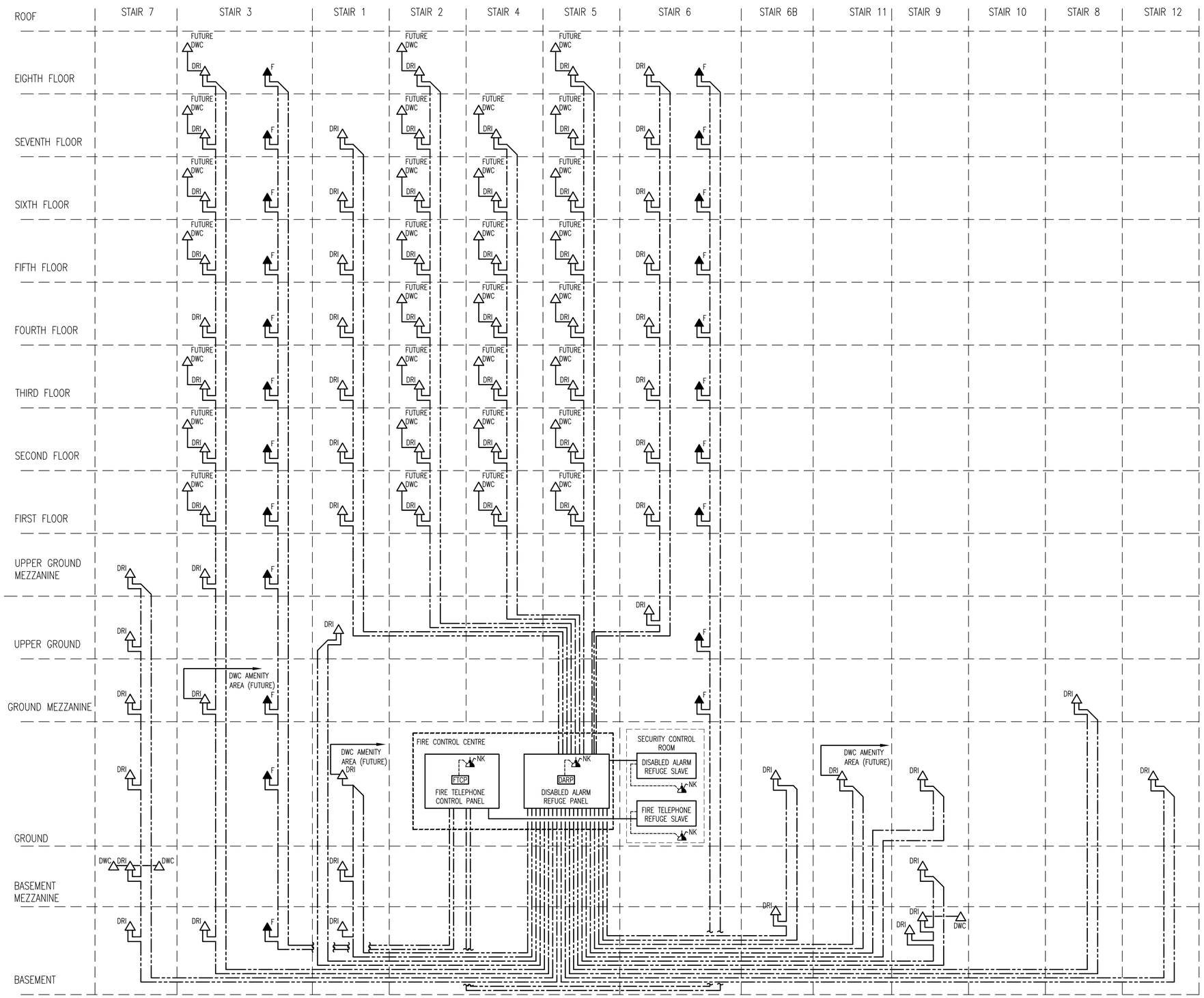
File name C:\DOCUMENTS\PROJECTS\50200153\01.0 - PROJECT MANAGE\DRAWINGS\ELECTRICAL\40SL-E-6210-WS.DWG, printed on 29 September 2015 17:09:16 by Stefan Kelly



DO NOT SCALE

NOTES:

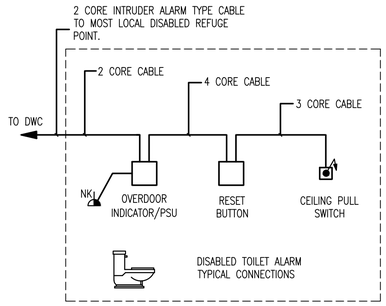
1. THIS DRAWINGS IS TO BE READ IN CONJUNCTION WITH ALL MECHANICAL, ELECTRICAL & PUBLIC HEALTH DRAWINGS FOR THIS CONTRACT.
2. ALL ELECTRICAL SERVICES WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE ELECTRICAL ENGINEERING.
3. FOR LEGEND DETAILS REFER TO DWG. NO. WSP-0153-SC-600-XX-100

LEGEND

DRI — DISABLED REFUGE ALARM

DWC — DISABLED PERSON'S W.C. ALARM

F — FIRE TELEPHONE



REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	SA	STAGE F	NP	TA
01	25.09.2015	SA	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES FIRE TELEPHONE, REFUGE ALARM & DISABLED TOILET SCHEMATIC

SCALE @ A1:	CHECKED:		APPROVED:
NTS	NP		TA
PROJECT No: 50200153	DESIGNED: RB	DRAWN: CAD	DATE: SEP 2014

DRAWING No: 40SL-E-6211 WS — REV: 02

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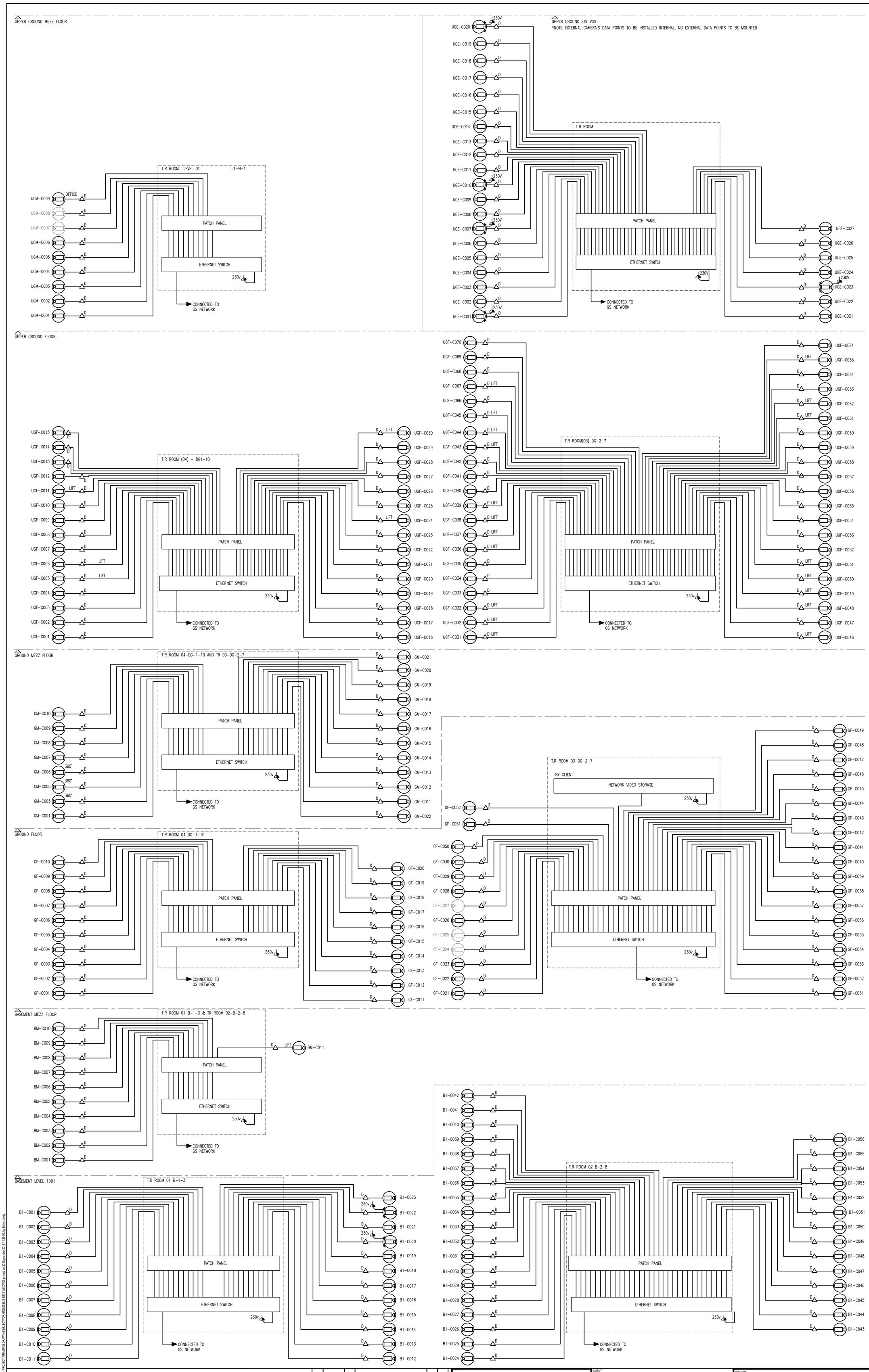

DO NOT SCALE

GENERAL HEALTH & SAFETY NOTES:

1. ALL WORKS ARE TO BE CARRIED OUT BY A CONTRACTOR COMPETENT TO UNDERTAKE THE TYPE OF CONSTRUCTION WORKS INDICATED ON THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RISK REGISTER PRODUCED FOR INCLUSION IN THE HEALTH & SAFETY PLAN.
3. THE HAZARDS NOTED ARE IN ADDITION TO THE NORMAL HAZARDS & RISKS FACED BY A COMPETENT CONTRACTOR WHEN DEALING WITH THE TYPE OF WORKS DETAILED ON THIS DRAWING.

KEY TO HEALTH AND SAFETY SYMBOLS

- INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION.
- INDICATES A RESIDUAL RISK FOR INFORMATION.
- INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.
- INDICATES A RESIDUAL RISK AS A WARNING.

NOTE:

1. POWER SUPPLY ARRANGEMENTS TO BE AS PER THE SPECIFIED MANUFACTURERS RECOMMENDATIONS.
2. ALL DATA OUTLETS, STRUCTURED CABLING, PATCH PANELS AND POE ETHERNET SWITCHES ARE TO BE PROVIDED BY THE NETWORK INFRASTRUCTURE AND STRUCTURED CABLING INSTALLER.
3. LEVELS 1 – 8 ARE GREYED OUT TO REFLECT FUTURE WORKS PACKAGE

LEGEND:

- HIGH LEVEL CONTAINMENT
- ACCESS CONTROL SWIPE CARD READER
  - (A) EXTERNAL DOORS OR FIRE EXITS
  - (B) EMERGENCY EXIT MONITORED ONLY
  - (C) TECHNOLOGY ROOM
  - (D) PLANT ROOMS
  - (E) OTHER ROOMS
- CONTROLLER — PW6000 AND LOCK PSU LOCATION
- ADD CONTAINMENT LINK TO PRIMARY. (ROUTE TO BE CONFIRMED BY MEP)
- AUDIO VIDEO INTERCOM DOOR STATION
- DOOR CONTACT
- 360 DEGREE DUAL TECH
- FIXED INTERNAL VSS CAMERA
- FIXED EXTERNAL VSS CAMERA
- PTZ EXTERNAL VSS CAMERA
- 360 DEGREE PANORAMIC VSS CAMERA
- IT OUTLET
- SWITCHED FUSED CONNECTION UNIT
- DISABLED TOILET ALARM
- PANIC ACTION BUTTON

REV	DATE	BY	DESCRIPTION	CHK	APD
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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES SECURITY VSS SCHEMATIC SHEET 1 OF 2

SCALE @ A0:	CHECKED:		APPROVED:
NTS	AL		TA
PROJECT No: 50200153	DESIGNED: DW	DRAWN: CAD	DATE: JULY 2015
DRAWING No: 40SL-E-6212-WS			REV: 01

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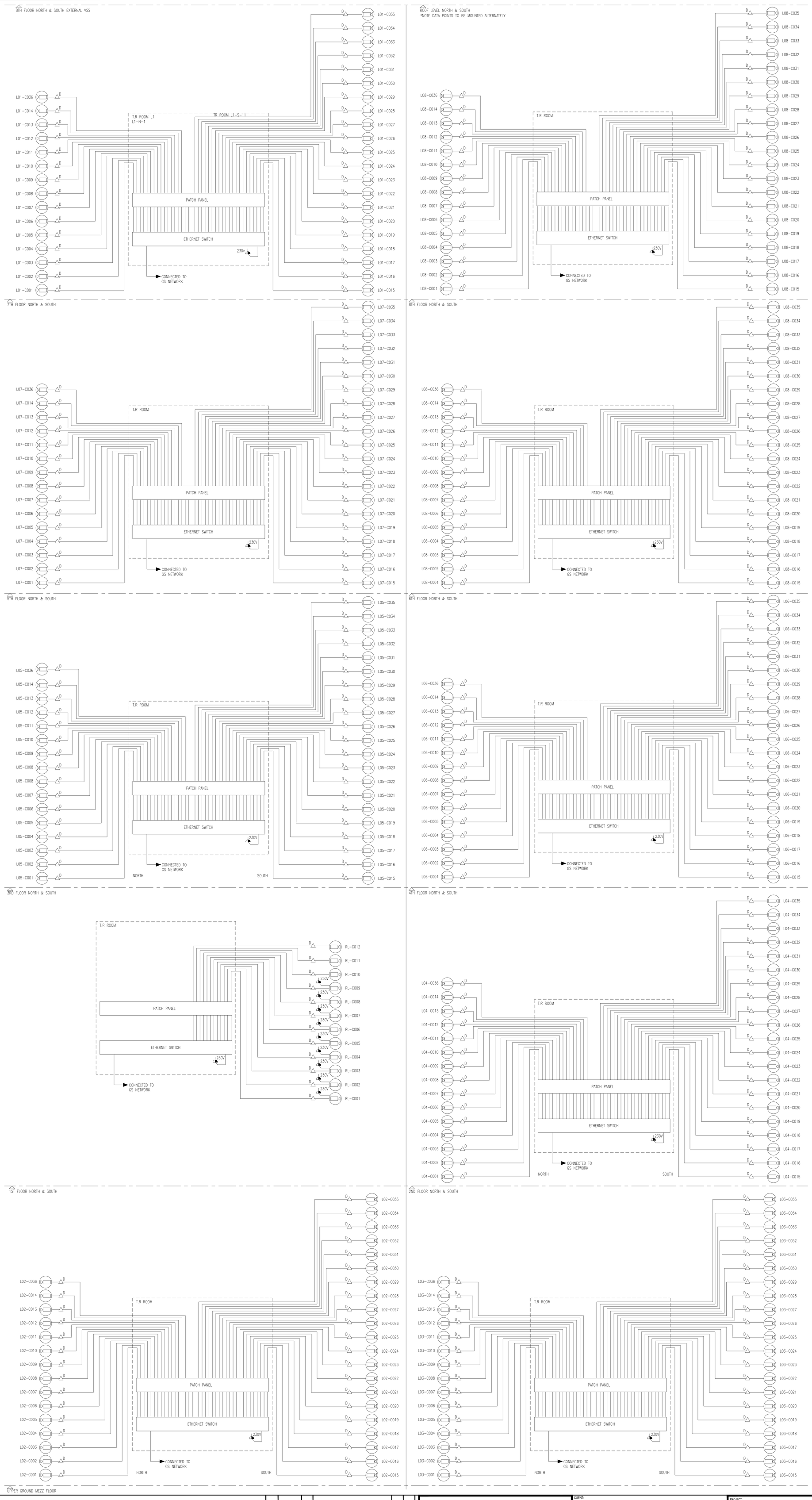

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GENERAL HEALTH & SAFETY NOTES:

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2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RISK REGISTER PRODUCED FOR INCLUSION IN THE HEALTH & SAFETY PLAN.
3. THE HAZARDS NOTED ARE IN ADDITION TO THE NORMAL HAZARDS & RISKS FACED BY A COMPETENT CONTRACTOR WHEN DEALING WITH THE TYPE OF WORKS DETAILED ON THIS DRAWING.

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- INDICATES A RESIDUAL RISK FOR INFORMATION.
- INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.
- INDICATES A RESIDUAL RISK AS A WARNING.

NOTE:

1. POWER SUPPLY ARRANGEMENTS TO BE AS PER THE SPECIFIED MANUFACTURERS RECOMMENDATIONS.
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LEGEND:

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- ACCESS CONTROL SWIPE CARD READER
  - (A) EXTERNAL DOORS OR FIRE EXITS
  - (B) EMERGENCY EXIT MONITORED ONLY
  - (C) TECHNOLOGY ROOM
  - (D) PLANT ROOMS
  - (E) OTHER ROOMS
- CONTROLLER — PW6000 AND LOCK PSU LOCATION
- ADD CONTAINMENT LINK TO PRIMARY. (ROUTE TO BE CONFIRMED BY MEP)
- V — AUDIO VIDEO INTERCOM DOOR STATION
- DC — DOOR CONTACT
- PD — 360 DEGREE DUAL TECH
- FIXED INTERNAL VSS CAMERA
- E — FIXED EXTERNAL VSS CAMERA
- E — PTZ EXTERNAL VSS CAMERA
- 360 DEGREE PANORAMIC VSS CAMERA
- D — IT OUTLET
- SWITCHED FUSED CONNECTION UNIT
- DISABLED TOILET ALARM
- PAB — PANIC ACTION BUTTON

REV	DATE	BY	DESCRIPTION	CHK	APD
01	25.09.2015	DW	STAGE F	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES SECURITY VSS SCHEMATIC SHEET 2 OF 2

SCALE @ A0:	CHECKED:		APPROVED:
NTS	AL		TA
PROJECT No: 50200153	DESIGNED: DW	DRAWN: CAD	DATE: JULY 2015

DRAWING No: 40SL-E-6214-WS — REV: 01

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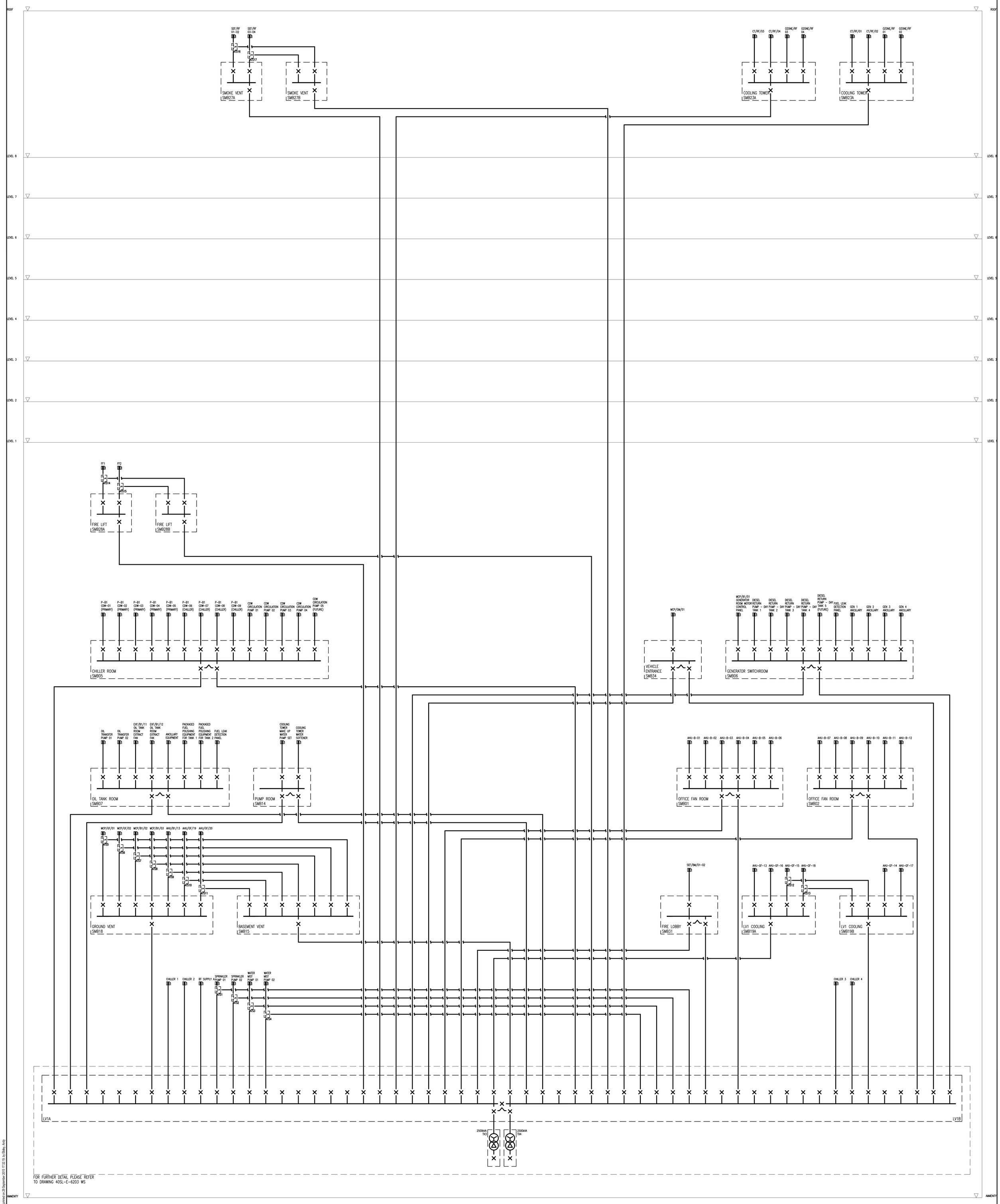

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02	25.09.2015	DW	STAGE F	NP	TA
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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES
LIFE SAFETY
SCHEMATIC

SCALE @ A0:	CHECKED:		APPROVED:
NTS	AL		TA
PROJECT No: 50200153	DESIGNED: TC	DRAWN: CAD	DATE: JULY 2015

DRAWING No: 40SL-E-6229-WS

REV: 02

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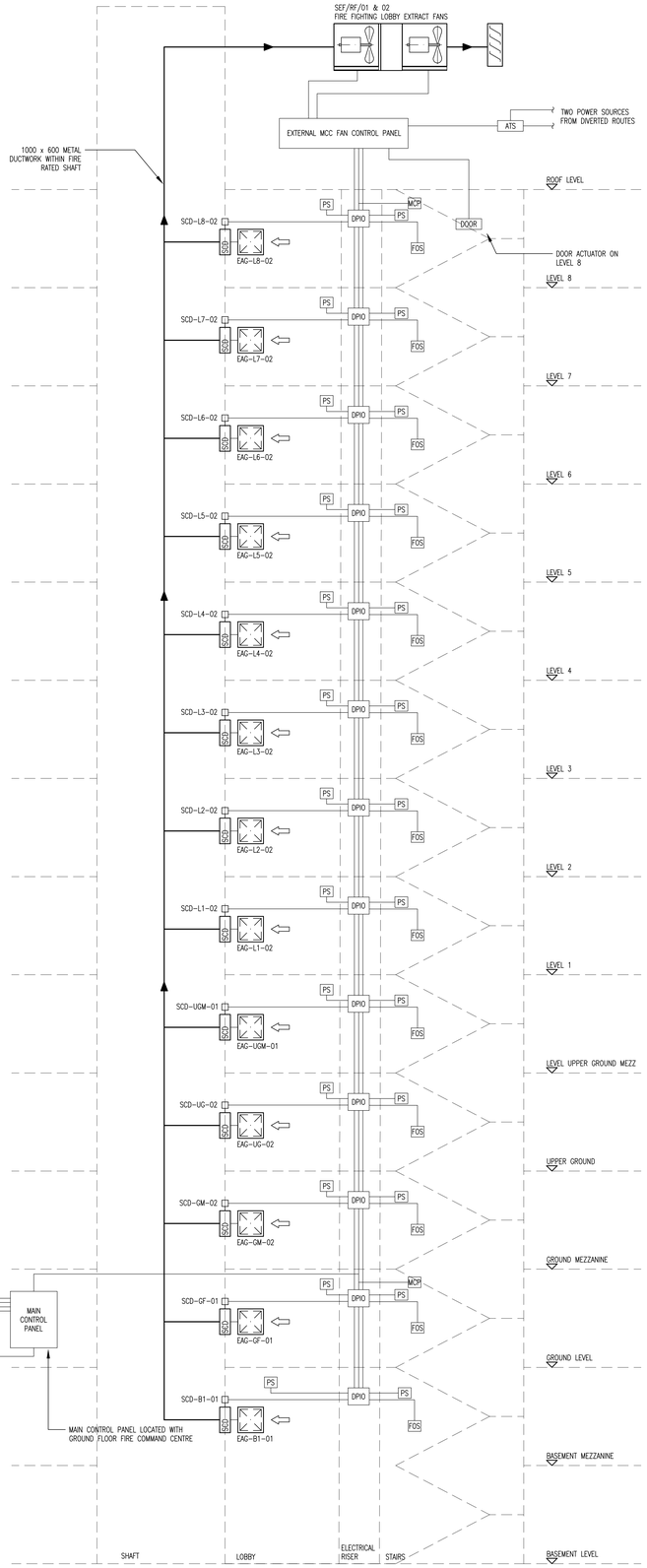
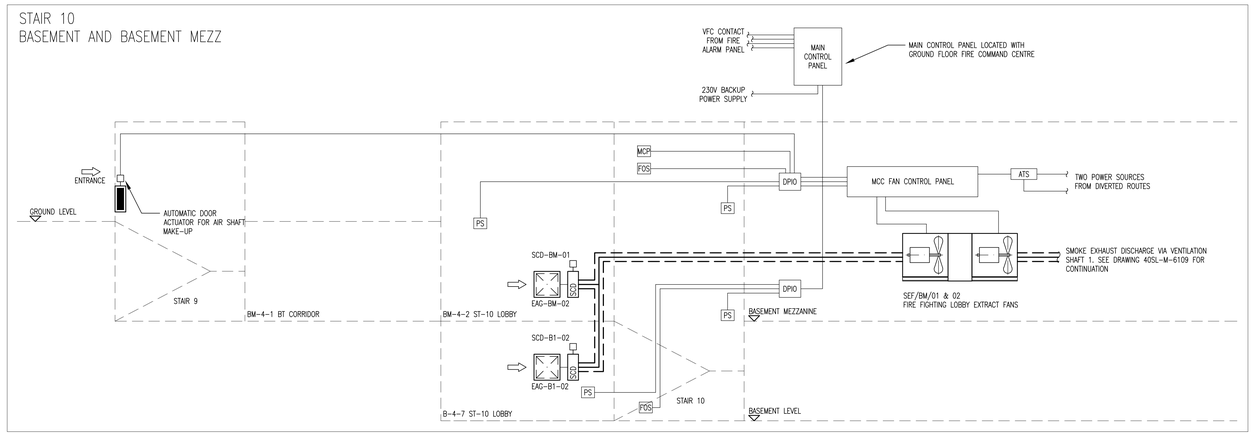


STAIR 3 NORTH CORE
BASEMENT – LEVEL 8

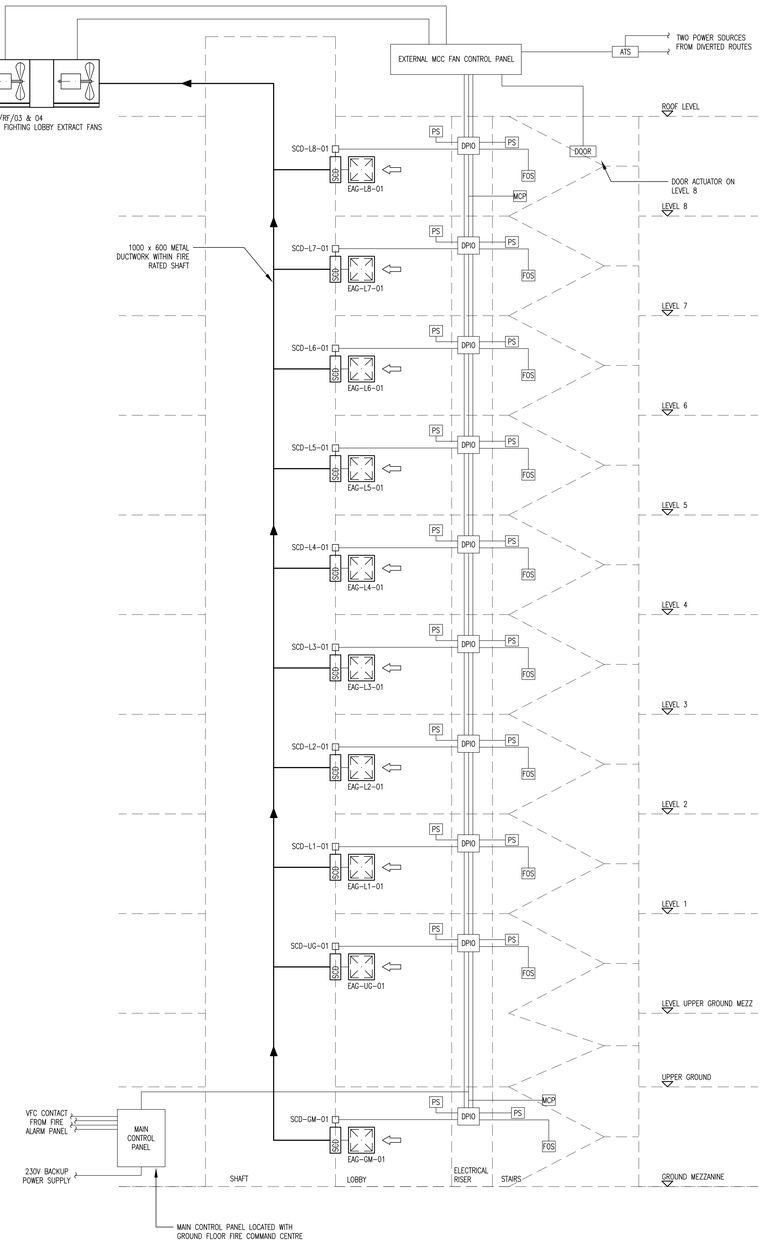


FOS FIREMAN'S OVERRIDE SWITCH
MCP MANUAL CALL POINT
PS PRESSURE SENSOR
ATS AUTOMATIC TRANSFER SWITCH
FOS FIREMEN OVERRIDE SWITCH

DO NOT SCALE

NOTES:

1. ALL DIMENSIONS WHERE SHOWN ARE IN MILLIMETERS (mm) UNLESS STATED OTHERWISE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS AND STRUCTURAL ENGINEERS DRAWINGS.
3. THIS DRAWING HAS BEEN PRODUCED FOR DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR CO-ORDINATION OR WORKING DRAWINGS PURPOSES.
4. BRACKETS & DUCT MOUNTING LOCATIONS & REQUIREMENTS ARE NOT SHOWN, THESE ARE TO BE DETERMINED BY TRADE CONTRACTOR & APPROVED PRIOR TO INSTALLATION.
5. ALL PENETRATIONS OF FIRE COMPARTMENTATION ARE TO BE SUITABLY TREATED AND SEALED TO MAINTAIN INTEGRITY.
6. ALL DUCTWORK TO BE INSTALLED IN ACCORDANCE TO HVAC DW144. DUCTWORK TO BE CLASSIFICATION B.
7. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
8. ALL SUPPLY DUCTWORK TO BE FITTED WITH INSULATION IN ACCORDANCE WITH SPECIFICATION AND BRITISH STANDARDS BS 5422.
9. ALL EXTERNAL DUCTWORK TO BE INSULATED IN RIGID MINERAL FIBRE OR PHENOLIC FOAM SLABS AND FINISHED IN A WEATHER PROOF PROTECTIVE JACKETING SYSTEM.
10. SENSORS & DETECTORS FOR BMS NOT INDICATED, LOCATIONS TO BE AGREED WITH BMS SPECIALIST CONTRACTOR.
11. ACCESS PANELS ARE TO BE INCORPORATED IN ACCORDANCE WITH DW144 BUT HAVE NOT BEEN SHOWN ON THE SCHEMATIC.
12. REFER TO WSP DETAIL SHEETS FOR SUPPORTING DETAILS / AHU TYPE CLASSIFICATIONS FOR RELEVANT SUPPORTING INFORMATION FOR THIS DRAWING.
13. THE THREE FIRE FIGHTING LOBBY EXTRACTION SYSTEMS ARE SPECIALIST CONTRACTOR DESIGN ITEMS. SPECIALIST CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, COORDINATION AND INSTALLATION OF THE ENTIRE SYSTEM.



STAIR 6 SOUTH CORE
GROUND MEZZ–LEVEL 8

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES
FIRE FIGHTING / LOBBY
VENT SCHEMATIC

SCALE @ A0:	CHECKED:		APPROVED:
N.T.S	JW		TA
PROJECT No: 50200153	DESIGNED: HB	DRAWN: CAD	DATE: NOV 2014

DRAWING No: 40SL-M-6104-WS
REV: 02

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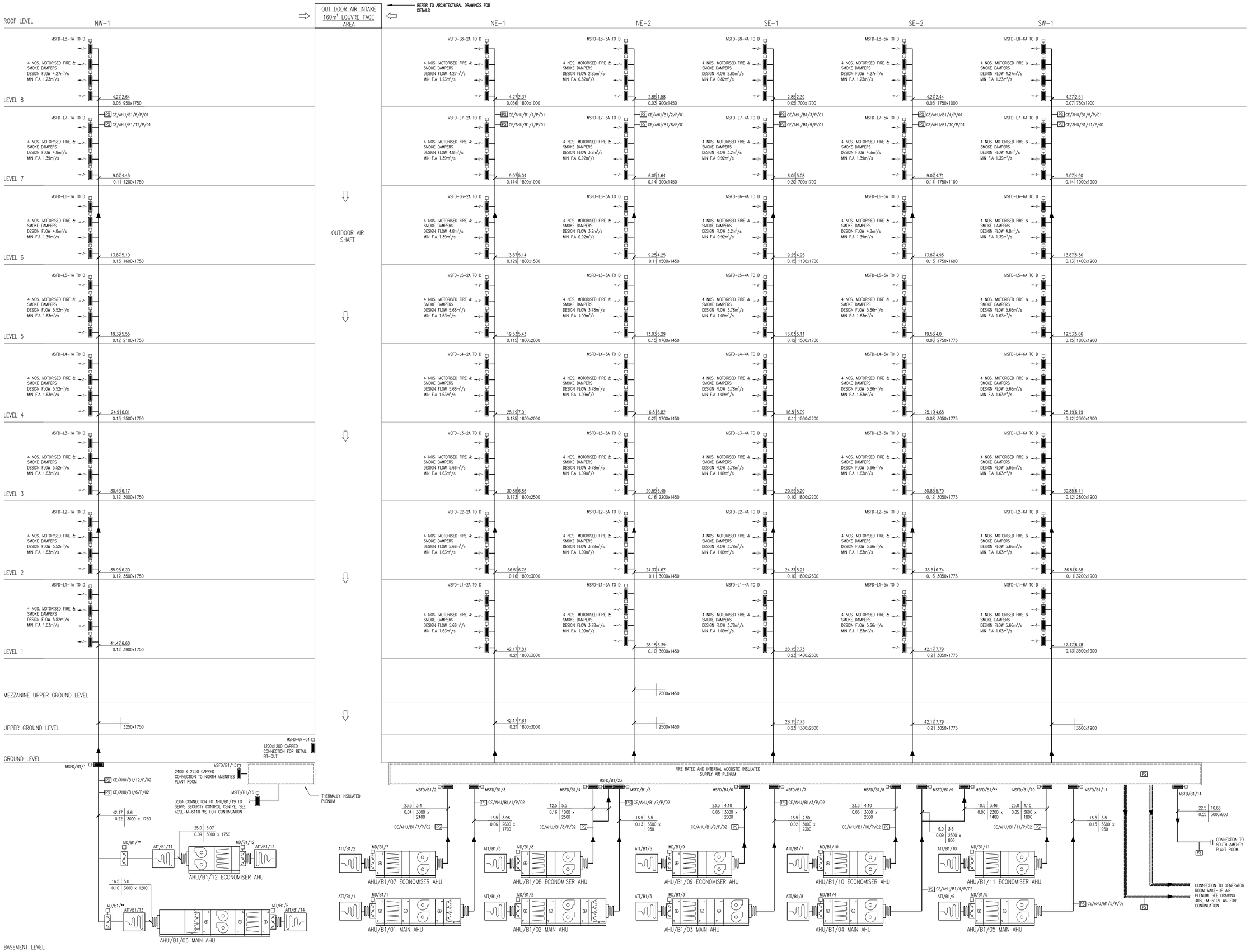

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4. BRACKETS & DUCT MOUNTING LOCATIONS & REQUIREMENTS ARE NOT SHOWN, THESE ARE TO BE DETERMINED BY TRADE CONTRACTOR & APPROVED PRIOR TO INSTALLATION.
5. ALL PENETRATIONS OF FIRE COMPARTMENTATION ARE TO BE SUITABLY TREATED AND SEALED TO MAINTAIN INTEGRITY.
6. ALL DUCTWORK TO BE INSTALLED IN ACCORDANCE TO HVAC DW144. DUCTWORK TO BE CLASSIFICATION B.
7. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
8. ALL SUPPLY DUCTWORK TO BE FITTED WITH INSULATION IN ACCORDANCE WITH SPECIFICATION AND BRITISH STANDARDS BS 5422.
9. ALL EXTERNAL DUCTWORK TO BE INSULATED IN RIGID MINERAL FIBRE OR PHENOLIC FOAM SLABS AND FINISHED IN A WEATHER PROOF PROTECTIVE JACKETING SYSTEM.
10. SENSORS & DETECTORS FOR BMS NOT INDICATED, LOCATIONS TO BE AGREED WITH BMS SPECIALIST CONTRACTOR.
11. ACCESS PANELS ARE TO BE INCORPORATED IN ACCORDANCE WITH DW144 BUT HAVE NOT BEEN SHOWN ON THE SCHEMATIC.
12. REFER TO WSP DETAIL SHEETS FOR SUPPORTING DETAILS / AHU TYPE CLASSIFICATIONS FOR RELEVANT SUPPORTING INFORMATION FOR THIS DRAWING.
13. AIR FLOW INDICATED 1 RELATES TO THE MAXIMUM FREE COOLING MODE OF OPERATION. UNDER 'MINIMUM FRESH AIR OPERATION' ONLY THE FRESH AIR AHU'S WILL RUN, WITH A CORRESPONDING REDUCTION IN FLOW RATE.
14. UNDER SMOKE CLEARANCE CONDITIONS, THE OFFICE EXTRACT FANS (40SL-M-6106 WS) WILL BE ENABLED TO PROVIDE VENTILATION AT A MINIMUM OF 6ACH/HR TO ONE FLOOR ONLY. FOR BELOW GROUND AREAS 10ACH/HR PER ROOM VIA DEDICATED HOT SMOKE CLEARANCE EXTRACT SYSTEM.
15. REFER TO BMS SPECIFICATION FOR PLANT MOUNTED BMS AND CONTROL DEVICES.
16. DUCT SIZES QUOTED ARE THE EXTERNAL DUCT SIZES. DUCTWORK IS TO BE INTERNALLY ACOUSTICALLY LINED, HENCE THE ACTUAL INTERNAL DUCT SIZE IS 100mm LESS IN WIDTH AND DEPTH THAN QUOTED.
17. HUMIDIFIERS SHOWN IN AHU-B1-01, 02 AND 06 ARE SPACE PROVISIONS ONLY FOR FUTURE INSTALLATION.
18. FLOOR MOTORISED SMOKE AND FIRE DAMPER SHALL INCLUDED PERFORATED PLATE AT OUTLET TO ACHEVE APPROXIMATELY 20Pa PRESSURE DROP WHEN AT FULLY OPENED POSITION WHEN UNDER DESIGN FLOW RATE.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES OFFICE SUPPLY AIR VENTILATION SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
N.T.S	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	NOV 2014

DRAWING No: 40SL-M-6105-WS

REV: 02

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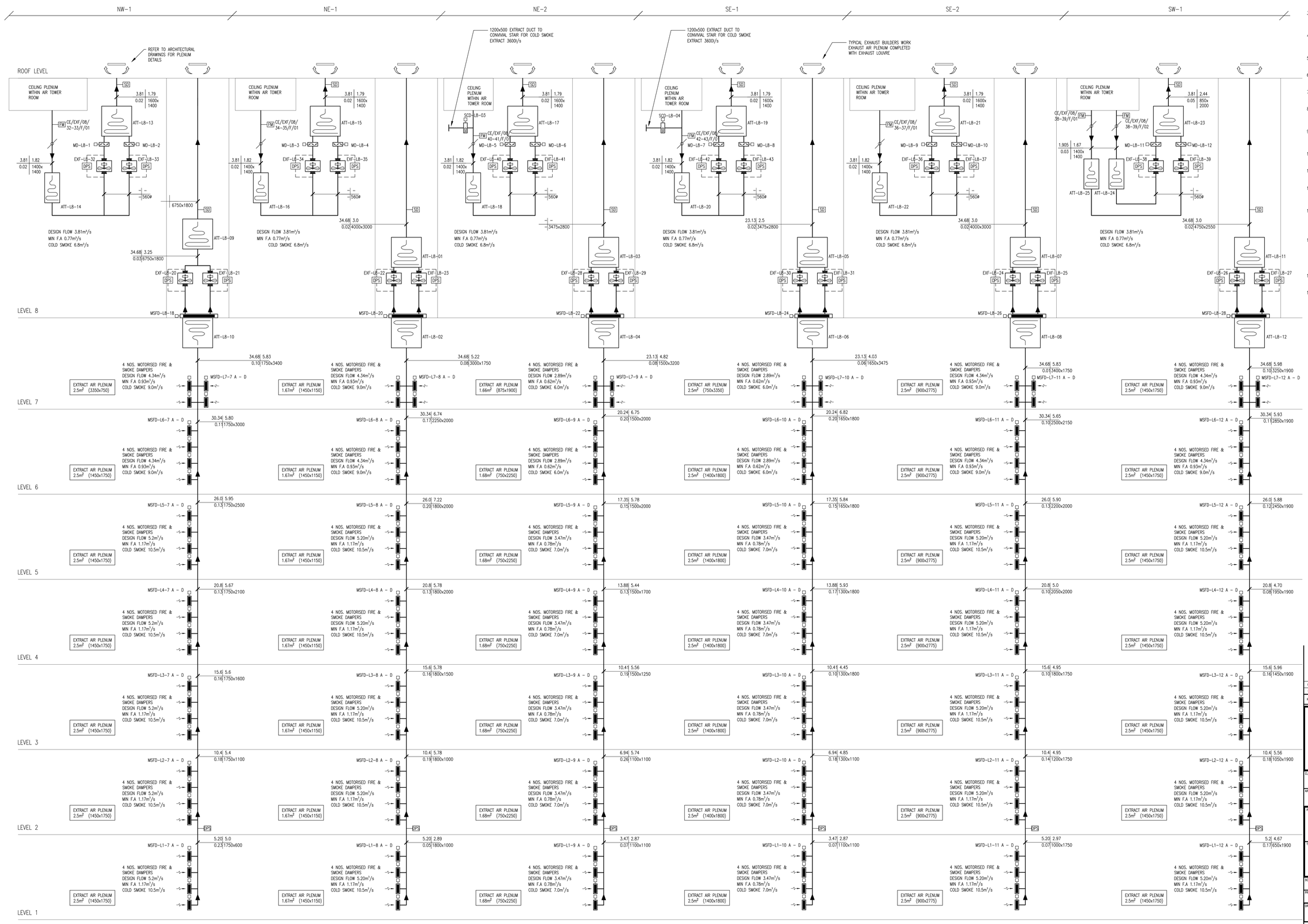

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14. UNDER SMOKE CLEARANCE CONDITIONS, THE OFFICE EXTRACT FANS (VENTILATION SHEET 3) WILL BE ENABLED TO PROVIDE VENTILATION AT A MINIMUM OF 6ACH/HR TO ONE FLOOR ONLY. FOR BELOW GROUND AREAS 10ACH/HR PER ROOM VIA DEDICATED HOT SMOKE CLEARANCE EXTRACT SYSTEM.
15. REFER TO BMS SPECIFICATION FOR PLANT MOUNTED BMS AND CONTROL DEVICES.
16. ALL EXTRACT FANS WITHIN LEVEL 8 AIR TOWER ROOMS ARE REQUIRED BE HOUSED WITHIN ACOUSTIC HOUSING THE VIBRATION ISOLATED WITHIN.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES OFFICE EXTRACT AIR VENTILATION SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
N.T.S	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	NOV 2014

DRAWING No: 40SL-M-6106-WS

REV: 02

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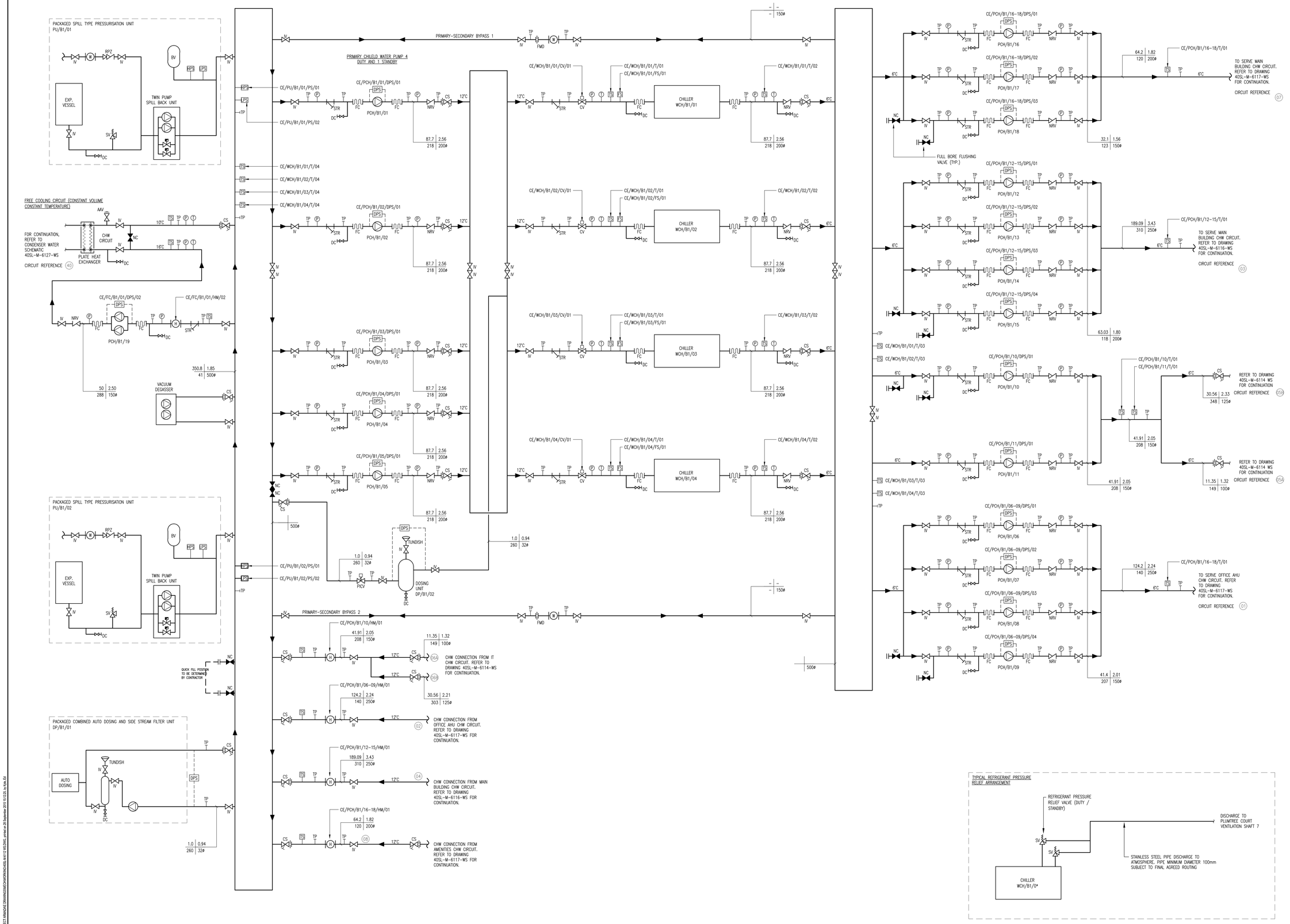
File name: S:\GS-LONDON\PROJECTS\50200153\CAD\ PROJECT AREA\CAE DRAWINGS\MECHANICAL\M-6106.DWG, plotted on 28 September 2015 15:12:07 by Kirk, Ed.

DO NOT SCALE



NOTES:

1. ALL DIMENSIONS WHERE SHOWN ARE IN MILLIMETERS (mm) UNLESS STATED OTHERWISE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS AND STRUCTURAL ENGINEERS DRAWINGS.
3. THIS DRAWING HAS BEEN PRODUCED FOR DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR CO-ORDINATION OR WORKING DRAWINGS PURPOSES.
4. EXPANSION / ANCHORING LOCATION & REQUIREMENTS ARE NOT SHOWN, THESE ARE TO BE DETERMINED BY TRADE CONTRACTOR & APPROVED PRIOR TO INSTALLATION.
5. ALL HIGH POINTS ON PIPEWORK SHALL BE VENTED, AND LOW POINTS TO HAVE DRAIN COCKS.
6. THE CONTRACTOR MUST ENSURE THAT ALL PIPEWORK CIRCUITS INCORPORATE SUITABLE FLUSHING & COMMISSIONING VALVE ARRANGEMENTS TO FACILITATE PHASED INSTALLATION.
7. ALL FLOW AND RETURN PIPEWORK BRANCHES SHALL BE PROVIDED WITH IV's AND DRV's.
8. ALL PENETRATIONS OF FIRE COMPARTMENTATION ARE TO BE SUITABLY TREATED AND SEALED TO MAINTAIN INTEGRITY.
9. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
10. ALL PIPEWORK TO BE FITTED WITH INSULATION IN ACCORDANCE WITH SPECIFICATION AND BRITISH STANDARDS BS 5422.
11. SENSORS, AND DETECTORS FOR BMS NOT INDICATED. LOCATIONS TO BE AGREED WITH BMS SPECIALIST CONTRACTOR.
12. CONDENSATE PIPEWORK FROM TERMINAL UNITS IS NOT SHOWN. THIS IS TO BE ROUTED TO A DRAIN DISCHARGE POINT VIA GRAVITY WHERE POSSIBLE OR BY AN CONDENSATE PUMPS IF NOT. TO BE DONE IN ACCORDANCE WITH PUBLIC HEALTH ENGINEERS REQUIREMENTS.
13. ALL EXTERNAL PIPEWORK/PIPEWORK IN UNCONDITIONED SPACES TO BE TRACE HEATED.
14. REFER TO WSP DETAIL SHEETS FOR MAIN PLANT CONNECTION DETAILS AND VALVING ARRANGEMENTS PLUS SUPPORTING DETAILS FOR RELEVANT DETAIL INFORMATION FOR THIS DRAWING.
15. PIPEWORK SYSTEM FLUSHING FACILITIES SHALL BE PROVIDED IN ACCORDING TO THE BSRIA BG 29/2012 RECOMMENDATIONS.
16. FOR SERVICES LEGEND SEE DRAWING No. 40SL-M-6101-WS.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES CHILLED WATER PLANTROOM SCHEMATIC

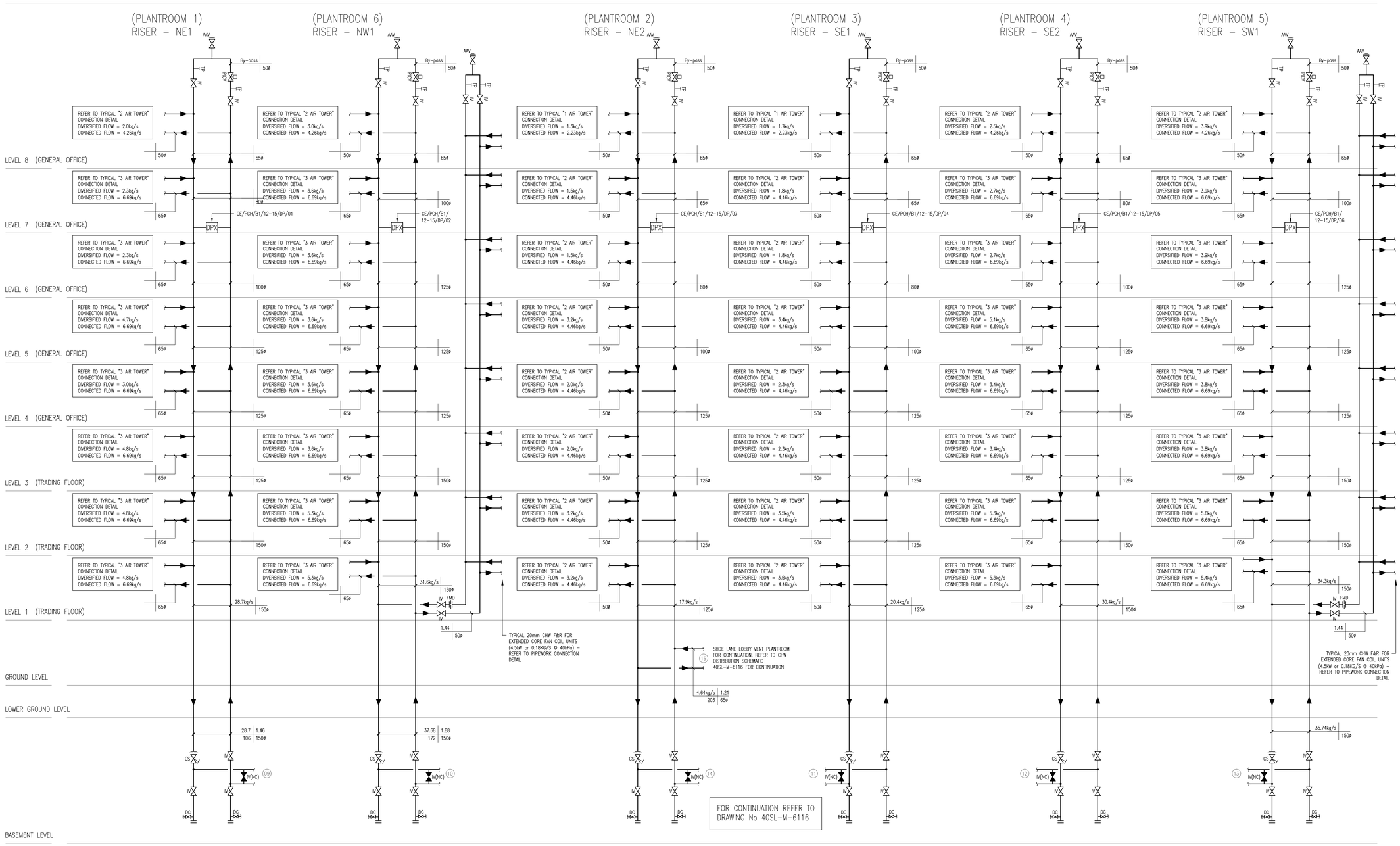
SCALE @ A0:	CHECKED:	APPROVED:
NTS	JW	TA

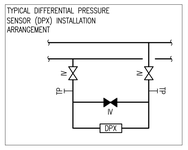
PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	NOV 2014

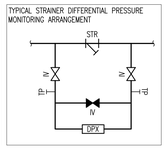
DRAWING No: 40SL-M-6112-WS REV: 02

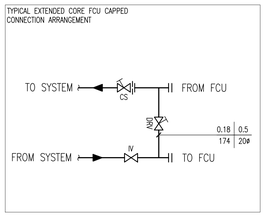
WSP Gr

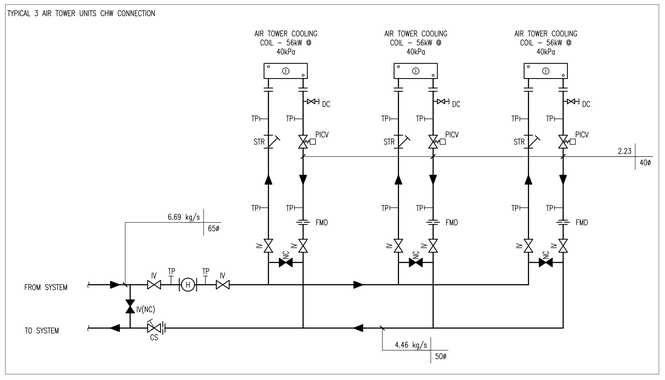
File name: S:\CS1\INDWORK\JEETS\50200153\50200153 - PROJECT ARRANGE DRAWINGS\MECHANICAL\40-M-6112-WS.DWG, printed on 28 September 2015 14:12:26, by Kyle, Ed

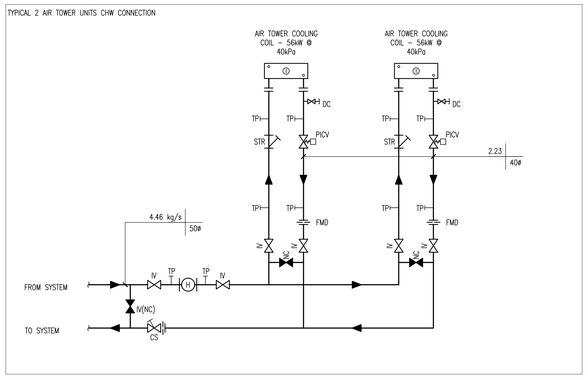


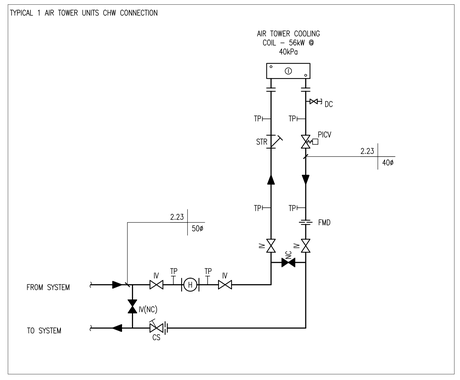












DO NOT SCALE

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5. ALL HIGH POINTS ON PIPEWORK SHALL BE VENTED, AND LOW POINTS TO HAVE DRAIN COCKS.
6. THE CONTRACTOR MUST ENSURE THAT ALL PIPEWORK CIRCUITS INCORPORATE SUITABLE FLUSHING & COMMISSIONING VALVE ARRANGEMENTS TO FACILITATE PHASED INSTALLATION.
7. ALL FLOW AND RETURN PIPEWORK BRANCHES SHALL BE PROVIDED WITH IV's AND DRV's.
8. ALL PENETRATIONS OF FIRE COMPARTMENTATION ARE TO BE SUITABLY TREATED AND SEALED TO MAINTAIN INTEGRITY.
9. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
10. ALL PIPEWORK TO BE FITTED WITH INSULATION IN ACCORDANCE WITH SPECIFICATION AND BRITISH STANDARDS BS 5422.
11. SENSORS, AND DETECTORS FOR BMS NOT INDICATED. LOCATIONS TO BE AGREED WITH BMS SPECIALIST CONTRACTOR.
12. CONDENSATE PIPEWORK FROM TERMINAL UNITS IS NOT SHOWN. THIS IS TO BE ROUTED TO A DRAIN DISCHARGE POINT VIA GRAVITY WHERE POSSIBLE OR BY AN CONDENSATE PUMPS IF NOT. TO BE DONE IN ACCORDANCE WITH PUBLIC HEALTH ENGINEERS REQUIREMENTS.
13. ALL EXTERNAL PIPEWORK/PIPEWORK IN UNCONDITIONED SPACES TO BE TRACE HEATED.
14. REFER TO WSP DETAIL SHEETS FOR MAIN PLANT CONNECTION DETAILS AND VALVING ARRANGEMENTS PLUS SUPPORTING DETAILS FOR RELEVANT DETAIL INFORMATION FOR THIS DRAWING.
15. ALL TENANT CONTROL VALVES SHALL BE "PICV" TYPE FOR AUTOMATIC HYDRAULIC BALANCING.
16. REFER TO BMS SPECIFICATION FOR PLANT MOUNTED BMS AND CONTROLS DEVICES.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES MAIN BUILDING CHILLED WATER RISERS SCHEMATIC

SCALE @ A0:	CHECKED:		APPROVED:
NTS	JW		TA
PROJECT No: 50200153	DESIGNED: TE	DRAWN: CAD	DATE: NOV 2014

DRAWING No: 40SL-M-6113-WS

REV: 02

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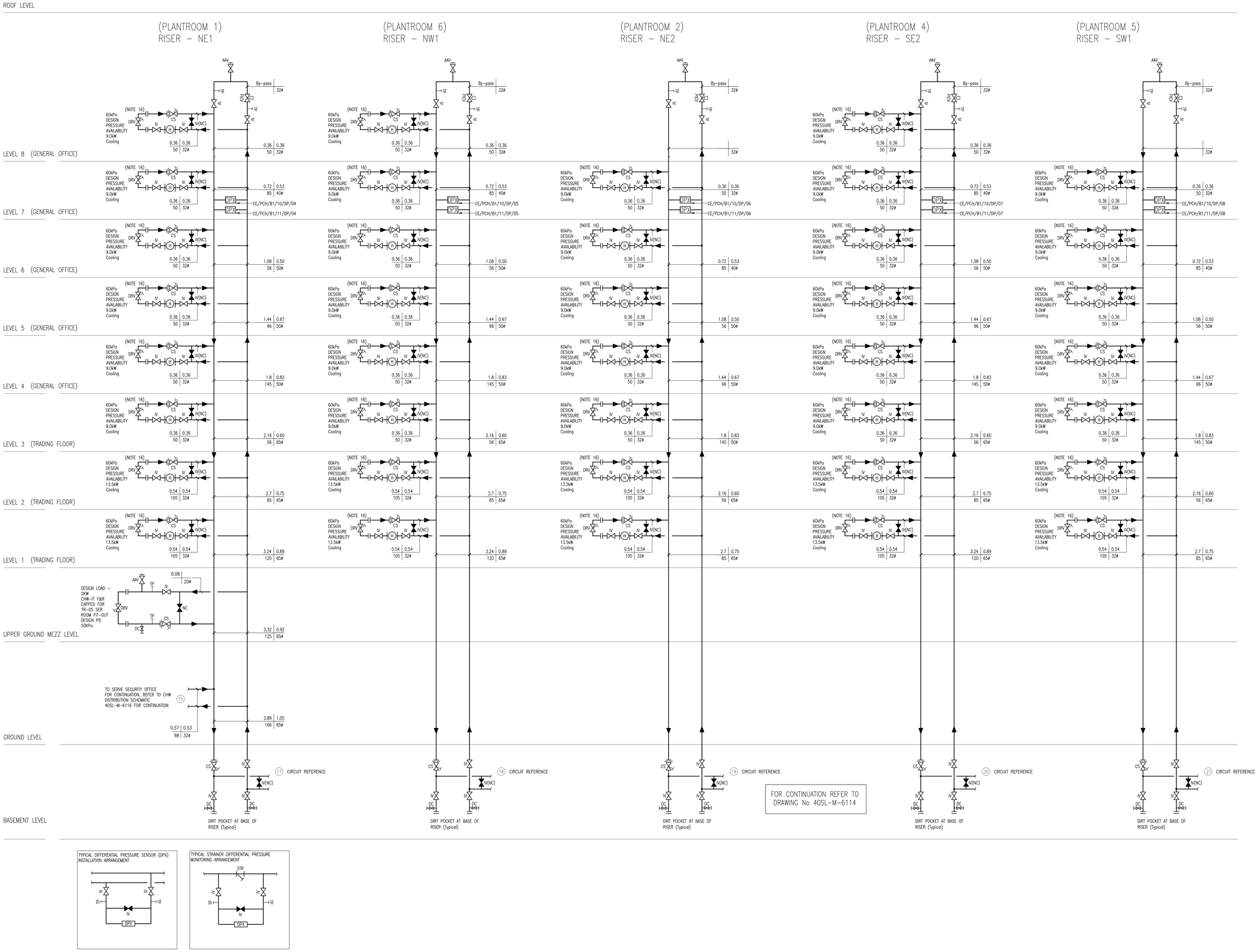

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14. REFER TO WSP DETAIL SHEETS FOR MAIN PLANT CONNECTION DETAILS AND VALVING ARRANGEMENTS PLUS SUPPORTING DETAILS FOR RELEVANT DETAIL INFORMATION FOR THIS DRAWING.
15. ALL TENANT CONTROL VALVES SHALL BE "PICV" TYPE FOR AUTOMATIC HYDRAULIC BALANCING.
16. DRV USED FOR SYSTEM COMMISSIONING ONLY AND SHALL BE CLOSED NORMALLY.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES
I.T CHILLED WATER
RISERS SCHEMATIC

SCALE @ A0: NTS	CHECKED: JW		APPROVED: TA
PROJECT No: 50200153	DESIGNED: TE	DRAWN: CAD	DATE: NOV 2014

DRAWING No: 40SL-M-6115-WS
REV: 02

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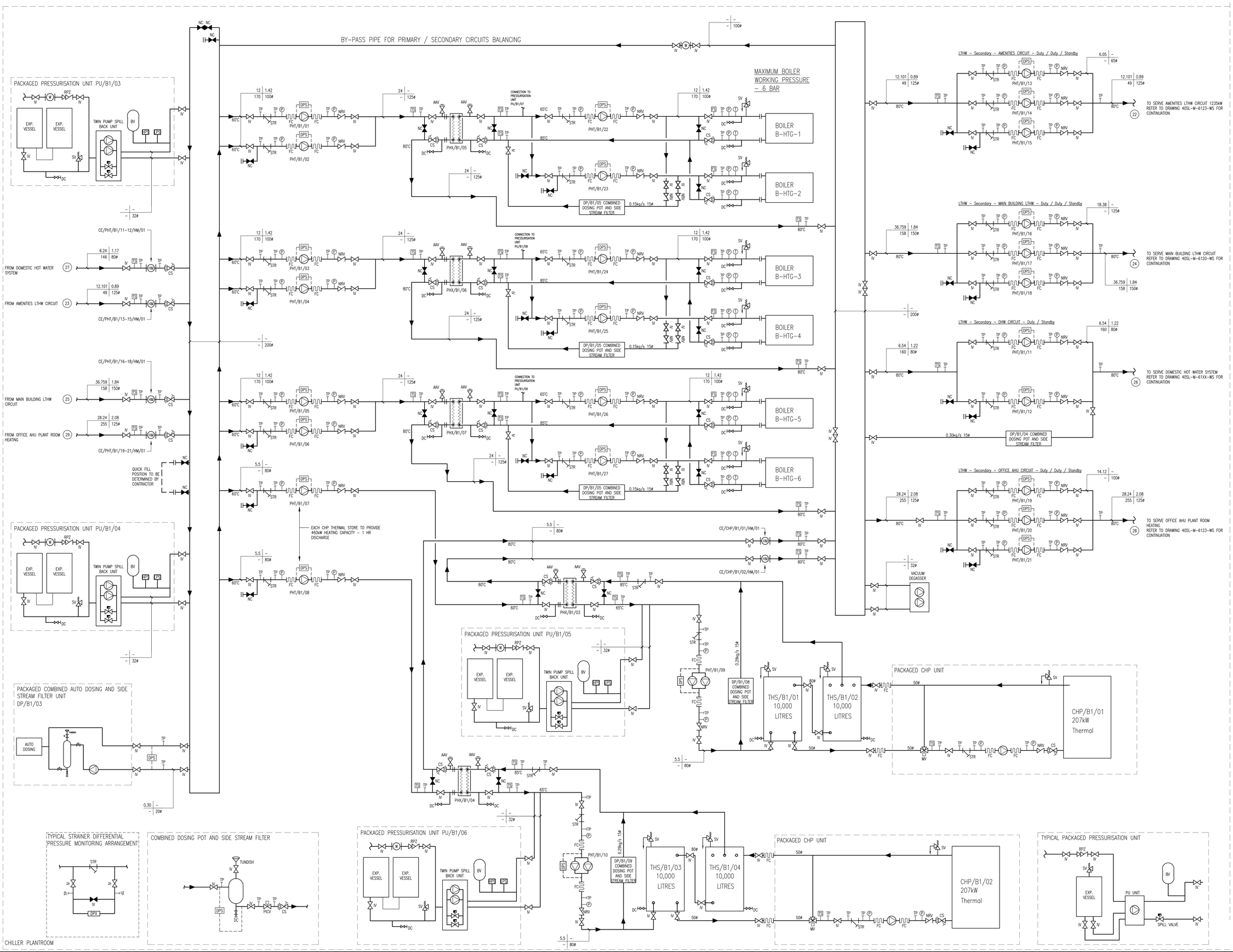

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14. BOILER MANUFACTURERS MANIFOLD KITS TO BE USED FOR GAS PIPEWORK AND FLUES.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES LTHW & CHP PLANTROOM SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
NTS	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	NOV 2014

DRAWING No: 40SL-M-6121-WS

REV: 02

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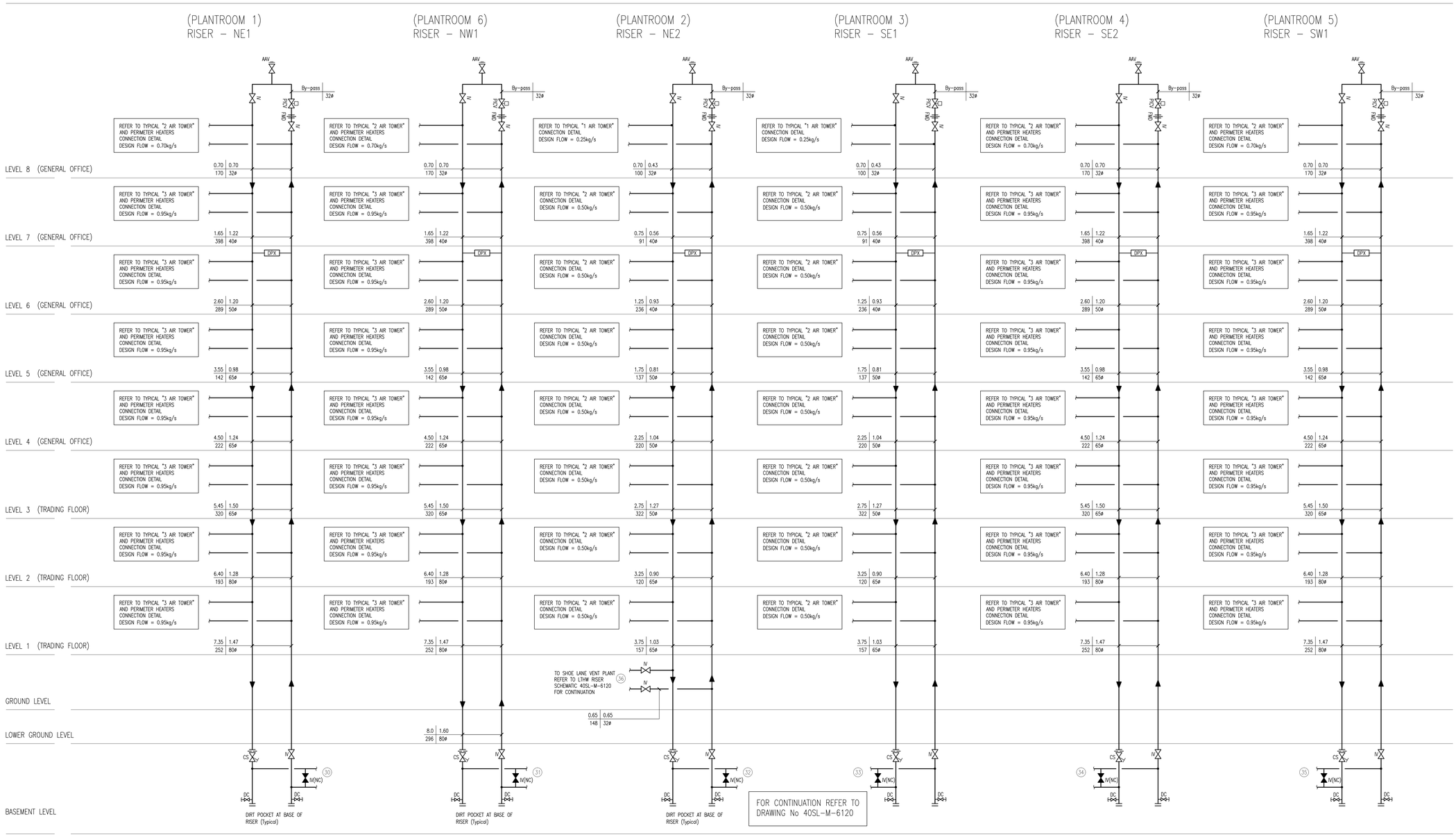
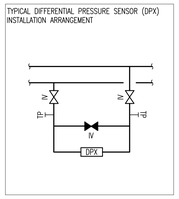
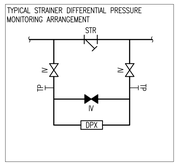


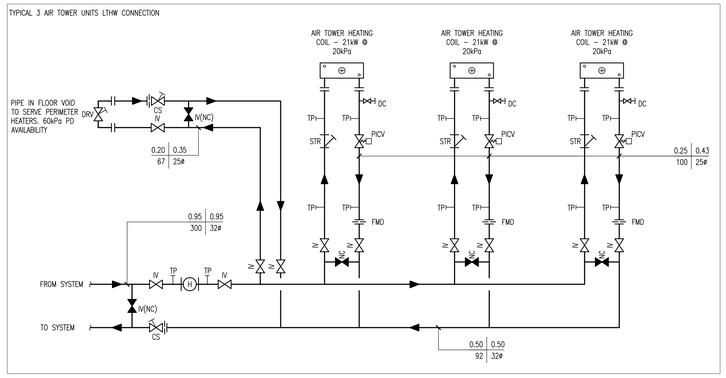
TYPICAL DIFFERENTIAL PRESSURE SENSOR (DPX) INSTALLATION ARRANGEMENT



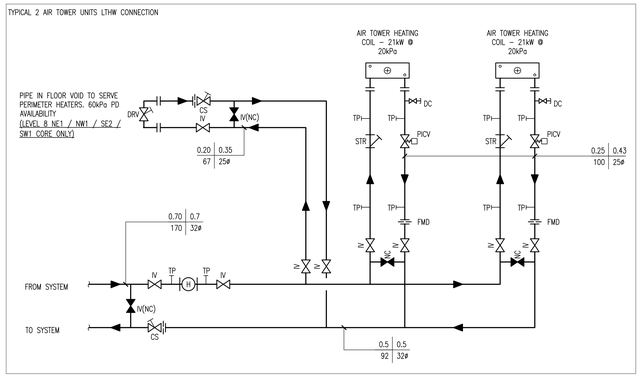
TYPICAL STRAINER DIFFERENTIAL PRESSURE MONITORING ARRANGEMENT



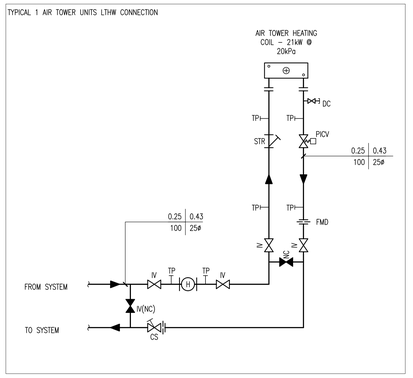
TYPICAL 3 AIR TOWER UNITS LTHW CONNECTION



TYPICAL 2 AIR TOWER UNITS LTHW CONNECTION



TYPICAL 1 AIR TOWER UNITS LTHW CONNECTION



DO NOT SCALE

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15. ALL TENANT CONTROL VALVES SHALL BE "PICV" TYPE FOR AUTOMATIC HYDRAULIC BALANCING.
16. DRV USED FOR SYSTEM COMMISSIONING ONLY AND SHALL BE REPLACED BY A DN15 DRV COMMISSIONING TO REDUCE CIRCUIT FLOW PRIOR TO FIT-OUT.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES MAIN BUILDING LTHW RISERS SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
NTS	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	TE	CAD	NOV 2014

DRAWING No: 40SL-M-6122-WS

REV: 02

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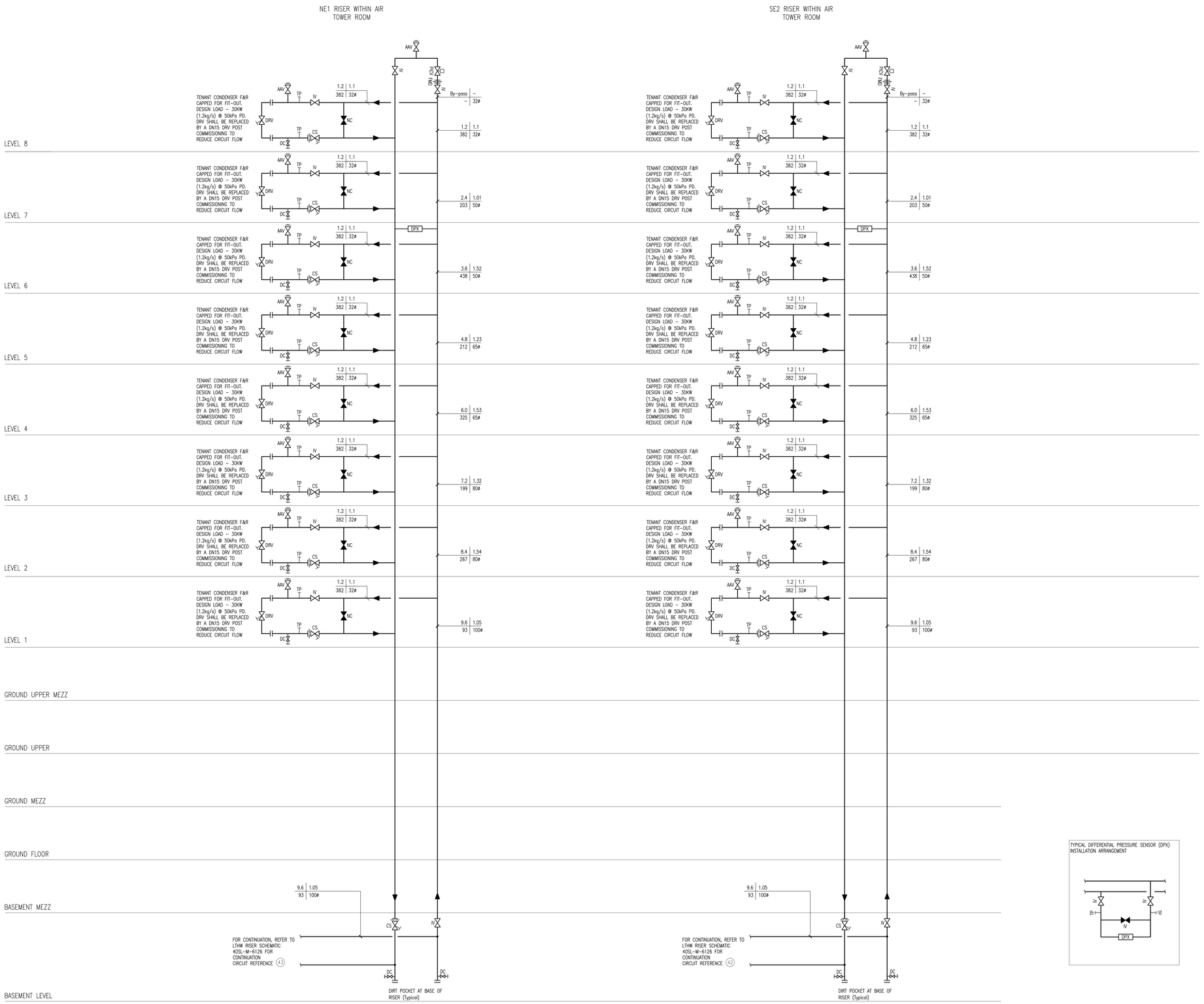
file name S:\SCI\CNO\PROJECTS\50200153\50200153_PROJECT AR\NAVIS\DRAWINGS\MECHANICAL\40-SERIES.dwg, printed on 28 September 2015 15:12:23, by Ellis, Ed



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13. ALL EXTERNAL PIPEWORK/PIPEWORK IN UNCONDITIONED SPACES TO BE TRACE HEATED.
14. REFER TO WSP DETAIL SHEETS FOR MAIN PLANT CONNECTION DETAILS AND VALVING ARRANGEMENTS PLUS SUPPORTING DETAILS FOR RELEVANT DETAIL INFORMATION FOR THIS DRAWING.
15. ALL TENANT CONTROL VALVES SHALL BE "PICV" TYPE FOR AUTOMATIC HYDRAULIC BALANCING.
16. DRV USED FOR SYSTEM COMMISSIONING ONLY AND SHALL BE CLOSED NORMALLY.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES TENANTS CONDENSER WATER RISERS SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
NTS	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	NOV 2014

DRAWING No: 40SL-M-6125-WS

REV: 02

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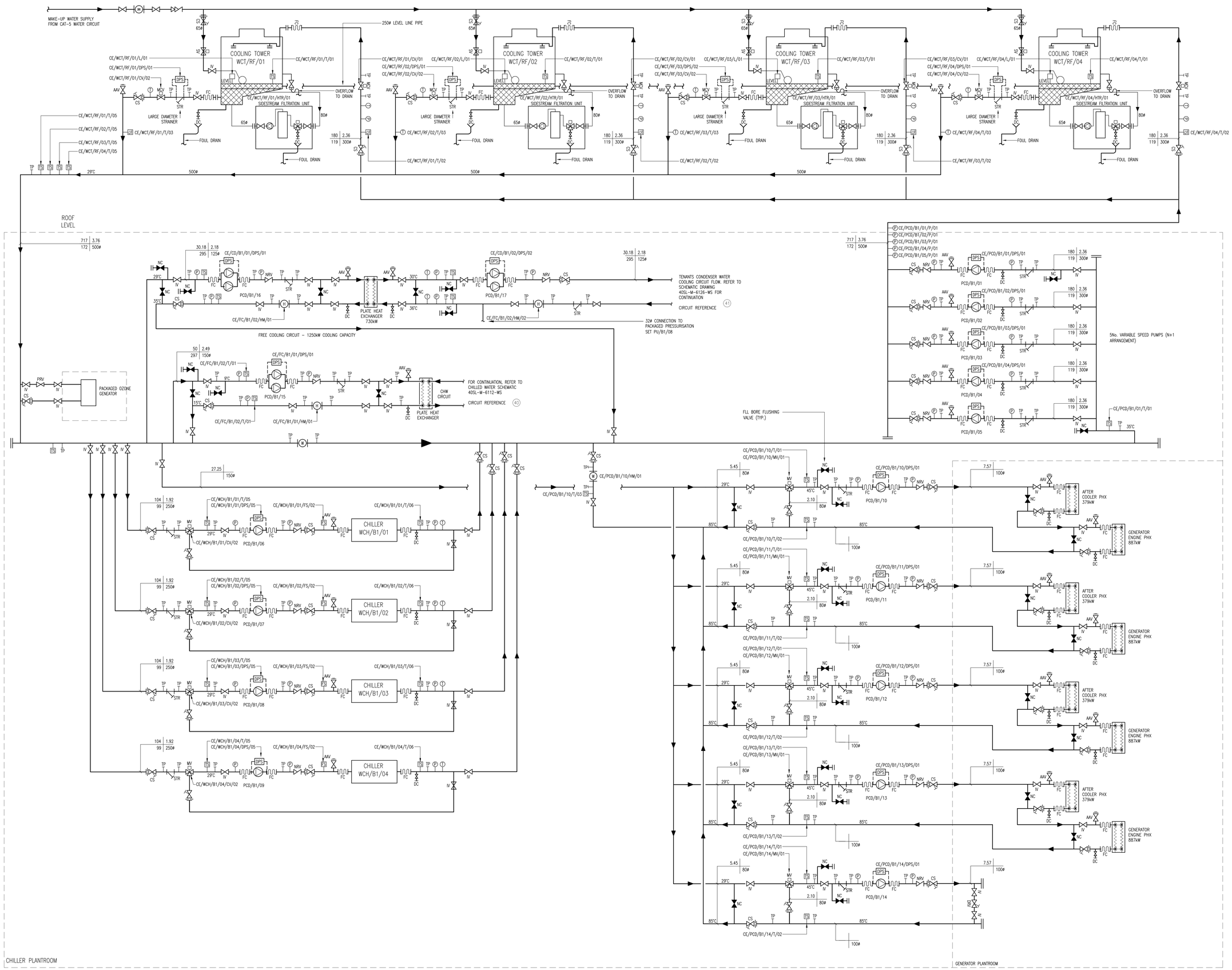
File name: \\GOS1\ONGOING\GLIST\50200153\50200153 - PROJECT ADVANCE\DRAWINGS\MECHANICAL\M-6125-WS.DWG printed on 28 September 2015 15:13:28 by Hyla, Ed



DO NOT SCALE

NOTES:

1. ALL DIMENSIONS WHERE SHOWN ARE IN MILLIMETERS (mm) UNLESS STATED OTHERWISE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS AND STRUCTURAL ENGINEERS DRAWINGS.
3. THIS DRAWING HAS BEEN PRODUCED FOR DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR CO-ORDINATION OR WORKING DRAWINGS PURPOSES.
4. EXPANSION / ANCHORING LOCATION & REQUIREMENTS ARE NOT SHOWN, THESE ARE TO BE DETERMINED BY TRADE CONTRACTOR & APPROVED PRIOR TO INSTALLATION.
5. ALL HIGH POINTS ON PIPEWORK SHALL BE VENTED, AND LOW POINTS TO HAVE DRAIN COCKS.
6. THE CONTRACTOR MUST ENSURE THAT ALL PIPEWORK CIRCUITS INCORPORATE SUITABLE FLUSHING & COMMISSIONING VALVE ARRANGEMENTS TO FACILITATE PHASED INSTALLATION.
7. ALL FLOW AND RETURN PIPEWORK BRANCHES SHALL BE PROVIDED WITH IV's AND DRV's.
8. ALL PENETRATIONS OF FIRE COMPARTMENTATION ARE TO BE SUITABLY TREATED AND SEALED TO MAINTAIN INTEGRITY.
9. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
10. ALL PIPEWORK TO BE FITTED WITH INSULATION IN ACCORDANCE WITH SPECIFICATION AND BRITISH STANDARDS BS 5422.
11. SENSORS, AND DETECTORS FOR BMS NOT INDICATED. LOCATIONS TO BE AGREED WITH BMS SPECIALIST CONTRACTOR.
12. ALL EXTERNAL PIPEWORK/PIPEWORK IN UNCONDITIONED SPACES TO BE TRACE HEATED.
13. REFER TO WSP DETAIL SHEETS FOR MAIN PLANT CONNECTION DETAILS AND VALVING ARRANGEMENTS PLUS SUPPORTING DETAILS FOR RELEVANT DETAIL INFORMATION FOR THIS DRAWING.
14. LARGE DIAMETER STRAINER SHALL BE INSTALLED WITHIN COOLING TOWER DRAIN PANS.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES CONDENSER WATER CIRCUIT PLANTROOM SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
NTS	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	NOV 2014

DRAWING No: 40SL-M-6127-WS REV: 02

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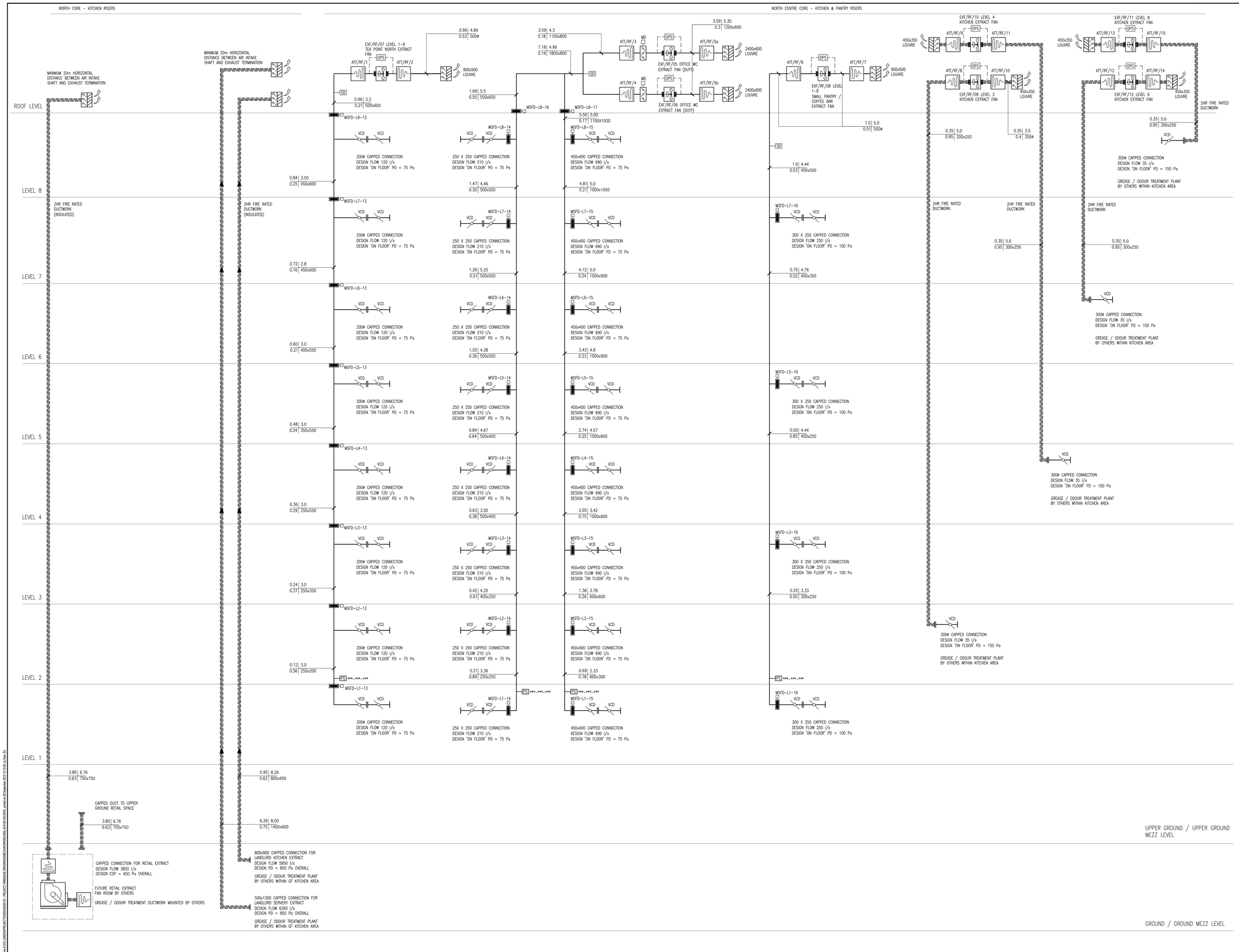

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NOTES:

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3. THIS DRAWING HAS BEEN PRODUCED FOR DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR CO-ORDINATION OR WORKING DRAWINGS PURPOSES.
4. BRACKETS & DUCT MOUNTING LOCATIONS & REQUIREMENTS ARE NOT SHOWN, THESE ARE TO BE DETERMINED BY TRADE CONTRACTOR & APPROVED PRIOR TO INSTALLATION.
5. ALL PENETRATIONS OF FIRE COMPARTMENTATION ARE TO BE SUITABLY TREATED AND SEALED TO MAINTAIN INTEGRITY.
6. ALL DUCTWORK TO BE INSTALLED IN ACCORDANCE TO B&ES DW/143 AND DW/144. DUCTWORK TO BE CLASSIFICATION B UNLESS SPECIFIED OTHERWISE.
7. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
8. ALL SUPPLY DUCTWORK TO BE FITTED WITH INSULATION IN ACCORDANCE WITH SPECIFICATION AND BRITISH STANDARDS BS 5422.
9. ALL EXTERNAL DUCTWORK TO BE INSULATED IN RIGID MINERAL FIBRE OR PHENOLIC FOAM SLABS AND FINISHED IN A WEATHER PROOF PROTECTIVE JACKETING SYSTEM.
10. SENSORS & DETECTORS FOR BMS NOT INDICATED, LOCATIONS TO BE AGREED WITH BMS SPECIALIST CONTRACTOR.
11. ACCESS PANELS ARE TO BE INCORPORATED IN ACCORDANCE WITH DW144 BUT HAVE NOT BEEN SHOWN ON THE SCHEMATIC.
12. REFER TO WSP DETAIL SHEETS FOR SUPPORTING DETAILS / AHU TYPE CLASSIFICATIONS FOR RELEVANT SUPPORTING INFORMATION FOR THIS DRAWING.
13. FUTURE KITCHEN EXTRACT DUCT SHALL BE OF FIRE RATED CONSTRUCTION COMPLETED WITH FIRE RATED INSULATION IN ACCORDANCE TO B&ES DW/172. DUCTWORK SHALL BE AIR LEAKAGE TESTED IN ACCORDANCE TO B&ES DW/143 AND DW/172.
14. COMMISSIONING VCDs SHALL BE INSTALLED IN ALL CAPPED CONNECTION. UPON COMPLETION OF AIR BALANCING PERMANENT VCD SHALL BE POSITION LOCKED.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES NORTH CORE GENERAL EXTRACT VENTILATION SCHEMATIC

SCALE @ A0:	CHECKED:	APPROVED:
N.T.S	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	NOV 2014

DRAWING No: 40SL-M-6128-WS

REV: 02

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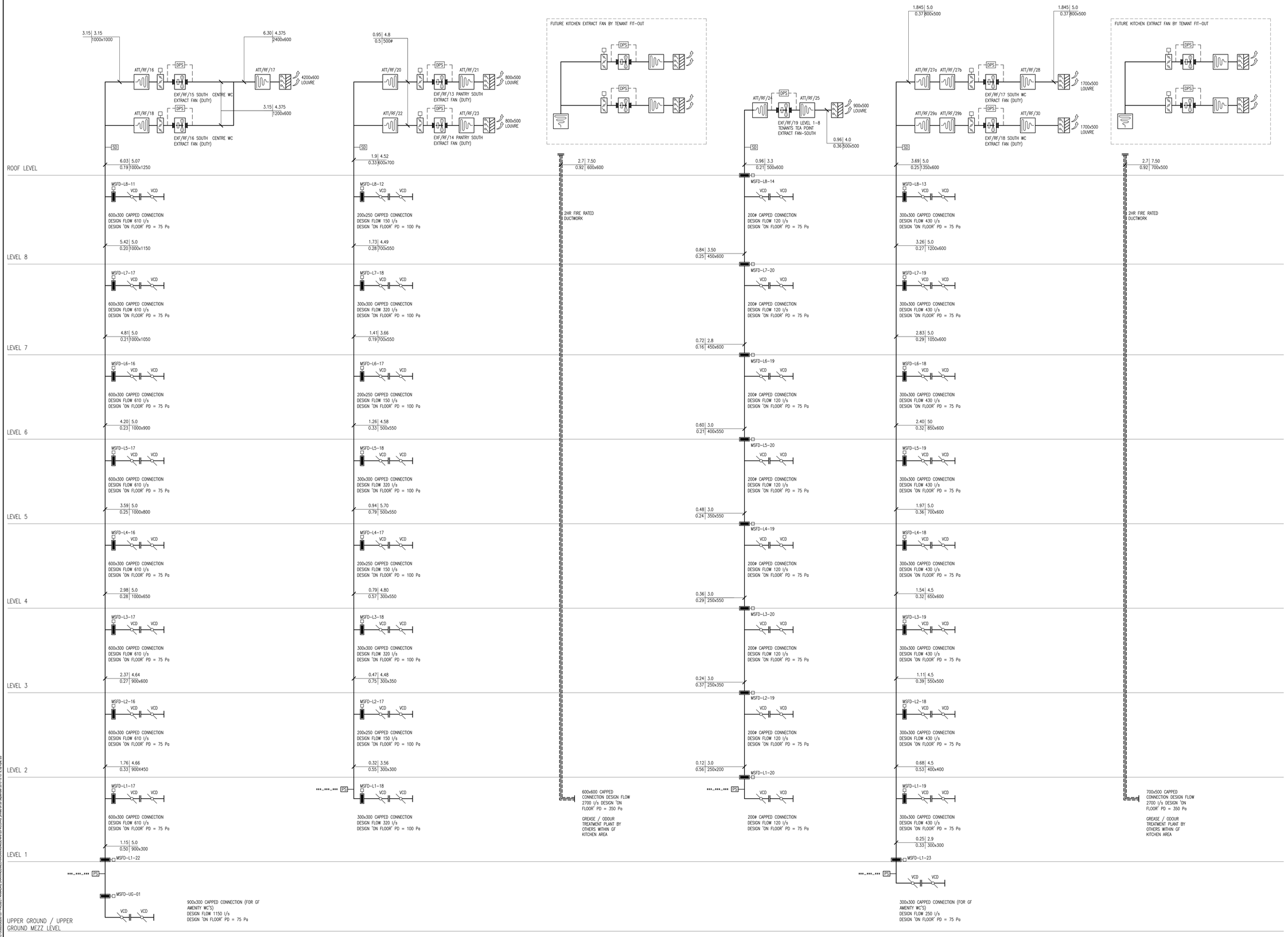
SOUTH CENTRE CORE – PANTRY / FUTURE TENANT RISER

SOUTH CORE – TOILET / FUTURE TENANT RISER



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6. ALL DUCTWORK TO BE INSTALLED IN ACCORDANCE TO B&ES DW/143 AND DW/144. DUCTWORK TO BE CLASSIFICATION B UNLESS SPECIFIED OTHERWISE.
7. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
8. ALL SUPPLY DUCTWORK TO BE FITTED WITH INSULATION IN ACCORDANCE WITH SPECIFICATION AND BRITISH STANDARDS BS 5422.
9. ALL EXTERNAL DUCTWORK TO BE INSULATED IN RIGID MINERAL FIBRE OR PHENOLIC FOAM SLABS AND FINISHED IN A WEATHER PROOF PROTECTIVE JACKETING SYSTEM.
10. SENSORS & DETECTORS FOR BMS NOT INDICATED, LOCATIONS TO BE AGREED WITH BMS SPECIALIST CONTRACTOR.
11. ACCESS PANELS ARE TO BE INCORPORATED IN ACCORDANCE WITH DW144 BUT HAVE NOT BEEN SHOWN ON THE SCHEMATIC.
12. REFER TO MSP DETAIL SHEETS FOR SUPPORTING DETAILS / AHU TYPE CLASSIFICATIONS FOR RELEVANT SUPPORTING INFORMATION FOR THIS DRAWING.
13. FUTURE KITCHEN EXTRACT DUCT SHALL BE OF FIRE RATED CONSTRUCTION COMPLETED WITH FIRE RATED INSULATION IN ACCORDANCE TO B&ES DW/172. DUCTWORK SHALL BE AIR LEAKAGE TESTED IN ACCORDANCE TO B&ES DW/143 AND DW/172.
14. COMMISSIONING VCDs SHALL BE INSTALLED IN ALL CAPPED CONNECTION. UPON COMPLETION OF AIR BALANCING PERMANENT VCD SHALL BE POSITION LOCKED.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES
SOUTH CORE GENERAL EXTRACT
VENTILATION SCHEMATIC

SCALE @ A0: N.T.S	CHECKED: JW		APPROVED: TA
PROJECT No: 50200153	DESIGNED: HB	DRAWN: CAD	DATE: NOV 2014

DRAWING No: 40SL-M-6129-WS

REV: 02

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FOR CONTINUATION REFER TO DRAWING NUMBER: 40SL-M-6134 WS

8 CORE FIBRE

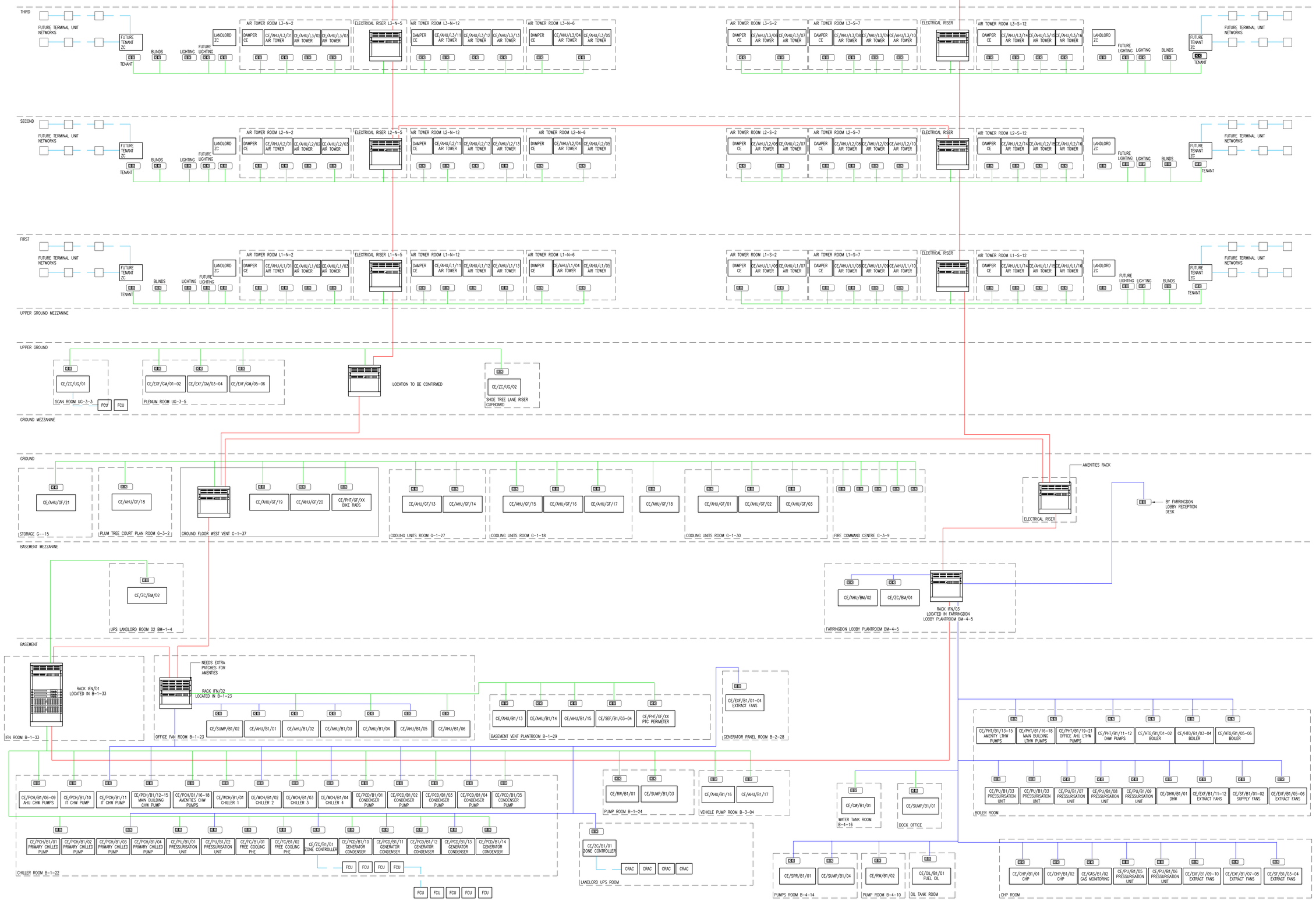
CAT6 / 6A (SINGLE LINE SHOWS MULTIPLE RUNS)

TWISTED PAIR/RS485 NETWORK

SPANNING TREE FIBRE CONNECTIONS INDICATIVE.

ALL RACKS TO BE DUAL FED FROM ESSENTIAL POWER.

ALL SWITCHES TO HAVE DUAL POWER SUPPLIES.



REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES BMS CONTROL PANEL SCHEMATIC SHEET 1 OF 2

SCALE @ A0:	CHECKED:	APPROVED:
NTS	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	JULY 2015

DRAWING No: 40SL-M-6133-WS

REV: 02

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8 CORE FIBRE

CAT6 / 6A (SINGLE LINE SHOWS MULTIPLE RUNS)

TWISTED PAIR/RS485 NETWORK

SPANNING TREE FIBRE CONNECTIONS INDICATIVE.

ALL RACKS TO BE DUAL FED FROM ESSENTIAL POWER.

ALL SWITCHES TO HAVE DUAL POWER SUPPLIES.

FOR CONTINUATION REFER TO DRAWING NUMBER: 40SL-M-6133 WS

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES
BMS CONTROL PANEL
SCHEMATIC
SHEET 2 OF 2

SCALE @ A0:	CHECKED:	APPROVED:
NTS	JW	TA

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	HB	CAD	JULY 2015

DRAWING No: 40SL-M-6134-WS

REV: 02

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File name: S:\CS1\ADCON\PROJECTS\50200153\01-PROJECT FILES\CAD\DRAWINGS\BEC\NON\NON\CABLE_A1\CVX WS.DWG, printed on 29 September 2015 13:13:25, by Cole, Ed

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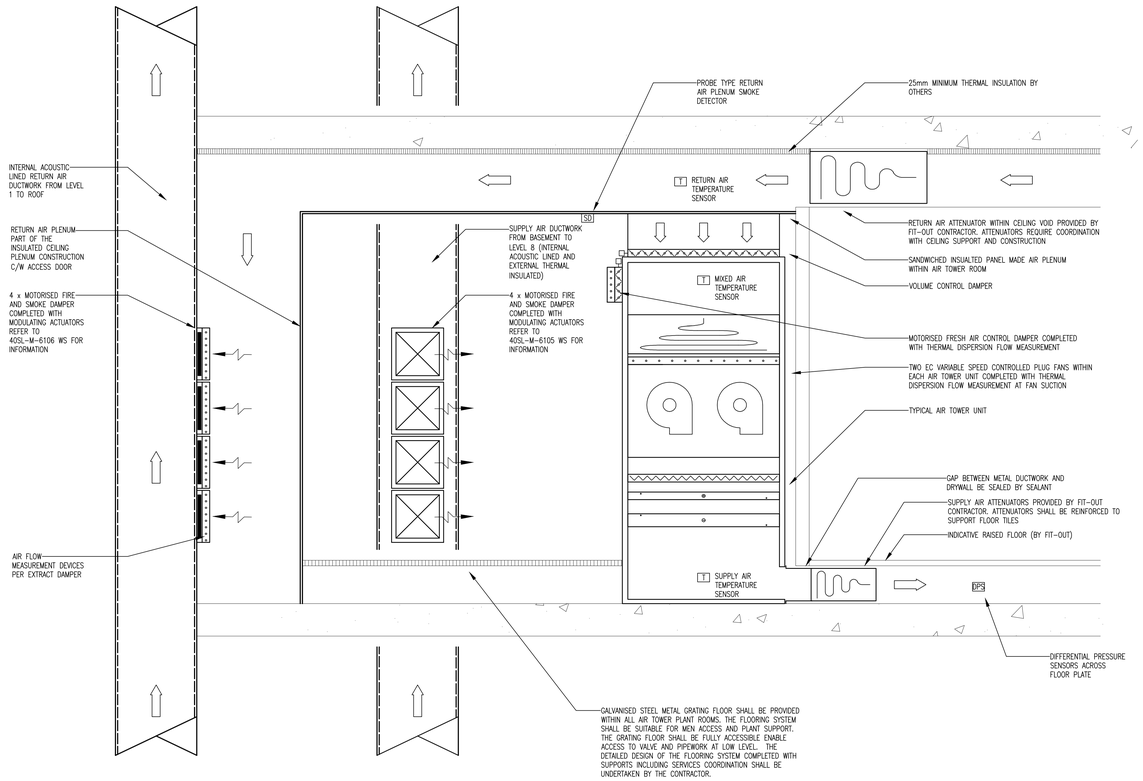

AIR TOWER ROOM LEVEL 1 TO 7

CORE	EQUIPMENT	EQUIPMENT REFERENCE	PERFORMANCE DATA	CONTROL REFERENCE	NOTES
NE1	AIR TOWER UNIT	AHU/L*/01	REFER TO EDS		
		AHU/L*/02			
		AHU/L*/03			
	ATTENUATOR – RETURN	ATT/L*/01 – 05			
	ATTENUATOR – SUPPLY	ATT/L*/06 – 08			
	CONTROL ENCLOSURE				
NE2	AIR TOWER UNIT	AHU/L*/04	REFER TO EDS		
		AHU/L*/05			
	ATTENUATOR – RETURN	ATT/L*/09 – 10			
	ATTENUATOR – SUPPLY	ATT/L*/11 – 12			
	CONTROL ENCLOSURE				
SE1	AIR TOWER UNIT	AHU/L*/06	REFER TO EDS		
		AHU/L*/07			
	ATTENUATOR – RETURN	ATT/L*/13 – 15			
	ATTENUATOR – SUPPLY	ATT/L*/16 – 17			
	CONTROL ENCLOSURE				
SE2	AIR TOWER UNIT	AHU/L*/08	REFER TO EDS		
		AHU/L*/09			
		AHU/L*/10			
	ATTENUATOR – RETURN	ATT/L*/18 – 21			
	ATTENUATOR – SUPPLY	ATT/L*/22 – 24			
	CONTROL ENCLOSURE				
NW1	AIR TOWER UNIT	AHU/L*/11	REFER TO EDS		
		AHU/L*/12			
		AHU/L*/13			
	ATTENUATOR – RETURN	ATT/L*/25 – 33			
	ATTENUATOR – SUPPLY	ATT/L*/34 – 36			
	CONTROL ENCLOSURE				
SW1	AIR TOWER UNIT	AHU/L*/14	REFER TO EDS		
		AHU/L*/15			
		AHU/L*/16			
	ATTENUATOR – RETURN	ATT/L*/37 – **			
	ATTENUATOR – SUPPLY	ATT/L*/** – **			
	CONTROL ENCLOSURE				

AIR TOWER ROOM LEVEL 8

CORE	EQUIPMENT	EQUIPMENT REFERENCE	PERFORMANCE DATA	CONTROL REFERENCE	NOTES
NE1	AIR TOWER UNIT	AHU/L8/01	REFER TO EDS		
		AHU/L8/02			
	ATTENUATOR – RETURN	ATT/L8/01 – 02			
	ATTENUATOR – SUPPLY	ATT/L8/01 – 02			
	CONTROL ENCLOSURE				
NE2	AIR TOWER UNIT	AHU/L8/03	REFER TO EDS		
	ATTENUATOR – RETURN	ATT/L8/01 – 02			
	ATTENUATOR – SUPPLY	ATT/L8/01 – 02			
	CONTROL ENCLOSURE				
SE1	AIR TOWER UNIT	AHU/L8/04	REFER TO EDS		
	ATTENUATOR – RETURN	ATT/L8/01 – 02			
	ATTENUATOR – SUPPLY	ATT/L8/01 – 02			
	CONTROL ENCLOSURE				
SE2	AIR TOWER UNIT	AHU/L8/05	REFER TO EDS		
		AHU/L8/6			
	ATTENUATOR – RETURN	ATT/L8/01 – 02			
	ATTENUATOR – SUPPLY	ATT/L8/01 – 02			
	CONTROL ENCLOSURE				
NW1	AIR TOWER UNIT	AHU/L8/07	REFER TO EDS		
		AHU/L8/08			
	ATTENUATOR – RETURN	ATT/L8/01 – 02			
	ATTENUATOR – SUPPLY	ATT/L8/01 – 02			
	CONTROL ENCLOSURE				
SW1	AIR TOWER UNIT	AHU/L8/09	REFER TO EDS		
		AHU/L8/10			
	ATTENUATOR – RETURN	ATT/L8/01 – 02			
	ATTENUATOR – SUPPLY	ATT/L8/01 – 02			
	CONTROL ENCLOSURE				

NOTES:

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5. ALL PENETRATIONS OF FIRE COMPARTMENTATION ARE TO BE SUITABLY TREATED AND SEALED TO MAINTAIN INTEGRITY.
6. ALL DUCTWORK TO BE INSTALLED IN ACCORDANCE TO HVAC DW144. DUCTWORK TO BE CLASSIFICATION B.
7. INSTALLATION OF SERVICES SHALL BE COORDINATED WITH ALL OTHER TRADES AND SITE INSTALLATIONS.
8. ALL SUPPLY DUCTWORK TO BE FITTED WITH INSULATION IN ACCORDANCE WITH SPECIFICATION AND BRITISH STANDARDS BS 5422.
9. ALL EXTERNAL DUCTWORK TO BE INSULATED IN RIGID MINERAL FIBRE OR PHENOLIC FOAM SLABS AND FINISHED IN A WEATHER PROOF PROTECTIVE JACKETING SYSTEM.
10. SENSORS & DETECTORS FOR BMS NOT INDICATED, LOCATIONS TO BE AGREED WITH BMS SPECIALIST CONTRACTOR.
11. ACCESS PANELS ARE TO BE INCORPORATED IN ACCORDANCE WITH DW144 BUT HAVE NOT BEEN SHOWN ON THE SCHEMATIC.
12. REFER TO WSP DETAIL SHEETS FOR SUPPORTING DETAILS / AHU TYPE CLASSIFICATIONS FOR RELEVANT SUPPORTING INFORMATION FOR THIS DRAWING.
13. AIR FLOW INDICATED 1 RELATES TO THE MAXIMUM FREE COOLING MODE OF OPERATION. UNDER 'MINIMUM FRESH AIR OPERATION' ONLY THE FRESH AIR AHU'S WILL RUN, WITH A CORRESPONDING REDUCTION IN FLOW RATE.
14. UNDER SMOKE CLEARANCE CONDITIONS, THE OFFICE EXTRACT FANS (VENTILATION SHEET 3) WILL BE ENABLED TO PROVIDE VENTILATION AT A MINIMUM OF 6ACH/HR TO ONE FLOOR ONLY. FOR BELOW GROUND AREAS 10ACH/HR PER ROOM VIA DEDICATED HOT SMOKE CLEARANCE EXTRACT SYSTEM.
15. RAISED FLOOR PLENUM SHALL BE AIR TIGHTNESS TESTED AS PER BSRIA BG 12/2010 TO ACHIEVE AIR LEAKAGE CLASS A UPON COMPLETION (BY OTHERS).
16. REFER TO BMS SPECIFICATION FOR PLANT MOUNTED BMS AND CONTROLS DEVICES.

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	HB	STAGE F	JW	TA
01	25.09.2015	HB	STAGE F	JW	TA

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Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: MECHANICAL SERVICES
OFFICE AIR TOWER ROOM
HVAC SCHEMATIC

SCALE @ A0:	CHECKED:		APPROVED:
N.T.S	JW		TA
PROJECT No: 50200153	DESIGNED: HB	DRAWN: CAD	DATE: JULY 2015

DRAWING No: 40SL-M-6136-WS REV: 02

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file name R:\C3\ONGOING\PROJECTS\50200153\0153 - PROJECT 4\IMAGE DRAWING\DWG\ARCHITECTURAL\40SL-M-6136-WS.DWG, printed on 28 September 2015 15:13:31 by Hb, 64

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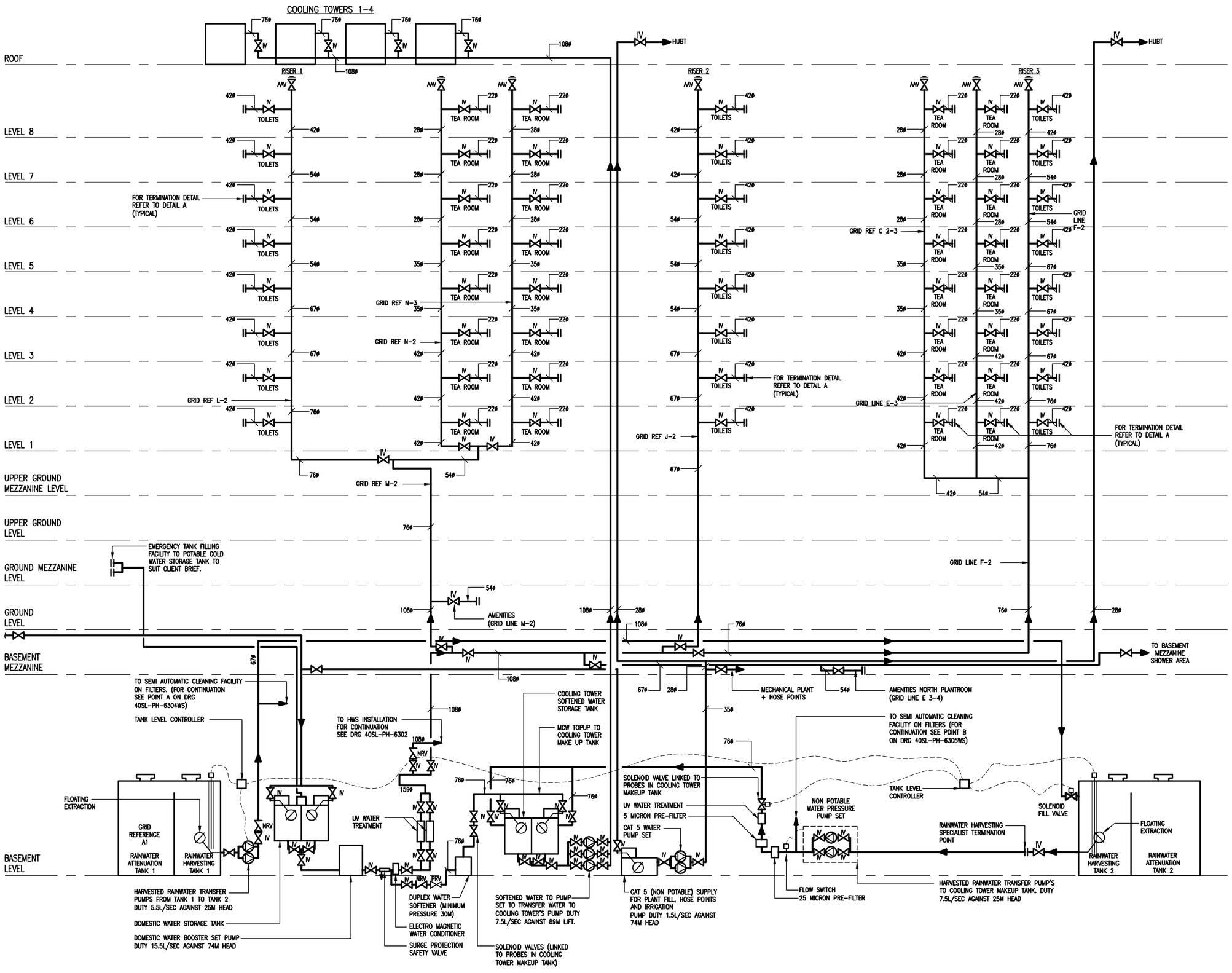

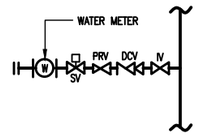

TYPICAL TERMINATION DETAIL FOR EXTENSION BY INTERIORS/AMENITIES TEAMS DETAIL A

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.08.2015	PJ	STAGE F	NE	TA
01	25.08.2015	PJ	STAGE F	NE	TA

WSP | PARSONS BRINCKERHOFF

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: PUBLIC HEALTH SERVICES COLD WATER SCHEMATIC

SCALE @ A1:	CHECKED:		APPROVED:
N.T.S	NE		TA
PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	PJ	CAD	JUNE 2014

DRAWING No: 40SL-PH-6301-WS

REV: 02

WSP Gr

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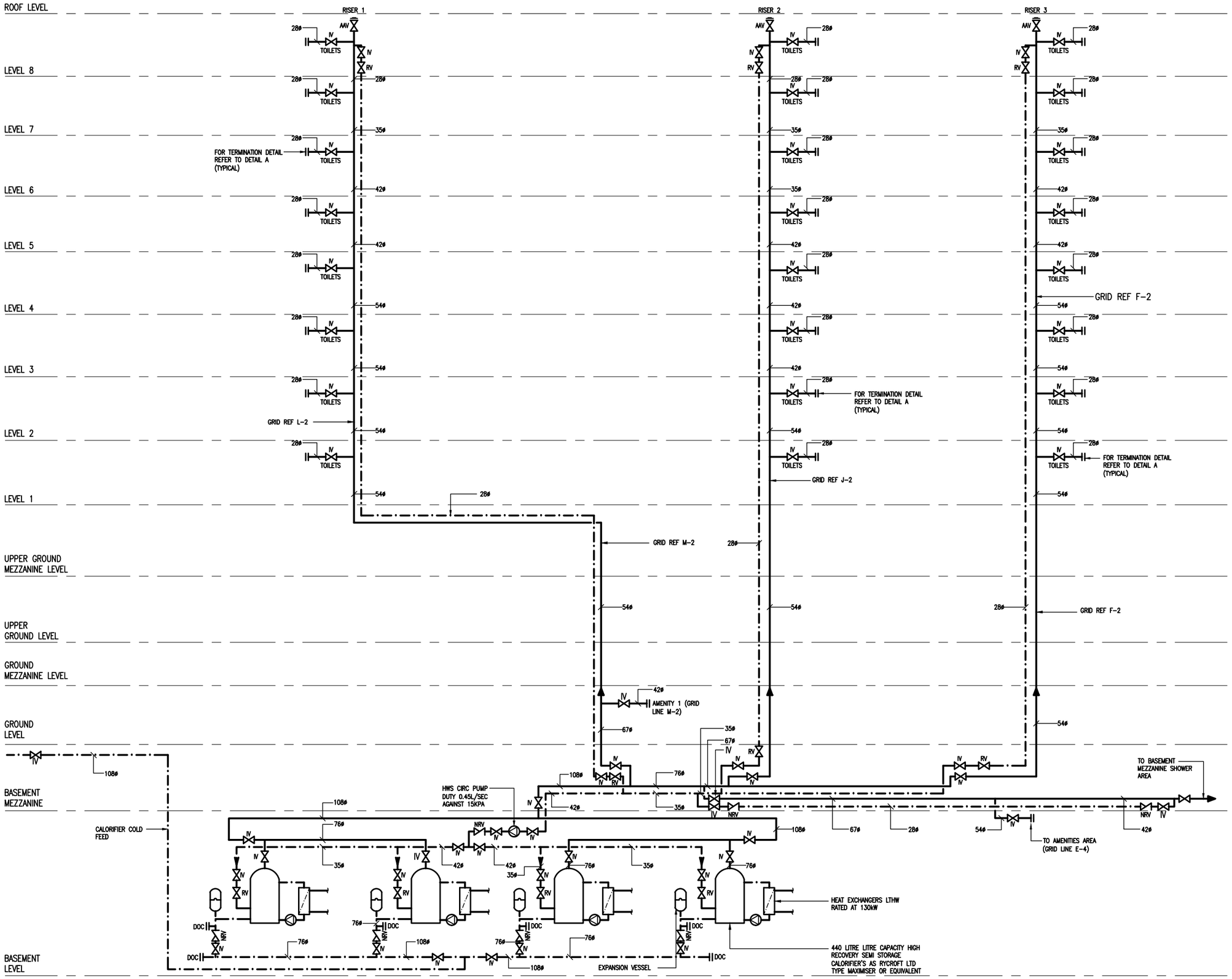

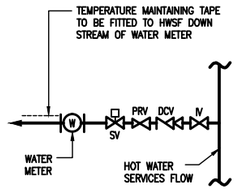

TYPICAL TERMINATION DETAIL FOR EXTENSION BY INTERIORS/AMENITIES TEAMS DETAIL A

REV	DATE	BY	DESCRIPTION	CHK	APD
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01	25.09.2015	PJ	STAGE F	NE	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: PUBLIC HEALTH SERVICES HOT WATER SCHEMATIC

SCALE @ A1:	CHECKED:		APPROVED:
N.T.S	NE		TA
PROJECT No: 50200153	DESIGNED: PJ	DRAWN: CAD	DATE: JUNE 2014

DRAWING No: 40SL-PH-6302-WS

REV: 02

WSP Gr□□□ □□□

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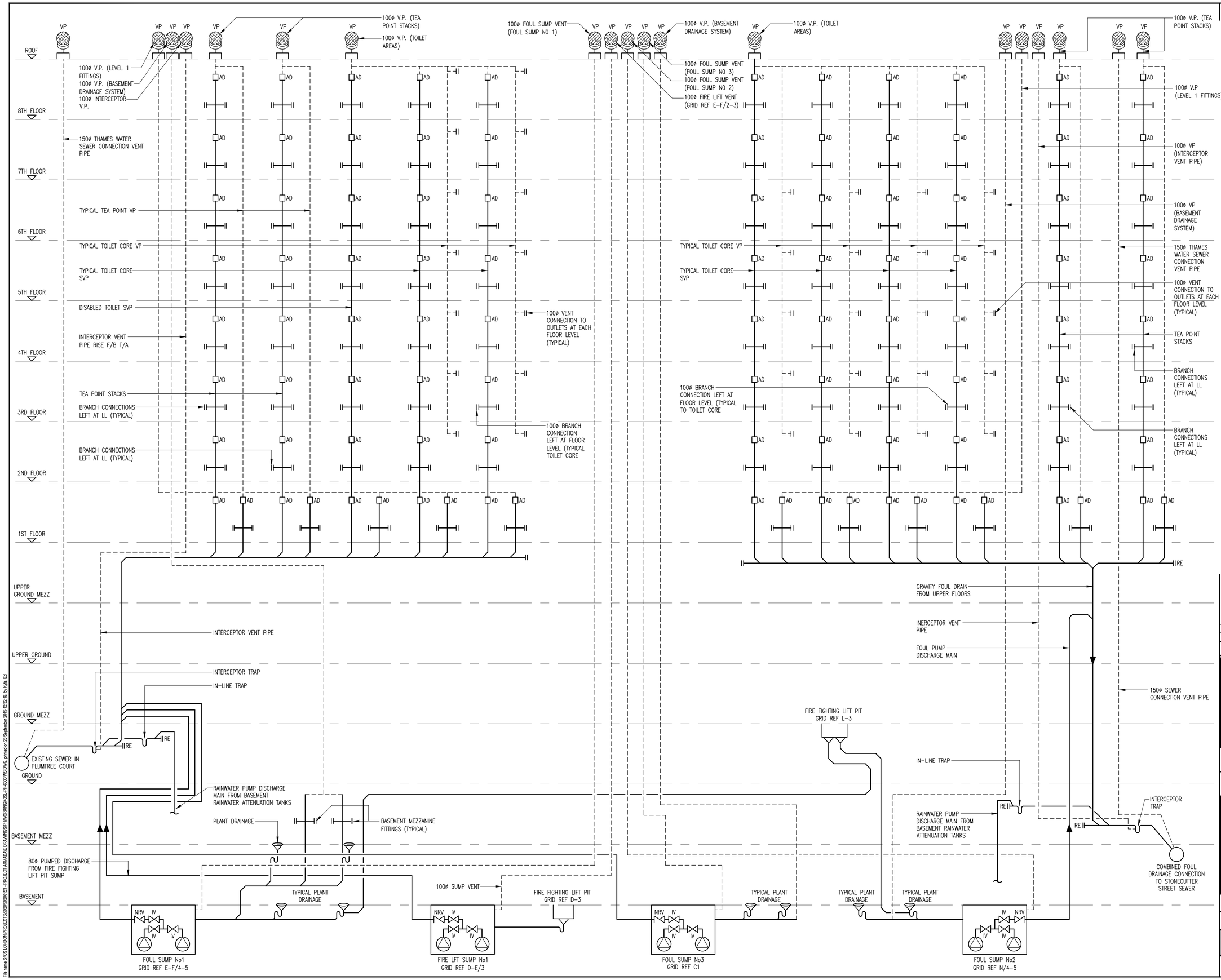

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	PJ	STAGE F	NE	TA
01	25.09.2015	PJ	STAGE F	NE	TA

WSP | PARSONS BRINCKERHOFF

WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: PUBLIC HEALTH SERVICES SANITATION SCHEMATIC

SCALE @ A1:	CHECKED:		APPROVED:
N.T.S	NE		TA
PROJECT No: 50200153	DESIGNED: PJ	DRAWN: CAD	DATE: JUNE 2014

DRAWING No: 40SL-PH-6303-WS

REV: 02

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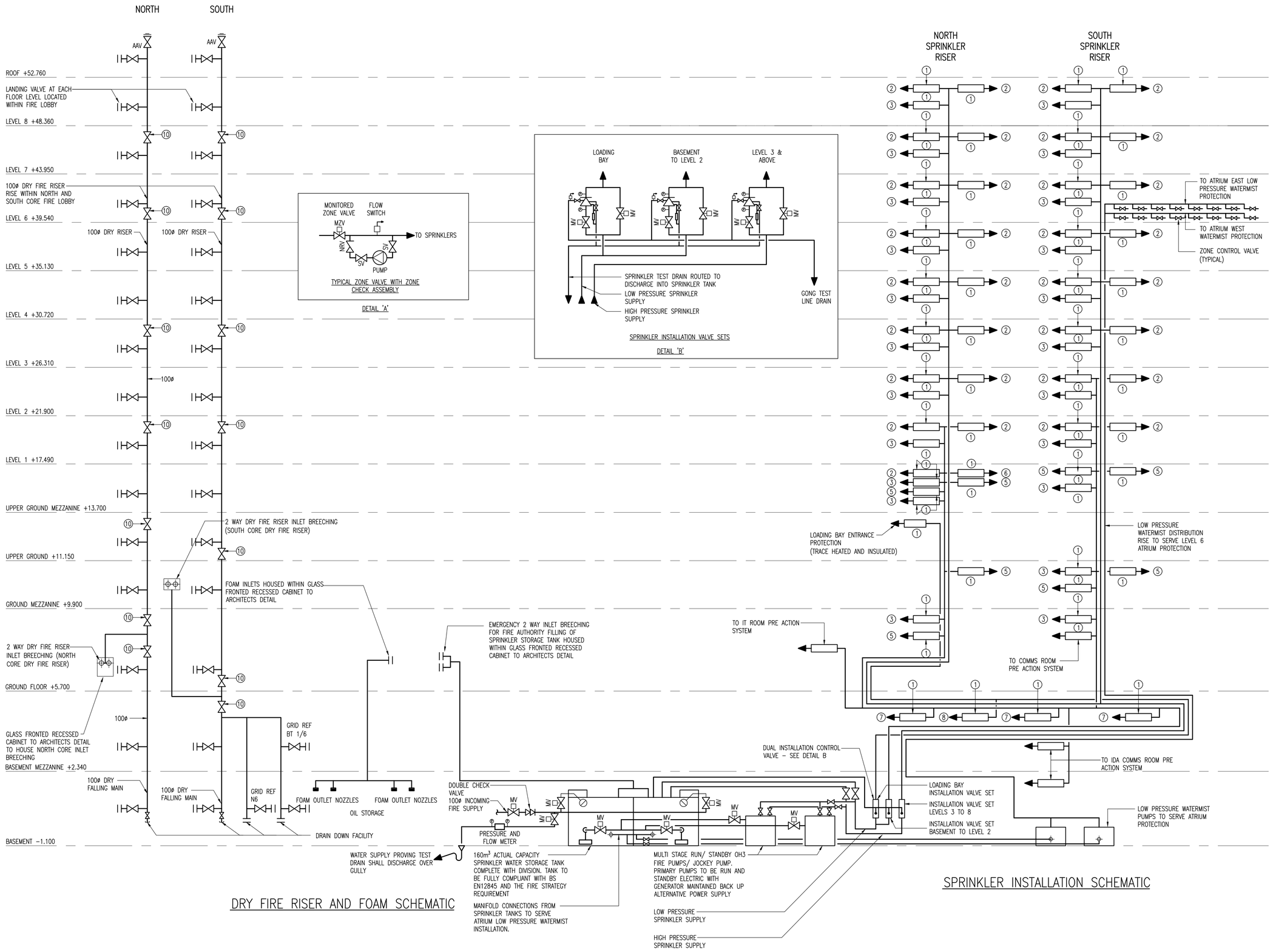

NOTES:

1. THE BUILDING SHALL BE PROTECTED WITH AN AUTOMATIC SPRINKLER INSTALLATION UNDER THE REQUIREMENTS OF SECTION 20 AND IN ACCORDANCE WITH BS EN12845:2004.
2. THE INSTALLATION SHALL BE AN ORDINARY HAZARD (OH)3 LIFE SAFETY INSTALLATION DUE TO THE MULTI-STOREY NATURE OF THE BUILDING AND THE HEIGHT DIFFERENCE BETWEEN THE HIGHEST AND LOWEST SPRINKLER EXCEDING 45m.
3. THE INFORMATION SHOWN ON THIS DRAWING IS INDICATIVE ONLY AND IS TO BE VERIFIED BY THE APPOINTED SPRINKLER SPECIALIST AT TENDER STAGE.
4. ZONE CONTROL VALVES FOR RETAIL AREAS WILL BE LOCATED OUTSIDE THE RETAIL UNIT UNDER THE LANDLORDS CONTROL.
5. ZONE CONTROL VALVES FOR LANDLORDS AREA'S TO BE HOUSED WITHIN ACCESSIBLE DUCT.
6. EACH ZONE CONTROL VALVE WILL INCORPORATE A 'ZONECHECK' ASSEMBLY FOR TESTING THE OPERATION OF THE FLOW SWITCH IN EACH ZONE.

SPRINKLER REFERENCES

1. TYPICAL ZONE VALVE WITH ZONE CHECK ASSEMBLY
2. OFFICE ZONE
3. LANDLORDS AREA PROTECTION
4. RETAIL AREA PROTECTION
5. AMENITIES AREA PROTECTION
6. MAIN ENTRANCE AREA PROTECTION
7. BASEMENT LEVEL PROTECTION
8. LOADING BAY PROTECTION
10. PADLOCKED OPEN STOP VALVE FITTED TO DRY RISER. MAXIMUM SPACING BETWEEN VALVES 10 METRES TO ACHIEVE COMPLIANCE WITH BS 9990

LEGEND OF SYMBOLS

- SV — STOP VALVE
- NRV — NON RETURN VALVE
- PRESSURE GAUGE
- ALARM VALVE
- FLOW METER ASSEMBLY
- ZONE VALVE AND ZONECHECK ASSEMBLY
- MV — MONITORED VALVE
- MZV — MONITORED ZONE VALVE
- FLOW SWITCH
- PUMP

REV	DATE	BY	DESCRIPTION	CHK	APD
02	25.09.2015	PJ	STAGE F	NE	TA
01	25.09.2015	PJ	STAGE F	NE	TA

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WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: DRY FIRE MAINS SPRINKLER INSTALLATION & FOAM INLET SCHEMATIC

SCALE @ A1:	CHECKED:		APPROVED:
N.T.S	NE		TA
PROJECT No: 50200153	DESIGNED: PJ	DRAWN: CAD	DATE: JUNE 2014

DRAWING No: 40SL-PH-6306-WS — REV: 02

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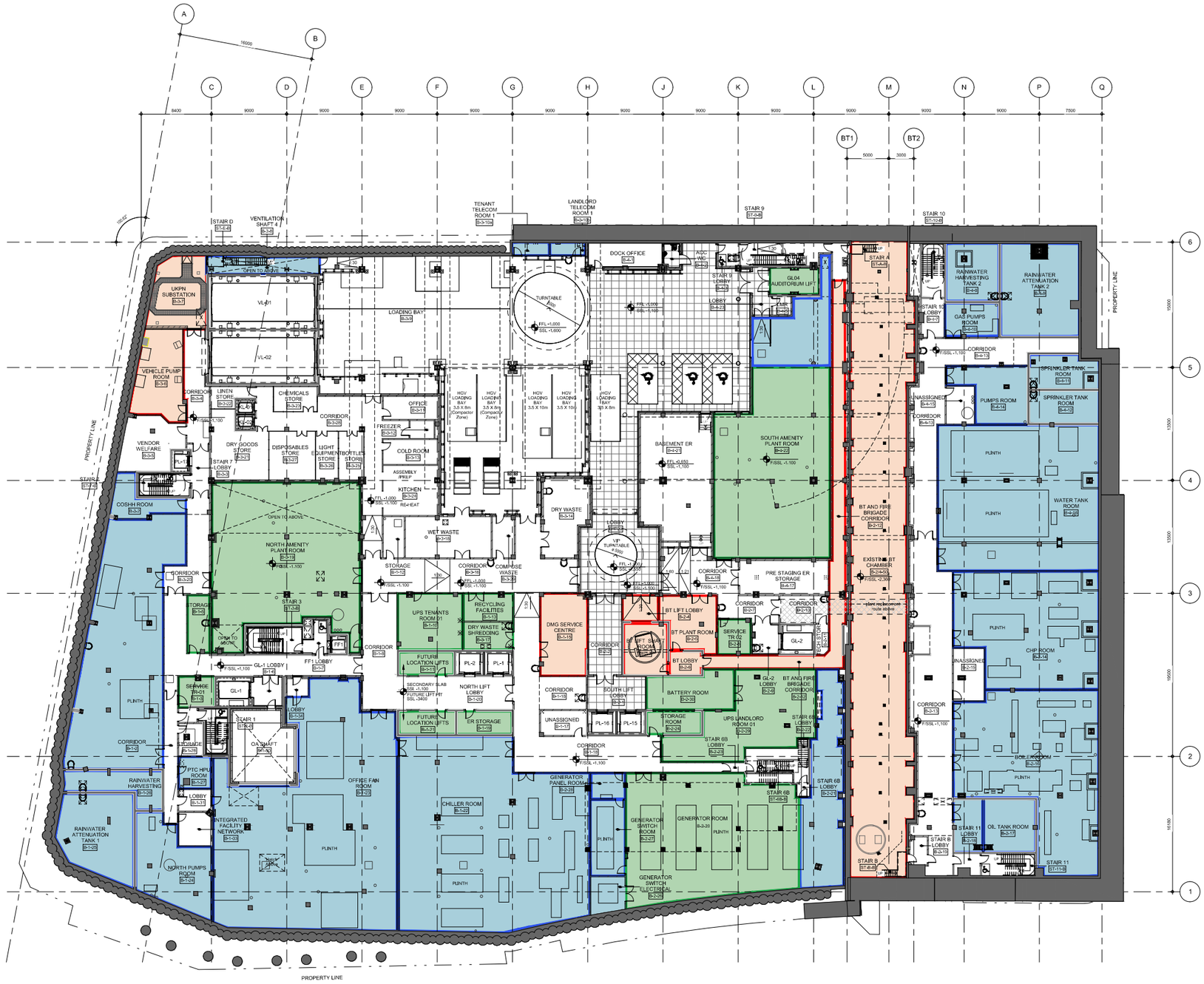
File name S:\CIS LONDON\PROJECTS\50200\50200153 - PROJECT ARMADIE DRAWINGS\PH\WORKING\40SL-PH-6306-WS.DWG, printed on 28 September 2015 12:23:24, by Kyle, Ed

16. APPENDICES

E. Tenant and Landlord Plant and Riser Allocation



LANDLORD PLANT

TENANT PLANT

3RD PARTY

E□TRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-0980-AA

BASEMENT TENANT □ LANDLORD PLANT ALLOCATION

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-534 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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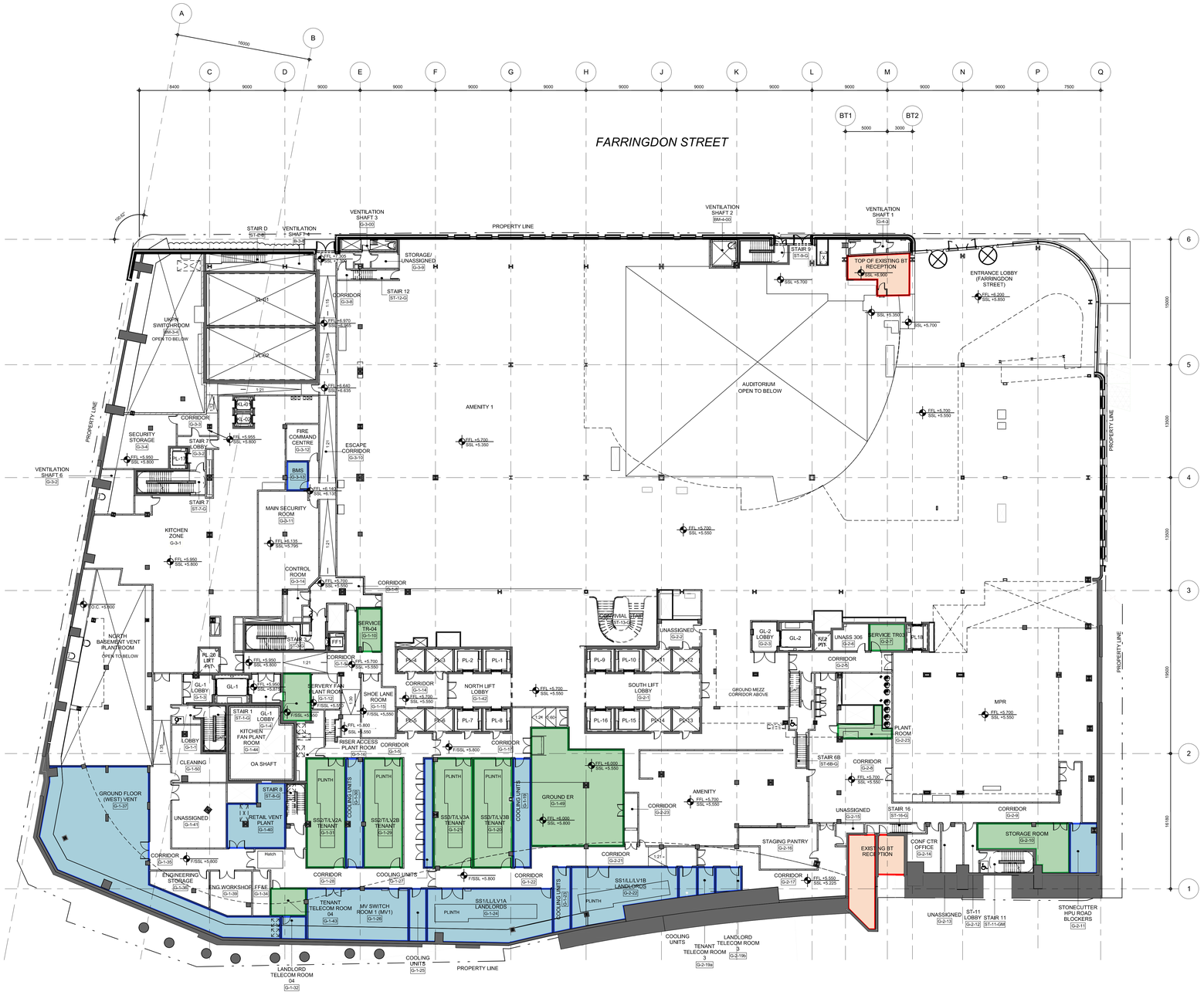

LANDLORD PLANT

TENANT PLANT

3RD PARTY

E□TRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-0990-AA

GROUND TENANT □ LANDLORD PLANT ALLOCATION

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-535 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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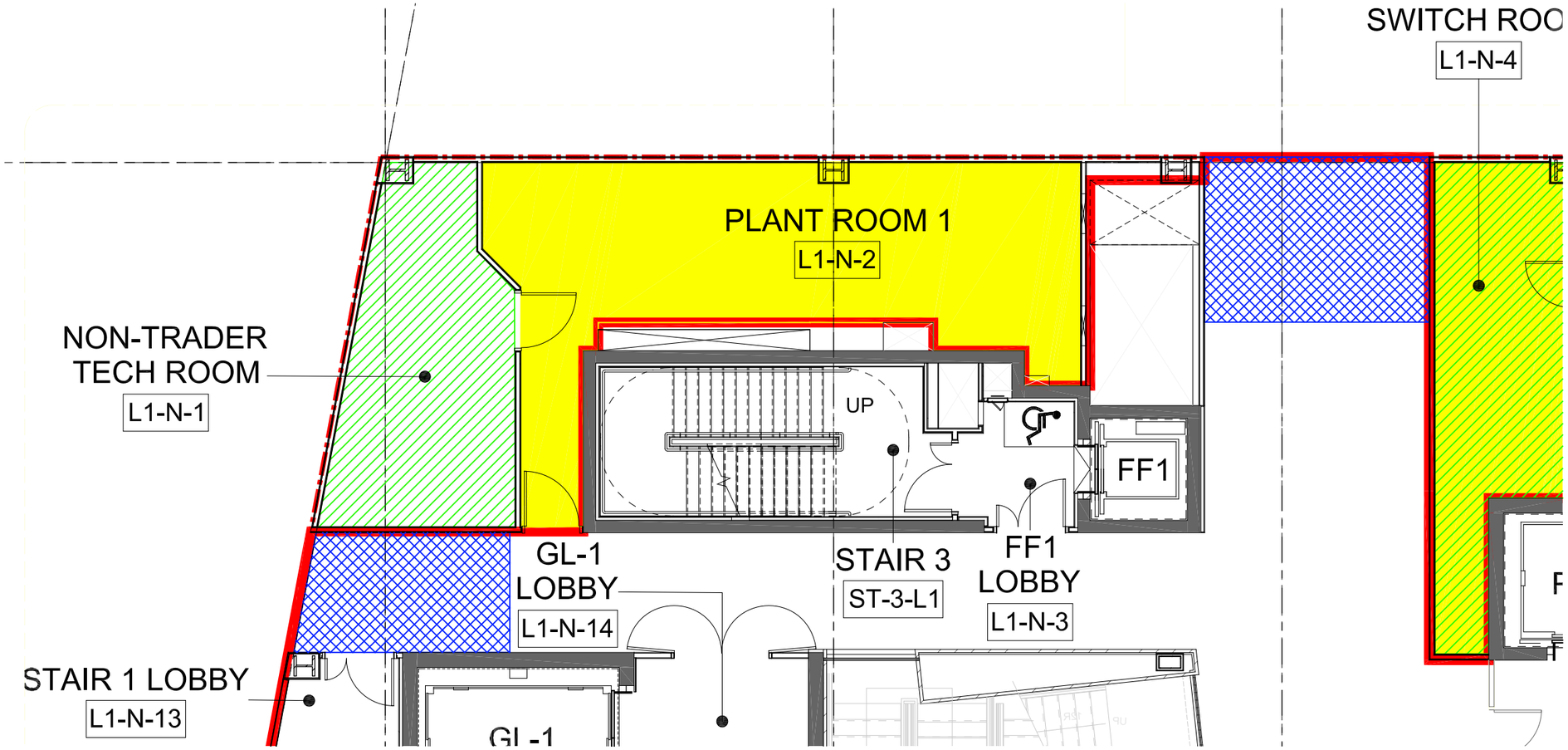

ZONE FOR TOILETS SUBJECT TO SIZE (POTENTIAL NIA TO BE RETURNED)

OPTION ZONE FOR LANDLORD FIT OUT

POTENTIAL ZONE FOR ELECTRICAL, IT ROOMS OR TENANT MEETING ROOMS

ZONE FOR TENENT PLANT
UFAD, FCU'S, CHILLED CEILING OPTIONS

TENANT RISER

DEMISE LINE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA
LANDLORD & TENANCY CORE SPLIT OPTION 1 N1

PROJECT NUMBER: 2087

PROJECT NAME: THE LONDON DEVELOPMENT

KPF

KPF_SK-589 REV_01

SCALE: 1-300

DATE: 2015.10.09

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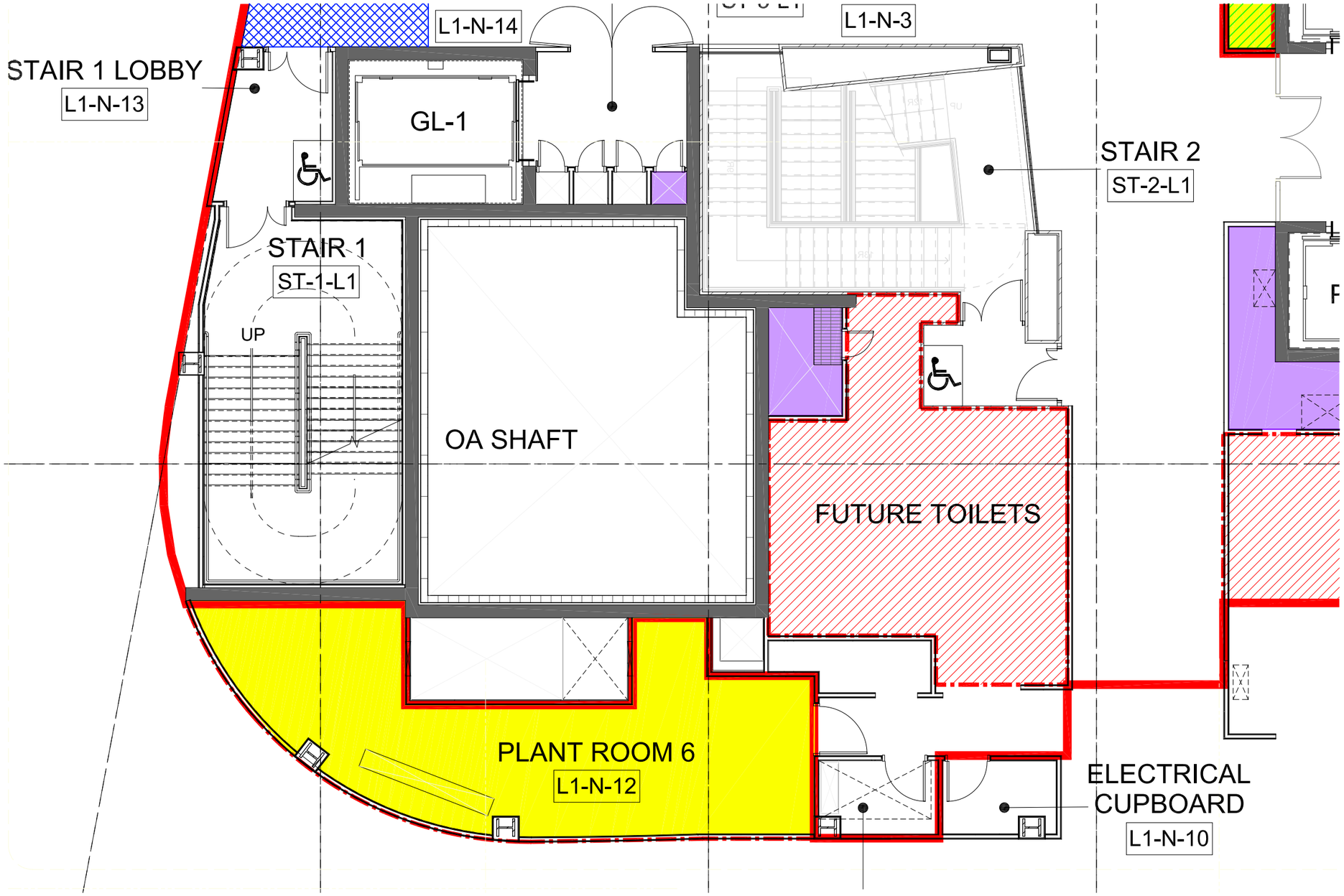

- ZONE FOR TOILETS SUBJECT TO SIZE (POTENTIAL NIA TO BE RETURNED)
- OPTION ZONE FOR LANDLORD FIT OUT
- POTENTIAL ZONE FOR ELECTRICAL, IT ROOMS OR TENANT MEETING ROOMS
- ZONE FOR TENENT PLANT
  UFAD, FCU'S, CHILLED CEILING OPTIONS
- TENANT RISER
- DEMISE LINE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA
LANDLORD & TENANCY CORE SPLIT OPTION 1 N2

PROJECT NUMBER: 2087
PROJECT NAME: THE LONDON DEVELOPMENT

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KPF_SK-590 REV_01
SCALE: 1-300 DATE: 2015.10.09

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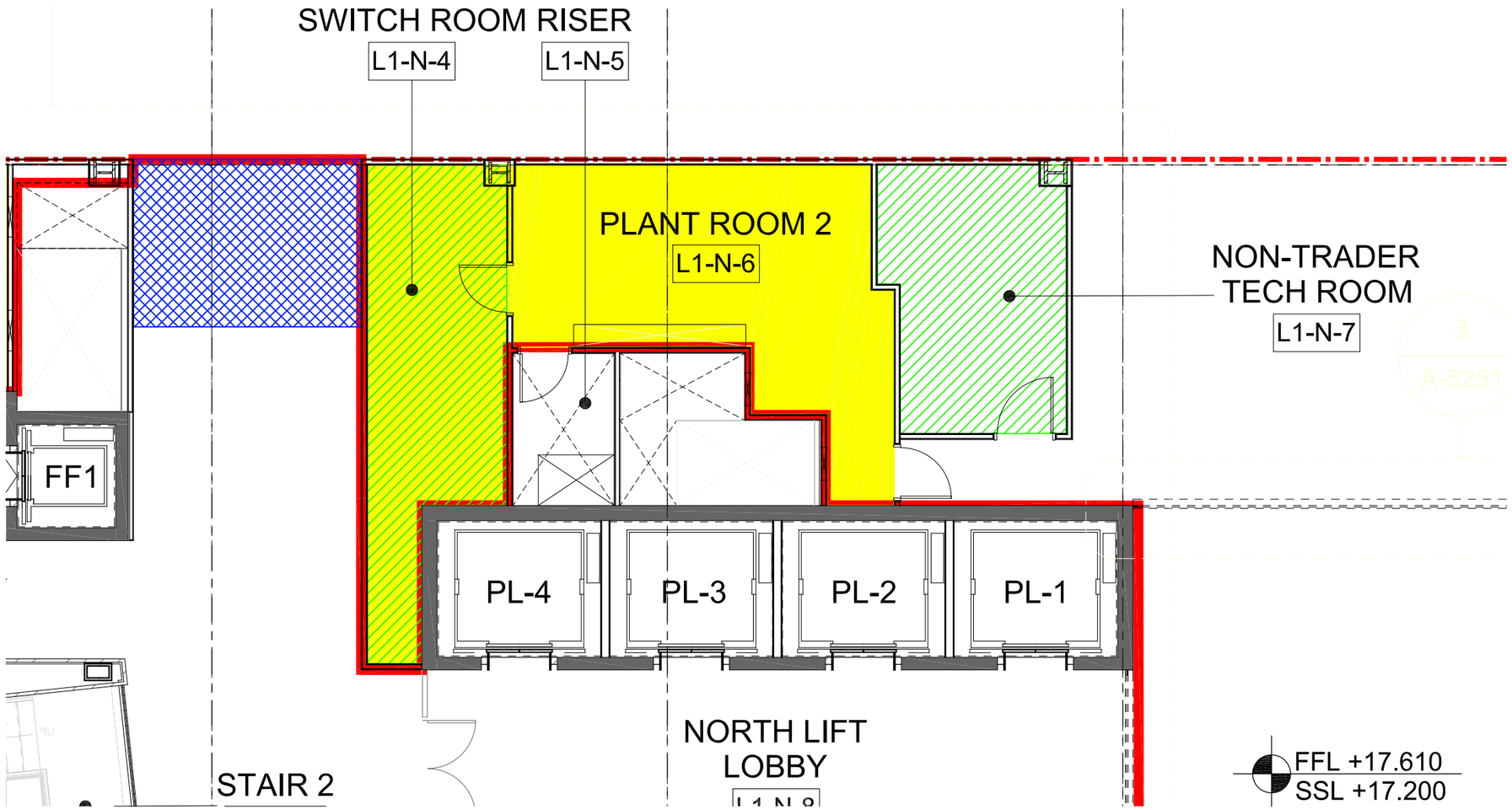

ZONE FOR TOILETS SUBJECT TO SIZE (POTENTIAL NIA TO BE RETURNED)

OPTION ZONE FOR LANDLORD FIT OUT

POTENTIAL ZONE FOR ELECTRICAL, IT ROOMS OR TENANT MEETING ROOMS

ZONE FOR TENENT PLANT
UFAD, FCU'S, CHILLED CEILING OPTIONS

TENANT RISER

DEMISE LINE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA
LANDLORD & TENANCY CORE SPLIT OPTION 1 N3

PROJECT NUMBER: 2087

PROJECT NAME: THE LONDON DEVELOPMENT

KPF

KPF_SK-591 REV_01

SCALE: 1-300

DATE: 2015.10.09

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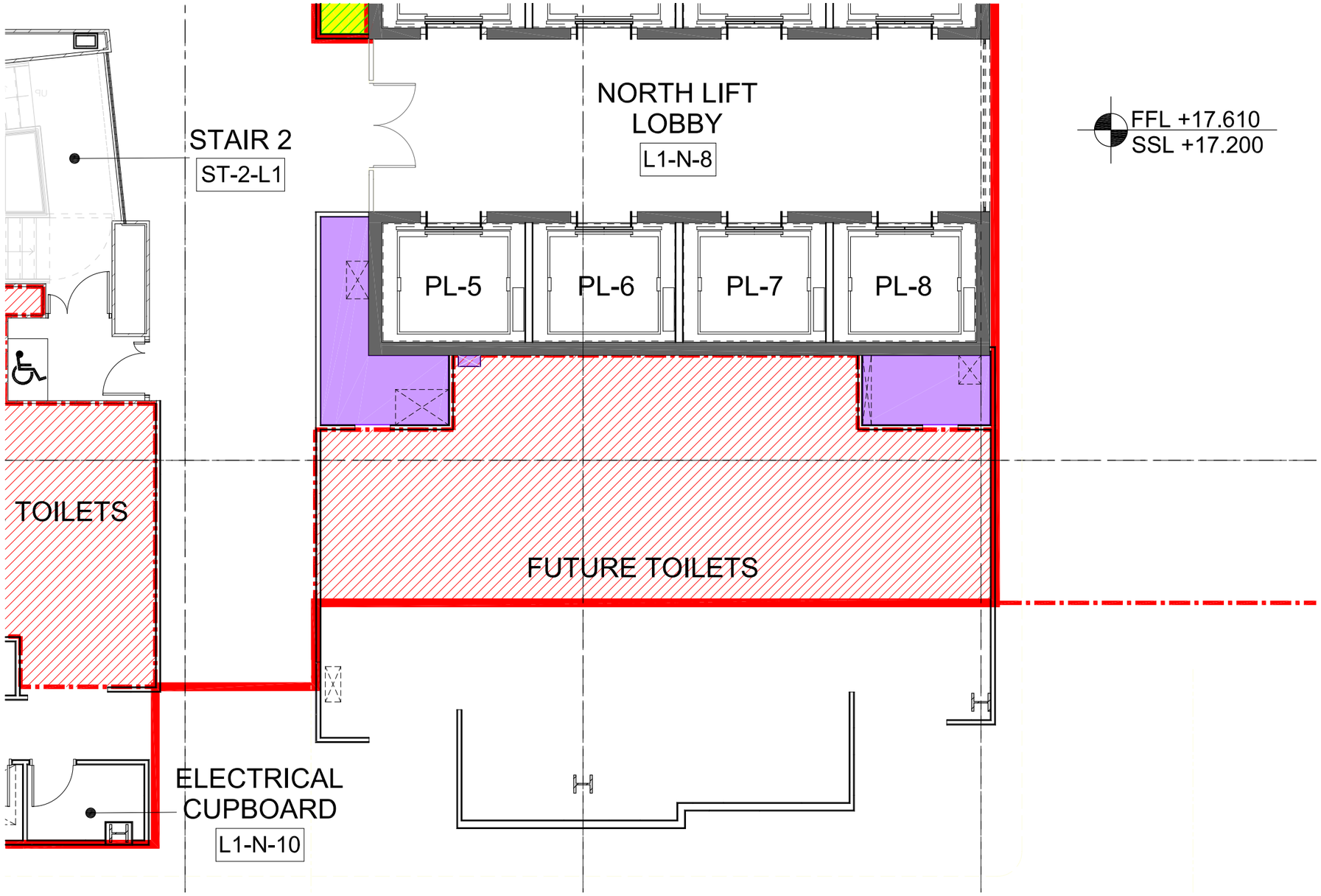

ZONE FOR TOILETS SUBJECT TO SIZE (POTENTIAL NIA TO BE RETURNED)

OPTION ZONE FOR LANDLORD FIT OUT

POTENTIAL ZONE FOR ELECTRICAL, IT ROOMS OR TENANT MEETING ROOMS

ZONE FOR TENENT PLANT
UFAD, FCU'S, CHILLED CEILING OPTIONS

TENANT RISER

DEMISE LINE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA
LANDLORD & TENANCY CORE SPLIT OPTION 1 N4

PROJECT NUMBER: 2087

PROJECT NAME: THE LONDON DEVELOPMENT

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KPF_SK-592 REV_01

SCALE: 1-300

DATE: 2015.10.09

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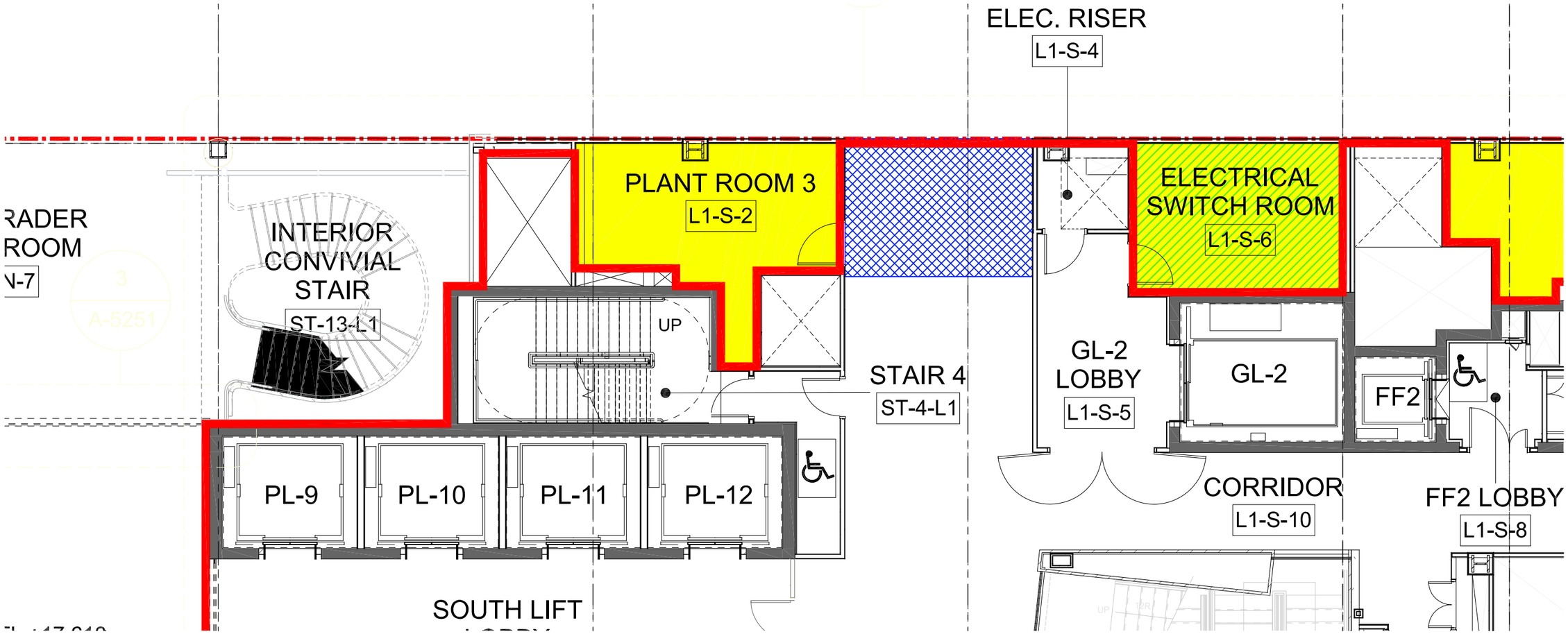

- ZONE FOR TOILETS SUBJECT TO SIZE (POTENTIAL NIA TO BE RETURNED)
- OPTION ZONE FOR LANDLORD FIT OUT
- POTENTIAL ZONE FOR ELECTRICAL, IT ROOMS OR TENANT MEETING ROOMS
- ZONE FOR TENENT PLANT
  UFAD, FCU'S, CHILLED CEILING OPTIONS
- TENANT RISER
- DEMISE LINE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA
LANDLORD & TENANCY CORE SPLIT OPTION 1 S1

PROJECT NUMBER: 2087
PROJECT NAME: THE LONDON DEVELOPMENT

KPF

KPF_SK-593 REV_01
SCALE: 1-300 DATE: 2015.10.09

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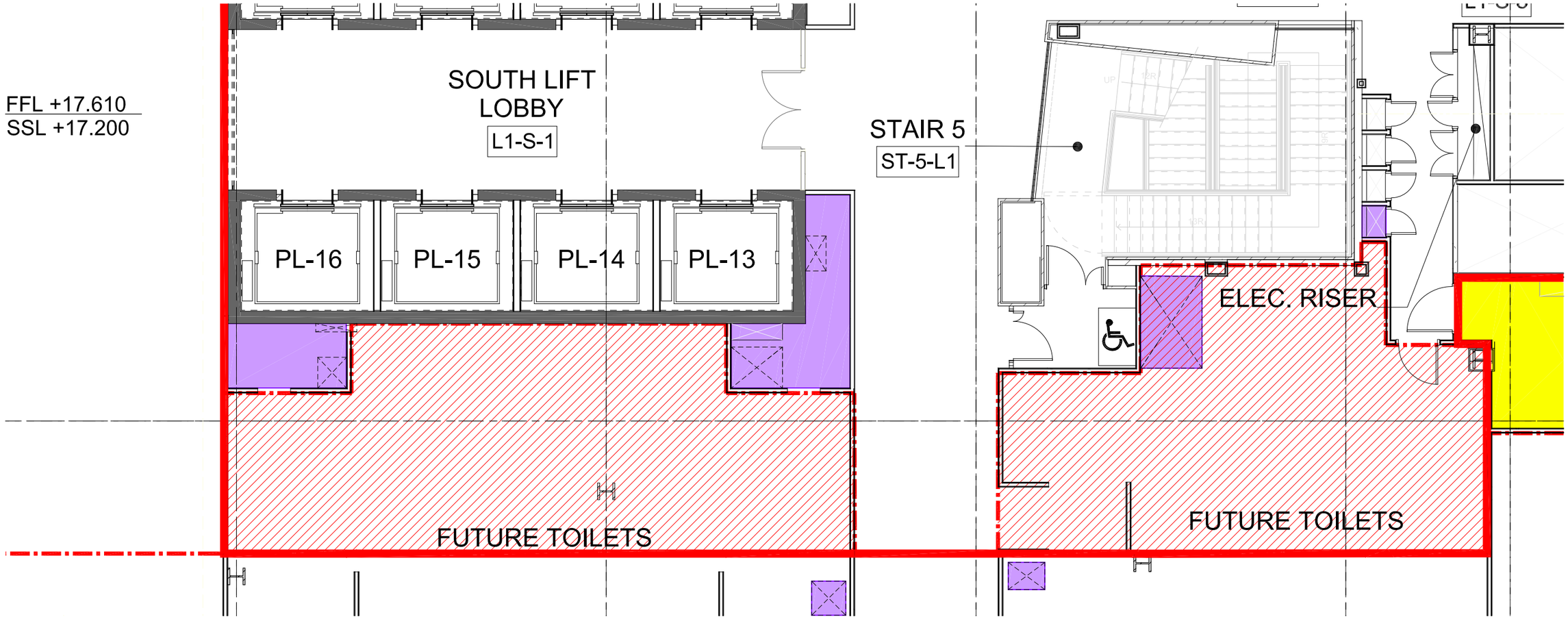

ZONE FOR TOILETS SUBJECT TO SIZE (POTENTIAL NIA TO BE RETURNED)

OPTION ZONE FOR LANDLORD FIT OUT

POTENTIAL ZONE FOR ELECTRICAL, IT ROOMS OR TENANT MEETING ROOMS

ZONE FOR TENENT PLANT
UFAD, FCU'S, CHILLED CEILING OPTIONS

TENANT RISER

DEMISE LINE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA
LANDLORD & TENANCY CORE SPLIT OPTION 1 S2

PROJECT NUMBER: 2087

PROJECT NAME: THE LONDON DEVELOPMENT

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KPF_SK-594 REV_01

SCALE: 1-300

DATE: 2015.10.09

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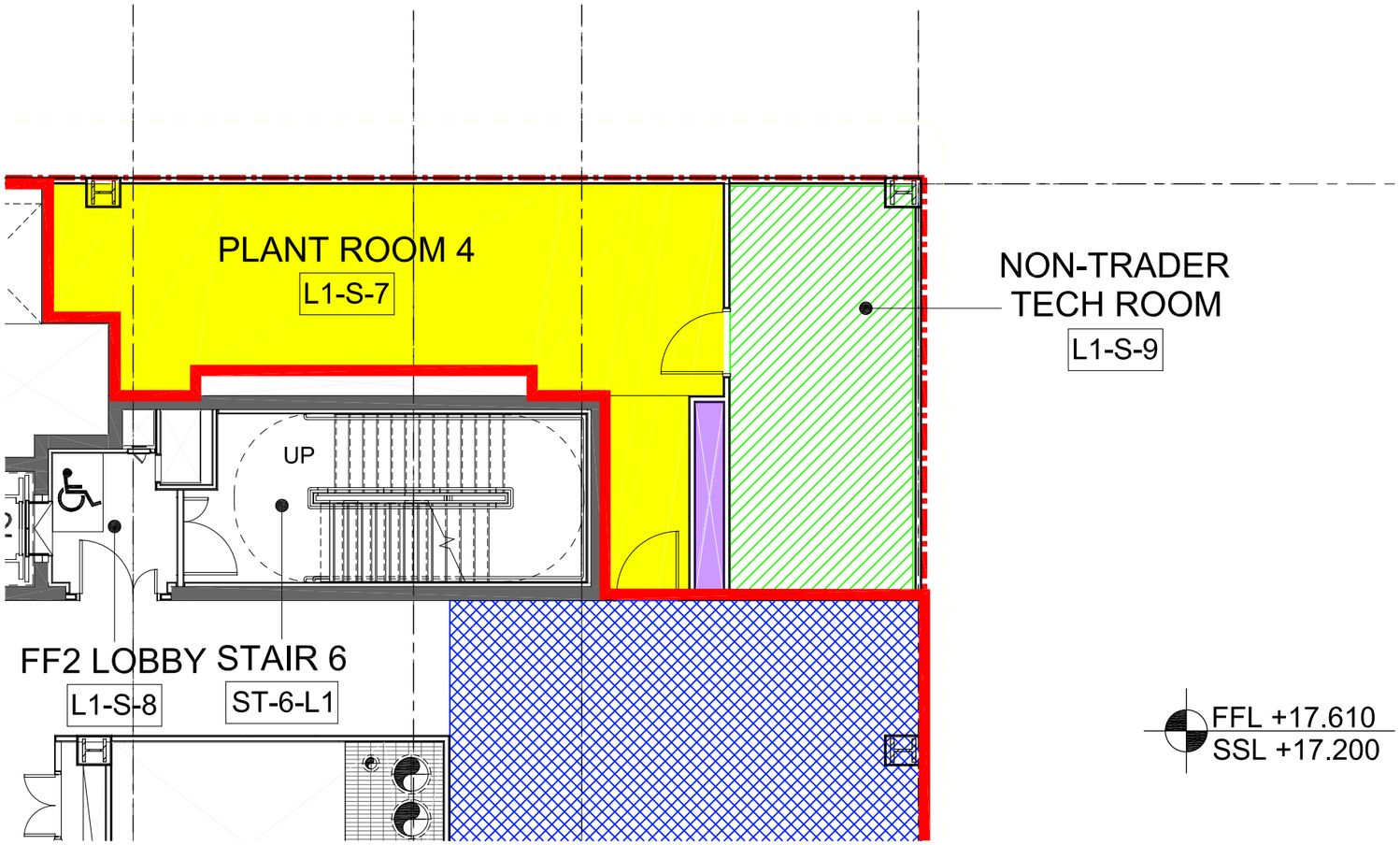

ZONE FOR TOILETS SUBJECT TO SIZE (POTENTIAL NIA TO BE RETURNED)

OPTION ZONE FOR LANDLORD FIT OUT

POTENTIAL ZONE FOR ELECTRICAL, IT ROOMS OR TENANT MEETING ROOMS

ZONE FOR TENENT PLANT
UFAD, FCU'S, CHILLED CEILING OPTIONS

TENANT RISER

DEMISE LINE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA
LANDLORD & TENANCY CORE SPLIT OPTION 1 S3

PROJECT NUMBER: 2087

PROJECT NAME: THE LONDON DEVELOPMENT

KPF

KPF_SK-595 REV_01

SCALE: 1-300

DATE: 2015.10.09

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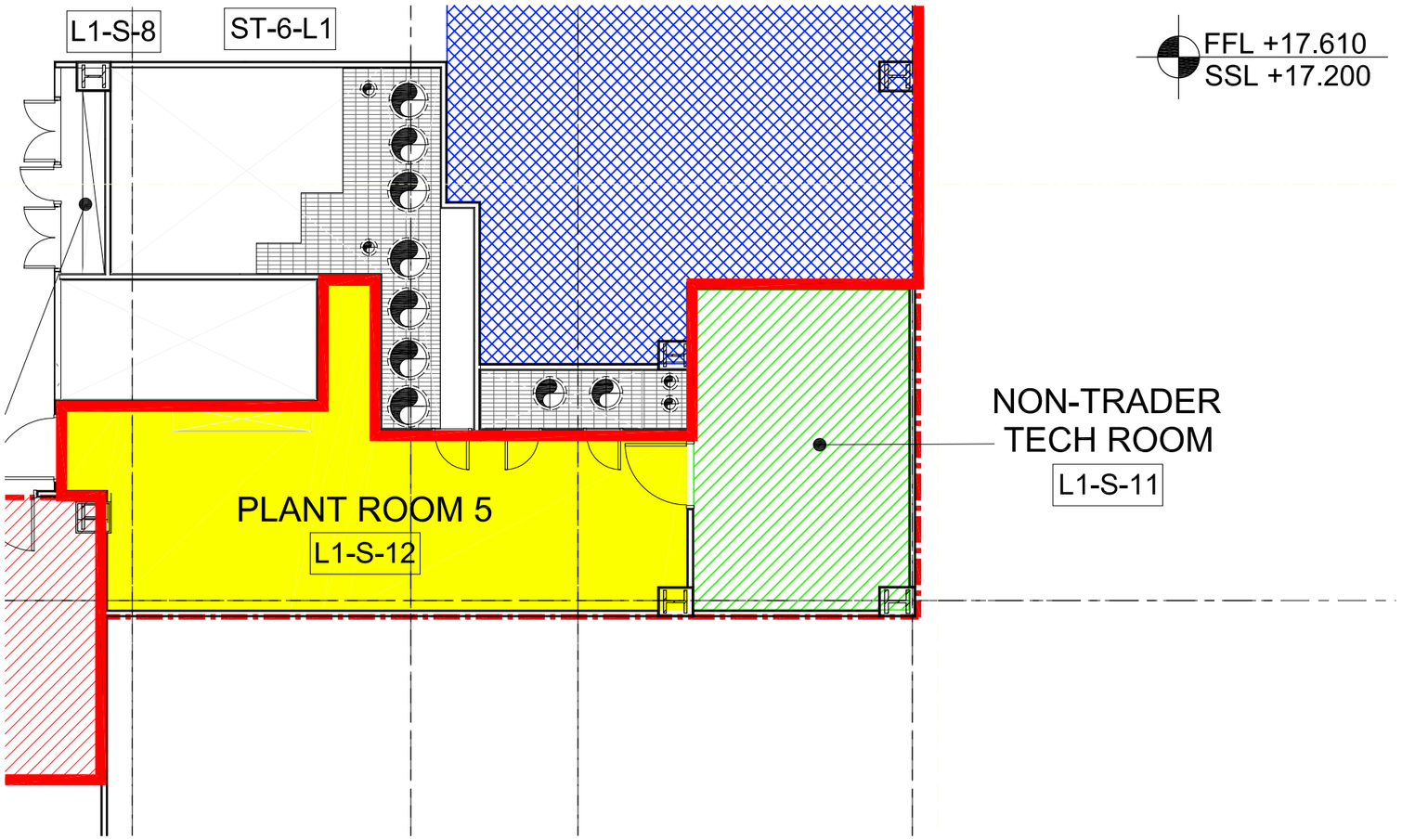

ZONE FOR TOILETS SUBJECT TO SIZE (POTENTIAL NIA TO BE RETURNED)

OPTION ZONE FOR LANDLORD FIT OUT

POTENTIAL ZONE FOR ELECTRICAL, IT ROOMS OR TENANT MEETING ROOMS

ZONE FOR TENENT PLANT
UFAD, FCU'S, CHILLED CEILING OPTIONS

TENANT RISER

DEMISE LINE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA
LANDLORD & TENANCY CORE SPLIT OPTION 1 S4

PROJECT NUMBER: 2087

PROJECT NAME: THE LONDON DEVELOPMENT

KPF

KPF_SK-596 REV_01

SCALE: 1-300

DATE: 2015.10.09

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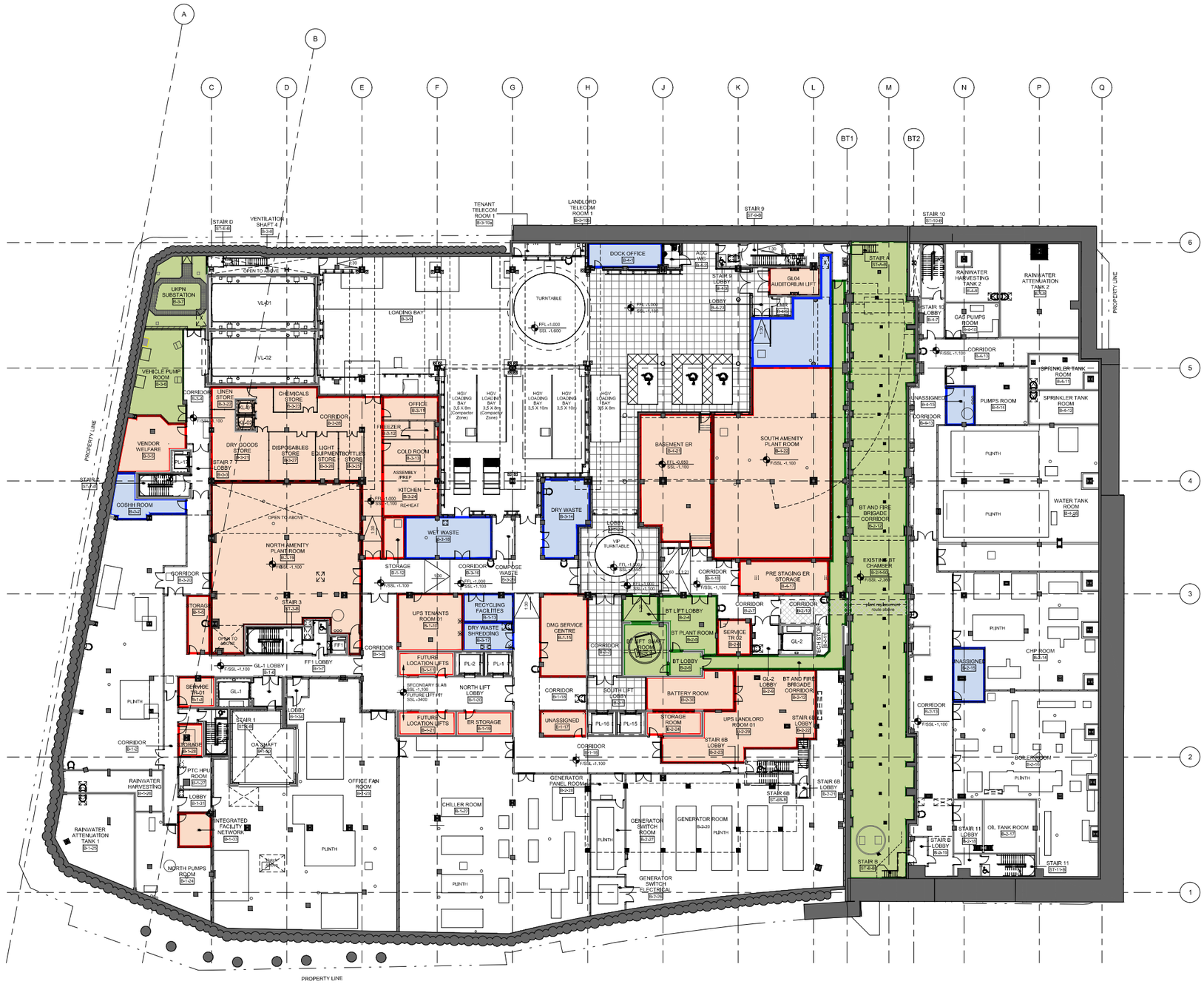
16. APPENDICES

F. Demise Plans per floor



TENANT DEMISE

LANDLORD ROOMS (NON PLANT)

3RD PARTY

E□TRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-0980-AA

BASEMENT DEMISE PLAN

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-526 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.29

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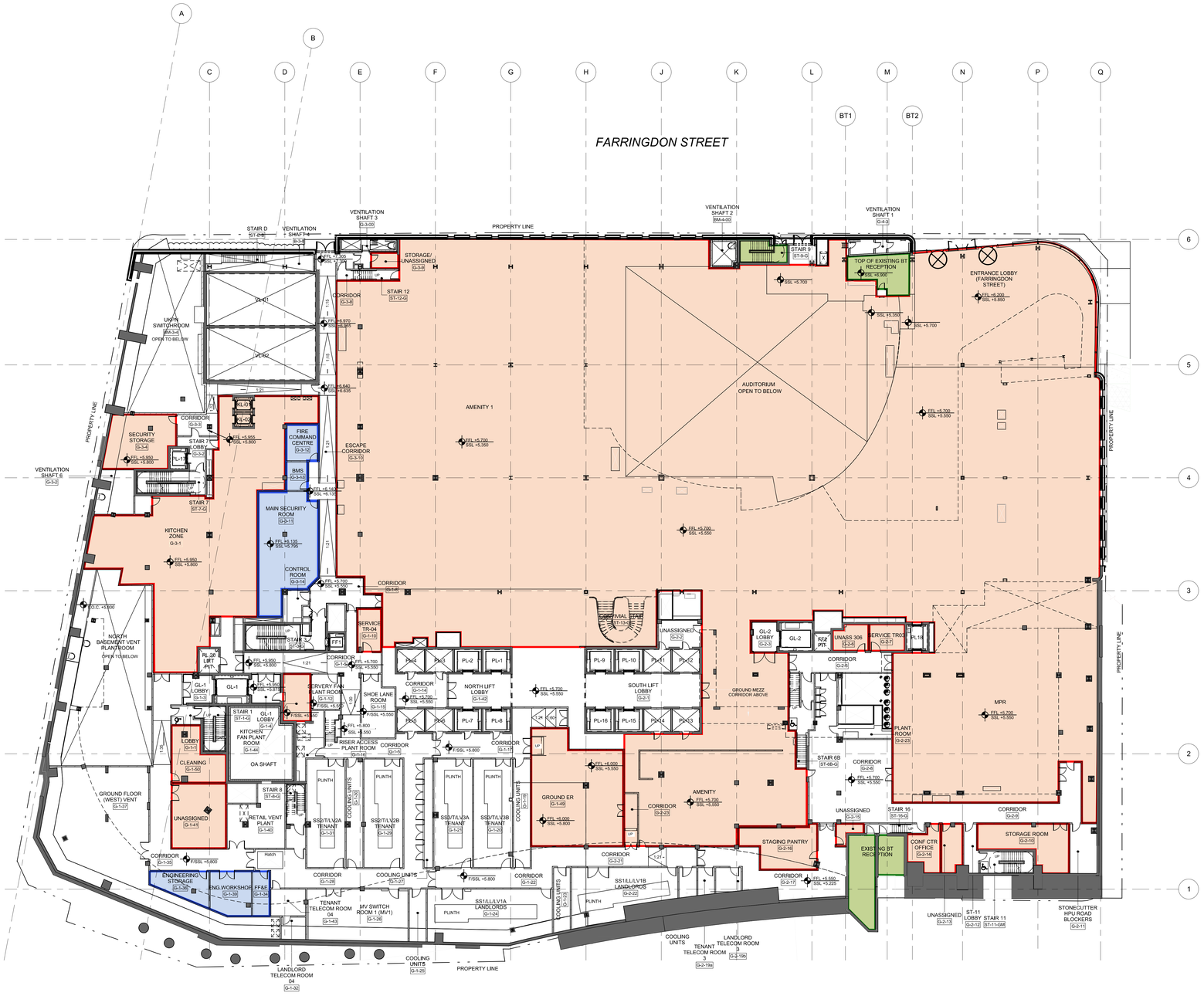

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-0990-AA

GROUND DEMISE PLAN

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-527 REV_03

SCALE: 1-200 @ A0

DATE: 2015.10.09

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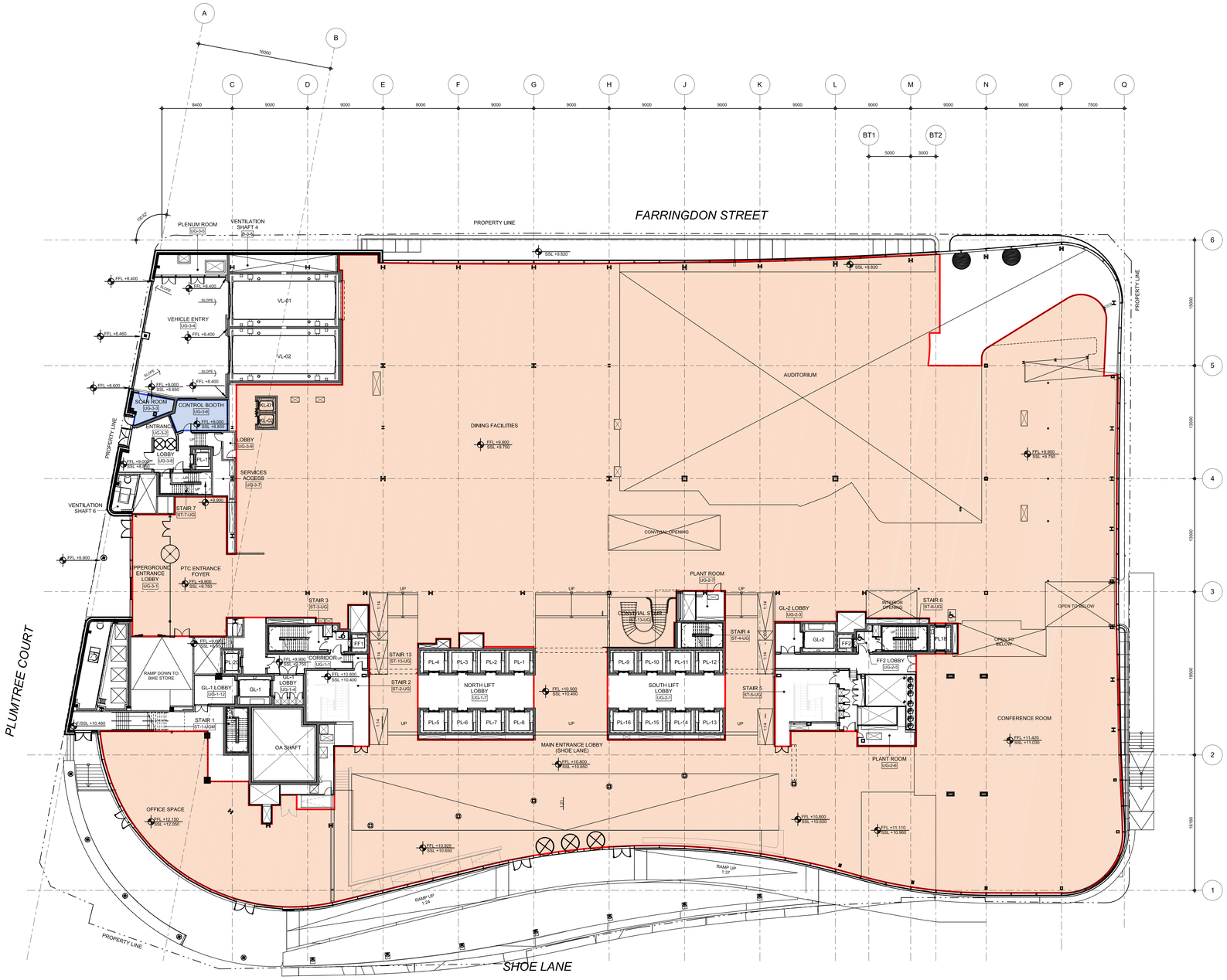

TENANT DEMISE

LANDLORD ROOMS (NON PLANT)

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1000-AA

UPPER GROUND DEMISE PLAN

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-528 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.29

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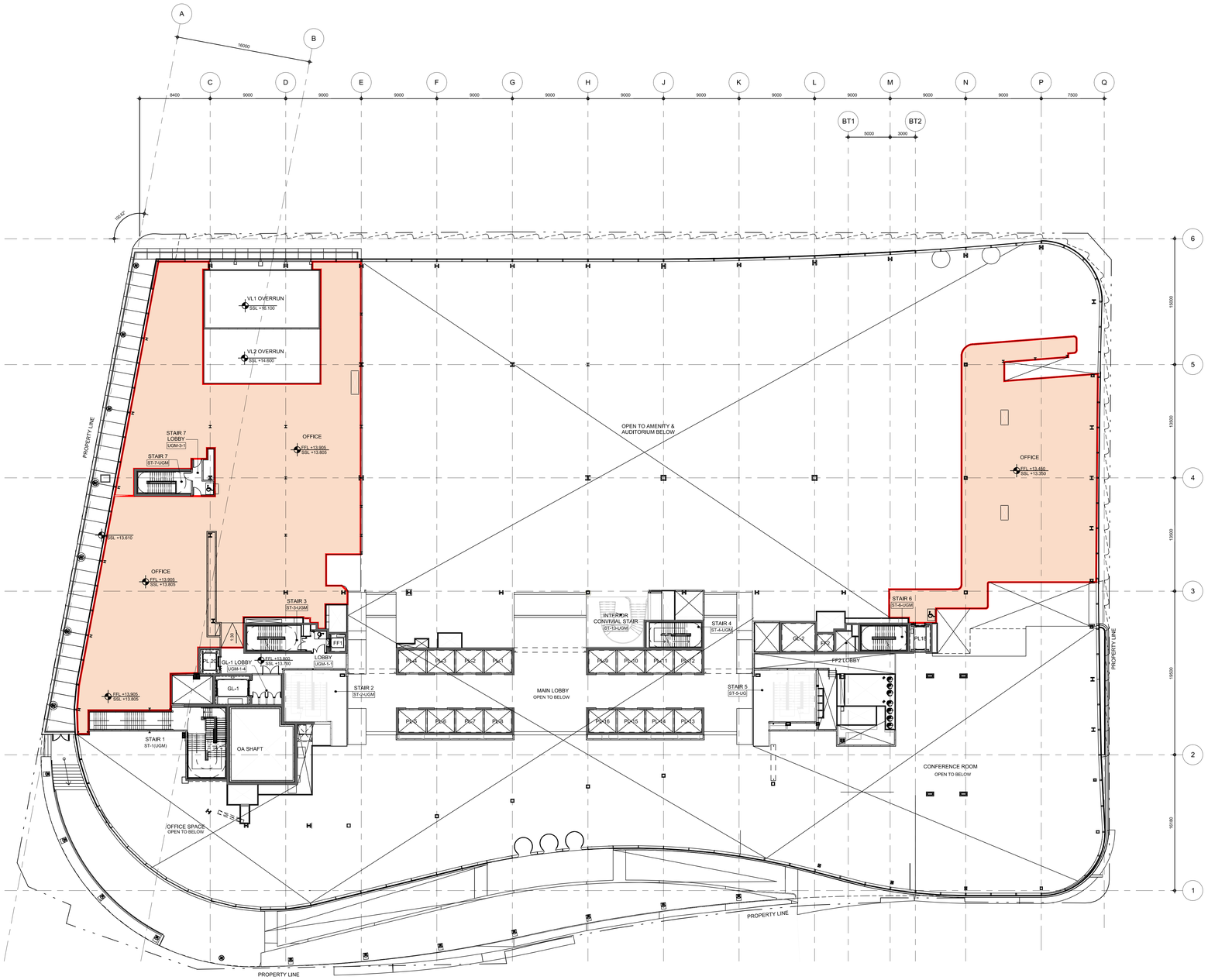

TENANT DEMISE

LANDLORD ROOMS (NON PLANT)

E□TRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1005-AA

UPPER GROUND ME□□ANINE DEMISE PLAN

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-529 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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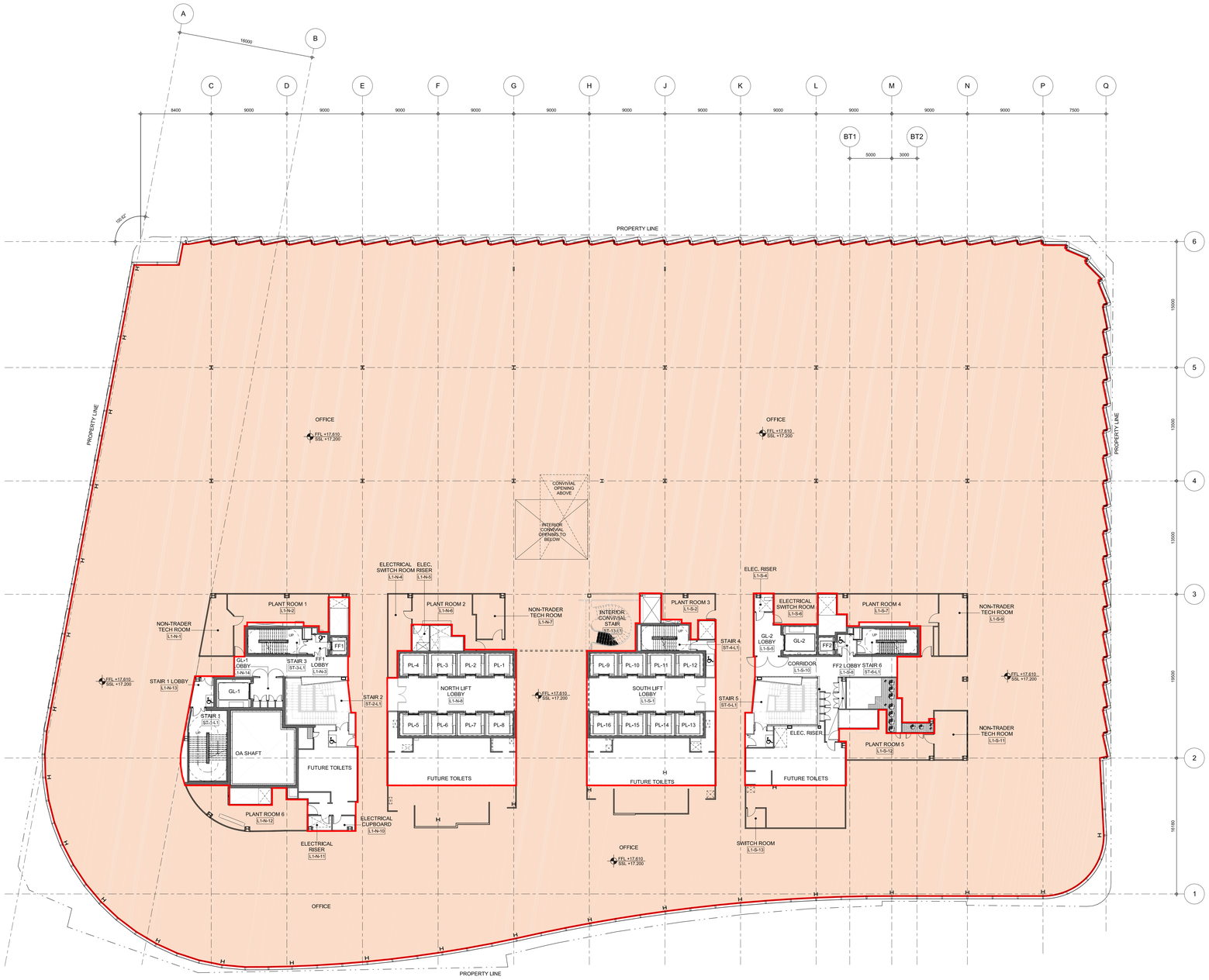

TENANT DEMISE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA

LEVEL 01 DEMISE PLAN (TYPICAL FOR LEVELS 02-07)

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-530 REV_03

SCALE: 1-200 @ A0

DATE: 2015.10.29

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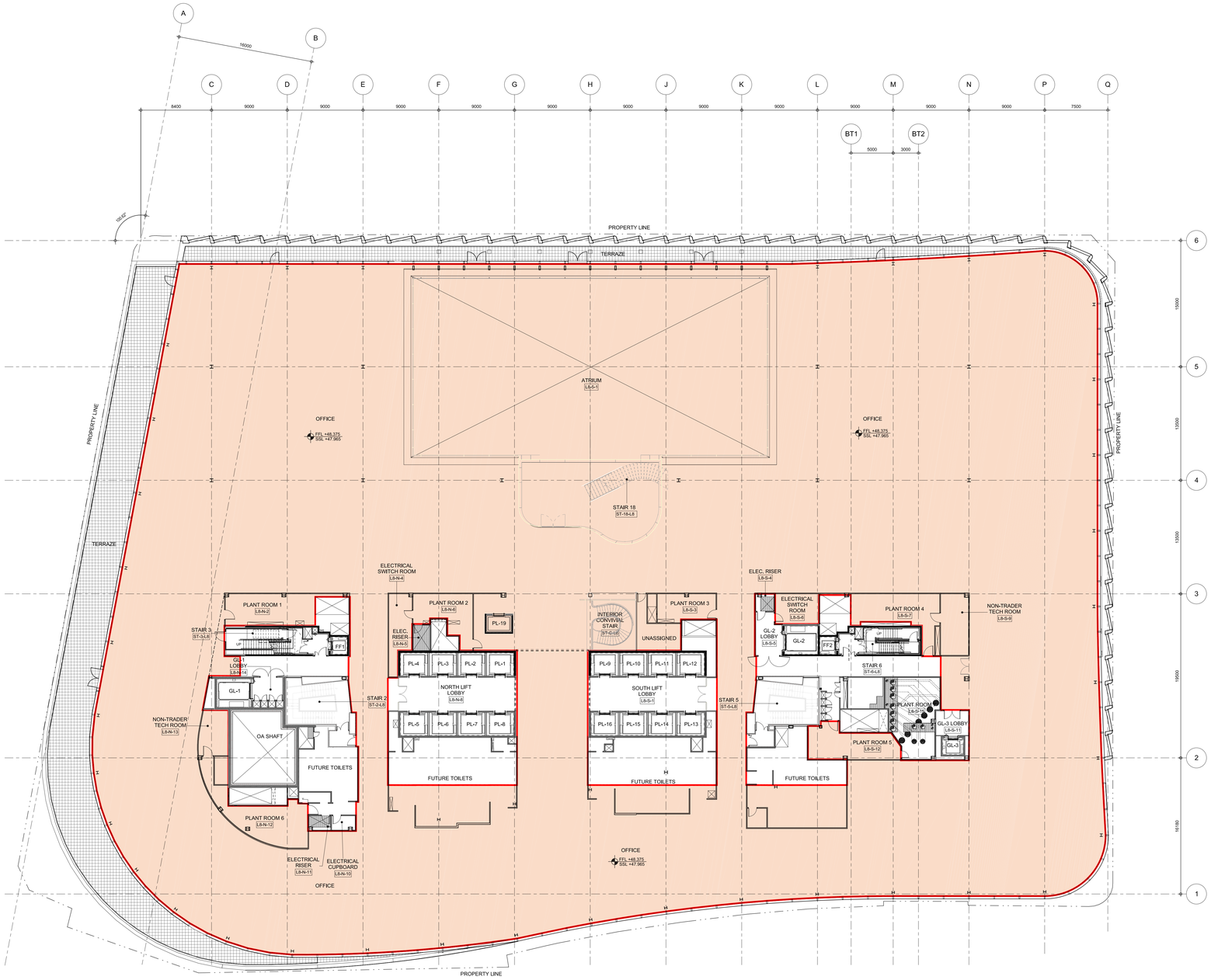

TENANT DEMISE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1080-AA

LEVEL 08 DEMISE PLAN

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-531 REV_02

SCALE: 1-200 @ A0

DATE: 2015.10.29

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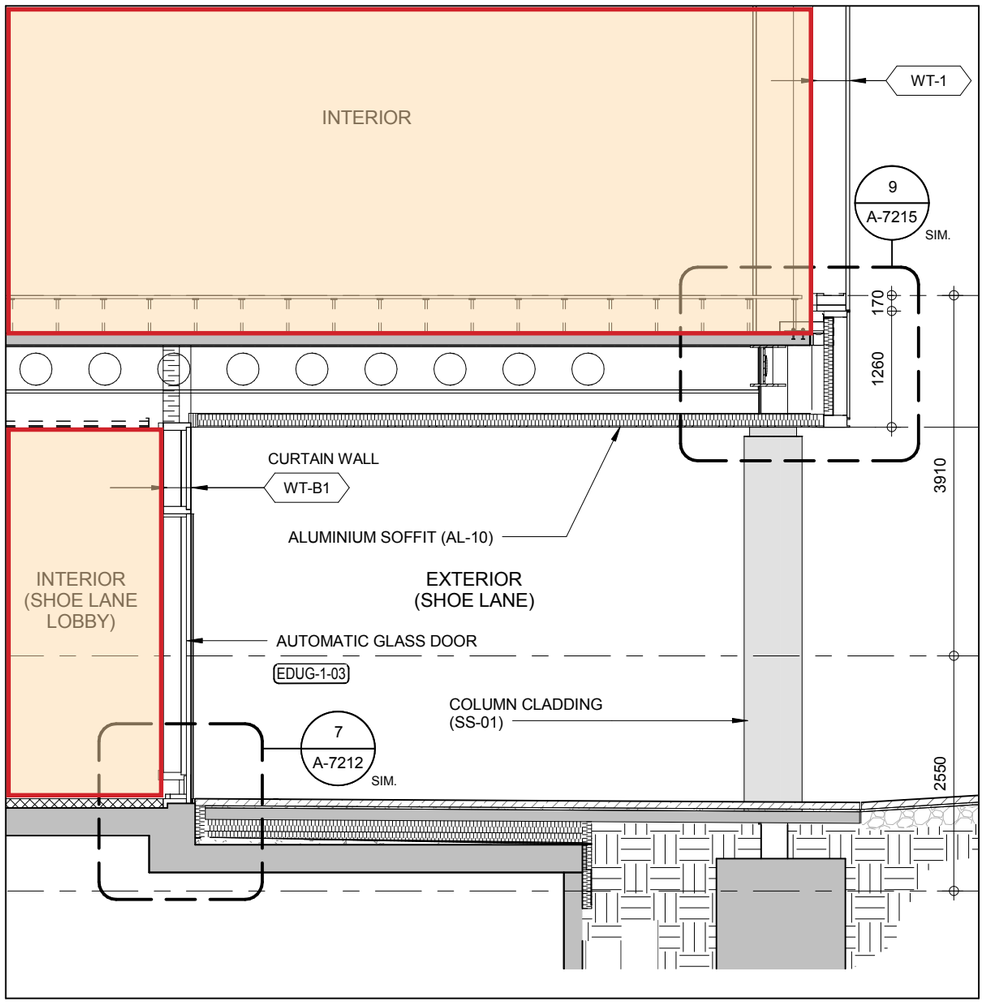
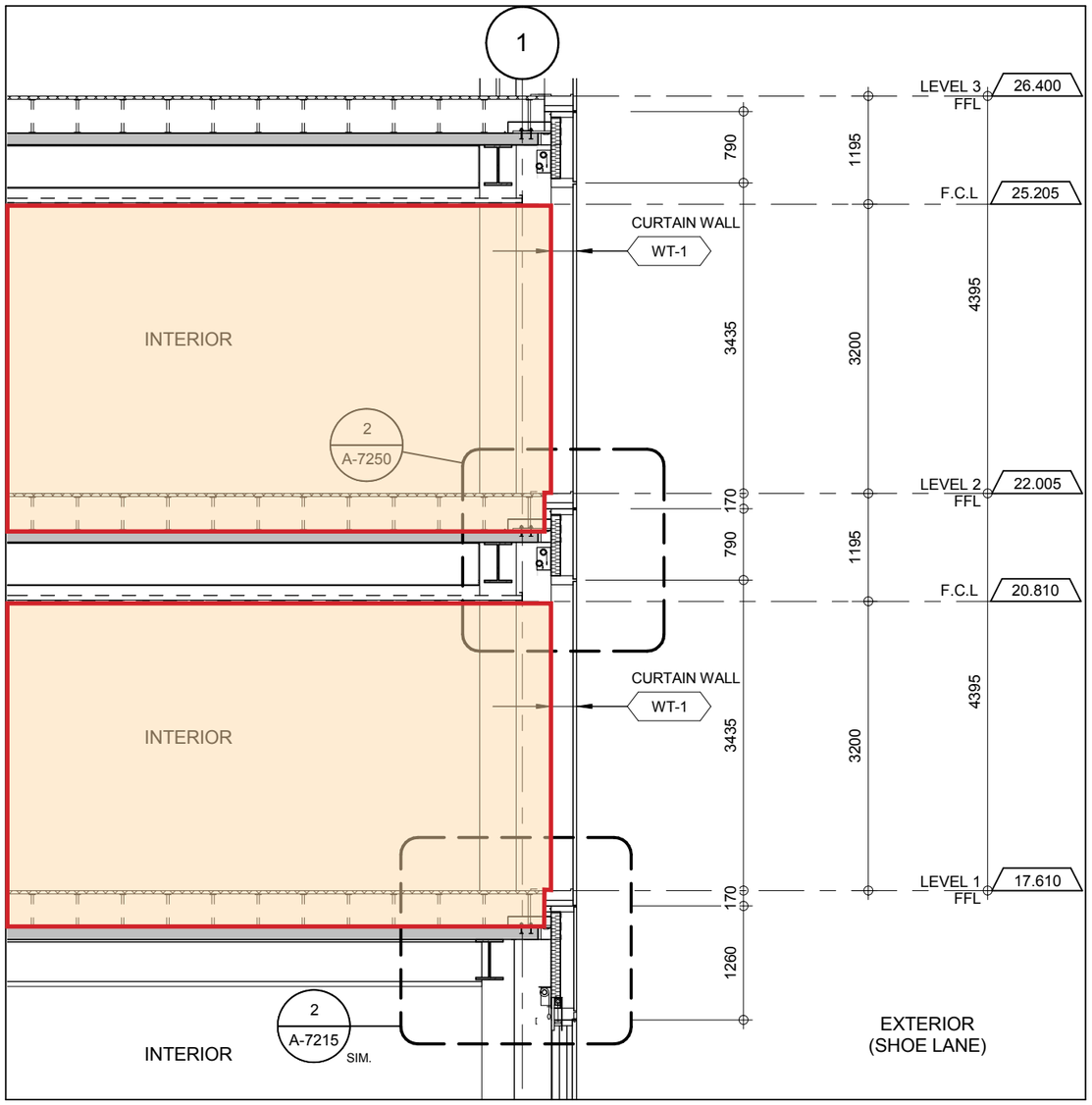
16. APPENDICES

G.Demise Sections



CLADDING WALL SECTION 5 / A-7108

1 : 50



PARTIAL SECTION 3 / A-7120

1 : 50

TENANT DEMISE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-7108-AA & 40SL-A-7120-AA

EXTERIOR DETAILS @ SHOE LANE/PLUMTREE COURT

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-532 REV_01

SCALE:

DATE: 2015.10.09

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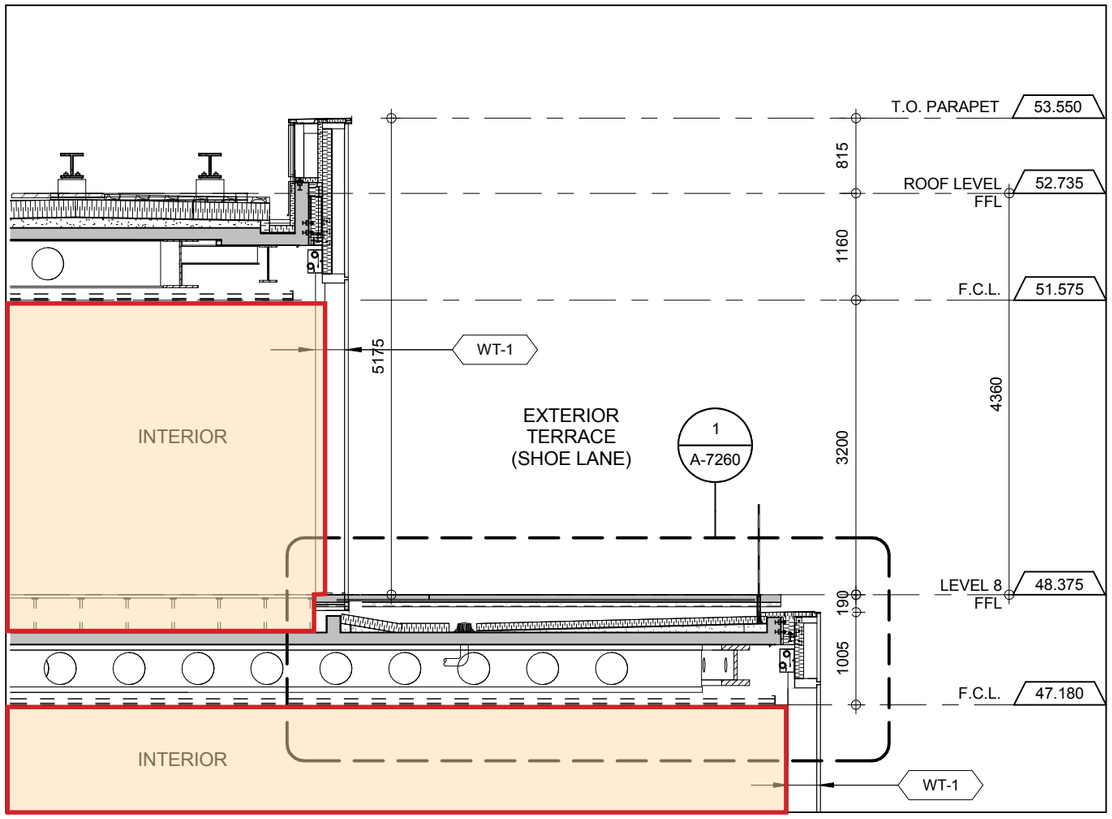

PARTIAL SECTION 9 / A-7132

1 : 50

TENANT DEMISE

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-7132-AA

EXTERIOR DETAILS @ SHOE LANE/PLUMTREE COURT

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-533 REV_01

SCALE:

DATE: 2015.10.09

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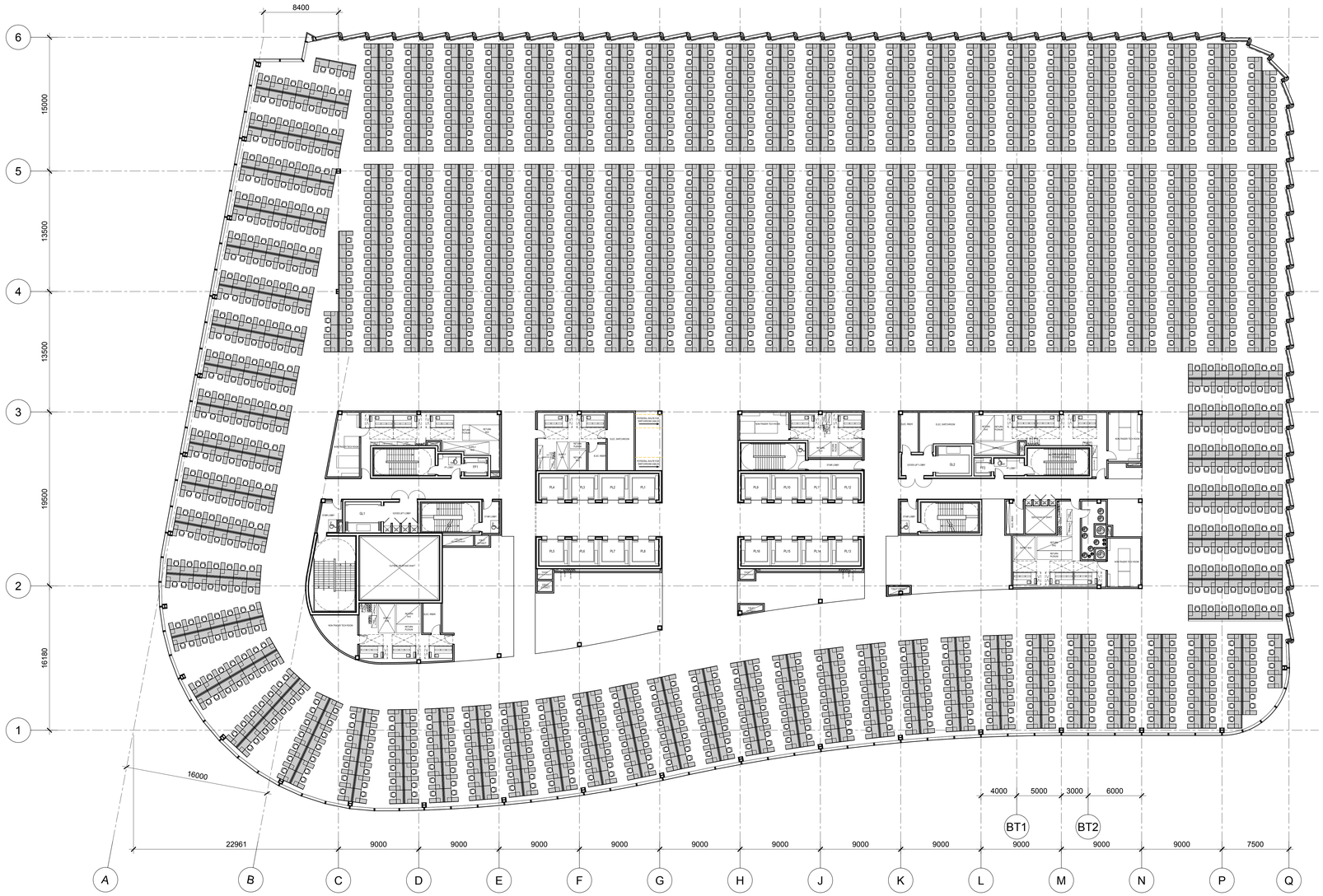
16. APPENDICES

H. Category A Typical Design Drawings



THIS LAYOUT SHOWS 1678 DESK COUNTS
(1 in 4.95 SQM)

TYPICAL LEVEL INDICATIVE DESK LAYOUT

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-560

SCALE: 1-200 @ A0

DATE: 2013.05.24

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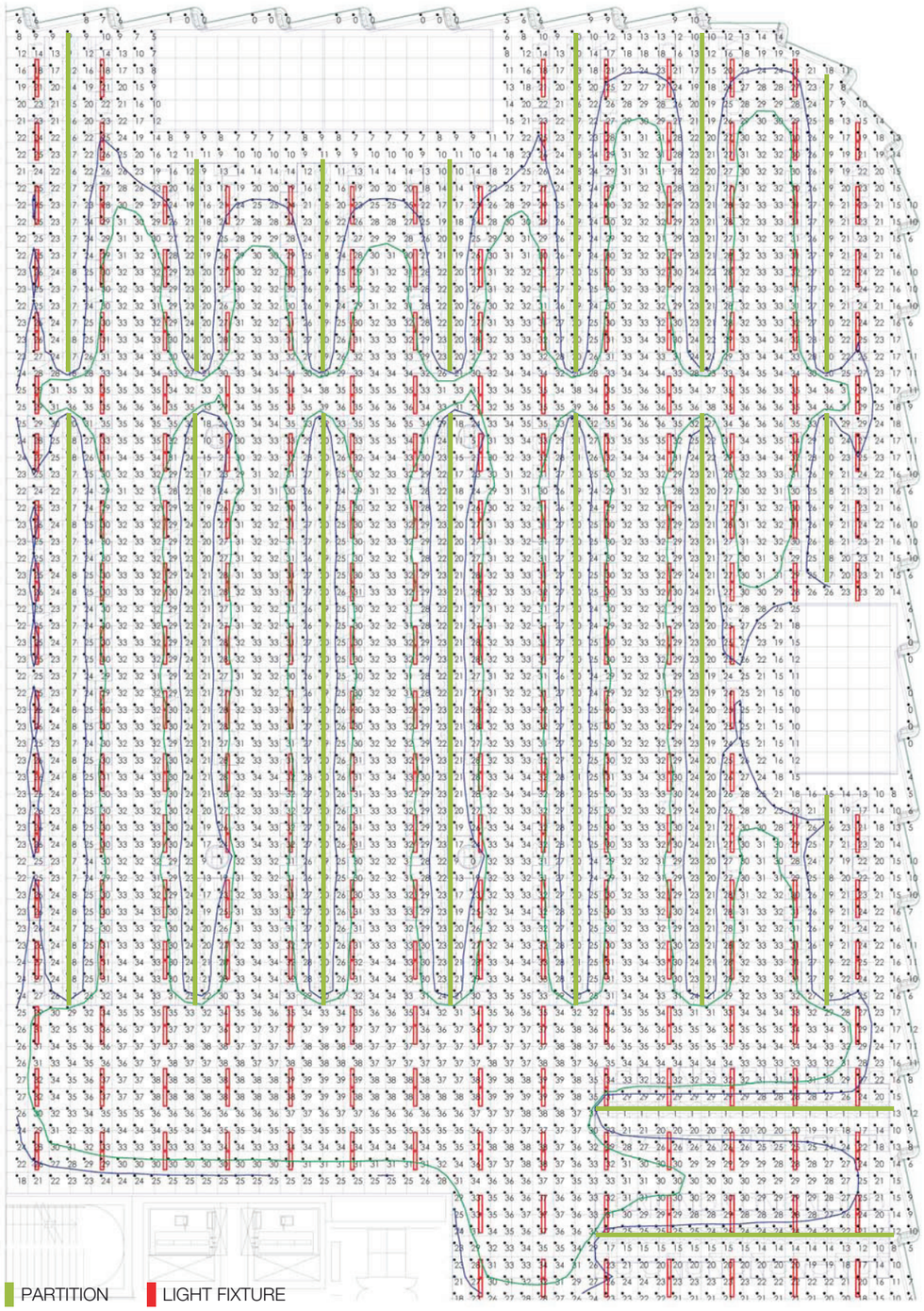
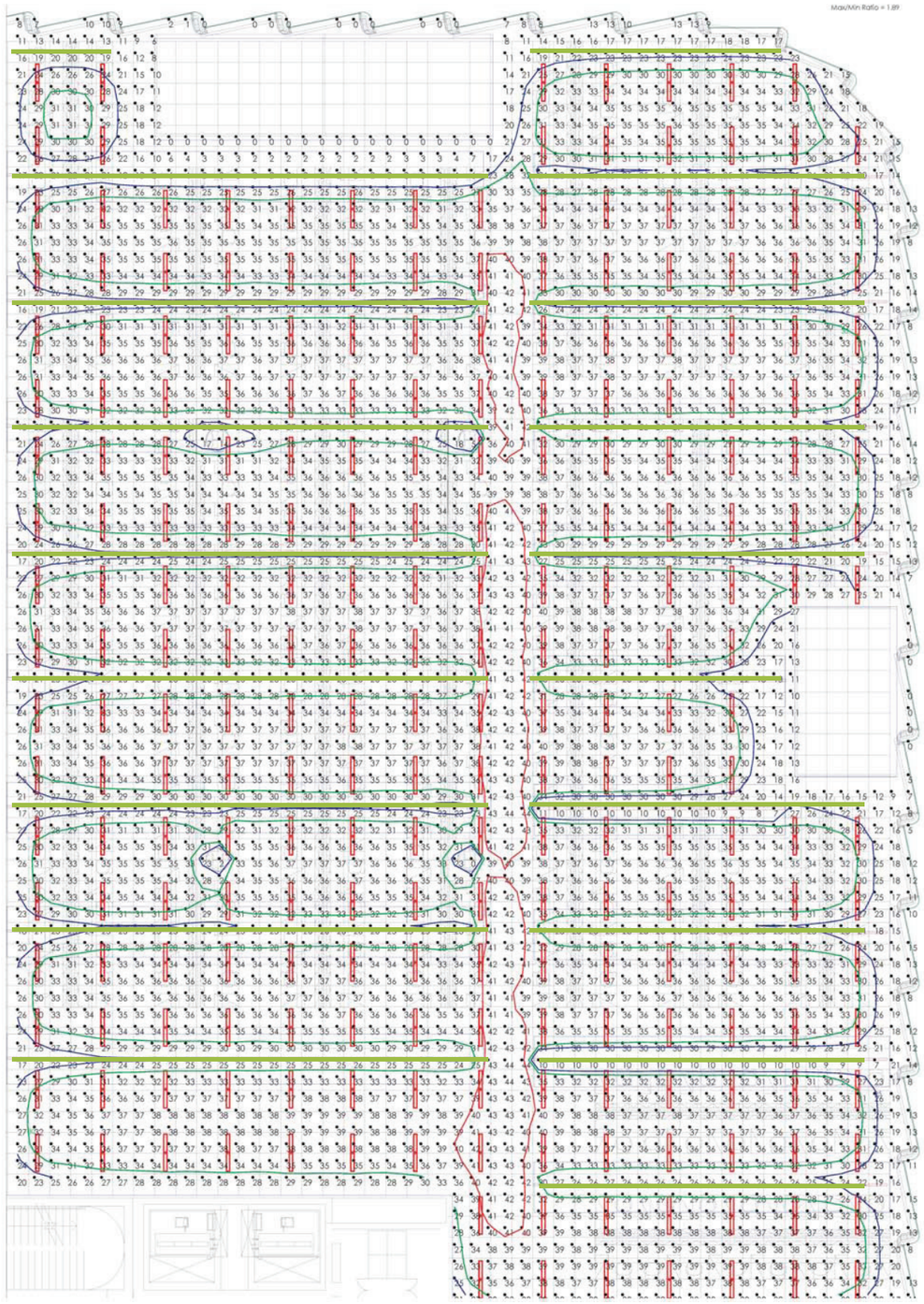
PRELIMINARY LIGHTING SCHEMES - *RECESSED SLOT 2.25M OC*

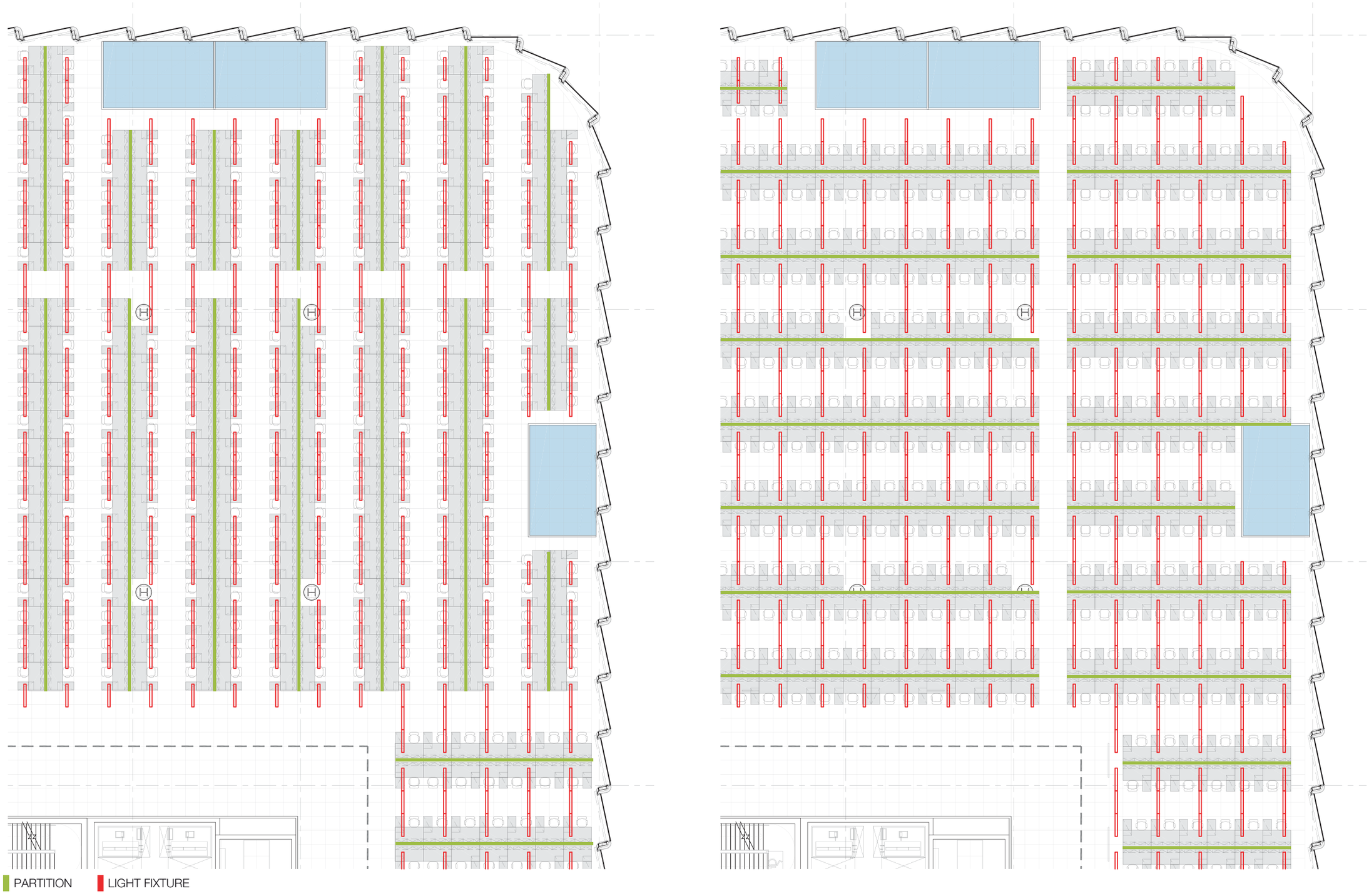
HDLG ©2013

February 6, 2013





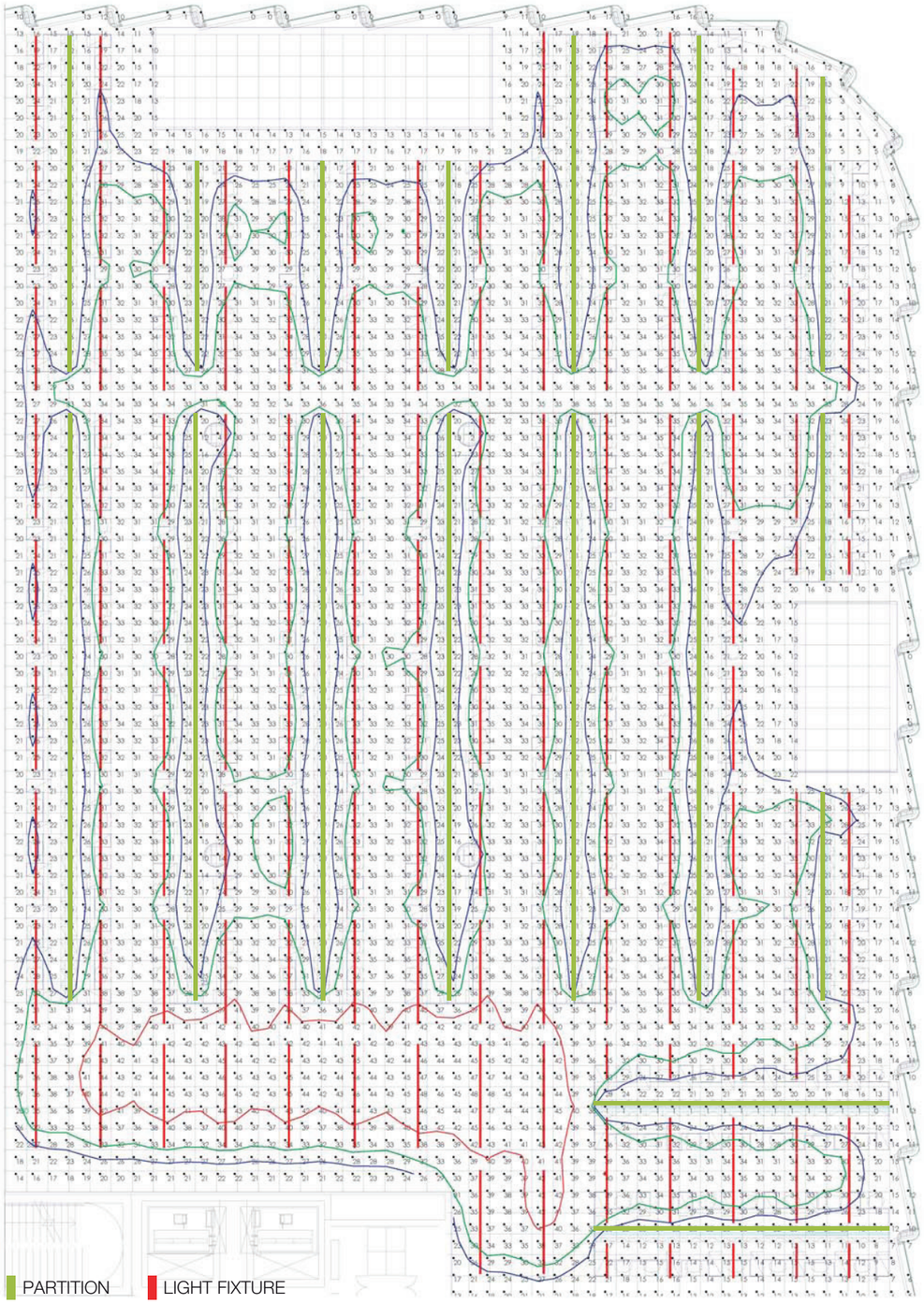
PRELIMINARY LIGHTING SCHEMES - *RECESSED SLOT 2.25M OC - LIGHT LEVELS*

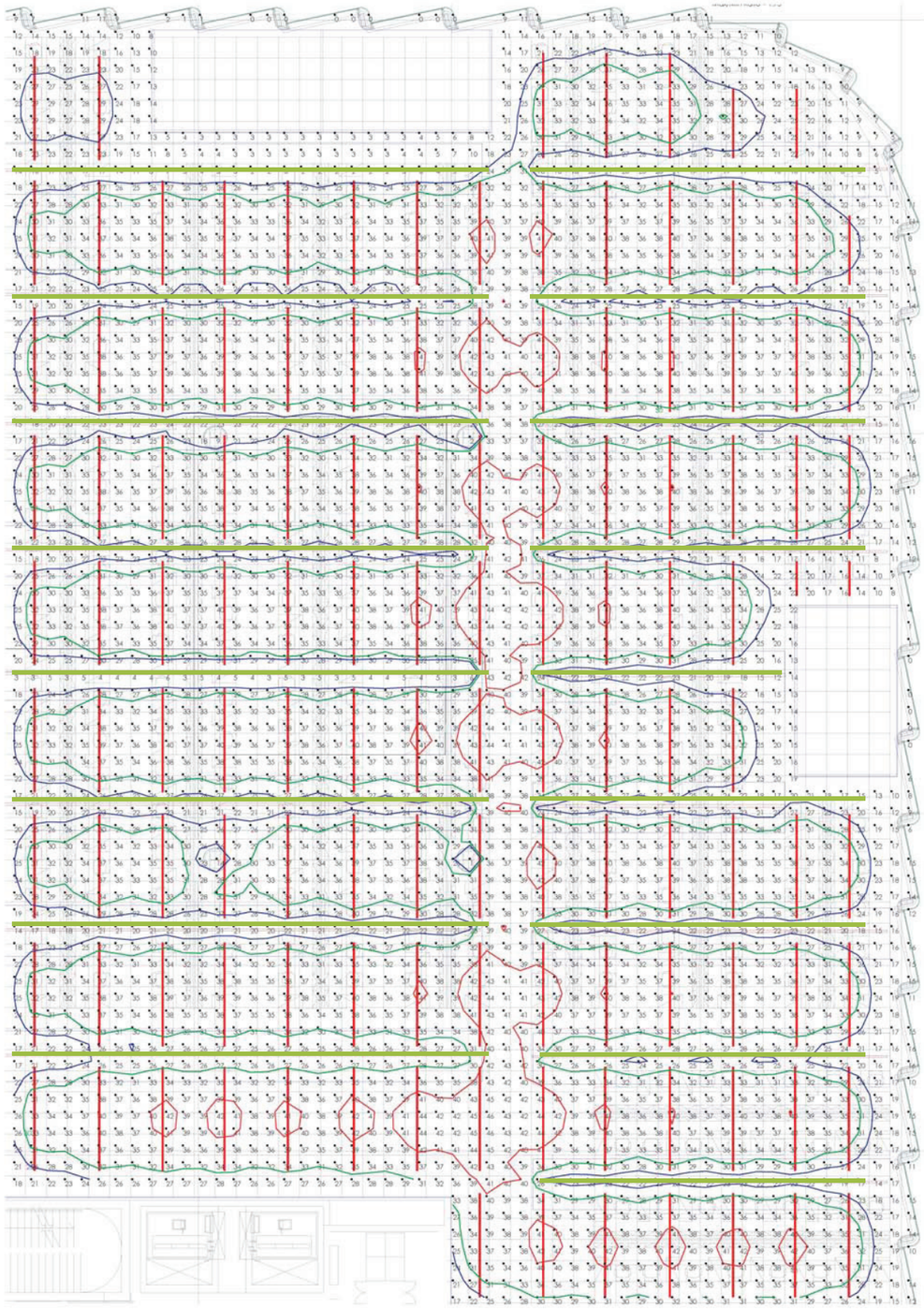


PRELIMINARY LIGHTING SCHEMES - *DIRECT/INDIRECT PENDANTS 2.25M OC*

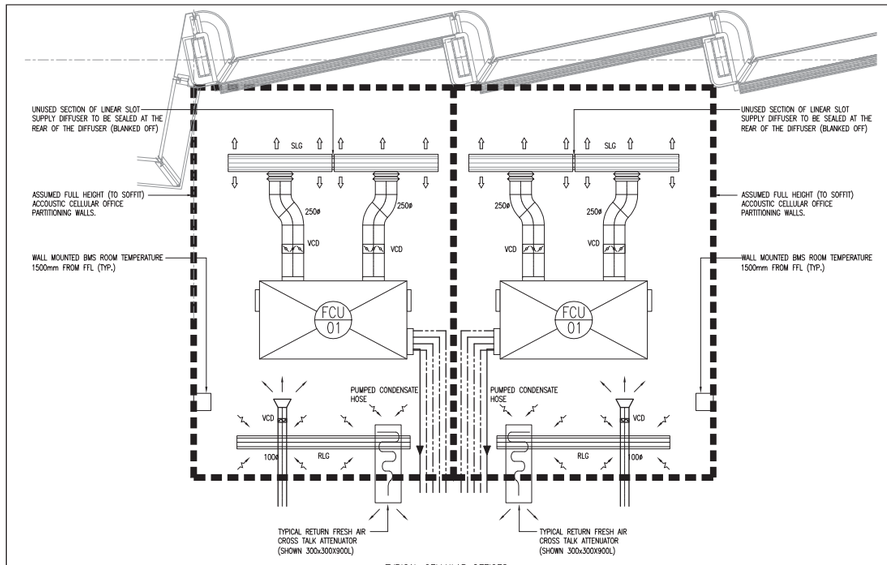
HDLG ©2013

February 6, 2013

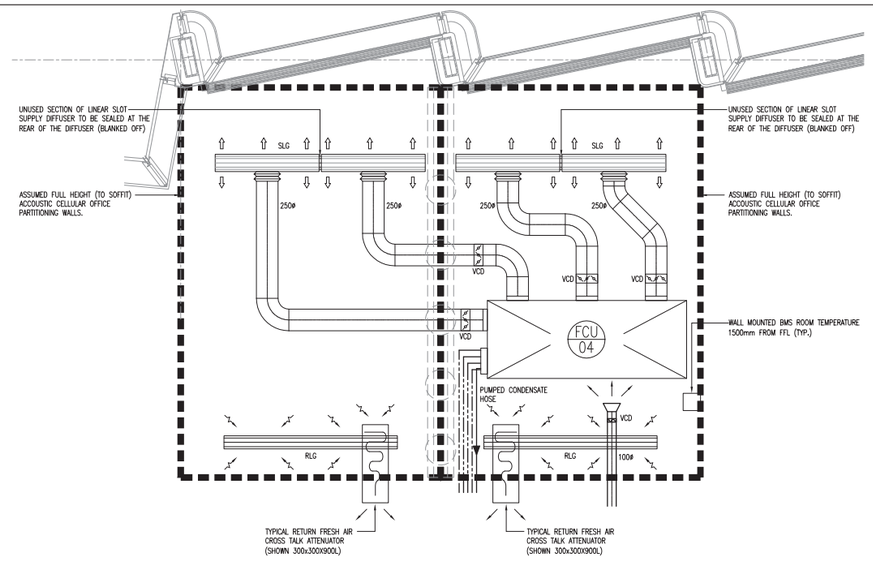




PRELIMINARY LIGHTING SCHEMES - *DIRECT/INDIRECT PENDANTS 2.25M OC - LIGHT LEVELS*



TYPICAL CELLULAR OFFICES
SCALE = 1:25



OPTION 2:–TYPICAL CELLULAR OFFICES
SCALE = 1:25
SECOND POSSIBLE FCU LAYOUT COMPROMISING OF ONE UNIT SERVING TWO BAYS

BACKGROUND DRAWING INFORMATION				
FILENAME	ORIGINATOR	DESCRIPTION	REV	DATE REC'D
A–1103KF_F	KOHN	LEVEL 01	F	09.04.2013

NOTES:–

1. TROX RECOMMENDED MINIMUM HEIGHT OF SPACE = 2600–4000mm. OFFICE SPACE HEIGHT FOR LBP =3200mm.
2. 1–4 SLOTS AVAILABLE. 3 SLOTS USED
3. DIFFUSER RECOMMENDED ACTIVE LENGTH BETWEEN 75 – 80% OF FACADE LENGTH.
4. RECOMMENDED MAX SPIGOT VELOCITY = 3.5m/s. CURRENTLY SIZED ON 2.5m/s (250 Dia SPIGOT CONNECTION.
5. PLENUM BOX HEIGHT INDICATED IS NOT STANDARD.
6. ROOM / PERIMETER LOAD 100W/M^{2}AC LOAD (TYPICAL)
7. CENTRAL OFFICE SPACE LOAD 81W/M^{2}AC LOAD (TYPICAL).
8. OCCUPANCY IS BASED ON 10 M^{2}AREA PER PERSON.
9. FRESH AIR IS BASED ON 12 L/S PER PERSON.
10. HEATING IS PROVIDE ONLY AT PERIMETER AND BASED ON 50W/M^2.
11. ROOM DEPTH = 4500mm

LEGEND:

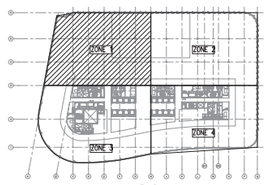
- CHW F&R
- LTHW F&R
- INDICATIVE TUNDISH GRAVITY SYSTEM
- FCU PUMPED CONDENSATE HOSE
- RECEIVER CONDENSATE

REFERENCE KEY:–

1. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR SPRINKLER (DETAIL 1)
2. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR CONDENSATE PIPEWORK (DETAIL 2/8)
3. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR CHW PIPEWORK (DETAIL 3)
4. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR DUCT WORK (DETAIL 4)
5. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR FRESH AIR DUCT WORK (DETAIL 5)
6. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR SPRINKLER & CONDENSATE (DETAIL 6)
7. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR CHW & CONDENSATE (DETAIL 7)
8. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR SPRINKLER & CHW (DETAIL 9)
9. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR LTHW (DETAIL 10)

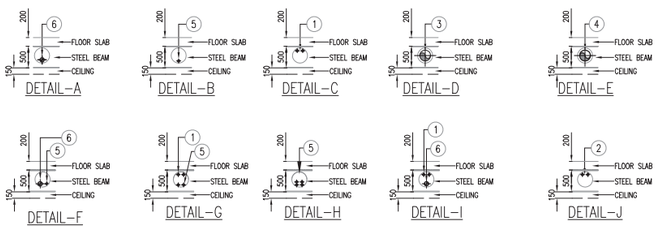
NOTES:–

1. THIS DRAWING SHOWS A TYPICAL FAN COIL UNIT LAYOUT TO SERVE HEATING / COOLING / FRESH AIR REQUIREMENTS WITHIN OFFICE AREAS.
2. THIS DRAWING SHOWS A TYPICAL FAN COIL UNIT LAYOUT TO SERVE HEATING / COOLING / FRESH AIR REQUIREMENTS WITHIN OFFICE AREAS.
3. LEVEL OF DETAIL PROVIDED IS SUFFICIENT TO SHOW SERVICES / BEAM COORDINATION AND THE SUITABILITY OF CELLULAR OFFICE LOCATIONS.
4. INDICATED PERIMETER CELLULAR OFFICE LAYOUT INDICATED (TYPICAL 4500mm DEEP x 3000mm WIDE) TO SHOW TYPICAL SERVICING ARRANGEMENT.
5. PERIMETER OFFICE HAVE NOT BEEN SHOWN WHERE DEEMED UNSUITABLE (TYPICALLY AROUND THE FRACTURES).
6. PIPEWORK FINAL CHW & HTG CONNECTIONS TO TERMINAL UNITS NOT SHOWN.
7. PIPEWORK VALVES, DRAIN POINT, AIR RELEASE VALVES AND OTHER MISCELLANEOUS EQUIPMENT NOT SHOWN.
8. ELECTRICAL SERVICES NOT SHOWN FOR CLARITY.
9. INDICATIVE GRAVITY DRAINAGE AND PUMPED FCU CONDENSATE SYSTEM SHOWN.
10. STRUCTURAL BEAM LAYOUT USED IN BACKGROUND FROM LEVEL 2
11. FOR SECTIONAL DETAIL OF ZONE 1 PLEASE REFER DRAWING NO: 40SL–MH–3100

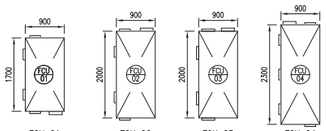


KEY PLAN

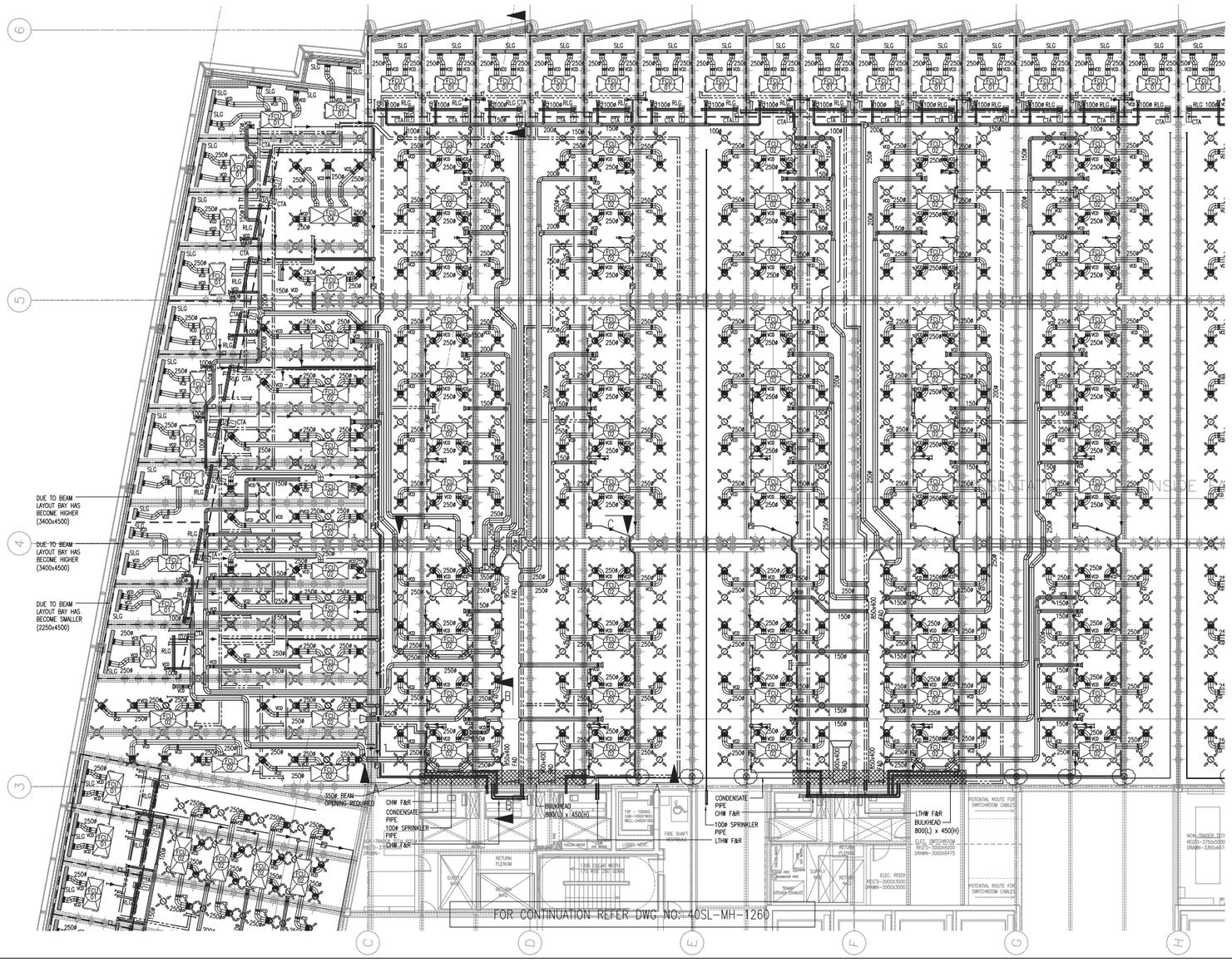
1. CHW F&R
2. LTHW F&R
3. SAD
4. FAD
5. CONDENSATE PIPE
6. SPRINKLER PIPE



TYPICAL SERVICES DETAIL
SCALE = 1:50



TYPICAL FCU DETAIL
SCALE = 1:50



DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK	APP
P1	17.05.2013	AG	ISSUE FOR STAGE D (INFO)	MK	JW

DRAWING STATUS: STAGE D

WSP
WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT: THE ENGLISH PARTNERSHIP

ARCHITECT: KPF

PROJECT: THE LONDON DEVELOPMENT

TITLE: VENTILATION LAYOUT FIRST FLOOR ZONE 1

SCALE @ A0	CHECKED	APPROVED
1:100	MK	JW

PROJECT No.	DESIGNED	DRAWN	DATE
50200153	AG	SP	MAY 13

DRAWING No. 40SL-MH-1240 REV. P1

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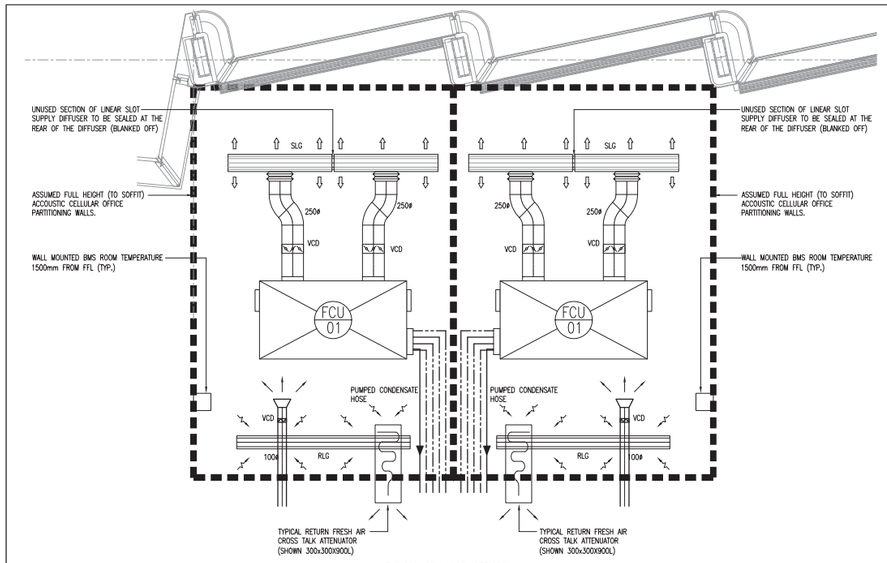
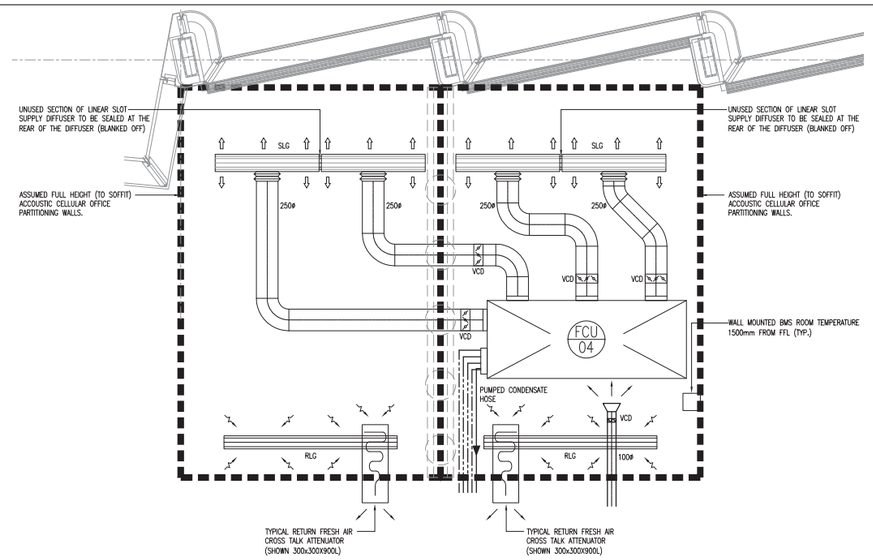
DO NOT SCALE

BACKGROUND DRAWING INFORMATION				
FILENAME	ORIGINATOR	DESCRIPTION	REV	DATE REC'D
A-1103XF_F	KOHN	LEVEL 01	F	09.04.2013



TYPICAL CELLULAR OFFICES
SCALE = 1:25



OPTION 2:-TYPICAL CELLULAR OFFICES
SCALE = 1:25
SECOND POSSIBLE FCU LAYOUT COMPROMISING OF ONE UNIT SERVING TWO BAYS

NOTES:-

1. TROX RECOMMENDED MINIMUM HEIGHT OF SPACE = 2600-4000mm. OFFICE SPACE HEIGHT FOR LBP =3200mm.
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11. ROOM DEPTH = 4500mm

LEGEND:

- CHW F&R
- LTHW F&R
- INDICATIVE TUNDISH GRAVITY SYSTEM
- FCU PUMPED CONDENSATE HOSE
- RECEIVER CONDENSATE

REFERENCE KEY:-

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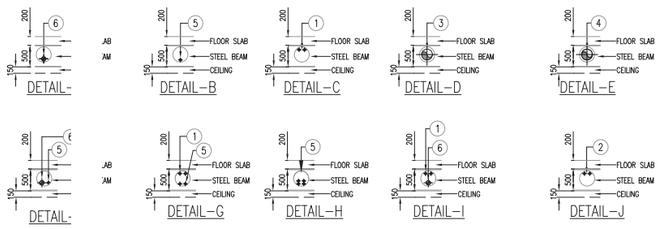
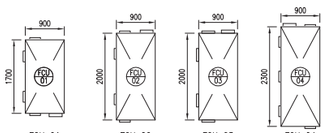
9. INDICATIVE GRAVITY DRAINAGE AND PUMPED FCU CONDENSATE SYSTEM SHOWN.
10. STRUCTURAL BEAM LAYOUT USED IN BACKGROUND FROM LEVEL 2

1. CHW F&R
2. LTHW F&R
3. SAD
4. FAD
5. CONDENSATE PIPE
6. SPRINKLER PIPE

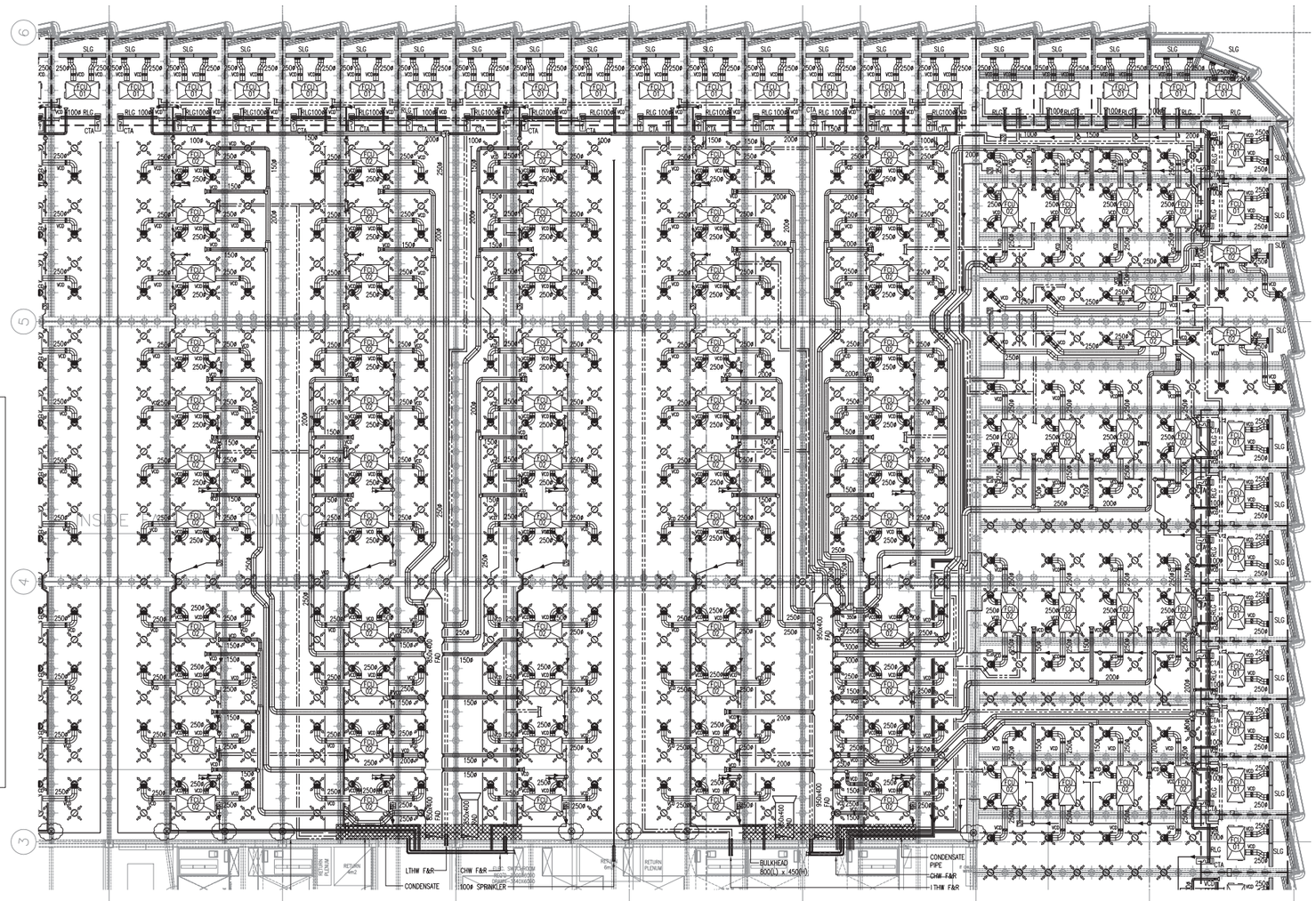


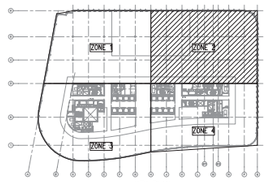
TYPICAL SERVICES DETAIL
SCALE = 1:50



FCU 01	FCU 02	FCU 03	FCU 04
1.35 KW	2.47 KW	2.5 KW	3.1 KW

TYPICAL FCU DETAIL
SCALE = 1:50





KEY PLAN

REV	DATE	BY	DESCRIPTION	CHK	APP
P1	17.05.2013	AG	ISSUE FOR STAGE D (INFO)	MK	JW

DRAWING STATUS: STAGE D

WSP
WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT: THE ENGLISH PARTNERSHIP

ARCHITECT: KPF

PROJECT: THE LONDON DEVELOPMENT

TITLE: VENTILATION LAYOUT FIRST FLOOR ZONE 2

SCALE @ A0:	CHECKED:	APPROVED:
1:100	MK	JW

PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	AG	SP	MAY 13

DRAWING No: 40SL-MH-1250 REV: P1

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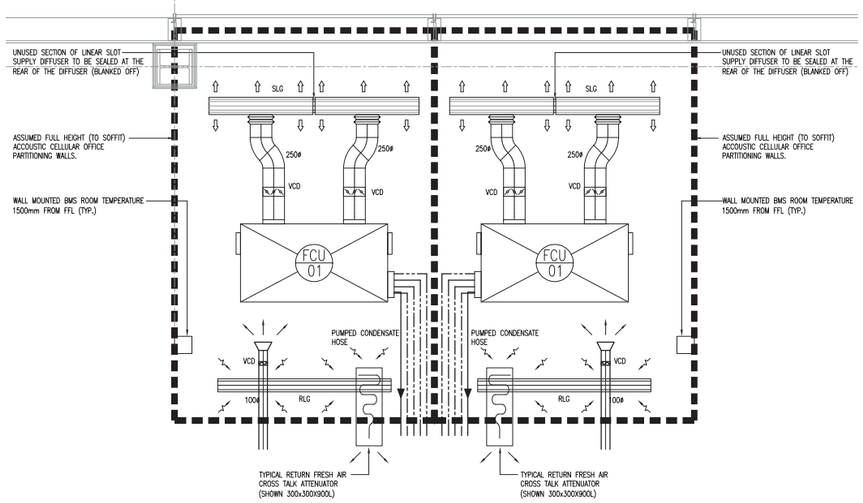
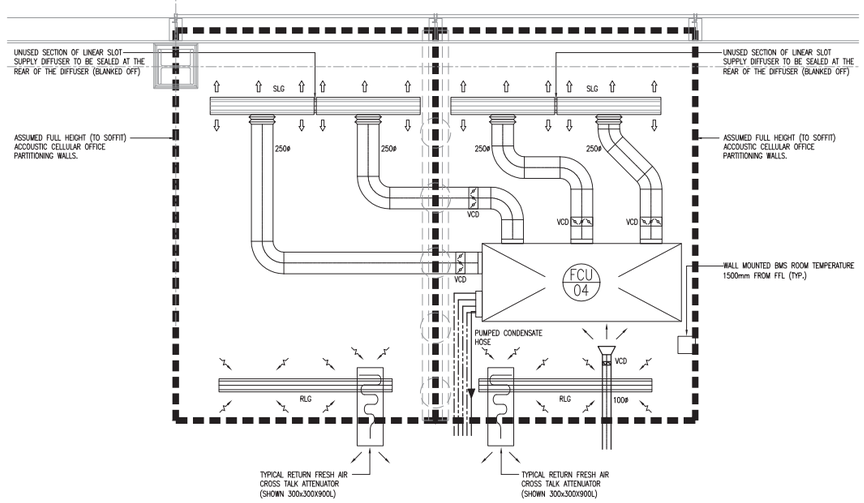
DO NOT SCALE

BACKGROUND DRAWING INFORMATION				
FILENAME	ORIGINATOR	DESCRIPTION	REV	DATE REC'D
A-110SKF_F	KOHN	LEVEL 01	F	09.04.2013



TYPICAL CELLULAR OFFICES
SCALE = 1:25



OPTION 2:-TYPICAL CELLULAR OFFICES
SCALE = 1:25

SECOND POSSIBLE FCU LAYOUT COMPROMISING OF ONE UNIT SERVING TWO BAYS

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- LTHW F&R
- INDICATIVE TUNDISH GRAVITY SYSTEM
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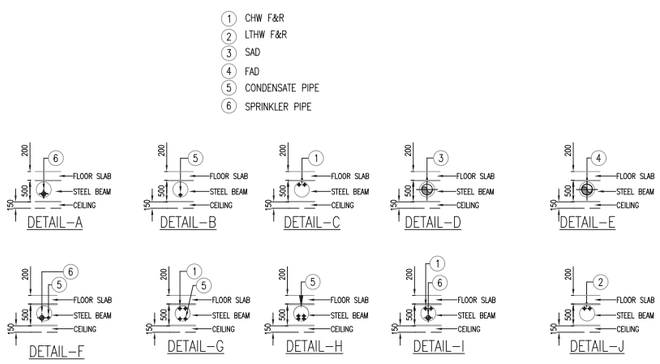
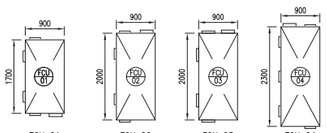
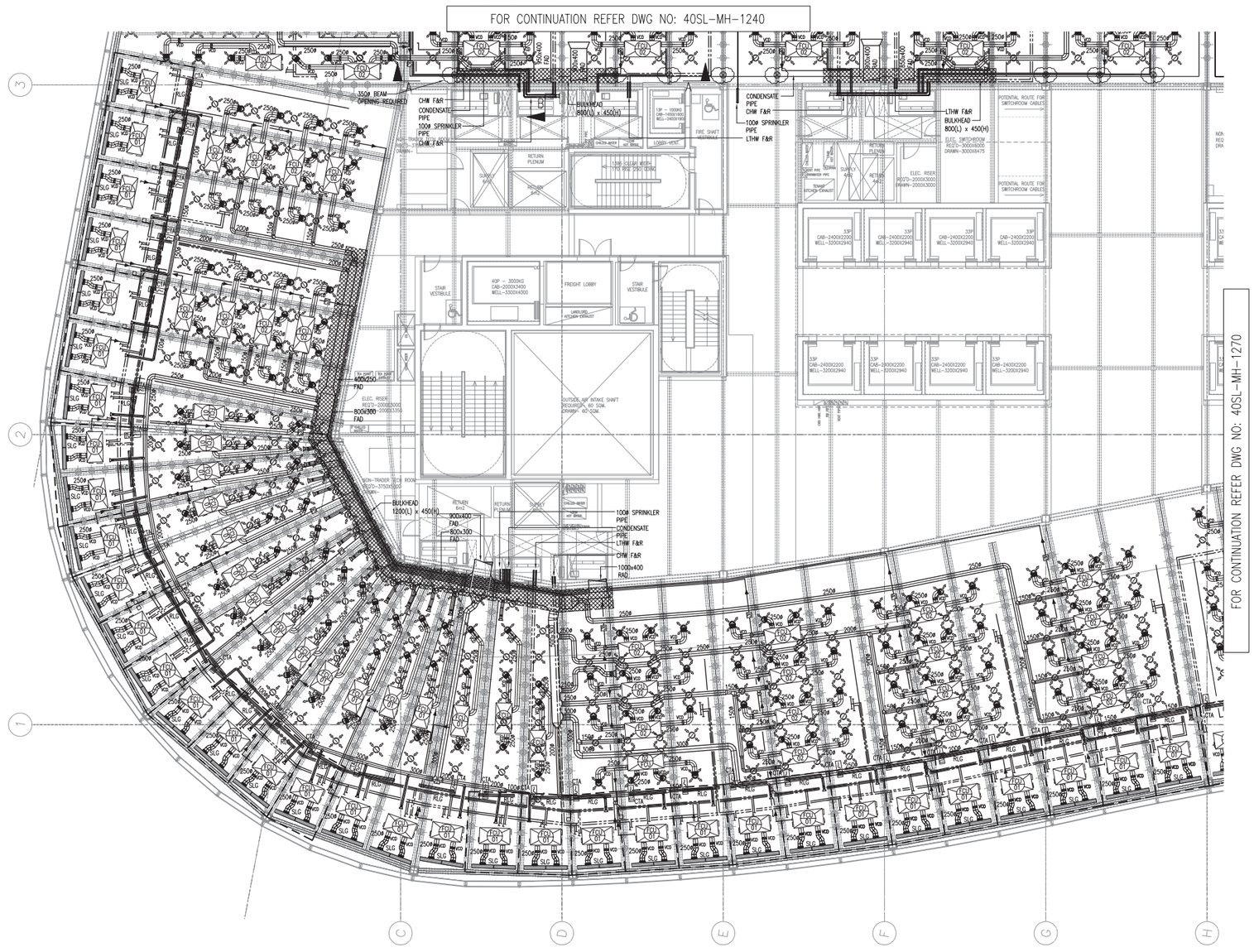
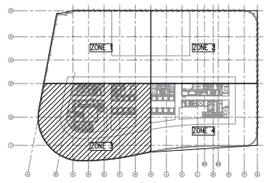


TYPICAL SERVICES DETAIL
SCALE = 1:50



TYPICAL FCU DETAIL
SCALE = 1:50





KEY PLAN

REV	DATE	BY	DESCRIPTION	CHK	APP
P1	17.05.2013	AG	ISSUE FOR STAGE D (50%)	MK	JW

DRAWING STATUS: STAGE D

WSP
WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT: THE ENGLISH PARTNERSHIP

ARCHITECT: KPF

PROJECT: THE LONDON DEVELOPMENT

TITLE: VENTILATION LAYOUT FIRST FLOOR ZONE 3

SCALE @ A0	CHECKED		APPROVED
1:100	MK		JW
PROJECT No: 52200153	DESIGNED: AG	DRAWN: SP	DATE: MAY 13

DRAWING No: 40SL-MH-1260 REV: P1

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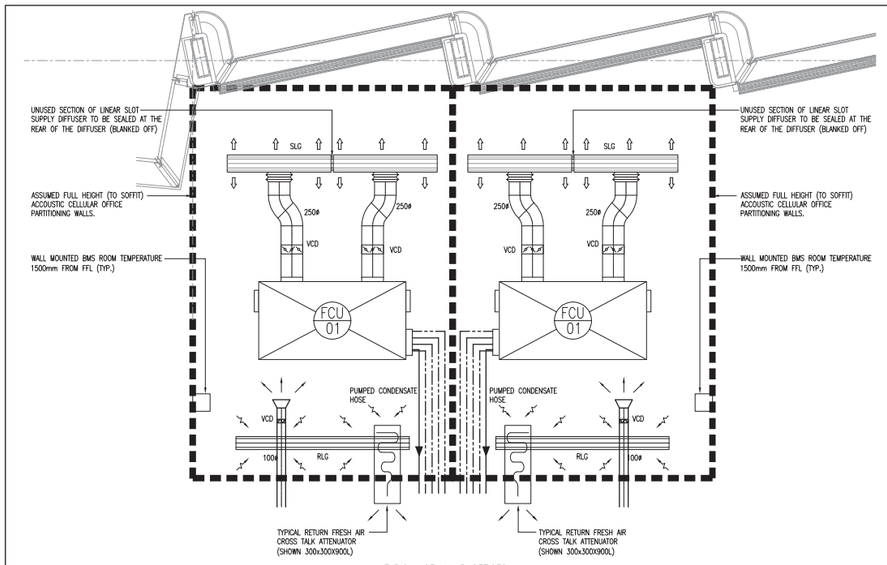
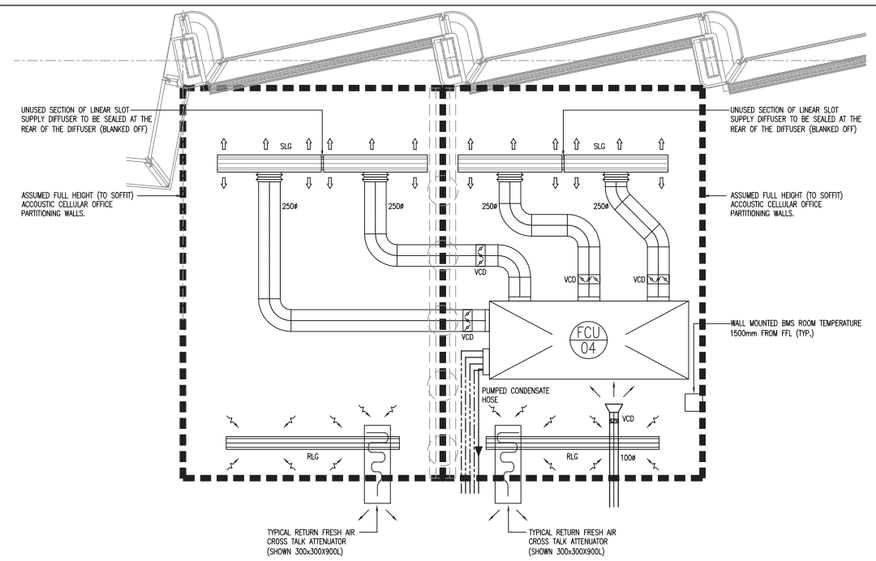


TYPICAL CELLULAR OFFICES
SCALE = 1:25



OPTION 2:-TYPICAL CELLULAR OFFICES
SCALE = 1:25

SECOND POSSIBLE FCU LAYOUT COMPROMISING OF ONE UNIT SERVING TWO BAYS

BACKGROUND DRAWING INFORMATION				
FILENAME	ORIGINATOR	DESCRIPTION	REV	DATE REC'D
A-1103KF_F	KOHN	LEVEL 01	F	09.04.2013

DO NOT SCALE

NOTES:-

1. TROX RECOMMENDED MINIMUM HEIGHT OF SPACE = 2600-4000mm. OFFICE SPACE HEIGHT FOR LBP =3200mm.
2. 1-4 SLOTS AVAILABLE. 3 SLOTS USED
3. DIFFUSER RECOMMENDED ACTIVE LENGTH BETWEEN 75 - 80% OF FACADE LENGTH.
4. RECOMMENDED MAX SPIGOT VELOCITY = 3.5m/s. CURRENTLY SIZED ON 2.5m/s (250 Dia SPIGOT CONNECTION.
5. PLENUM BOX HEIGHT INDICATED IS NOT STANDARD.
6. ROOM / PERIMETER LOAD 100W/M^{2}AC LOAD (TYPICAL)
7. CENTRAL OFFICE SPACE LOAD 81W/M^{2}AC LOAD (TYPICAL).
8. OCCUPANCY IS BASED ON 10 M^{2}AREA PER PERSON.
9. FRESH AIR IS BASED ON 12 L/S PER PERSON.
10. HEATING IS PROVIDE ONLY AT PERIMETER AND BASED ON 50W/M^2.
11. ROOM DEPTH = 4500mm

LEGEND:

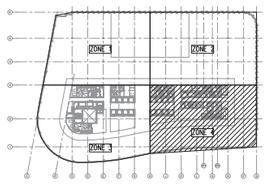
- CHW F&R
- LTHW F&R
- INDICATIVE TUNDISH GRAVITY SYSTEM
- FCU PUMPED CONDENSATE HOSE
- PS RECEIVER CONDENSATE

REFERENCE KEY:-

1. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR SPRINKLER (DETAIL 1)
2. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR CONDENSATE PIPEWORK (DETAIL 2/8)
3. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR CHW PIPEWORK (DETAIL 3)
4. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR DUCT WORK (DETAIL 4)
5. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR FRESH AIR DUCT WORK (DETAIL 5)
6. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR SPRINKLER & CONDENSATE (DETAIL 6)
7. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR CHW & CONDENSATE (DETAIL 7)
8. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR SPRINKLER & CHW (DETAIL 9)
9. 350ø HOLE THROUGH BEAM BY STRUCTURAL ENGINEER TO BE UTILISED FOR LTHW (DETAIL 10)

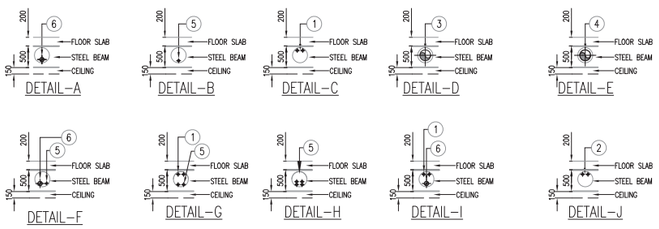
NOTES:-

1. THIS DRAWING SHOWS A TYPICAL FAN COIL UNIT LAYOUT TO SERVE HEATING / COOLING / FRESH AIR REQUIREMENTS WITHIN OFFICE AREAS.
2. THIS DRAWING SHOWS A TYPICAL FAN COIL UNIT LAYOUT TO SERVE HEATING / COOLING / FRESH AIR REQUIREMENTS WITHIN OFFICE AREAS.
3. LEVEL OF DETAIL PROVIDED IS SUFFICIENT TO SHOW SERVICES / BEAM COORDINATION AND THE SUITABILITY OF CELLULAR OFFICE LOCATIONS.
4. INDICATED PERIMETER CELLULAR OFFICE LAYOUT INDICATED (TYPICAL 4500mm DEEP x 3000mm WIDE) TO SHOW TYPICAL SERVICING ARRANGEMENT.
5. PERIMETER OFFICE HAVE NOT BEEN SHOWN WHERE DEEMED UNSUITABLE (TYPICALLY AROUND THE FRACTURES).
6. PIPEWORK FINAL CHW & HTG CONNECTIONS TO TERMINAL UNITS NOT SHOWN.
7. PIPEWORK VALVES, DRAIN POINT, AIR RELEASE VALVES AND OTHER MISCELLANEOUS EQUIPMENT NOT SHOWN.
8. ELECTRICAL SERVICES NOT SHOWN FOR CLARITY.
9. INDICATIVE GRAVITY DRAINAGE AND PUMPED FCU CONDENSATE SYSTEM SHOWN.
10. STRUCTURAL BEAM LAYOUT USED IN BACKGROUND FROM LEVEL 2



KEY PLAN

1. CHW F&R
2. LTHW F&R
3. SAD
4. FAD
5. CONDENSATE PIPE
6. SPRINKLER PIPE



TYPICAL SERVICES DETAIL
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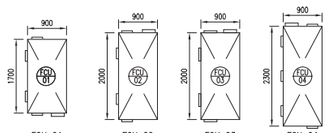
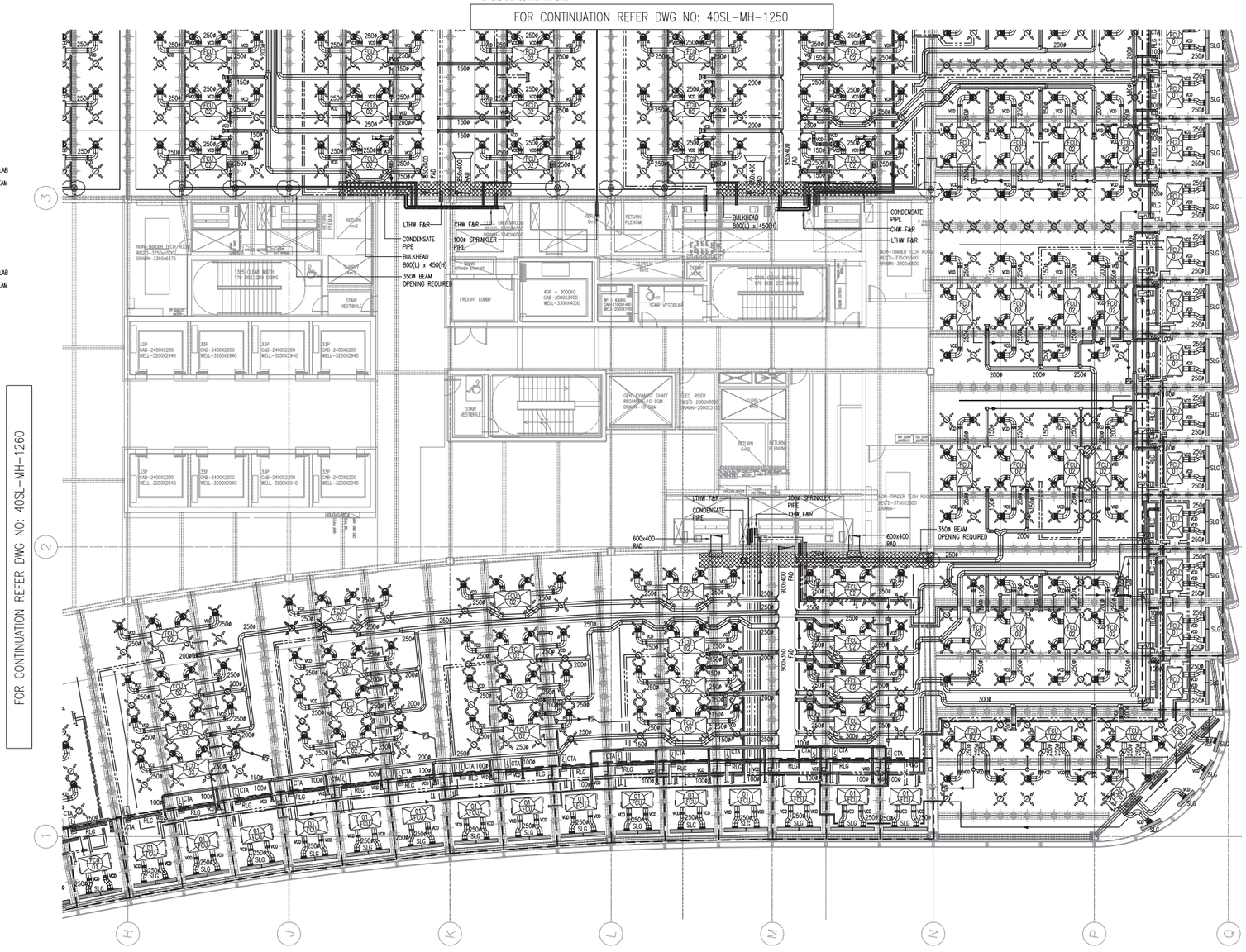


FCU 01	FCU 02	FCU 03	FCU 04
1.35 KW	2.47 KW	2.5 KW	3.1 KW

TYPICAL FCU DETAIL
SCALE = 1:50



REV	DATE	BY	DESCRIPTION	CHK	APP
P1	17.05.2013	AG	ISSUE FOR STAGE D (90%)	MK	JW

DRAWING STATUS: STAGE D

WSP
WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT: THE ENGLISH PARTNERSHIP

ARCHITECT: KPF

PROJECT: THE LONDON DEVELOPMENT

TITLE: VENTILATION LAYOUT FIRST FLOOR ZONE 4

SCALE @ A0:	CHECKED:	APPROVED:
1:100	MK	JW

PROJECT No:	DESIGNED:	DRAWN:	DATE:
92200153	AG	SP	MAY 13

DRAWING No: 40SL-MH-1270 REV: P1

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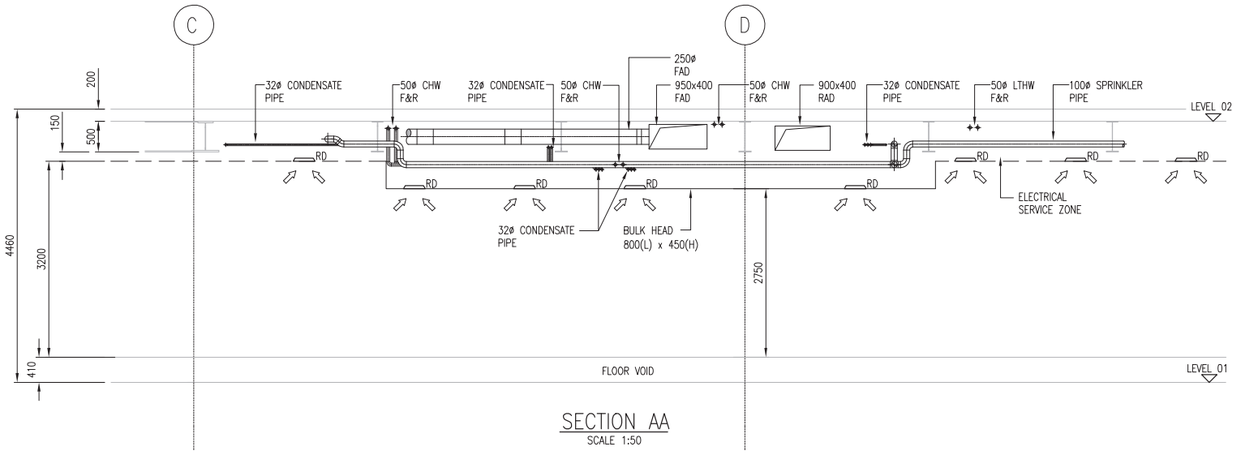
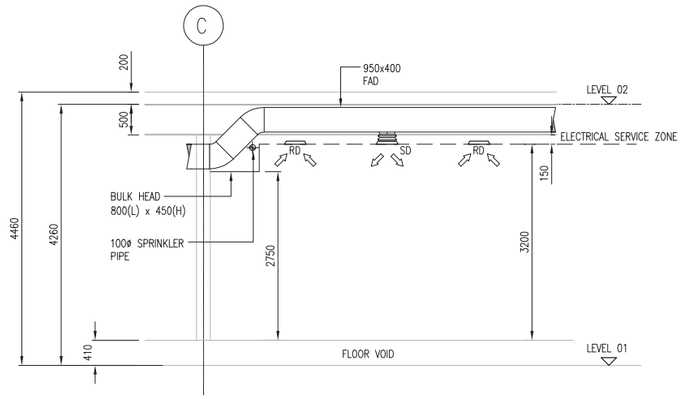
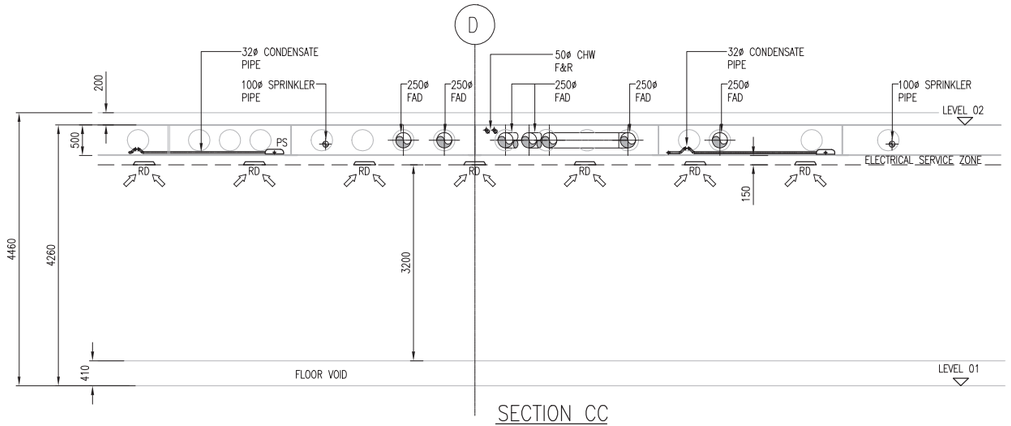
DO NOT SCALE



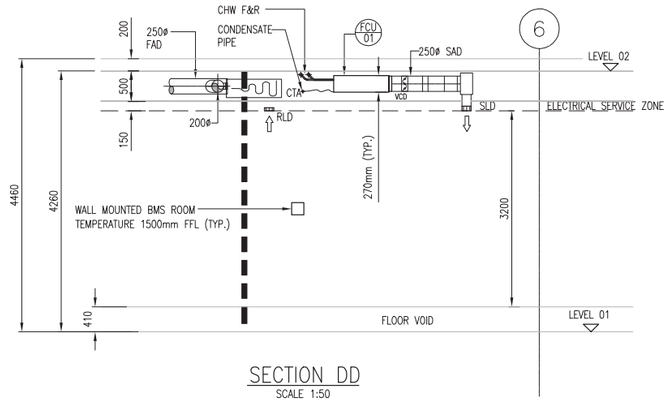
SECTION AA
SCALE 1:50



SECTION BB
SCALE 1:50



SECTION CC
SCALE 1:50



SECTION DD
SCALE 1:50

REV	DATE	BY	DESCRIPTION	CHK	APP
P1	17.05.2013	AG	ISSUE FOR STAGE D (90%)	MK	JW

DRAWING STATUS: STAGE D

WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: +44 (0)207 314 5000 Fax: +44 (0)207 314 5111
www.wspgroup.com

CLIENT: THE ENGLISH PARTNERSHIP

ARCHITECT: KPF

PROJECT: THE LONDON DEVELOPMENT

TITLE: SECTION AA, BB, CC & DD
FIRST FLOOR
ZONE 1

SCALE @ A1:	CHECKED:		APPROVED:
1:50	MK		JW
50200153	DESIGNED: AG	DRAWN: SP	DATE: MAY 13

DRAWING No: 40SL-MH-3100 REV: P1

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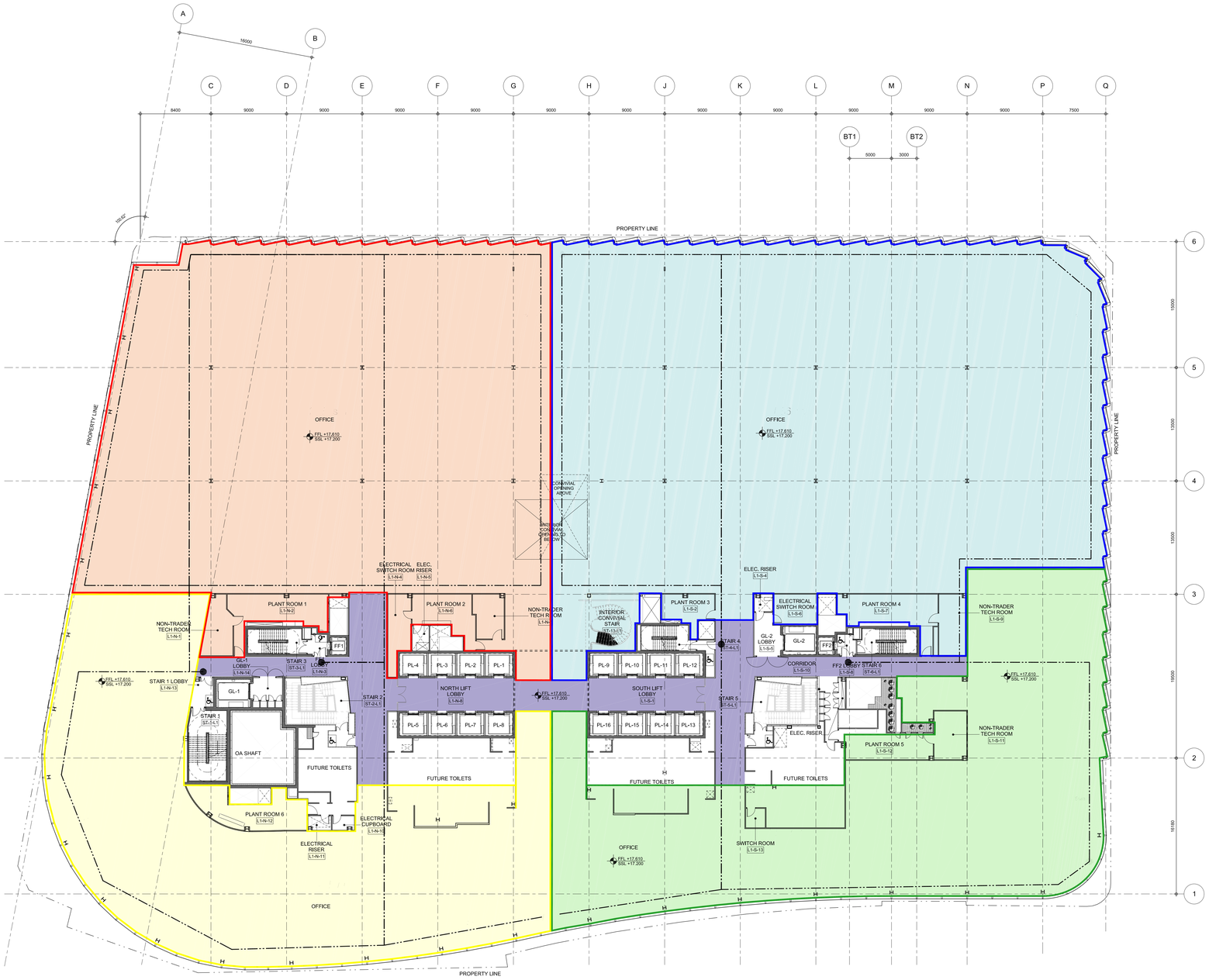
File name J:\PROJECTS\NEW\XXXXXXXX - THE LONDON DEVELOPMENT\04 DRAWING\SGA CURRENT\HVAC\PACKAGE - 1\40SL-MH-3100.DWG, printed on Friday, May 17, 2013 7:13:55 PM, by Kumar, Pankaj

16. APPENDICES

I. Indicative Tenant Separation



THE BASE BUILDING AIR CONDITIONING SYSTEMS COMPRISE AN UNDER FLOOR AIR DISTRIBUTION SYSTEM WITH ON FLOOR ZONAL AIR TOWER UNITS SERVING THE OCCUPIED SPACE VIA AN AIR HIGHWAY AND THE RAISED FLOOR VOID.

FOR A MULTI-TENANCY ARRANGEMENT THE AIRWAY WILL BE TERMINATED AT THE TENANTS DEMISE LINES.

THIS DRAWING INDICATES BASE CASE ZONES THAT ARE SERVED BY THE AIR TOWER UNITS IN EACH ZONE. UNDER THE BASE CASE THE AIR TOWERS IN THE BLUE ZONE HAVE BEEN UP-RATED BY 10% IN VOLUME.

POPULATION DENSITY: 1 IN 6

- TENANT A
- TENANT B
- TENANT C
- TENANT D
- LANDLORD

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA

TYPICAL UFAD TENANT SPLIT - BASE CASE

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-553 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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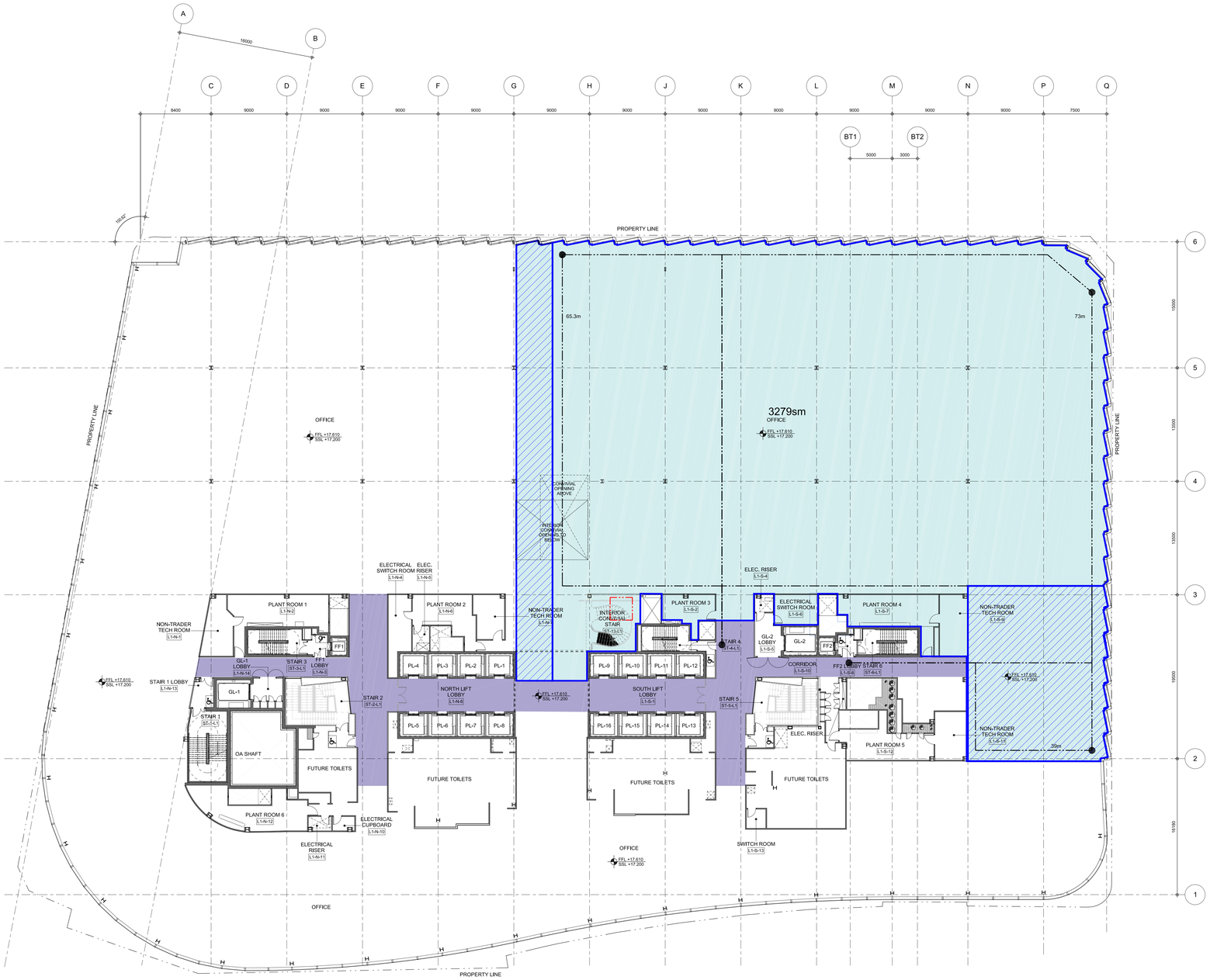

The base building air conditioning systems comprise an under floor air distribution system with on floor zonal air tower units serving the occupied space via an air highway and the raised floor void.

For a multi-tenancy arrangement the airway will be terminated at the tenants demise lines.

This drawing indicates the extended zone that can be served by up-rating the air tower units in the zone shown by 10% and adding an air tower in location identified.

Population Density: 1 in 6

- TENANT A
- LANDLORD
- ADDITIONAL AIR TOWER UNIT LOCATION
- AREA SERVED BY ADDITIONAL UNIT (ONLY ONE AREA CAN BE SERVED)

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA

TYPICAL UFAD ZONE FLEXIBILITY

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-554 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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THE BASE BUILDING AIR CONDITIONING SYSTEMS COMPRISE AN UNDER FLOOR AIR DISTRIBUTION SYSTEM WITH ON FLOOR ZONAL AIR TOWER UNITS SERVING THE OCCUPIED SPACE VIA AN AIR HIGHWAY AND THE RAISED FLOOR VOID.

FOR A MULTI-TENANCY ARRANGEMENT THE AIRWAY WILL BE TERMINATED AT THE TENANTS DEMISE LINES.

THIS DRAWING INDICATES THE EXTENDED ZONE THAT CAN BE SERVED BY UP-RATING THE AIR TOWER UNITS IN THE ZONE SHOWN BY 10%

POPULATION DENSITY: 1 IN 6

TENANT B

LANDLORD

AREA SERVED BY 10% UPGRADE IN AIR TOWER UNIT VOLUME (ONLY ONE AREA CAN BE SERVED)

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA

TYPICAL UFAD ZONE FLEXIBILITY

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-555 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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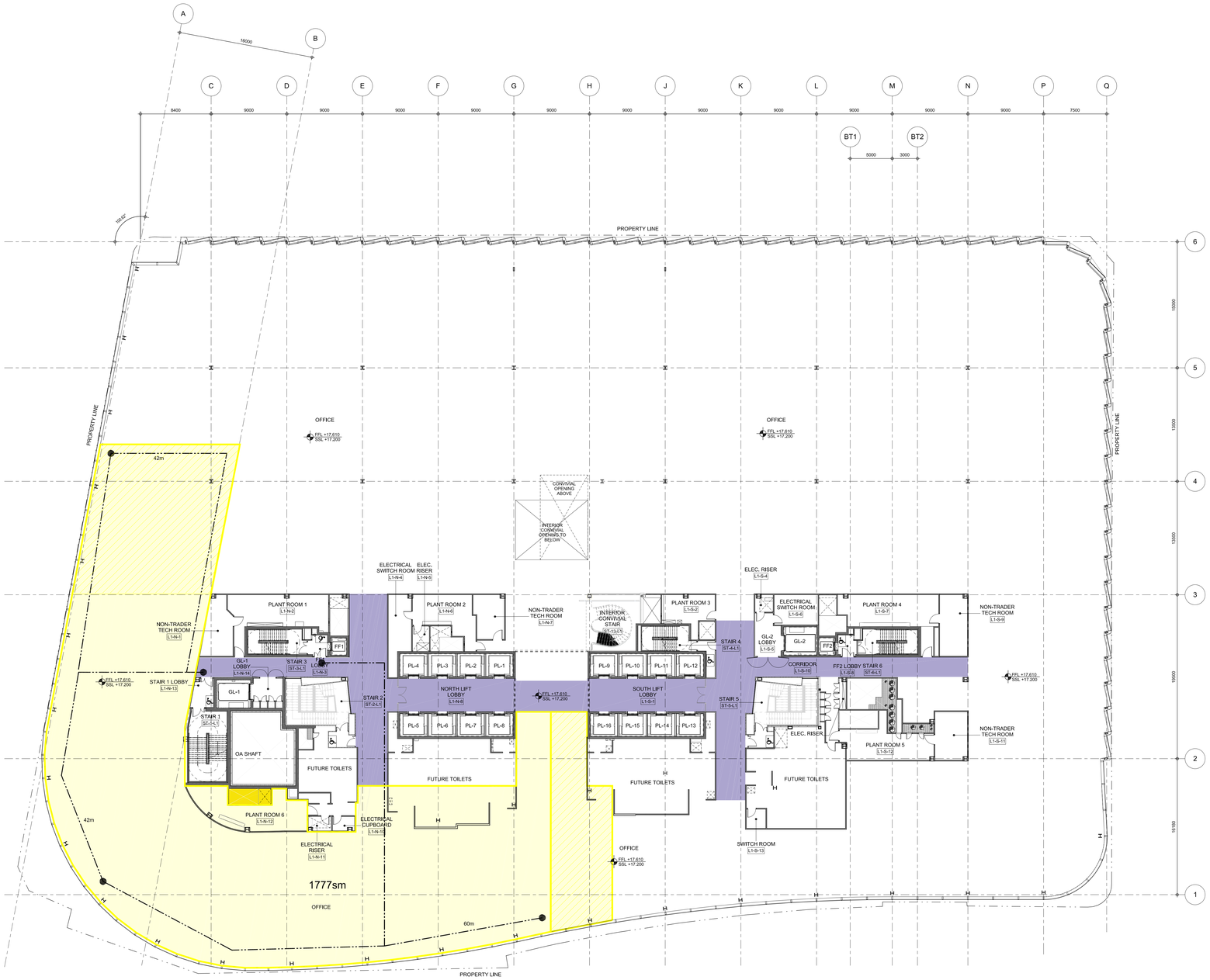

THE BASE BUILDING AIR CONDITIONING SYSTEMS COMPRISE AN UNDER FLOOR AIR DISTRIBUTION SYSTEM WITH ON FLOOR ZONAL AIR TOWER UNITS SERVING THE OCCUPIED SPACE VIA AN AIR HIGHWAY AND THE RAISED FLOOR VOID.

FOR A MULTI-TENANCY ARRANGEMENT THE AIRWAY WILL BE TERMINATED AT THE TENANTS DEMISE LINES.

THIS DRAWING INDICATES THE EXTENDED ZONE THAT CAN BE SERVED BY UP-RATING THE AIR TOWER UNITS IN THE ZONE SHOWN BY 10%

POPULATION DENSITY: 1 IN 6

TENANT C

LANDLORD

AREA SERVED BY 10% UPGRADE IN AIR TOWER UNIT VOLUME (ONLY ONE AREA CAN BE SERVED)

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA

TYPICAL UFAD ZONE FLEXIBILITY

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-556 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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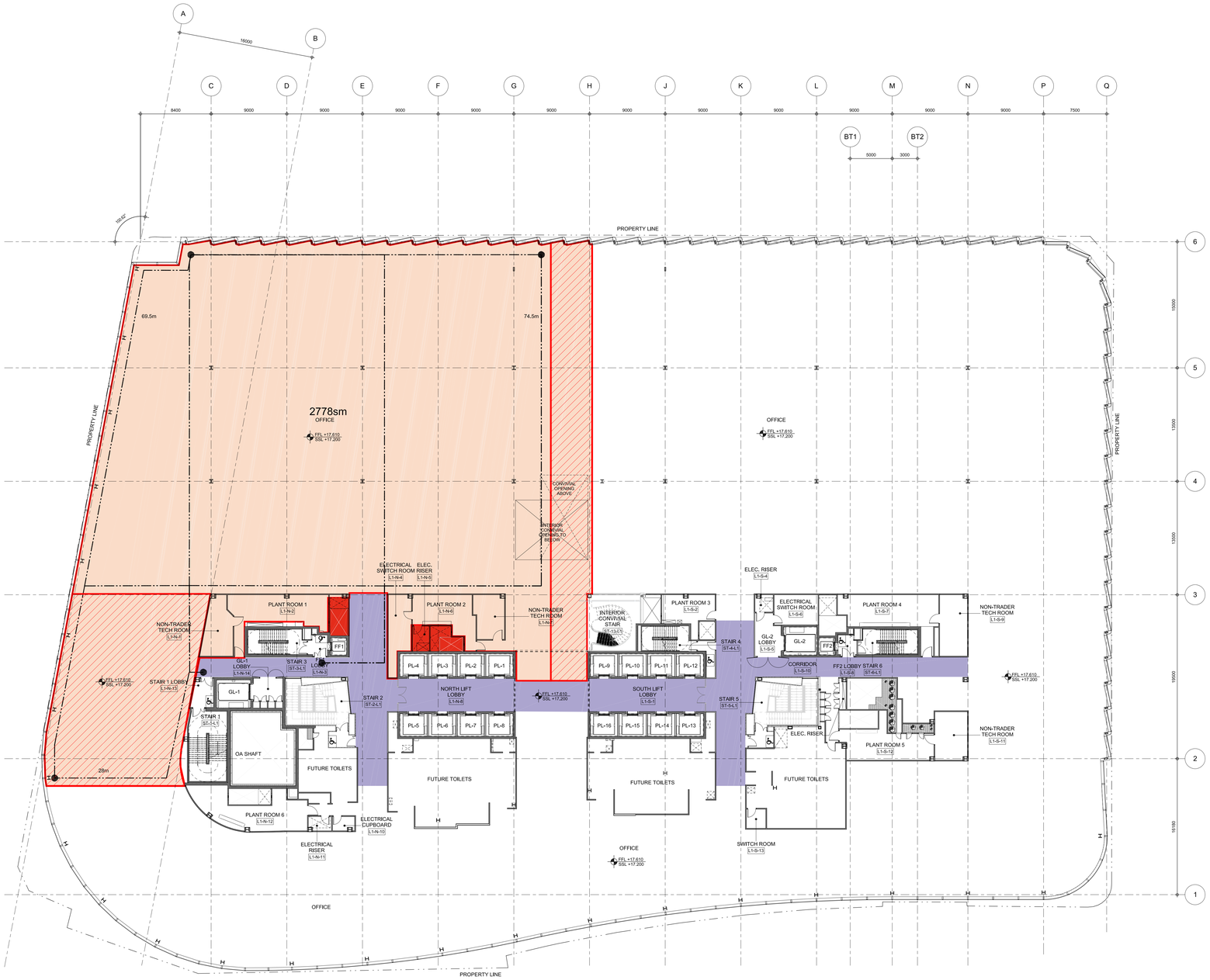

THE BASE BUILDING AIR CONDITIONING SYSTEMS COMPRISE AN UNDER FLOOR AIR DISTRIBUTION SYSTEM WITH ON FLOOR ZONAL AIR TOWER UNITS SERVING THE OCCUPIED SPACE VIA AN AIR HIGHWAY AND THE RAISED FLOOR VOID.

FOR A MULTI-TENANCY ARRANGEMENT THE AIRWAY WILL BE TERMINATED AT THE TENANTS DEMISE LINES.

THIS DRAWING INDICATES THE EXTENDED ZONE THAT CAN BE SERVED BY UP-RATING THE AIR TOWER UNITS IN THE ZONE SHOWN BY 10%

POPULATION DENSITY: 1 IN 6

TENANT D

LANDLORD

AREA SERVED BY 10% UPGRADE IN AIR TOWER UNIT VOLUME (ONLY ONE AREA CAN BE SERVED)

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA

TYPICAL UFAD ZONE FLEXIBILITY

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-557 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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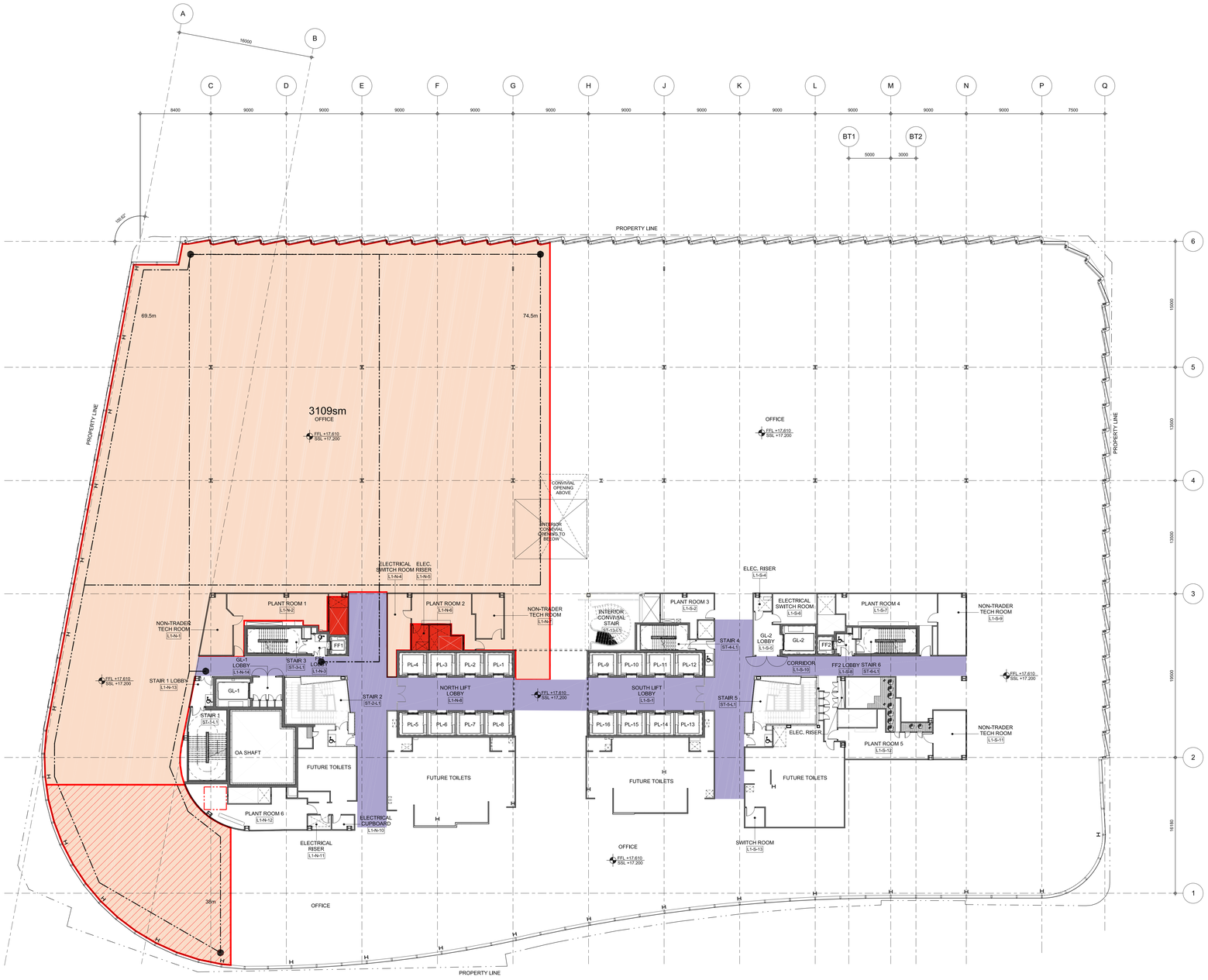

THE BASE BUILDING AIR CONDITIONING SYSTEMS COMPRISE AN UNDER FLOOR AIR DISTRIBUTION SYSTEM WITH ON FLOOR ZONAL AIR TOWER UNITS SERVING THE OCCUPIED SPACE VIA AN AIR HIGHWAY AND THE RAISED FLOOR VOID.

FOR A MULTI-TENANCY ARRANGEMENT THE AIRWAY WILL BE TERMINATED AT THE TENANTS DEMISE LINES.

THIS DRAWING INDICATES THE EXTENDED ZONE THAT CAN BE SERVED BY UP-RATING THE AIR TOWER UNITS IN THE ZONE SHOWN BY 10% AND ADDING AN AIR TOWER IN LOCATION IDENTIFIED.

POPULATION DENSITY: 1 IN 6

- TENANT D
- LANDLORD
- ADDITIONAL AIR TOWER UNIT LOCATION
- AREA SERVED BY 10% UPGRADE IN AIR TOWER UNIT VOLUME (ONLY ONE AREA CAN BE SERVED)

EXTRACTED FROM ADAMSON ASSOCIATES STAGE F - 40SL-A-1010-AA

TYPICAL UFAD ZONE FLEXIBILITY

PROJECT NUMBER: 2087

PROJECT NAME: LONDON DEVELOPMENT PROJECT

KPF

KPF_SK-558 REV_01

SCALE: 1-200 @ A0

DATE: 2015.10.09

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16. APPENDICES

J. Fire Strategy

REPORT N^{O} 60001016-FIRE

LONDON DEVELOPMENT PROJECT

FIRE STRATEGY REPORT

WSP | PARSONS BRINCKERHOFF

LONDON DEVELOPMENT PROJECT

FIRE STRATEGY REPORT

Type of document (version)

Project no: 60001016
Date: 15/09/2015

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www.pbworld.com

QUALITY MANAGEMENT

ISSUE/REVISION	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5
Remarks	First Issue, For Comment	Draft for Comment - Updated following DS discussions	For OGS review	Draft for OGS review	For DS Review
Date	17/12/2014	29/06/2015	22/07/2015	31/08/2015	15/09/2015
Prepared by	Sam Bennett	Thomas O'Driscoll	Thomas O'Driscoll	Sam Bennett (Astute Fire)	Sam Bennett (Astute Fire)
Signature					
Checked by	Thomas O'Driscoll	Chris Barrett	Chris Barrett	Thomas O'Driscoll (Astute Fire)	Thomas O'Driscoll (Astute Fire)
Signature					
Authorised by	Thomas O'Driscoll	Thomas O'Driscoll	Thomas O'Driscoll	Paul Tremble	Paul Tremble
Signature					
Project number					
Report number					
File reference					

EXECUTIVE SUMMARY

This section provides a brief overview of the key fire safety measures installed within the building and the areas in which the fire safety design deviates from standard design guidance. Reference should be made to the relevant section of the main body of the report as this section does not cover all aspects of the design.

MEANS OF ESCAPE AND WARNING

- A zoned phased evacuation strategy will be adopted within this building. This will involve all occupants in the zone of fire origin evacuating immediately with occupants in other zones leaving separately on a zone by zone basis. This will operate on a double knock with a ten minute investigation period before initiation of the fire alarm.
- All levels will be provided with an “enhanced” category L2 fire detection and alarm system in accordance with BS 5839 – Part 1: 2013 and a voice alarm system.
- Travel distances / exit widths and stair widths comply with the guidance given in BS 9999.
- Occupants using two of the six escape stairs from the upper levels will discharge across the reception area at Upper Ground level onto Shoe Lane.
- Disabled refuge spaces in the form of vestibules will be provided within each stair at each level except discharge level.

INTERNAL FIRE SPREAD (LININGS)

- All ceiling and wall linings will meet the provisions set out in BS 9999.
- The fire resistance period of the building will be 90 minutes above ground and 120 minutes below ground.
- Each evacuation zone will be separated by compartment floors.
- All areas of the building will be provided with a life safety sprinkler system designed in accordance with BS EN 12845 with the exception of the Shoe Lane reception area, where the fire loading will be controlled
- The atrium will be enclosed within 30 minutes fire resistance (integrity only) and will be provided with a smoke clearance system in accordance with BS 9999. The base of the atrium will be protected by a bespoke suppression system.
- All rooms designated as areas of high fire risk will be enclosed within fire resisting construction, as detailed in the fire strategy drawings.
- The main bank of lifts will be provided with fire curtains at each floor level to prevent vertical fire spread via the lift shafts.
- The convivial opening will be provided with a horizontal fire curtains at each level in order to prevent fire spread between floors.

INTERNAL FIRE SPREAD (STRUCTURE)

- Basement smoke ventilation systems will be provided to address BS 9999 requirements.
- As an enhancement to the measures given in BS 9999, a mechanical smoke clearance system (6acph) will be provided to each storey level (combined with the general exhaust system).

EXTERNAL FIRE SPREAD

- The boundary distances for the building are in compliance with the figures given in BR 187 to allow a 100% unprotected façade.

ACCESS AND FACILITIES FOR THE FIRE SERVICE

- Two fire-fighting shafts will be provided to the upper levels. Each shaft will be provided with a firefighting lobby, a dry rising fire main, ventilated lobby and a firefighting lift. In the basement, a number of additional dry rising mains will be provided within escape stairs in order to meet the hose distance guidance given in BS 9999.
- A third firefighting shaft is provided which serves the basement storeys only.
- Fire appliance access will be provided to within 18m of the inlets for each dry rising or falling main.

SUMMARY OF VARIATIONS TO CODE

A summary of the non-standard solutions adopted in this project is given in Table 0-1-1. Further details and justification for each of these solutions is provided in the referenced section.

Table 0-1-1 Summary of Variations to the Code

SECTION	ITEM	GUIDANCE STATES	PROPOSED SOLUTION	JUSTIFICATION
4.2	Investigation Period	No more than 6 minutes (BS 5839 Part 1)	10 minutes	A high level of management is provided within the building, with 24/7 security and trained personnel on site. If a fire incident was to occur it is highly likely that the full 10 minutes would not be required as activation of the alarm will be on any second device (i.e. a second smoke/heat detector) any manual call point or sprinkler head would cause the alarm to activate.
4.1	Evacuation Strategy	Fire floor and floor above should evacuate simultaneously. Followed by rest of the building two floors at a time (BS 9999)	Building divided into separate zones. Fire zone to evacuate initially followed by one zone at a time.	Due to the high degree of compartmentation within the building, it is felt that the occupants above the fire floor are sufficiently protected to allow this strategy. However the stairs have been sized based on two floors evacuating should this be required during an incident. Note that due to the large number of people on a floor plate, this allows a more controlled evacuation of the building.
11.2	Hose Distances on Office Levels	No more than 60m from a dry riser outlet (BS 9999)	Maximum hose distance is currently 75m.	This has been agreed with LFB on the basis that the office areas are of low risk and are sprinklered.
0	Escape Through Lobbies	Escape stairs should discharge either directly to the outside of the building or via a protected, sterile, lobbied corridor (BS 9999)	Two stairs discharge through the reception lobby onto Shoe Lane.	The shoe lane reception will be kept near sterile. As such, the risk of fire starting in this area is negligible.
9.7	Underfloor Cavity Barriers	Cavities should be sub divided into areas which do not exceed 40m unless the guidance given in Section 34.3 of BS 9999 is followed.	Large underfloor cavities are provided. The guidance given in Section 34.3 of BS 9999 is followed with the exception that no detection is provided within the cavity.	The floor void is provided with air vents into the floor plate at regular intervals. Therefore, if a fire was to begin within this space, the smoke would rise and be detected before it could spread beyond 40m.
11.2	Firefighting Shaft Ventilation	Firefighting shafts which serve a storey greater than 30m above ground should be provided with a pressure differential system.	Firefighting shafts will be ventilated using a "colt type" depressurisation system.	The depressurisation system would be designed to give an equivalence in terms of keeping the stair clear of smoke.

12.1	Atrium Design	Atrium should be enclosed on all levels by construction which provided 30 minutes fire resistance (Integrity only)	Atrium will be open at base level, automatic suppression will be extended to the atrium base as a compensatory feature.	The low pressure mist system will provide a similar level of suppression to the sprinkler system. Therefore, the provision of an open atrium presents no greater risk.
11.1	Firefighting Shaft Discharge Locations	Firefighting shafts should discharge either directly to external air or via a sterile, protected corridor which is no more than 18m long.	Sterile exit corridors are greater than 18m long.	This approach has been agreed with LFB as the building is sprinklered and the office levels are considered to be of low risk.
9.1	Sprinkler Coverage	As the building is over 30m in height, all areas of the building require sprinkler protection.	The reception areas will not be provided with sprinkler protection.	The area will be designed with minimal fire loading. i.e. fire loading will be present in quantity and area no greater than that would be controlled by a sprinkler system.
9.2	Reduction in Passive Fire Protection Requirements	All loadbearing elements of structure should be designed to achieve the relevant fire resistance periods	A fire engineering exercise has been undertaken to optimise the passive fire protection requirements to some secondary elements of structure.	Full details of the analysis are provided under separate cover.
0	Discounting of Horizontal Exits	All horizontal exits should be sized on the assumption that a fire prevents access to the largest exit.	The horizontal exits on the roof will be sized on the assumption that both exits are available.	As the roof is external, there is no confinement of smoke. Therefore it is not considered that a fire at the roof would affect the final exits. Additionally extra controls over fire loading will be in place within 5m of the exits.
9.3	Compartmentation and Evacuation Strategy	Every floor within the building should be a compartment floor.	Floors between Ground and Upper Ground in amenities space and floor between basement and basement mezzanine will not be provided as compartment floors. Evacuation strategy will deal with this by grouping floors into "zones"	Means of escape are sized sufficiently to allow a full evacuation of this area.
0	Inner Rooms	Where the occupancy of a space is greater than 60 persons at least two means of escape each into separate volumes is required.	Some rooms with an occupancy greater than 60 evacuate into a single volume	Calculations have been undertaken in order to demonstrate than this arrangement is acceptable.
9.3	Insulation rating to amenities fire curtains	Fire curtains in compartment floor should be 90 minute fire rated with integrity and insulation.	Fire curtains will provide 90 minutes integrity and 15 minutes insulation.	Calculations demonstrate that the curtain and separation distance between floors is sufficient to have integrity only.

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1 INTRODUCTION

1.1 DOCUMENT OVERVIEW

WSP l PB Fire has been appointed to provide fire safety engineering advice for The London Development Project in the City of London.

The objectives of this report are to:

- Provide support to the design team by providing detailed solutions for fire safety issues with appropriate analyses.
- Demonstrate how the detailed fire safety design meets the functional requirements of Part B of the Building Regulations 2010 in terms of life safety.

This document is intended to provide a strategy for the building as a whole and, as such, covers the design issues associated with both of the project workstreams (i.e. shell and core and interiors).

The report should be read in conjunction with the Architectural GA's prepared by the various architects working on both the interiors and shell and core scheme, the additional information provided in the appendices of this report and other supporting documentation prepared and submitted by other consultants who are acting on behalf of the design team.

1.2 DESIGN APPROACH AND LEGISLATION

The report provides a detailed account of the fire safety measures that will be used to demonstrate compliance with Part B (Fire Safety) of the Building Regulations 2010. This has, on the main part, been achieved using the guidance of BS 9999 with some fire engineered solutions developed under the framework of BS 7974 where appropriate.

Property protection and events not pertaining to Building Regulations compliance are not explicitly addressed within this document. However some areas of the design will afford a degree of property protection, and indeed some aspects have been developed with this in mind.

FIRE SAFETY GUIDANCE

BS 9999 provides a transparent and flexible approach to fire safety design through the adoption of a structured risk based approach. The approach reflects with improved accuracy the varying physical and human factors associated with individual building designs in a way that other more traditional design methods, such as Approved Document B, do not. This is the principal reason why BS 9999 is being adopted on this project.

Whilst the framework in BS 9999 permits numerous trade-offs in active and passive fire safety measures, significant levels of redundancy in design can still arise when the techniques in it are used. In these cases, alternative fire safety engineering techniques using the framework outlined in BS 7974 can be used. This mixing of design approach is permitted in BS 9999 as WSP has a thorough understanding of the fire safety issues and takes sufficient care when developing such an integrated approach.

SECTION 20

Whilst it is recognised that Section 20 of the London Building Act (Amendment) 1939 has been repealed. The first stage of the design was undertaken at a time when compliance with this legislation was required. As such, the Stage C design incorporated many measures which are stated in LDSA Guide No. 1. Following discussion with the Approving Authorities it has been agreed that some of the measures previously incorporated into the design will be retained in order to provide an enhanced level of safety within the building. Specifically, these are:

- Places of Special Fire Hazard – High risk plant rooms will be enclosed within 120 minutes fire resistance.
- A mechanical smoke clearance system will be provided to the office levels and amenities spaces at a rate of six air changes per hour. This will be for post fire smoke clearance (i.e. cold smoke only).

FIRE ENGINEERING ASSESSMENT PROCESS

Where fire engineering analyses have been undertaken within this report the framework set out by the guidance in BS 7974:2001 – *the application of fire engineering principles to the design of buildings,* has been followed.

REGULATORY REFORM ORDER

Under the Regulatory Reform (Fire Safety) Order 2005 each and every owner, occupier and operator of a premises is required to adequately manage the safety of the areas under their control. Under this legislation a 'Responsible Person or Persons' is required to be identified in order that the necessary level of safety can be implemented, with an inherent necessity for competence in the area of fire safety. The fire authority having jurisdiction has the power to inspect the premises to check that the Responsible Person(s) comply with the duties under the Order and will look for evidence that the Responsible Person(s) has carried out a suitable fire risk assessment and acted upon the significant findings of that assessment.

The Responsible Person must ensure that any duty imposed by Articles 8 to 22 of the Order, or by regulations made under Article 24, is complied with in respect of those premises. It is important therefore that the information contained within this strategy is provided to the Responsible Person.

FUTURE PROOFING

Some of the means of escape widths within the building have been oversized so that in the future, the design could potentially allow higher levels of occupation. However, it should be noted that any future increase in occupant capacity should be subject to a full fire engineering analysis to ensure that any increases in occupancy correlate all aspects of this fire strategy.

2 BUILDING DESCRIPTION

2.1 OVERVIEW

The building consists of eight storey levels of office accommodation above ground floor levels and two storeys of basement accommodation which consist mostly of plant (known as Basement and Basement Mezzanine). The roof of the building houses an occupiable area which will be used for functions.

Due to a sloping site, direct external access to the building is provided on two storeys, Upper Ground and Ground. At both of these storeys, amenity areas for the occupants will be provided.

The upper levels of the building are provided with six escape staircases, two of which are firefighting shafts. Two of the dedicated means of escape staircases discharge via the Upper Ground level reception area onto Shoe Lane. The remaining stairs discharge via sterile, protected corridors at Ground Level, Upper Ground Mezzanine and Ground Level. The basement is provided with seven escape staircases, two of which are firefighting shafts. A stair matrix is provided in Appendix D-1, which shows which escape stairs serve each level and where they discharge.

The building is provided with three mezzanine levels at Basement, Ground and Upper Ground.

An atrium is provided between Levels 05 to 08. This atrium is separated from Levels 06 – 08 by glazing. The atrium is extended vertically from Level 05 through to Upper Ground Level via the convivial opening, which is provided with fire curtains to maintain compartmentation.

The existing maintenance connection to BT tunnels which run underneath the building is to be maintained as a part of the new development. Whilst construction of this connection will form a part of the design / construction works of the new building, the BT connection will be completely separate from the new building and have its own protected entrance / exit.

2.2 BUILDING HEIGHTS

In accordance with Section 3.29 of BS 9999, the basement depth should be taken as the “distance of the lowest point of the floor of the lowest storey of a building to the fire and rescue service access level measured at the centre of that face of the building where the distance is greatest”. In this case, this has been measured at the centre of Stonecutter Street so the basement depth is considered to be 9.7m.

The top storey height when measured from the Fire Service Access level (i.e. Ground to Roof) is 47.1m.

2.3 EXTENDED CORE

Four double height extended core areas are provided within the building between Levels 01-02, Levels 03-04, Levels 05-06 and Levels 07-08. These areas contain meeting rooms, conferencing facilities and pantries. Each extended core contains a convivial stair which passes between the lower level (village) and the upper level (clubhouse). The extended core areas also house an open convivial stair which runs from Upper Ground Level to Level 08.

2.4 AMENITY AREAS

The development contains amenity spaces for the occupants on Ground, Upper Ground and Upper Ground Mezzanine Levels. These areas contain the following uses:

- Auditorium – Ground and Upper Ground Levels;
- Pre function Space – Ground Level;
- Fitness Centre – Ground Level;
- Conferencing Facilities – Ground, Upper Ground and Upper Ground Mezzanine Levels;
- Flexible Dining, Function Space – Upper Ground;
- Childcare Facilities – Upper Ground Mezzanine;
- Wellbeing Centre – Upper Ground Mezzanine.

2.5 STERILE CORE ZONE

On the office levels, each of the stairs are accessed via shared corridors from which access to the office floor plate. These corridors are referred to throughout the report as the “sterile core area”. It has been agreed with the approving authorities that these areas will contain no fire loading with the exception of a few small beverage points.

3 BS 9999 – RISK PROFILE

3.1 OVERVIEW

The risk profile methodology in BS 9999 provides a basis upon which all other fire safety measures are then developed. The risk profile is a function of the occupancy characteristic (as defined in Section 6.2 and Table 2 of the document) and the fire growth rate of the space (Section 6.3 and Table 3).

3.2 OCCUPANCY CHARACTERISTICS

The occupancy characteristic is determined by whether the occupants are familiar or unfamiliar with the building and whether they are likely to be awake or asleep should fire start. For this type of building the main occupancy characteristic is A (awake and familiar) with some areas having a “B” occupancy characteristic (awake and unfamiliar) and childcare having a “C” occupancy characteristic (asleep and unfamiliar).

3.3 FIRE GROWTH RATE

The fire growth rate is the rate (per unit time) at which it is estimated that a fire will develop. For this building the fire growth rates are a mixture of “2” (medium) and “3” (fast) as given in Table 3 of BS 9999.

However, as this building will be fitted with a life safety sprinkler system designed and installed in accordance with the guidance given in BS EN 12845 it is acceptable to reduce the growth rates stated in Table 3 of BS 9999 by one i.e. an “A2” risk profile becomes “A1”.

3.4 RISK PROFILES

On the basis of the above, the assumed risk profiles for each “use” contained within the building are given in Table 3-1. These values correspond with the examples provided in Table 4 of BS 9999.

Table 3-1 Building Risk Profiles

AREA	STOREYS	RISK PROFILE
Offices	01 – 08	A1
Auditorium	G, UG	B1
Pre-function Space	G, UG	B1
Fitness Area	G	A1
Dining / Function Area	UG	B1
Conferencing	All Levels	B1
Childcare	UGM	C1
Wellbeing	UGM	B1
Kitchens	B, BM	A2
Low Risk Plant	B, BM	B1
High Risk Plant	B, BM	B3
Rooftop Terrace	Roof	B1
Reception Areas	GM, UG	B1
Loading Bay	B	B2
Retail	UG	B2

Source : Table 4 of BS 9999.

3.5 BS 9999 PERMITTED ENHANCEMENTS

BS 9999: 2008 allows a 15% enhancement to travel distances, stair widths and exit widths where it can be demonstrated that the proposed detection strategy provides a “clear benefit” over the minimum standard required.

BS 9999 states that the minimum standard of alarm required in a building with an atrium is Category L2. In this building, additional detection will be provided as described in Section 4.2. The level of coverage will be akin to an L1 alarm and detection system with the exception of detection within some void areas and some inner rooms (full details of the alarm system are provided within the MEP information). Should a fire begin in one of the rooms where detection would not be required under the minimum standard, occupants would be alerted at a much earlier stage of fire development than under an L2 level of coverage. This is of clear benefit to the occupants and, in our opinion, sufficient to allow the 15% benefit described in BS 9999. As such, the 15% enhancement to travel distances, stair widths and exit widths has been adopted. This approach has been discussed and agreed with the Approving Authorities. An illustration of the proposed detection coverage compared to that of a standard L2 system is given in Appendix B.

It should be noted that BS 9999 also allows an additional 5% enhancement to be taken where the floor to ceiling heights within the building are between 3 - 4m. Whilst the building would meet this criterion, the design team has decided not to include this enhancement within the means of escape calculations.

3.6 MANAGEMENT LEVELS

Table 6 of BS 9999 states that a Level 2 management strategy is required within this building with high risk plant areas requiring Level 1.

More details on the requirements of the management levels are set out in Appendix A. This guidance will be taken into account when the fire safety management strategy for the building is produced.

4 MEANS OF WARNING

4.1 EVACUATION STRATEGY

OVERVIEW

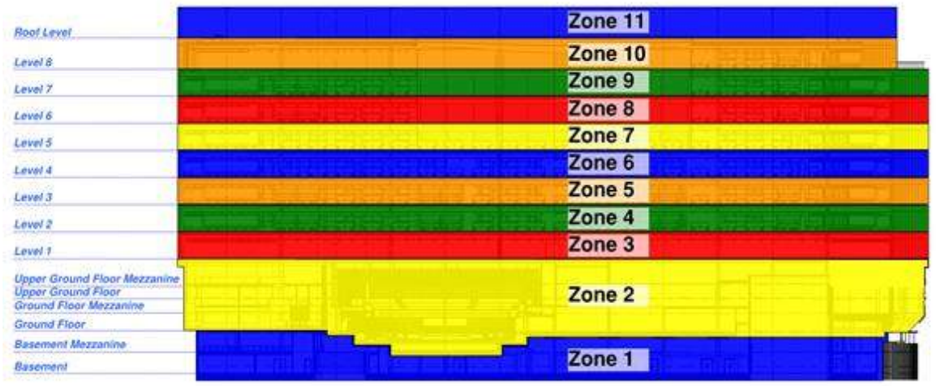
A phased evacuation strategy will be adopted within this building. When phased evacuation is used it is necessary to provide the additional fire safety measures listed below. Each of these requirements is either met or exceeded in the current design.

- All staircases will have lobby protection;
- Every floor should be designed as a compartment floor;
- The building should be provided with an automatic fire warning system, conforming to at least an L3 standard given in BS 5839-1:2002 (note: an "enhanced" category L2 system will be provided);
- An emergency voice communication system should be provided in accordance with BS 5839-9, with outstations at each floor level which communicate with a master station located in the buildings control room or some other suitable control point at fire and rescue service access level.

ZONING STRATEGY

BS 9999 states that where phased evacuation is adopted the stairs should be sized to accommodate the fire zone and the zone above the fire zone evacuating at the same time. However, due to the large size of the floor plates and the economic impact associated with false alarms, only one alarm zone will evacuate at a time. The proposed zoning strategy is shown in Figure 4-1.

Figure 4-1 Illustration of Evacuation Zones within the building.



Given the high level of compartmentation within the building and the provision of sprinklers, which will inhibit fire spread between compartments, it is our view that the risks to occupants in adjacent zones to the fire zone are low and, as such, this strategy is acceptable.

Despite the above, the stairs have been sized on the basis of a "standard" BS 9999 phased evacuation strategy, i.e. two entire floors evacuate at a time. This has been done to add an enhanced degree of safety to the building and for future proofing purposes.

Ground, Upper Ground and Upper Ground Mezzanine levels of the amenities space are considered to be a single zone and, as such, the occupants of this area will evacuate simultaneously upon detection of a fire in this area. This is due to the provision of open voids between each of these levels. Additionally all basement levels are considered as a single zone.

4.2 FIRE ALARM AND DETECTION

OVERVIEW

An "enhanced" category L2 alarm and detection system, in accordance with BS 5839: Part 1, will be provided to all areas. A category L2 system provides coverage to all escape routes, rooms accessed directly from escape routes and places of 'high fire risk' as defined in Section 13.6 in BS 9999.

Additional detector heads will be provided to the open plan office floor plate. This level of detection is in excess of that required for an L2 system under BS 5839: Part 1. An illustration of the proposed detection coverage compared to that of a standard L2 system is given in Appendix B. For this reason, the alarm is considered to be an "enhanced" L2 system.

Detection will also be provided in access rooms (i.e. rooms from which inner rooms are accessed) in order to meet the provisions for inner rooms as described in BS 9999.

The fire alarm and detection system will consist of a combination of multi sensor detection with manual call points placed at all storey exits.

ASPIRATING SYSTEMS

Aspirating smoke detection will be provided to some basement plant areas where point detection would be difficult to reach. The rooms to which this is applicable are detailed in the MEP information.

FLAME DETECTION/UVIR DETECTION

The fire suppression system within the atrium will use a combination of point source and infra-red flame detection to locate the seat of a fire and operate low pressure water mist heads accordingly. Specific details of this system will be provided by the system manufacturer as the design develops.

VOICE ALARM

A category V3 voice alarm system will also be provided as per the guidance of BS 5839-8.

INVESTIGATION PERIOD

The client has requested that the building operates a ten minute investigation period. The key features of this process are as follows:

- If the initial alarm signal is not acknowledged within a 40 second period, the alarm will activate.
- If the alert is not cancelled after ten minutes, the alarm will activate.
- The system will be "double knock" i.e. the activation a second smoke detector will activate the alarm.

- Activation of a manual call point will activate the alarm.
- Prolonged activation of a sprinkler flow switch will activate the alarm.
- Activation of a heat detector on a multi sensor head will activate the alarm.

This investigation period is in excess of the six minutes suggested in BS 5839: Part 1. However, it is our view that this arrangement is acceptable in this instance for the following reasons:

- Due to the nature of the use of the building, the level of operational control and management within the building will be largely in excess of the minimum standards required by BS 9999 (i.e. M1 level rather than M3). Furthermore, security staff will be present within the building 24 hours a day on every day of the year. This means that there will always be staff present on site that will be trained to deal with any fire incident which may occur.
- The floor plate of the building is largely open plan and will be heavily occupied. This means that a fire incident will likely be visually detected by one of the occupants inside the ten minute investigation period.
- If a fire was to occur in an unoccupied space and in the unlikely event that the full ten minutes elapses before the alarm is activated, the dispersed nature of the buildings escape routes are such that the chances of an occupant becoming trapped without an exit to travel to are low.
- The building is provided with a sprinkler system which will control the size of a fire at an early stage, meaning that the chances of a large fire developing during the additional four minutes of investigation time are minimal. Activation of the sprinkler system will also trigger an evacuation of the building.

This approach has been discussed and agreed with the Approving Authorities, subject to a suitable management strategy being submitted by the client.

CAUSE AND EFFECT MATRIX

The detailed cause and effect matrix for this process is documented separately. However, an indicative cause and effect matrix for the scheme is provided in Appendix C, for reference. In addition, to the cause and effect processes required to achieve compliance with the relevant codes and British Standards, the following additional operational processes will be integrated into the system design at the request of the client:

- Upon activation of any device, a feed from the nearest security camera will open on the console in the security room.
- Upon any first knock activation, an alert signal will be sent to the pagers of PEEP holders and staff within the Crèche.
- Upon any 2nd Knock alarm, the traffic control bollards to Stonecutter Street and Plumtree Court will descend to allow Fire Appliance Access to the site.

5 HORIZONTAL MEANS OF ESCAPE

5.1 TRAVEL DISTANCES

The maximum travel distances for all areas are given in Table 5-1. These figures are based on the values given in Table 12 of BS 9999 with an additional 15% added based on the provision of an enhanced detection system and have been rounded down to the nearest whole number.

Table 5-1 Summary of Travel Distance Limits.

AREA	RISK PROFILE	MAXIMUM TRAVEL DISTANCE (M) WHEN ESCAPE IS POSSIBLE IN:	
		One direction	Multiple directions
Offices	A1	29	74
Auditorium [1]	B1 [1]	27 [1]	69 [1]
Pre-function Space	B1	27	69
Fitness Area	A1	29	74
Dining / Function Area	B1	27	69
Conferencing	B1	27	69
Childcare	C1	14	31
Wellbeing	B1	27	69
Kitchens	A2	24	63
Low Risk Plant	B1	27	69
High Risk Plant	B3	18	46
Rooftop Terrace	B1	27	69
Reception Areas	B1	27	69
Loading Bay	B2	23	57
Retail	B2	23	57

[1] This is the overall travel distance. Note for auditorium there are further design requirements as discussed below and in Section 12 of this report.

The current GA Plans indicate that these travel distances are achieved at all levels.

AUDITORIUM

In accordance with BS 9999, travel distances between rows of seats shall be limited to no more than 15m in a single direction and 32m where alternative directions exist. The total distance (i.e. from seat to a final exit) shall not exceed 69m. This is achieved in the current design. Further information on the design of the Auditorium is discussed in Section 12 of this report.

5.2 MINIMUM NUMBER OF ESCAPE ROUTES (ROOM, TIER OR STOREY)

In accordance with the guidance given in BS 9999, the following minimum number of exits are provided to each area based on the occupancy present. This is based both “locally” and “globally”, i.e. an individual room on a floor plate and an evacuation storey respectively.

- Up to 60 persons – one exit;
- 61 – 600 persons – two exits; and
- More than 600 persons – three exits.

CHILDCARE

In accordance with BS 9999, childcare areas require at least two exits, one of which shall be a direct exit to the outside of the building. This shall be achieved using a dedicated stair (i.e. Stair 7). Access to the childcare facilities should be designed so that in an escape situation parents who wish to pick up their children as they evacuate the building do not have to go against the “flow” of escaping occupants from other areas. This is currently achieved through the layout of the stair cores.

5.3 HORIZONTAL EXIT WIDTHS - LEVEL 01 TO ROOF

The minimum required storey exit widths and the widths provided are given in Table 5-2. The width factors used for these calculations have been taken from BS 9999 with an additional 15% reduction based on the provision of an enhanced detection system and have been rounded up to the nearest two decimal places. The occupancies have been calculated using the floor space factors provided in Table 10 of BS 9999 with the exception of the roof, where the capacity is limited to 600 as only two exits are provided.

Table 5-2 Horizontal Exit Width Analysis for Levels 01 – Roof

STOREY	OCCUPIED FLOOR AREA (M^2)	BS 9999 FLOOR SPACE FACTOR (M^2/PERSON)	OCCUPANCY	MINIMUM WIDTH (MM / PERSON)	NUMBER OF EXITS PROVIDED	MINIMUM REQUIREMENT	ACTUAL WIDTH PROVIDED
Roof	N/A	N/A	600	2.81	2	2 x 843mm	2 x 900mm
Level 08	6940	5	1388	2.81	4	4 x 1300mm	4 x 1020mm,
Level 07	7930	5	1586	2.81	6	6 x 892mm	4 x 1300mm, 1 x 900mm, 1 x 1200mm
Level 06	7930	5	1586	2.81	6	6 x 892mm	4 x 1300mm, 1 x 900mm, 1 x 1200mm
Level 05	7930	5	1586	2.81	6	6 x 892mm	4 x 1300mm, 1 x 900mm, 1 x 1200mm
Level 04	7930	5	1586	2.81	6	6 x 892mm	4 x 1300mm, 1 x 900mm, 1 x 1200mm
Level 03	7930	5	1586	2.81	6	6 x 892mm	4 x 1300mm, 1 x 900mm, 1 x 1200mm
Level 02	7930	5	1586	2.81	6	6 x 892mm	4 x 1300mm, 1 x 900mm, 1 x 1200mm
Level 01	7930	5	1586	2.81	6	6 x 892mm	4 x 1300mm, 1 x 900mm, 1 x 1200mm

STERILE CORE ZONE

The corridors which provide access to the “sterile core zone” on the office floor plates should also be suitably sized such that if one exit is blocked then the remaining two exits do not impede the flow of occupants into the stair. On the north side, the corridors would need to be sized at 1850mm to achieve this and on the south side the corridors would need to be sized at 1750mm to achieve this. These minimum widths are achieved in the current design.

MEANS OF ESCAPE FROM THE ROOF

BS 9999 states that horizontal exit widths should be sized on the basis that one exit is discounted due to a fire. This principle will be adopted throughout the building with the exception of the roof level. It is considered that discounting an exit at the roof level is unnecessary for the following reasons:

- The quantity of fire loading on the roof level is minimal.
- As the roof is an open air space, if a fire was to occur then the smoke and heat would be released into the air, rather than contaminating the immediate area.

This principle was discussed with the Approving Authorities and was accepted providing that a 5m sterile “safety zone” of no fire loading is provided adjacent to the entrance of both the stairs. The extent of this zone is shown in the fire strategy drawings for the scheme.

5.4 HORIZONTAL EXIT WIDTHS – AMENITIES AREA

ROOM BY ROOM

A summary of maximum occupancy figures for each room within the amenities space is given in Table 5-3. These figures have been provided by the client. For each room, the minimum number and width of exits is shown.

Table 5-3 Occupancies in the Amenity Spaces

SPACE	MAXIMUM OCCUPANCY FIGURES	MINIMUM NO. OF EXITS	MINIMUM EXIT WIDTH
Ground Floor			
FCR 60a	60	1	800mm
FCR 60b	60	1	800mm
FCR 60c	60	1	800mm
FCR 60d	60	1	800mm
MPR 144a	144	2	2 x 800mm
MRP 144b	144	2	2 x 800mm
Upper Ground Floor			
Employee Café	1050	3	3 x 1607mm (or 4 x 1071mm)
BCR12a	24	1	800mm
BCR12b	24	1	800mm
BCR12c	24	1	800mm
BCR12d	24	1	800mm
BCR18-20a	40	1	800mm
BCR18-20b	40	1	800mm
FCR40a	40	1	800mm
FCR40b	40	1	800mm
BCR16	32	1	800mm
FCR50	100	2	2 x 800mm
FCR30	60	1	800mm
FCR16	32	1	800mm
Upper Ground Floor Mezzanine			
BCR12a	24	1	800mm
BCR12b	24	1	800mm
BCR12c	24	1	800mm
BCR12d	24	1	800mm

ENTIRE ZONE

Given that numerous routes between floors are provided, and the space is designed as a single zone, it is considered reasonable to assess the escape capacity of the amenities space as a whole.

The maximum concurrent occupancy of the amenities space has been confirmed by the client as 3249. This figure assumes that all rooms within the amenities space are occupied to full capacity simultaneously, which is considered to be highly unlikely.

Assuming a base risk profile of B1 for the amenities space, a minimum width of 3.06mm/person is applicable to the amenities space. On this basis, a minimum exit width of 9942mm if exit width is required from this space after the largest exit has been discounted.

The proposed exiting strategy for this area is shown in the marked up drawings provided in Appendix D-2. Under the proposed strategy, a total of 10400mm of exit width is provided, which is sufficient for 3398 occupants. As such, exit width provisions are assumed to be compliant.

5.5 HORIZONTAL EXIT WIDTHS – BASEMENT STOREYS

The North section of the basement is provided with access to five stairs, each with a 900mm exit door. Assuming a B1 risk profile, this allows a maximum capacity of 1176. The south section of the basement is provided with access to two stairs, each with a 900mm exit door. Assuming a B1 risk profile, this allows a maximum capacity of 294. Given that the use of the basement is almost exclusively plant, it is not anticipated that the occupancy of the basement will ever reach these limits.

Each of the basement mezzanine areas is provided with access to a single stair. This limits the capacity of each of these areas to 60 persons.

5.6 INNER ROOMS AND ACCESS ROOMS

An “inner room” is a room from which escape is only possible through another occupied room. In accordance with Section 17.3.4 in BS 9999 all access rooms in this scheme will be provided with automatic fire detection. Inner rooms will not house more than 60 persons and the access room will not be a place of ‘special fire hazard’.

However, a room is no longer deemed to be an “inner” room if two means of escape are provided from the room which each discharge into separate volumes (there is no requirement for these volumes to be fire separated under the guidance of BS 9999).

In the design of the amenities space, the FCR rooms at Ground and Upper Ground have capacities which could exceed 60 persons where both exits are provided into the central amenities space. For each of the above spaces, escape should be possible into at least two separate volumes in order to comply with the guidance of BS 9999.

The objective of the inner rooms rule is that by limiting the capacity, the time taken to evacuate the space is reduced. This ensures that in the event of a fire in the access room, the occupants of the inner room will have evacuated before smoke fills down and renders the escape route impassable. In such situations it is logical to limit the number of occupants (and associated escape time) where the access room is small as an uncontrolled fire could quickly fill the volume, preventing escape.

However in a large, open volume, such as the amenities space, the time for the smoke layer to fill down and affect alternate exits from a space will be greater. Particularly considering that sprinklers are provided, which will limit the smoke output of any fire.

On the basis of the above, it is our view that the inner rooms guidance stated in BS 9999 will not provide any enhancement to the level of safety within the amenities space given the large volume and provision of sprinkler protection. As such, both means of escape from the Upper Ground FCR rooms will be provided into the main amenities volume. The suitability of this approach is demonstrated quantitatively below.

INNER ROOM CALCULATION OVERVIEW

An egress flow analysis has been undertaken to evaluate the time it takes for occupants of the 88 seat conference room to reach the stair.

When two FCR rooms are combined into the theatre arrangement, two 900mm doors are provided. It is assumed that one of these may be blocked by a fire and hence unavailable for use. Two fire scenarios have been studied

SCENARIO ONE

In scenario one (Figure 5-2), the seating will require those within the room to manoeuvre to the side then to the exit, there is a total distance of 18m to the exit. Based on the density of the room (~0.88 persons/m^2) this will take 16.8s.

In comparison the time it takes for 88 people to pass the door is longer. Using a flowrate of 1.333 persons/s, which is quoted in BS 7974-6, and following the equation in Figure 5-1 it would take 73s for all to pass. Therefore, the limiting factor for occupants escaping from the space is considered to be the flow rate through the door, not the travel distance.

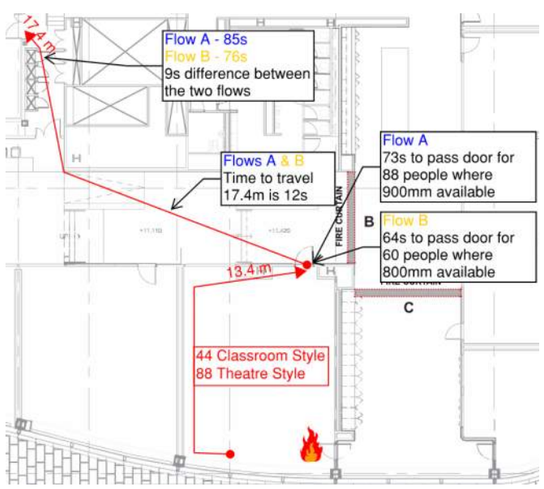
Figure 5-1 Flow Rate Equation

$$F_p = 1.333 \times D$$

Where D is the width of the exit in metres and F_p is the amount of people which can pass in one second.

The code compliant time for which 60 people would have to pass an 800mm wide door, based on equation one, is 64s. The represents a 9s difference.

Figure 5-2 Summary of Scenario One

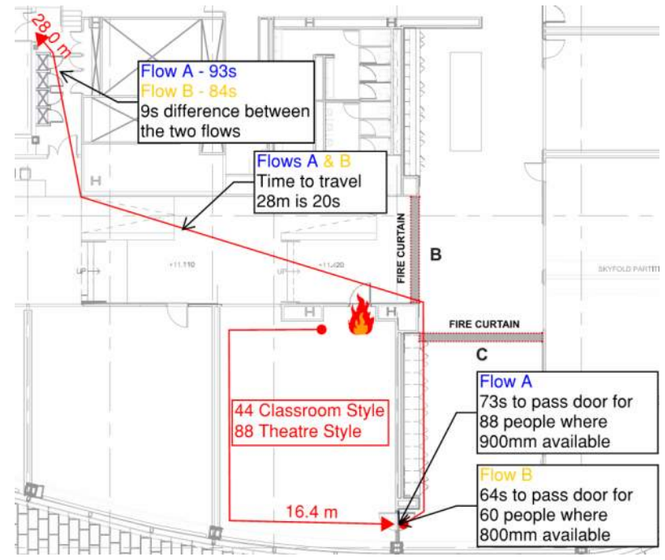


SCENARIO TWO

The second scenario analyses the egress time when the fire blocks the closest exit.

In the second scenario (Figure 5-3), following the same principles as scenario one, it takes 84s and 93s respectively for occupants to reach the stair. The 13s difference remains between the two.

Figure 5-3 Summary of Scenario Two



CONCLUSION

A total difference of 9s between both flow calculations exists to reach a place of relative safety in the stairwell. In addition to this two routes of escape are available from this portion of the building. In our opinion this additional travel time is unlikely to impact egress and therefore a common route for more than 60 people escaping is felt to be acceptable.

6 VERTICAL MEANS OF ESCAPE

6.1 NUMBER AND DESIGN OF ESCAPE STAIRS

The upper levels of the building are served by six staircases, five sized at 1395mm and one sized at 2196mm. The 2196mm stair will be provided with a central handrail. Levels 01 – 07 will be served by six staircases. At level 08, the number of stairs reduces to four and at the roof only two escape stairs are provided.

As the building is sprinklered and each staircase in this building has lobby protection a staircase will not be discounted when calculating the total exit width required for escape from each floor (See Section 18.3.2 in BS 9999).

6.2 MINIMUM WIDTH OF ESCAPE STAIRS

Although the phased evacuation strategy is based one floor evacuating at a time, the minimum vertical exit width requirements for the office uses have been designed on the basis of two full levels evacuating simultaneously in order to add a degree of conservatism to the design and for future proofing purposes. The maximum occupancies for each storey level are shown in Table 5-2. An analysis of the stair width capacities for the building is shown in the sections below.

LEVELS 01 - 07

Phased evacuation calculations are based on the two most capacious, adjacent floors evacuating at the same time. In this instance, this is a total of 3172 persons (i.e. two floors from Levels 1 - 4).

In accordance with Table 15 of BS 9999, the stairs are sized based on a minimum width of 3.4mm/person. However, taking into account the 15% enhancement this becomes 2.89mm/person. Therefore, a total stair width of 9168mm is required.

The total stair width at Levels 01 – 07 is 9171mm. As such, there is sufficient capacity within the stairs to accommodate the expected occupancy of two floors simultaneously.

LEVEL 08

On Levels 07 and 08, there is a total of 2974 persons. In accordance with Table 15 of BS 9999, the four stairs which serve Levels 07 and 08 are sized based on 2.89mm/person (as above). The two stairs which serve Levels 07 only should be sized based on a minimum width 3.315mm/person BS 9999 with 15% enhancement).

The total width of the two stairs which serve Level 07 only is 3591mm and can accommodate 1083 occupants. The total width of the four stairs which serve both levels is 5580mm and can accommodate 1930 occupants. Therefore, there is sufficient capacity in the stairs to accommodate 3013 occupants on Levels 07 and 08 which is in excess of the maximum capacity.

BASEMENT STAIRS

As the occupancy of the basement will be low, all stairs serving the basement are required to be sized at a width of at least 1200mm, the minimum width required for upwards travel.

6.3 EXITS FROM PROTECTED STAIRWAYS

SHOE LANE RECEPTION

The guidance in BS 9999 states that every protected stairway should discharge:

a) directly to a final exit; or

b) by way of a protected exit passageway to a final exit.

This is achieved for all of the stairs in the building with the exception of Stairs 2 and 5, which discharge via the Shoe Lane reception area. This is contrary to the guidance of BS 9999. However, it is felt that this arrangement is acceptable for the reasons below:

- It has been agreed with the Approving Authorities that fire loading within the reception will be limited as per the guidance within BS 9999 atrium bases, i.e. a maximum of 160kg of combustible material in islands no more than 10m^2 and separated from one another by a minimum of 4m.
- The reason BS 9999 states that discharge routes should be via a sterile, protected enclosure is to mitigate the risk of the products of a fire rendering the escape routes impassable. However, the reception area will be designed so that the fire loading is kept as minimal as possible and will never exceed the limitations stated above. This will mean that the risk of a fire occurring in the reception area will be low and even if a fire was to occur, the restricted fire loading will severely limit the maximum fire size.
- The development will operate at the upper end of the market and, as such, high aesthetical standards will be required within the reception area. Therefore, the buildings management team will be vigilant against obstructions (combustible or otherwise) being left within the reception area to maintain this high aesthetic standard. Given the high level of fire safety and security management within the building, it is reasonable to assume that this will be achievable. This means that the chances of the routes through reception becoming blocked or the chances of additional fire loading being left within the reception area are low.
- The reception area will be separated from surrounding areas by fire rated and smoke sealed construction which provides at least 90 minutes fire resistance (i.e. the fire resistance period of the building). Where open connections between the amenity spaces and the reception area exist, 90 minute fire shutters will be provided which will close upon any Stage 2 alarm activation. This will ensure that a fire which occurs within the amenities area will not lead to smoke spreading into adjoining reception areas.
- In the unlikely event that a fire was to occur within the reception area, activation of a detector will not initiate full building evacuation. Instead, an investigation period will begin. Therefore, if a fire of sufficient severity to block escape through the reception area was to occur, the fire safety management of the building would be able to recognise the risks associated with escape through the reception space and manage the evacuation of the building accordingly.

For the reasons given above, it is our view that the risks of a fire occurring within the reception space are sufficiently mitigated to justify the current design. This approach has been discussed and agreed with the Approving Authorities.

FINAL EXIT ROUTES

All final exit doors and doors on discharge routes from stairs will be at least as wide as the stair which they serve.

Once outside of the building, the route to a place of safety should not force occupants to pass within 1.8m of an unprotected wall of the building which could be on fire. This is not achieved for Stair 1. Therefore, all walls which pass within 1.8m of the Stair 1 discharge route should be designed to achieve 30 minutes fire resistance.

6.4 DISABLED EVACUATION

In accordance with Section 4.7 of AD-B, each stair will be provided with a disabled refuge at each level except its discharge level. This refuge will be 900 x 1400mm and provided with an emergency voice communication (EVC) unit which complies with the guidance given in BS 5839: Part 9.

In the upper level of the amenity space, there is no direct access to a disabled refuge. However, it has been discussed and agreed with Building Control that if lift PL18 is upgraded to have dual power supply and discharges into a protected lobby, this would be acceptable. This is on the basis of access to the meetings rooms in that area being controlled, and the high degree of management throughout the building. This lift will discharge into a protected corridor at Ground Level which has direct access to a stair with a refuge.

6.5 AUTOMATIC DOORS

All automatic doors and doors fitted with magnetic locking devices which are located on escape routes will be designed to be openable in the direction of escape upon activation of an alarm or to fail safe into an openable position up in the event of a power failure.

However, it is recognised that in some instances this requirement may have implications on the security strategy for the building. Any such issues will be identified and resolved through detailed discussions with all relevant parties during the ongoing design and operation of the building.

7 MEANS OF ESCAPE: GENERAL PROVISIONS

7.1 ENCLOSURE OF CORRIDORS THAT ARE NOT PROTECTED CORRIDORS

In accordance with Section 17.3.11.2 of BS 9999, all corridors that form part of an escape will be smoke retarding and enclosed with full height partitions that finish either at the underside of the structural floor above, or to a suspended ceiling. Openings to adjoining rooms will be provided with doors that need not be fire resisting but will be close-fitting.

7.2 HEIGHT OF ESCAPE ROUTES

In accordance with the requirements set out in BS 9999, all escape routes will be provided with a minimum clear height of 2m. This is achieved throughout the design.

7.3 EXIT SIGNAGE

Emergency signage will be provided as per BS ISO 3864-1:2011.

7.4 LIGHTING OF ESCAPE ROUTES

Emergency lighting will be provided as per BS 5266: Part 1: 2011.

8 INTERNAL FIRE SPREAD (LININGS)

8.1 WALL AND CEILING LININGS

All wall and ceiling linings will meet the relevant classifications given in Table 35 of BS 9999 (extracted in Table 8-1 below).

Table 8-1 Summary of internal linings requirements

LOCATION	NATIONAL CLASS[1]	EUROPEAN CLASS[1,3]
Small rooms[2] of area not more than 30m^2.	3	D-s3, d2
Other rooms[2].	1	C-s3, d2
Other circulation spaces.	0	B-s3, d2

Notes

1. The National classifications do not automatically equate with the equivalent classifications in the European column, therefore, products cannot typically assume a European class, unless they have been tested accordingly.

2. BS 9999 defines a "room" as "An enclosed space within a building that is not used solely as a circulation space". The term includes not only conventional rooms, but also cupboards that are not fittings and large spaces such as warehouses and auditoria. The term does not include voids such as ducts, ceiling voids and roof spaces.

3. When a classification includes 's3, d2', this means that there is no limit set for smoke production and/or flaming droplets/particles. Class 3)

4. In any room, the classification may be lowered (to a minimum Class 3 or European Class D-s3, d2) providing the total area in any one room does not exceed 50% of the floor area of that room up to a maximum of 60m^2.

Source : Table 35 of BS 9999.

9 INTERNAL FIRE SPREAD (STRUCTURE)

9.1 SPRINKLER PROVISION

As the height of the building is greater than 30m, the building will be provided with a life safety sprinkler system as per BS EN 12845. In general, this will be a category OH3 system. Full details of the sprinkler category applied to each area of the building are provided in the project MEP information.

NON-SPRINKLERED AREAS

It is proposed not to provide sprinkler protection to the Shoe Lane reception area. This is has been discussed and agreed with the Approving Authorities providing that the fire loaded is limited as follows:

- Fire loading is separated into “islands” of combustible material which take up no more than 10m^2;
- The amount of combustible materials on each island should not exceed 160kg;
- Each island of combustible material should be separated by at least 4m.

These restrictions should be written into the management strategy of the building. In addition to this, the following areas are also not provided with sprinkler protection:

- UPS rooms - These rooms contain high voltage plant and water based suppression would not be appropriate. As such, they are enclosed within 120 minutes fire resistance.
- ER Rooms – These rooms are provided with pre-action sprinklers as an alternative.

ATRIUM SUPPRESSION

Sprinklers will be omitted from the base of the atrium as it will be protected by a low pressure water mist system. This is described in detail in Section 12.1.

9.2 ELEMENTS OF STRUCTURE

In accordance with Table 26 of BS 9999, the minimum period of fire resistance for this category of building is 75 minutes as the ventilation conditions stated in Table 27 are met. However, given that a 75 minute fire resistance period is unachievable, a 90 minute fire resistance period will be provided for this building. Elements of structure to the basement will require 120 minutes fire resistance.

In addition to this, a detailed structural assessment has been undertaken using the techniques described in BS EN 1991-1-1. This assessment reinforces the suitability of the 90 minute fire resistance period and demonstrates that some structural elements can be left unprotected. This analysis has been issued under separate cover.

9.3 COMPARTMENTATION

COMPARTMENTATION

All separating elements within the building will be provided with the levels of fire resistance shown in the architectural fire strategy drawings produced by Adamson Associates. Fire Resistance requirements are per Tables 24 and 26 of BS 9999 with the exception of the enhanced ratings requested by the Building Control, which are summarised in Table 9-1.

Table 9-1: Compartmentation Requirements

ELEMENT OF CONSTRUCTION	FIRE RESISTANCE PERIOD (MINUTES)		
	Integrity	Insulation	Load Bearing Capacity
Separation of Firefighting Shaft / Lift from Surrounding Areas	120	120	120
Walls enclosing reception area	90	90	90
Places of Special Fire Hazard (Section 20)[2]	120	120	120
Other Plant Areas[3]	30	30	30
Fire Curtains to Main Lift Bank	30	30	-
Fire Curtains to Reception Area	90	90	-
Fire Shutters to Loading Bay[5]	90	90	-
Compartment Floor between Basement and Ground	120	120	120
Compartment Floors (other than between Basement and Ground)	90[1]	90	90
Floors which are not Compartment Floors (Basement)	-	-	120
Floors which are not Compartment Floors (Above Ground)	-	-	90
Compartment Walls	90	90	90
Protected Shafts (Risers, Lift Shafts, Stairs)	90	90	90
Separation of Atria from Surrounding areas[4]	30	0	30
Separation of BT Areas [6]	60	60	60
Oil Storage	240	240	240
Areas Under UKPN Ownership	240	240	240

Notes

1. Due to the phased evacuation strategy all floors which separate evacuation zones will be compartment floors.
2. In accordance with the LDSA Guide, the “Section 20” high risk areas are oil fuel boiler chambers, oil fuel storage, transformer rooms, substations and rooms housing a fixed combustion engine.
3. Other high risk plant areas include all other boiler rooms, switch rooms and CHP rooms. However, as a means of good practice, it is proposed to enclose all plant rooms with construction which provides at least 30 minutes fire resistance.
4. See Section 12. for details.
5. The fire shutters are only required between the lift and the UKPN room (these to be increased to 240 minutes) and to the Amenity space. The loading bay, vehicle lift and the lift entrance will be one compartment with all areas off these at a level other than basement loading bay being separated by a minimum of 120 minutes fire resistance.
6. As the construction enclosing the BT areas is not load bearing this only forms separation of occupancies, therefore would only require 60 minutes fire resistance.

FIRE SHUTTERS / CURTAINS

Fire shutters will be used to complete compartment walls in the following areas. The locations of these shutters are shown in the fire strategy drawings. Details of when these fire curtains / shutters operate are provided in the detailed cause and effect matrix which is issued under separate cover.

- To separate the loading bay from the rest of the basement (Fire Shutter - 90 minutes)
- To separate the amenities area from the Shoe Lane reception area (Fire Shutter - 90 minutes)
- To enclose the convivial stair at Levels 1 – 8 (Fire Curtain – 90 minutes)
- To separate the lift lobbies from the extended core / sterile core areas on Levels 1 – 8 (Fire Curtain – 30 minutes – See Section 9.6)
- To maintain the compartment floor separation throughout the convivial opening at slab level on Levels 1 – 5 (Fire Curtain – 90 Minutes – See Section 12.2)
- Vertical shutters at clubhouse level to separate maintain the horizontal compartmentation between the village and clubhouse levels of the extended core (90 minutes)

9.4 FIRE DOORS

Doors passing through fire rated construction should be fire rated and provided within the minimum rating as outlined in Table 9-2 and as shown in the fire strategy drawings prepared by Adamsons Associates.

Table 9-2 Fire Door Requirements.

POSITION OF DOOR	MINIMUM FIRE RESISTANCE OF DOOR [1]	NOTE/EXAMPLES
1 In a compartment wall separating buildings	As for the wall in which door is fitted, but not less than 60 min [2]	
2 In a compartment wall:		
2(a) enclosing a protected shaft forming a stairway situated wholly or partly above the adjoining ground in occupancy characteristic A (office only) buildings	FD 30S	If no compartment floors.
2(b) enclosing a protected shaft forming a stairway not described in 2(a)	Half the period of fire resistance of the wall in which it is fitted but not less than 30 min and with suffix S	I.e. through compartment floors.
2(c) enclosing a protected shaft forming a lift or service shaft	Half the period of fire resistance of the wall in which it is fitted but not less than 30 min. [2]	As compartment floors, need to look at smoke spread. I.e. smoke curtains or sterile lobbies with smoke sealed doors.
2(d) not described in 2(a), 2(b) or 2(c)	As for the wall it is fitted in, but with suffix S if the door is used for progressive horizontal evacuation	I.e. Between extended core and office floor plate.
3 Compartment Floor	As for the floor in which it is fitted [2]	I.e. plant rooms etc.
4 Forming part of the enclosure of:		
4(a) a protected stairway	FD 30S	Stair ways may need to be higher due to compartment floors.
4(b) the separation between upward and downward flights of a basement stair	FD 30S	
4(c) lift shaft, which does not form a protected shaft in 2(a) 2(b) or 2(c)	FD 30 [2]	As compartment floors, need to look at smoke spread. I.e. smoke curtains or sterile lobbies with smoke sealed doors.
5 Forming part of the enclosures of:		
5(a) a protected lobby approach (or protected corridor) to a stairway, except for a fire-fighting stair	FD 30S	
5(b) any other protected corridor, or	FD 20S	Unless room off corridor requires higher fire rating.
5(c) a protected lobby approach to a lift shaft	FD 30S	
6 Forming part of the enclosures of:		
6(a) evacuation lifts or refuges, except for lift landing doors	FD 30S	
6(b) evacuation lifts, where the door is a lift landing door	FD 30	
7 Affording access to an external escape route	FD 30	Unless general compartmentation required as external stair/corridor separates compartments.
8 Subdividing:		
8(a) corridors connecting alternative exits	FD 20S	Unless room off corridor requires higher rating.
8(b) dead-end portions of corridors from the remainder of the corridor	FD 20S	Unless room off corridor requires higher rating.
9 Any door within a cavity barrier	FD 30 [2]	

[1] Integrity only, when tested in accordance with BS 476-22
[2] Smoke seals should be added where passing through an evacuation zone. I.e. compartment floors in phased evacuation buildings.

Source : Table 32 of BS 9999.

9.5 SPRINKLER PROTECTED GLAZING

Within the building there are several areas that it is proposed to utilise sprinkler protected glazing in lieu of fire rated glazing. These areas are shown in the fire strategy drawings prepared by Adamsons Associates.

Much research has been undertaken into the sprinkler protected glazing and it is allowable as a prescriptive solution within design guidance documents in many other countries including the US NFPA codes.

The main piece of research into this approach was by the IRC who used physical tests to determine suitable design criteria for such systems. It is proposed that the findings of the IRC research are used as the design criteria for sprinkler protected glazing on this project. These criteria are as follows:

- Sprinklers are provided along both side of the glass wall at intervals of no more than 1830mm;
- Sprinklers are located at a distance from the glass wall of no more than 305mm, and in an arrangement so upon activation the entire glass surface is wet;

- The glass wall is of tempered, wired or laminated glass held in place by a gasket system that allows the glass framing system to deflect without breaking (loading) the glass before the sprinklers operate;
- Sprinklers required by point 1) are not required on the non-accommodation side of the glass in an atrium situation providing there is no fire loading immediately adjacent to the glass (i.e. no floor adjacent).

Additionally, it is recommended that the sprinklers are of "fast-response" type with a Response Time Index (RTI) of 22.7$m^{1/2}s^{1/2}$ or lower.

Where fire loading is provided on both sides of the glazing, sprinkler protection should be provided to both sides as per the criteria above. However, where fire loading is provided on one side only (e.g. when forming the enclosure of a protected stair) it is considered reasonable to provide sprinklers on the fire loading side only, as the risk of a fire occurring within a sterile space is negligible. The only exception to this rule is the glazing to the atrium as it has been demonstrated through quantitative assessment that if a fire occurred within the atrium, temperatures would not be sufficiently high to cause the glazing to fail.

9.6 LIFT PROTECTION

BS 9999 states that all lifts should be accessed via a protected lobby in order to prevent the shafts from becoming a path for smoke to spread between floors.

It is proposed to provide drop down fire curtains to the main bank of lifts at each level in order to prevent fire and smoke spread via the lift shafts. The shutters on the fire floor only will activate upon activation of localised detection. Once activated, the shutters will provide 30 minutes smoke and fire protection to the lift enclosure, preventing fire spread between levels. On the upper levels, there are instances where two shutters could descend and trap occupants. For this reason, a combination of fire curtains and doors on hold open devices will be used to form the lobby in fire conditions, as shown in the fire strategy drawings.

This strategy is considered to be reasonable as if smoke was to spread to the upper floor via the lift shaft then the curtains on the upper floor would activate, preventing smoke spread onto the wider floor plate. This would result in the same level of protection as a code compliant arrangement.

9.7 FIRE STOPPING

OPENINGS FOR PIPES

Pipes which pass through fire resisting construction will meet the guidance of Table 33 of BS 9999. In summary, this table permits the passage of pipes of a diameter of 40mm through a compartment wall. If the pipe is non-combustible, the maximum diameter can be increased to 160mm. Alternatively, any pipe of any diameter can pass through a compartment line if it has a proprietary sealing system which has fire test data to prove that it can maintain the fire resistance of the wall floor or cavity.

VENTILATION DUCTS AND FLUES

The integrity of all air handling ducts needs to be maintained when they pass through lines of fire separation. In this scheme the integrity of these ducts will be maintained using either:

- Fire and Smoke Dampers;
- Fire Resisting Enclosures; or
- Fire Resisting Ductwork.

Details of how this protection is achieved for each riser / duct is provided in the detailed MEP information.

CAVITY BARRIERS

Cavity barriers will provide a minimum of 30 minutes of fire resistance with 15 minutes insulation. The requirements for cavity barrier installations within this scheme, as per BS 9999 are set out in Table 9-3.

Table 9-3 Cavity barrier locations and requirements within the development.

LOCATION OF CAVITY	CLASS OF EXPOSED SURFACES WITHIN A CAVITY	MAX DIMENSIONS IN ANY DIRECTION BETWEEN CAVITY BARRIERS (m)	OTHER REQUIREMENTS
Within the construction of a masonry external wall	Any	No restriction	Openings to be closed at the edges and in line with lines of fire resistance
Behind an external cladding system	Any	No restriction	Minimum 75 mm masonry or concrete inner leaf; insulation materials non-combustible.
Beneath a raised access floor	Class 0, or Class 1	40	
Above the ceiling of either a room or zone enclosed with fire resisting walls, or of a corridor sub-divided by a fire resisting door	Class 0, or Class 1	40	Cavity barriers to follow the line of the walls, or a fire resisting ceiling to be installed.
Above the ceiling of a large, undivided space	Ceiling to be Class 1 within the cavity	40	Cavity to be closed at the junctions with the enclosing walls
Above a fire resisting ceiling	Ceiling to be Class 1 within the cavity	30	Ceiling to be Class 0 on the underside, imperforate and not easily demountable
Any other cavity	Class 0, or Class 1	20	
	Not Class 0, or Class 1	10	

This will be achieved in all areas of the scheme with the exception of the underfloor and above ceiling cavities within the offices. The following section provides justification as to why the proposed cavity design will have not have a detrimental effect on the level of safety within the building.

It is proposed that day to day ventilation to the office spaces is provided via an underfloor air distribution (UFAD) mechanical ventilation system which utilises the plenum space beneath a conventional raised floor with a depth of 410mm (slab to top of raised floor) to supply air to the occupied zone. In order for this ventilation solution to be effective, an even pressure distribution is required across the floor plenum which in turn requires plenum spaces in excess of the 20 x 20m size limit stated in Table 34 of BS 9999.

The UFAD system comprises basement air handling units which take outdoor air from roof level, distributing this air via vertical risers to a series of on-floor plant rooms located around the core at each level. These plant rooms contain air towers (circa. 16/floor) which distribute supply air via an 'air highway' (an underfloor air distribution route around the perimeter of the core to ensure even distribution of air) to the floor plenum. Air then enters the occupied zone through a regular array of floor grilles across the entire floor plate. The air towers draw return air from the occupied zone through grilles evenly distributed across the entire ceiling and via the ceiling void in the conventional manner. The mixing of outdoor air and return air in the on-floor plant rooms is then determined by outdoor conditions. Exhaust air is taken from the on-floor plant rooms to roof level via a series of

vertical risers and exhaust fan sets located in the on-floor plant rooms at 8th floor level. These exhaust fans will also provide the requisite smoke exhaust to each office floor.

Compartmentation will be floor by floor and the supply and exhaust air risers will comprise protected shafts with fire/smoke dampers to maintain the necessary degree of compartmentation.

The open plan Cat A fit-out will include multi sensor smoke and heat detectors at ceiling level at approximately 10m centres throughout the entire floor plate.

In our view the provision of extended plenum spaces will not materially impact negatively on the overall level of safety within the building for the following reasons:

- The main objective of providing cavity barriers within a building is to prevent the unseen spread of fire and smoke throughout the building. For this building, the provision of a UFAD system will mean that should a fire occur in the floor plenum, either with the system operational or in its non-operational mode, the buoyancy of the smoke will quickly cause it to rise through the floor grilles into the occupied zone. This will either lead to a much earlier alarm via the activation of a call point if the office is occupied or via the activation of an automatic multi sensor smoke and heat detector at ceiling level, than would be the case for the more typical solution of a sealed raised floor. The benefits of cavity barriers in accordance with BS 9999 are therefore considered to be redundant for this particular building.

- The system will also be designed in accordance with the guidance given in Section 33.4.8 of BS 9999 for air circulation systems (i.e. system designed to be shut down upon activation of the fire alarm system). This will ensure that if a fire does occur within the plenum, the system will not cause smoke to be dispersed throughout the building via the ventilation system. The most appropriate sensor/detector location to de-activate the systems will be reviewed further post Stage E.

- Where a line of fire separation is provided above the floor (e.g. the core), the line of fire separation is also taken down through the underfloor plenum space. Therefore, there is no risk of the plenum spaces acting as a path where compartmentation could be breached.

- Fire loading within the plenum spaces will be limited to electrical wiring/data cables, which will have designated routes and be fixed to the floor slab to prevent fire spread to surrounding surfaces. Furthermore, all surfaces within the plenums will be designed to meet a surface spread of flame classification of 0. Therefore, the risk of a fire occurring within these spaces is considered to be low and even if a fire does occur, the chances of fire spread are also low.

For the reasons given above, it is our view that the provision of the underfloor plenum spaces beyond those prescribed in BS 9999 will not increase the level of risk to the occupants within the building and indeed due to the inclusion of a UFAD system, it is likely that the activation of an alarm as a result of a fire within the underfloor plenum, will occur much earlier than normal due to the provision of floor grilles across the entire floor plate. This approach has been discussed and agreed with the Approving Authorities.

The MEP information shows an alternative general ventilation solution which would increase number of fan coil units within the ceiling cavity. It is the view of the design team that the fire risk associated with a fan coil unit is negligible. Therefore, increasing the number of fan coil units within the ceiling cavity will not significantly increase the risk of fire within the ceiling cavity and, as such, the justification above is still applicable. This, however, is a subject for discussion with the Approving Authorities.

10 EXTERNAL FIRE SPREAD

10.1 SPACE SEPARATION ANALYSIS

To ensure compliance with the functional requirements of Part B4 the Building Regulations 2010, the potential for external fire spread must be assessed. The elevations of the building have been assessed using the "enclosing rectangle" method detailed in BR 187, to determine the required boundary separation.

Using this method a conservative assumption is made that the entire extent of the façade is located at the same distance from the site boundary as the closest part. In each case, the largest compartment on the façade has been assessed.

Each elevation has been assessed to a "notional boundary" which is the centre point of the adjacent road. An external fire spread assessment for each elevation is provided below.

EASTERN ELEVATION

The eastern elevation, which faces Farringdon Street, consists of office amenity spaces between ground to upper ground mezzanine with office accommodation on the upper levels. The sprinklered single compartment spanning the ground level entrance lobby to upper ground mezzanine is the worst case scenario on this elevation and is assessed below.

Figure 10-1 Eastern elevation facade separation distance

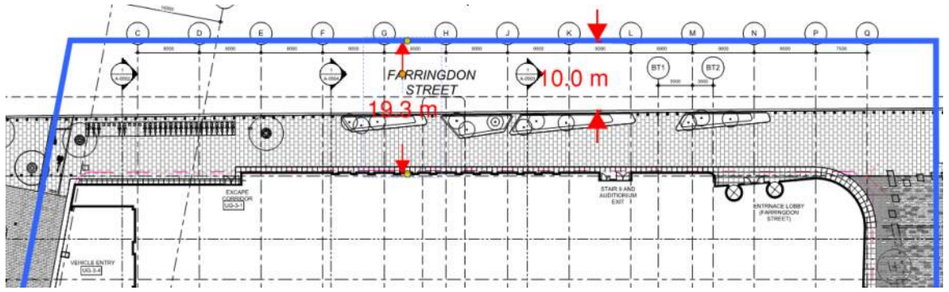


Table 10-1 Enclosing Rectangle Assessment – East (Office Amenity)

ELEVATION	EASTERN (OFFICE AMENITY)
Boundary Distance (m)	19.3
Compartment Height (m)	11.4
Compartment Width (m)	97.2
Enclosing Rectangle Height (m)	12
Enclosing Rectangle Width (m)	100
Enclosing Rectangle Area (m^2)	1200
% Unprotected Allowed	100
Unprotected Area Allowed (m^2)	1200
Area Requiring Protection (m^2)	0

The results of the assessment show that the Ground / Upper Ground amenities compartment can be provided as 100% unprotected. Given that this is the largest compartment, it can be assumed that all compartments on this elevation can also be provided as 100% unprotected.

SOUTHERN ELEVATION

The southern elevation, which faces Stonecutter Street, consists of office spaces between ground to upper ground mezzanine with office accommodation on the upper levels. The sprinklered single compartment spanning the ground level entrance lobby to upper ground mezzanine is the worst case scenario on this elevation and is assessed below.

Figure 10-2 Southern elevation facade separation distance

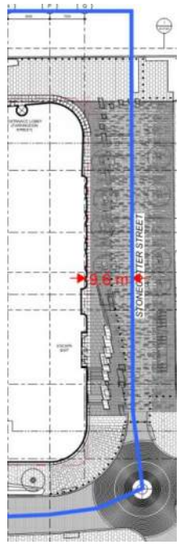


Table 10-2 Enclosing Rectangle Assessment – South

ELEVATION	SOUTHERN (OFFICE AMENITY)
Boundary Distance (m)	9.6
Compartment Height (m)	11.2
Compartment Width (m)	78.0
Enclosing Rectangle Height (m)	12
Enclosing Rectangle Width (m)	80
Enclosing Rectangle Area (m^2)	960
% Unprotected Allowed	100
Unprotected Area Allowed (m^2)	1200
Area Requiring Protection (m^2)	0

The results of the assessment show that the Ground / Upper Ground amenities compartment can be provided as 100% unprotected. Given that this is the largest compartment, it can be assumed that all compartments on this elevation and is assessed below.

The results of the assessment show that the Ground / Upper Ground amenities compartment can be provided as 100% unprotected. Given that this is the largest compartment, it can be assumed that all compartments on this elevation can also be provided as 100% unprotected.

WESTERN ELEVATION

The western elevation, which faces Shoe Lane, consists of a main reception space between upper ground to upper ground mezzanine with office accommodation on the upper levels. The sprinklered single compartment spanning the ground level entrance lobby to upper ground mezzanine is the worst case scenario on this elevation and is assessed below.

Figure 10-3 Western elevation facade separation distance

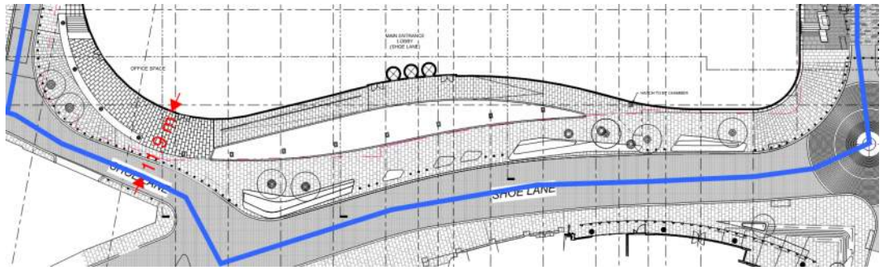


Table 10-3 Enclosing Rectangle Assessment – West (Reception)

ELEVATION	WESTERN (MAIN RECEPTION)
Boundary Distance (m)	11.9
Compartment Height (m)	5.5
Compartment Width (m)	122.1
Enclosing Rectangle Height (m)	6
Enclosing Rectangle Width (m)	130
Enclosing Rectangle Area (m^2)	780
% Unprotected Allowed	100
Unprotected Area Allowed (m^2)	780
Area Requiring Protection (m^2)	0

The results of the assessment show that the Ground / Upper Ground amenities compartment can be provided as 100% unprotected. Given that this is the largest compartment, it can be assumed that all compartments on this elevation can also be provided as 100% unprotected.

NORTH ELEVATION

The northern elevation, which faces Plumtree Court, consists of office spaces between upper ground mezzanine upwards which are separated by compartment floors. Some smaller compartmented amenity spaces also exist on this elevation.

The worst case on this elevation is a fire on a typical office level and is assessed below.

Figure 10-4 Northern elevation facade separation distance

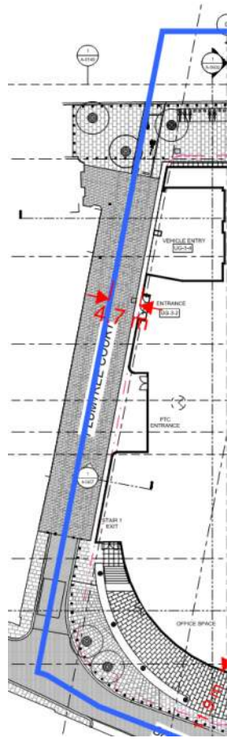


Table 10-4 Enclosing Rectangle Assessment – North Office

ELEVATION	NORTHERN (OFFICE)
Boundary Distance (m)	4.7
Compartment Height (m)	4.4
Compartment Width (m)	86.6
Enclosing Rectangle Height (m)	6
Enclosing Rectangle Width (m)	100
Enclosing Rectangle Area (m^2)	600
% Unprotected Allowed	99
Unprotected Area Allowed (m^2)	600
Area Requiring Protection (m^2)	0

Given that the allowable unprotected area is greater than the actual area of the largest compartment frontage, this entire elevation can be provided as 100% unprotected.

10.2 EXTERNAL WALL CONSTRUCTION

As stated in clause 36.6 of BS 9999, as the building contains storeys greater than 18m above ground level, any insulation used in the external wall construction should be of limited combustibility.

The external walls of the London Development Project should meet the recommendations of Figure 45 of BS 9999 as shown in Table 10-5.

Table 10-5 Provisions for external surfaces or walls

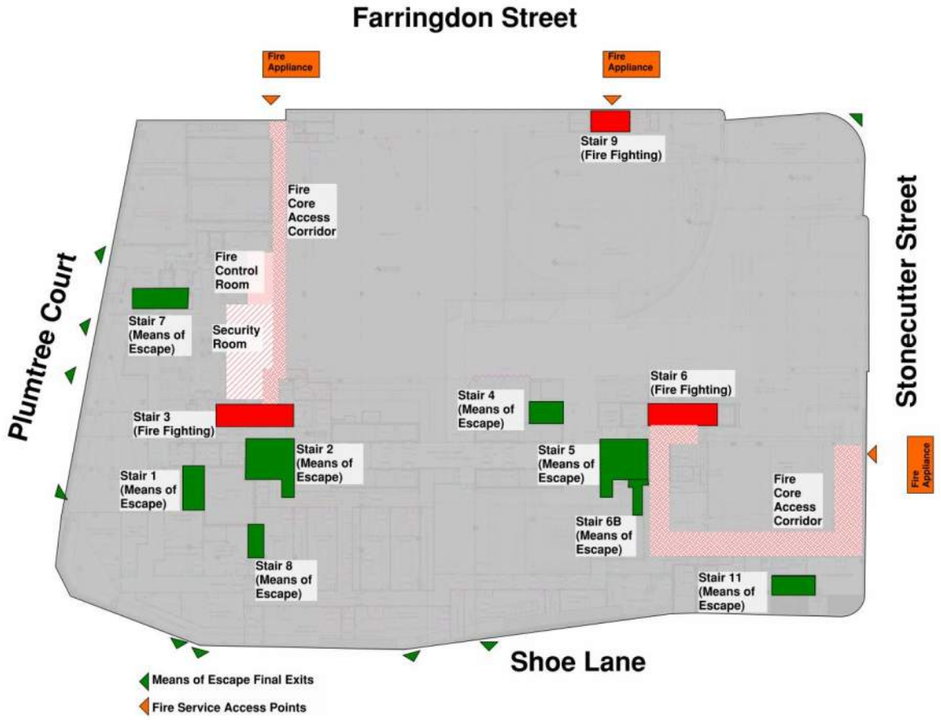
LOCATION OF FACADE ABOVE GROUND	SURFACE CLASSIFICATION
≤18m	Index (I) not more than 20 or class C-s3, d2 or better
>18m	Class 0 or class B-S3, d2 or better

11 ACCESS AND FACILITIES FOR THE FIRE SERVICE

11.1 FIREFIGHTING ACCESS

Fire Appliance Access is provided to the site at all sides of the building. The primary access route is via Farringdon Street for access to the main firefighting core and the fire command centre. Secondary access is to the second firefighting core via Stonecutter Street. All four facades have access to various Means of Escape routes, providing additional access points throughout the building for the Fire Service if needed. Access arrangements are summarised in Figure 11-1. This should be viewed in conjunction with the stair matrix in Appendix D-1.

Figure 11-1 Firefighting access points and core locations.



11.2 FIREFIGHTING SHAFTS

FIREFIGHTING SHAFT NUMBER AND LOCATIONS

The upper levels of the building will be served by two firefighting shafts. On the office floor plates, the maximum hose distance from a firefighting shaft is approximately 75m when measured orthogonally (to account for fit out). Whilst this exceeds the 60m limit stated in BS 9999, it is our view that this is acceptable for the following reasons:

- It is standard procedure for the Fire Service to set up either one or two floors below the fire floor. As a part of this procedure, they will connect to the dry rising main outlet on the set up level. As such, the Fire Service will likely have to run hose to a distance greater than 60m in any fire situation.
- The building is provided with a sprinkler system which will inhibit the growth of or, most likely, extinguish a fire before the fire service arrives. This will mean that the additional time taken for the Fire Service to set up additional lengths of hose due to the additional distances will be compensated for by the significantly smaller fire size present when they attempt to fight the fire.

This has been discussed and agreed with Building Control and the Fire Service.

The basement is served by two Firefighting shafts. From these shafts it is not possible to reach the entire basement floor plate within the 60m limit stated in BS 9999. As such, four of the escape stairs will be provided with dry rising mains (stair or lobby is acceptable). The stairs to which this applies are shown in the fire strategy drawings. Under this layout, it is possible to reach all areas of the basement within either 60m of a firefighting shaft or 45m of a dry rising main located in a protected stair (or lobby). This is in compliance with BS 9999.

FIREFIGHTING SHAFT ACCESS ARRANGEMENTS

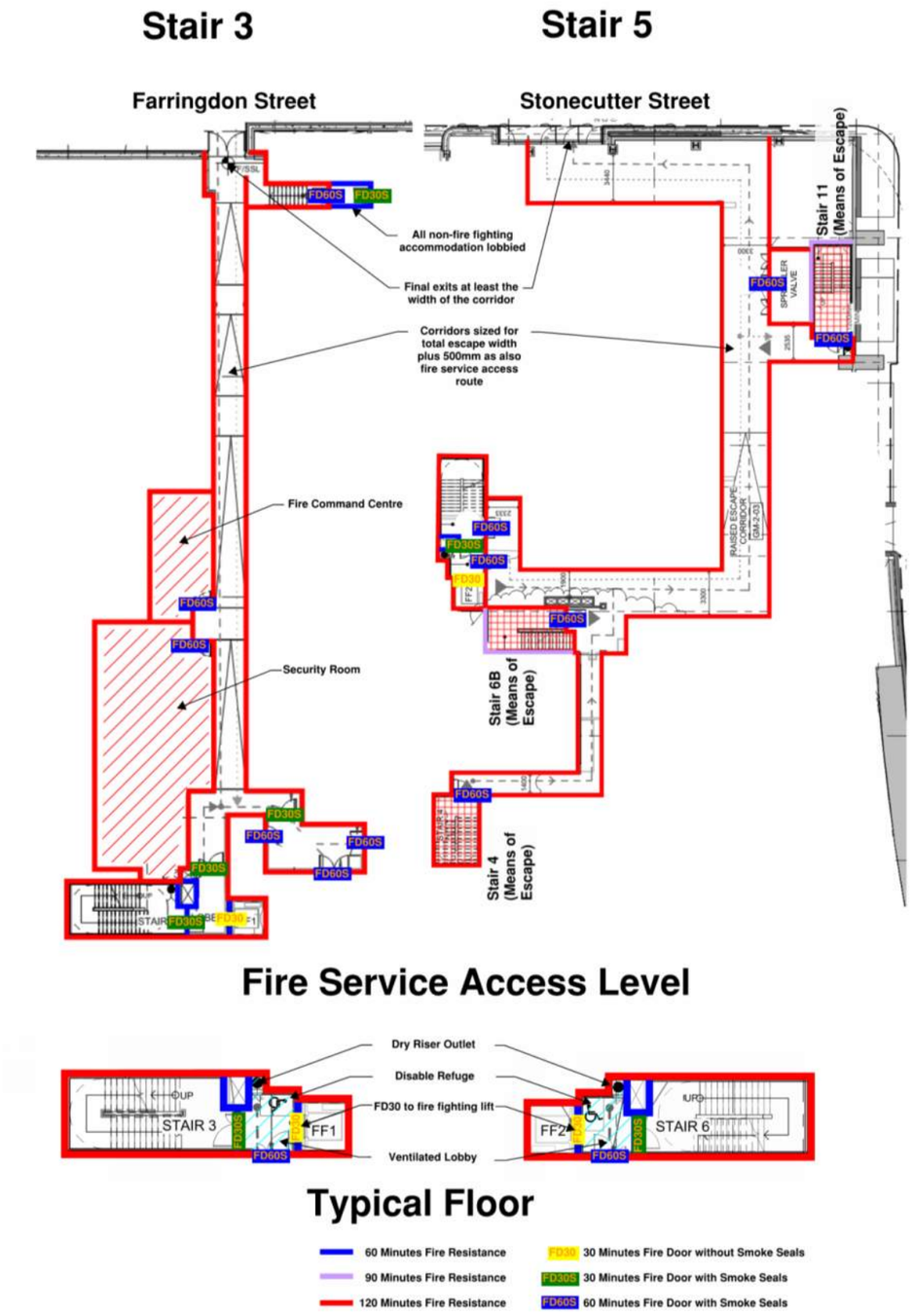
Section 21.2.7.1 in BS 9999 states that each fire-fighting shaft should be accessible directly from outside or by way of a protected corridor that is no longer than 18m. However, this provision conflicts with the security requirement for the building to locate the core in the center of the building (which is greater than 18m from the façade). This provision has been discussed with the Fire Service who have accepted the protected corridor lengths provided.

BS 9999 also requests that the width of the access corridor (but not the doors) is increased by 500mm if it serves as an escape route for the buildings occupants. This is achieved in this building.

DESIGN AND CONSTRUCTION OF FIREFIGHTING SHAFTS

In accordance with BS 9999 the fire-fighting shaft will be enclosed with 120 minutes fire resistance from the accommodation side. Doors separating the firefighting lobby from the accommodation will be FD60S. Internally within the shaft, the stair and lobby will be separated from each other using construction having 60 minutes fire resistance. The door between the stair and the lobby will be self-closing FD30S. A firefighting lift will also be provided within each firefighting core. The proposed layouts of the two primary firefighting shafts on a typical floor and at access level are shown in Figure 11-2.

Figure 11-2 Firefighting shaft construction and layout.



NUMBER AND LOCATION OF FIRE MAINS

A breeching inlet to the dry rising mains will be located on an external wall adjacent to each fire service access point in a location which is clearly visible to the Fire Service and is no more than 18m away from the point of fire brigade arrival.

Dry riser outlets will be located within the firefighting lobby / stair lobby at each level served

FIREFIGHTING LOBBY

Each firefighting lobby is a minimum of 5m^2 (principal dimensions not less than 1.5m) and no greater than 20m^2 on plan. The door between the firefighting lobby and the firefighting staircase will be kept free of any type of fastening.

It is noted that BS 9999 states that all firefighting shafts which serve a storey greater than 30m in height should be pressurised. However, as an alternative, it is proposed to provide a mechanical smoke extraction system to the lobby instead. This system will automatically extract any smoke which enters the lobby, allowing safe firefighting operations to occur.

Such “depressurisation” systems are widely used throughout the UK as an alternative to both natural and pressurising ventilation systems. However, discussions will need to be held with Building Control during the ongoing approvals to determine what level of evidence is required in order to demonstrate that the proposed system provides a level of safety which is at least as high as that provided by a pressurisation system.

FIREFIGHTING LIFT

Each fire-fighting lift installation will conform to BS EN 81-72: 2003 and to BS EN 81-1: 1998 or BS EN 81-2: 1988 as appropriate for the particular type of lift. The firefighting lift will be provided with backup power supply. Lift doors within fire-fighting shaft are to have 30 minutes fire resistance. Smoke seals are not required.

11.3 HYDRANTS

In accordance with BS 9999, the dry riser inlet should be located no more than 100m from a fire hydrant. If this is not possible then an additional, private hydrant will need to be provided.

11.4 FIRE COMMAND CENTRE

In accordance with BS 9999, a fire command centre will be provided. The command centre is located on the ground floor on the corridor serving Stair 3 from Farringdon Street. The exact contents of this room are a subject for discussion with the Approving Authorities. However, it is currently envisaged that this room will contain the following (as per section 25 of BS 9999):

- All control and indicating equipment for the fire alarm and other fire safety systems for the building;
- Control systems showing the location of the incident and status of all automatic fire protection installations and facilities;
- Override provision associated with all automatic fire protection installations and facilities (other than those that have to be located either adjacent to their

equipment or elsewhere where local control is needed, e.g. overrides for gaseous fire extinguishing systems or sprinkler system main or floor isolating valves);

- Override provision for air conditioning systems or ventilation systems involving recirculation;
- A communication system, conforming to BS 5839-9, providing a direct link between the control room and all fire-fighting lobbies, fire and rescue service access points and refuges for disabled people;
- An exchange telephone with direct dialling for external calls;
- A facility to sound the alert signal throughout the building;
- Facilities to be able to give information via public address system to occupiers of the building;
- Controls and monitor screens for closed circuit television (CCTV) if it is if provided for the control of evacuation. The use of CCTV can greatly assist in the management of emergency situation;
- The fire emergency plan for the building;
- Keys or other devices required to facilitate access throughout the building and to operate any mechanical and electrical systems;
- Floor plans of the building as described in Clause 27 of BS 9999;
- Facilities to contact principal staff/building services engineers;
- A clock to time phases of evacuation;
- A visual indication which can show the status of evacuation in parts of the building where an evacuation signal has been given;
- A wall-mounted writing board with suitable writing implements for displaying important information;
- Facilities for the control centre personnel to rest and refresh themselves.

In additional to the items above the fire command centre should be provided with:

- A 3hr non-maintained system of emergency lighting supplied from a source independent of the normal lighting;
- A reliable means of communication with the fire control centre, either a fire telephone system or a radio telecommunication system.

11.5 SMOKE VENTILATION

OFFICE SMOKE EXTRACTION

Although not a code requirement, the offices and amenities areas are provided with a manually controlled mechanical smoke ventilation system (make up air and smoke extract). The mechanical system is designed to provide six air changes per hour. This is considered to provide an enhanced level of safety within the building to that implied by the guidance of BS 9999.

BASEMENT SMOKE EXTRACTION

The basement levels and Plant areas of the Lower Ground Floors will be provided with a mechanical smoke extraction system designed to achieve ten air changes per hour and is designed on a zonal basis.

This system is to be capable of handling gas temperatures of 300˚C for not less than one hour. It will come into operation automatically upon activation of the sprinkler system or, alternatively, the alarm and detection system. All other aspects of the system will be in accordance with BS EN 12101-3: 2002.

ATRIUM SMOKE EXTRACTION

Following a series of studies it is proposed that the smoke clearance system works on the basis of natural relief vents at high level with supply air provided at low level to “purge” the atrium. This concept has been tested and proven using a CFD modelling study, which is issued under separate cover.

GENERAL REQUIREMENTS

Smoke vents will not discharge where they will affect means of escape or firefighting operations.

12 ATRIA DESIGN

12.1 MAIN ATRIUM

BS 9999 GUIDANCE

The design includes for a large atrium between Levels 05 – 08. This atrium will be sized at approximately 25m x 45m (CSA - 1125m^2). The following text states the required fire protection measures for such an atrium, as per Figures C.4 and C.13 of BS 9999, and provides commentary on whether they are achieved.

- *"Atrium to be separated from all floor levels with construction which is smoke retarding and fire resisting"* - Toughened glazing will be provided at Levels 06 – 08 but not on Level 05. As compensatory feature, it is the intention to provide low pressure water mist system to the base of the atrium.
- *"Provide L2 detection system and voice alarm throughout building."* - This is achieved.
- *"Provide smoke clearance system within atrium"* - A mechanical smoke clearance solution will be adopted with a flow rate of six air changes per hour. A CFD modelling study has been undertaken to prove this concept.
- *"Atrium not to exceed 30m in height."* – This is achieved.
- *"Fire load in the atrium to be comparable to the use and contents with that adjoining the atrium."* This is achieved. Furthermore, a low pressure water mist system will be provided so fire load is considered to be "controlled".

It is our view that with the provision of a fire suppression system to the base of the atrium, the occupants of Level 05 are at no greater risk should a fire occur within the atrium than if a fire was to occur anywhere else on the Level 05 floorplate. As such, the suppression system is seen as adequate compensation for the deviations from the above design guidance.

SUPPRESSION TO THE BASE OF THE ATRIUM

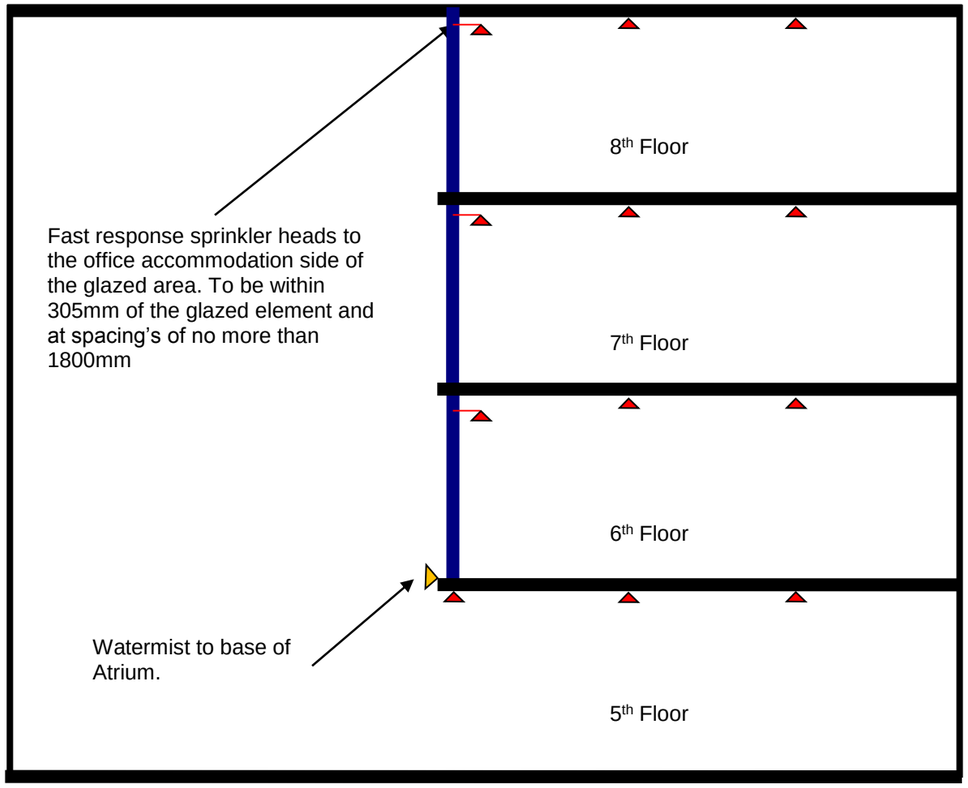
As the design does not include for 30 minutes fire rated glazing at Level 05, it is proposed to provide a bespoke low pressure water mist system to the base of the atrium

Using this system, it will be possible to provide full coverage of the base of the atrium from the sides. This system will be activated using a double knock system of smoke detection and flame detection. Upon activation of the smoke detection, the flame detection will locate the seat of the fire and activate the mist heads which are adjacent to this area to extinguish the fire. Further details of this system will be provided by the system manufacturer as the design develops

GLAZING TO THE UPPER LEVELS OF THE ATRIUM

Sprinkler protected glazing is utilised throughout the building in lieu of fire rated glazing (see section 9.3). It is proposed that this principle be extended to the main atrium.. However, due to the height of the atrium it is proposed that sprinklers are not provided on the atrium side of the glass (i.e. only on the office levels). This is summarised in Figure Figure 12-1.

Figure 12-1 Proposed Sprinkler Coverage to the Atrium Glass.



The arrangement of the sprinklers, spacing, type etc, will be as per that discussed in Section 9.5. In order to justify the removal of sprinklers from the atrium side, it needs to be shown that the glass to atrium would not fail should a fire occur at the base. This assessment was undertaken using both a desktop study and a detailed CFD analysis. The desktop study is set out below.

INITIAL ASSESSMENT

The sprinklers are activated by automatic fire detection (AFD), a UVIR system which has a double knock feature built in and with reaction times that are instantaneous (<5s at 50 ft). A conservative assumption of the sprinklers activating upon a point detector located on the ceiling of the atrium has been used for this assessment. Specific details of how the detection will be arranged in the atrium are included in the MEP information.

Under this assumption it takes 80s for the detector to activate the sprinklers. A medium growth t^2 fire gives an indicative heat release rate of 80kW. The flame height at 80kw is negligible, where Equation 4.40 of Drysdale's is applied (An Introduction to Fire Dynamics, D.Drysdale, Wiley, 2011) as shown in Figure 12-2.

Figure 12-2 Equation 4.40 from Introduction to Fire Dynamics.

$$L = 0.23\dot{Q}_c^{2/5} - 1.02D$$

REVERSE ANALYSIS

The failure criteria for the atrium glazing would be when the flame impinges on the surface. This is only possible when a 3.2MW fire lies directly adjacent to the glazing. This is dependent on a 1m diameter base.

CFD ANALYSIS OF UPPER SMOKE LAYER

The CFD results show that temperatures do not exceed 350°C without the AOVs open. This temperature is considered to be the failure temperature of toughened glazing, as per BS 9999 and, as such, it is not considered that the glazing could fail due to smoke temperatures within the atrium. A full CFD report which details the inputs and results of this study is provided under separate cover.

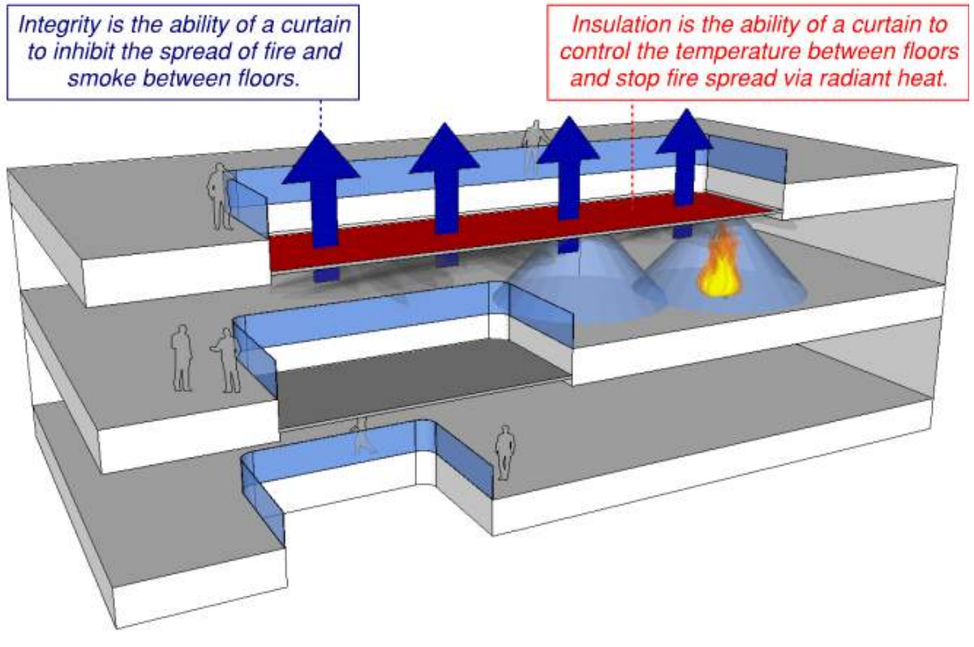
CONCLUSION

For the desk top study, even with relatively conservative assumptions the predicted fire size within the sprinklered atrium is minimal. Therefore it is anticipated that the flame temperatures which the glazing receives will not cause the glass to fail. Additionally the CFD model shows that temperatures do not exceed the failure criteria for exposed toughened glass.

12.2 CONVIVIAL OPENINGS

To maintain the compartmentation between floors in the atrium BS 9999 states that the fire curtains should be designed to achieve 90 minutes fire resistance. For a fire curtain, fire resistance can be measured in terms of integrity and insulation. The difference is described in Figure 12-3.

Figure 12-3 Horizontal fire curtains integrity and insulation.

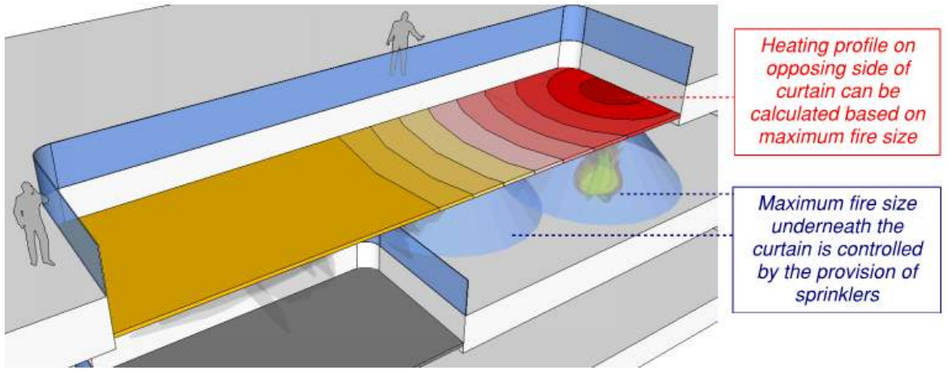


FIRE ENGINEERED SOLUTION

The requirement to provide an insulation rating to the fire curtain is intended to ensure that the opposing face of the curtain does not reach a sufficiently high temperature to cause combustibles on the opposing side to ignite via radiant heat.

This is an important factor to consider in a non-sprinklered building as an uncontrolled fire could potentially flashover, resulting in a high temperature profile throughout the compartment. However, in a sprinklered building such as the London Development, any fire is likely to be controlled resulting in significantly lower fire temperatures which are confined to a small area, as shown in Figure 12-4.

Figure 12-4 Horizontal fire curtains fire engineered solution.



Using standard fire engineering calculations, it is possible to calculate the maximum size of a fire which could occur underneath the curtain and to measures the associated temperature profile on the opposing side of the curtain.

The heat flux at which spontaneous ignition of combustibles is assumed to occur is 12.6kW/m^2. Preliminary calculations show that the maximum distance at which this flux could be breached is 500mm.

Therefore, an area of 500mm of fire resistance is provided above the curtain. This will prevent radiative heat from causing fire spread to the level above and, as such, it is considered to be reasonable to omit the insulation requirement from the convivial opening fire curtains.

12.3 CONVIVIAL STAIR

The design includes for an accommodation stair from Upper Ground Level to Level 08. Although by definition this stair is an atrium (i.e. an open volume which penetrates compartment floors) For fire engineering purposes this stair will be treated akin to a protected shaft.

The convivial stair will be open to the amenities volume. On Levels 1 – 8, fire curtains which provide 90 minutes fire resistance (integrity only) will be provided to separate the stair from the floor plate. In the event of any second knock alarm activation, these curtains will descend, separating the convivial stair from the office levels. Sprinkler protected glazing (as per Section 9.5) is also provided to form this enclosure.

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19. **BS EN 81 – 1: 1998** – Safety rules for the construction and installation of lifts. Hydraulic lifts.
20. **BS EN 81 – 2: 1998** – Safety rules for the construction and installation of lifts. Electric lifts.

Appendix A

BS 9999 – MANAGEMENT LEVELS

Table A-0-1 BS 9999 Management Levels

FACTORS USED IN ASSESSING MANAGEMENT LEVELS	EXPLANATION	LEVEL 1	LEVEL 2	LEVEL 3
Planning for changes in risk profile	Management systems should include procedures for anticipating and taking into account, either on a permanent or a temporary basis, changes to the occupancy and/or fire growth characteristics of the building and its contents over the life cycle of the building. These procedures should form part of the overall audit and review process for the fire safety strategy and should be able to determine whether any such changes will necessitate alterations to the fire precautions provided, including the management systems, and to put any such alterations into effect.	A level 1 system anticipates and proactively identifies the impact of any proposed changes, including changes to the occupancy, periods of abnormal occupancy, and fire growth characteristics. The system identifies any alternative protection and management measures that will be required as a result, and ensures that they are implemented.	A level 2 system identifies and reacts to any changes as they occur, including changes to the occupancy, periods of abnormal occupancy, and fire growth characteristics. The system identifies any alternative protection and management measures that will be required as a result, and ensures that they are implemented.	A level 3 system reviews any changes on a periodic basis. The system then identifies any alternative protection and management measures that will be required as a result, and ensures that they are implemented.
Resources and authority	For the management of fire safety to be effective, the fire safety manager(s) needs to be empowered and able to command sufficient resources to maintain the systems.	In a level 1 system, the manager(s) with responsibility for fire safety are empowered to ensure that legislative requirements are met; initiate testing, initiate maintenance or repair, and, where necessary, have direct control of staff responsible for these tasks. Such powers are supported by the necessary, sufficient and appropriate resources, including funds.	In a level 2 system, the responsibility for fire safety, and the necessary supporting staff and resources, is likely to be divided over a number of different individuals, departments or even companies. It is likely that the implementation of any necessary changes will require approval of those not directly responsible for the routine management of fire safety within the premises.	In a level 3 system, the managers determined as being responsible for fire safety are likely to have limited or no power or resources, and are thus unlikely to be able to ensure that the fire safety systems are kept fully functional without reference to a third party.
Fire training	Training of staff and others for action in the event of a fire is an essential element of fire safety management.	In a level 1 system, the training ensures that there are sufficient numbers of staff trained in all aspects of fire prevention, fire protection and evacuation procedures, and able to use the appropriate extinguishing equipment (and media), so as to provide full coverage of the building, with provision for contingencies, sickness or holiday absences.	In a level 2 system, the training ensures that there are sufficient numbers of staff trained in all aspects of fire prevention, fire protection and evacuation procedures, and able to use the appropriate extinguishing equipment (and media), so as to provide full coverage of the building, but has no contingency provision.	In a level 3 system, general training is provided on a periodic basis.
Staffing level (staff-occupant ratio)	The role of staff is an important element of the fire safety package provided. The appropriate staffing level (for fire safety purposes) for a particular building is influenced by the use of the building and fire growth characteristics; the types of occupant; the fire safety systems in place; and the roles and levels of the staff concerned in ensuring the fire safety of the occupants.	In a level 1 system, the staffing level provided is specifically appropriate to the building concerned, including the use of the building, the nature of the occupants, the management systems in place, and the active and passive systems provided. It also includes sufficient trained personnel to ensure that all occupants are assisted, or supported, to make their way out of the building effectively in an emergency – where necessary, e.g. in the case of elderly or disabled persons, or children, this might include making appropriate additional arrangements to ensure their safe evacuation. A level 1 system may include arrangements for security such as regular patrols, perimeter controls, entry control systems, and staff able to respond to an intrusion. A level 1 system will also provide for contingencies such as training, sickness, and other unexpected absences etc.	In a level 2 system, there will not be any arrangements for contingencies such as training, sickness, and other unexpected absences, etc., nor will there be provision for security such as regular patrols, perimeter controls, entry control systems, or staff able to respond to an intrusion.	In a level 3 system, the staffing levels and systems provided do not routinely and specifically address the issues identified above.
Work control (e.g. Repairs to structure)	Management systems should control work on site, e.g. repairs to structure, and in particular hot work.	A level 1 work control system is developed proactively with clear lines of responsibility; a permit system; logging and audit processes and routine checking and supervision.	A level 2 work control system is developed reactively to work required on site to include clear lines of responsibility; a permit system; and logging and audit processes.	A level 3 work control system is reactive to work required on site.
Communications procedures	Communications procedures include means of being alerted to a fire; communications between management, and between management and staff; messages to occupants; and communications with the fire and rescue service in the event of a fire.	A level 1 communications system is able to ensure that all of those involved, or potentially involved, in an incident are informed rapidly and effectively, of relevant information. In addition the systems make use of alternative formats as necessary, with contingency plans for when systems fail.	A level 2 communications system will provide information to all those involved, with alternative formats as necessary, but will not have contingency arrangements.	A level 3 communications system is one that provides the necessary information, but does not allow for alternative formats or contingency arrangements.

FACTORS USED IN ASSESSING MANAGEMENT LEVELS	EXPLANATION	LEVEL 1	LEVEL 2	LEVEL 3
Maintenance and testing of fire safety systems	Maintenance and testing is essential to ensure that fire safety systems will operate correctly in the event of a fire.	A level 1 maintenance system is one where there is dynamic monitoring of the fire safety systems, and the equipment is kept fully functional at all the times the building is in use. There will also be alternative procedures, etc., identified for those times when systems, equipment and other arrangements are not available or not functioning correctly.	A level 2 maintenance system is one where there is monitoring of the fire safety systems, and the equipment is kept fully functional at all the times the building is in use. When systems, equipment and other arrangements are not available or not functioning correctly, alternative procedures, etc., are determined reactively.	A level 3 maintenance system will not have a predetermined regime of maintenance and testing in place.
Liaison with fire and rescue service	A good relationship with the fire and rescue service will have benefits for both the occupier and the fire and rescue service. In particular it will ensure that the fire and rescue service are able to have an appropriate pre-determined response strategy for the premises concerned and will enable the occupier to seek advice where appropriate on: a) how to prevent fires and restrict their spread in their buildings and other property; b) the means of escape from buildings and other property in case of fire.	In a level 1 system, the liaison is proactive in nature and includes effective arrangements for notifying the fire and rescue service of changes to the occupancy, periods of abnormal occupancy, fire growth characteristics, and other relevant factors. The arrangements will also allow for routine meetings with the fire and rescue service, and additional meetings where a change in the building or its occupancy is proposed.	In a level 2 system, the liaison includes arrangements for notifying the fire and rescue service of changes to the occupancy, periods of abnormal occupancy, fire growth characteristics, and other relevant factors. However, the arrangements are unlikely to provide for routine meetings with the fire and rescue service or where a change in the building or its occupancy is proposed.	In a level 3 system, the liaison is likely to be either non-existent or spasmodic.
Contingency planning	Contingency plans need to include preparation and response to a wide range of foreseeable events.	A level 1 planning system is proactive, and takes into account a wide range of possible emergencies and incidents. These are likely to include planning for logistical issues such as the provision of shelter, communications, transport, the weather, time of day, time of week, time of year (holidays, etc.) and traffic-related issues, as well as scenarios such as power failures or floods.	A level 2 system takes into account a narrow range of possible emergencies and incidents. These are likely to include planning for logistical issues such as the provision of shelter, communications, transport, the weather, time of day, time of week, time of year (holidays, etc.) and traffic-related issues, as well as scenarios such as power failures.	A level 3 system does not have effective pre-planning, and is unlikely to secure ongoing business continuity in the event of an emergency or incident.

Appendix B

COMPARISON OF FIRE DETECTION COVERAGE FOR THE PROPOSED “ENHANCED” SYSTEM AND A “STANDARD” CATEGORY L2 SYSTEM

Note: These drawings show an outdated layout and are intended to illustrate the enhancents of the proposed system when compared to a "standard" L2 system only. Full details of the proposed detector locations can be found in the detailed MEP information.

FIRE ALARM LAYOUT
BS 5839: 1 COMPLIANT
L2 SYSTEM

SMOKE DETECTOR (WITH SOUNDER & XENON BEACON)

BREAKGLASS CALL POINT

TYPICAL TRADING FLOOR

Note: These drawings show an outdated layout and are intended to illustrate the enhancents of the proposed system when compared to a "standard" L2 system only. Full details of the proposed detector locations can be found in the detailed MEP information.

FIRE ALARM LAYOUT
PROPOSED
L2 + SYSTEM

LEGEND

S SMOKE DETECTOR (WITH SOUNDER & XENON BEACON)

BREAKGLASS CALL POINT

TYPICAL TRADING FLOOR

Appendix C

INDICATIVE CAUSE AND EFFECT MATRIX

LDP – Draft Simplified Cause and Effect Strategy

Cause / Effect	Investigation period activated	Evacuation of PEEP users instigated	Door on Magnetic Hold open device released note1	Fire shutter / curtain activates note1	Fire fighting lobby smoke clearance system activates	$1m^2$ AOV at the head of Fire Fighting Stair Activates	Evacuation Mode Initiated, Zone of Fire origin only	Evacuation of further evacuation zones note2
Activation of localised detection adjacent to fire shutter / curtain								
Activation of localised detector adjacent to door on magnetic hold open device								
Activation of detector within firefighting lobby								
Activation of smoke detector head not described above								
Activation of Heat Detector								
Activation of Manual Call point								
Activation of Sprinkler Head								
Activation of secondary detector head								
Alarm Signal not confirmed after 40 seconds								
Fire confirmed through investigation								
Investigation period not cancelled after 10 minutes.								
Fire control centre orders the evacuation of a floor								

Note 1: Only the device adjacent to the localised detection will activate. All other shutter/ curtain / door devices will remain open until activation of localised detection.

Note 2: Evacuation of other zones will be controlled manually at the fire control centre.

Appendix D

MEANS OF ESCAPE

APPENDIX D-1

STAIR MATRIX

LDP - Stair Access Matrix

19/04/2015 - Rev 6

	ST1		ST2		ST3 (FF)		ST4		ST5		ST6 (FF)		ST6B		ST7		ST8		ST9		ST10		ST11		CONVIVIAL	CLIENT STAIR
	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	STAIR	(FARRINGDON)
Roof						ACI/ACO/GBI						ACI/ACO/GBI														
Level 8				ACI/ACO/GBI		ACI/ACO/GBI				ACI/ACO/GBI		ACI/ACO/GBI														
Level 7		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI														
Level 6		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI														
Level 5		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI														
Level 4		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI														
Level 3		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI														
Level 2		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI														
Level 1		ACI/ACO/GBI		ACI/ACO/GBI/SS(OPT)		ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI/SS(OPT)		ACI/ACO/GBI													SS	
Uppr Gnd Mezz						ACI/ACO/GBI										ACI/ACO/GBI (x2 Doors)										
Uppr Gnd				ACI/ACO/GBO		ACI/ACO/GBI				ACI/ACO/GBO		ACI/ACO/GBI			ACI/ACO/GBO (x2 Doors)	ACI/ACO/GBO										
Gnd Mezz						ACI/ACO/GBI		ACI/ACO/GBO				ACI/ACO/GBO		ACI/ACO/GBO				ACI/ACO/GBI (See Note 5)						ACI/ACO/GBO		
Gnd		ACI/ACO/GBI				ACI/ACO/GBO								ACI/ACO/GBI	ACI/ACO/GBI			ACI/ACO/GBO		ACI/ACO/GBO				ACI/ACO/GBI		SG
Bsmnt Mezz		ACI/ACO/GBI													ACI/ACO/GBI					ACI/ACO/GBI		ACI/ACO/GBO (See Note 6)		ACI/ACO/GBI		
Bsmnt		ACI/ACO/GBI				ACI/ACO/GBI							ACI/ACO/GBI	ACI/ACO/GBI	ACI/ACO/GBI					ACI/ACO/GBI		ACI/ACO/GBI		ACI/ACO/GBI		

KEY:

- Stair does not serve this level
- Stair passes through this level but is not accessible
- Stair passes through this level and is accessible through a door
- Stair passes through this level and may be fitted with security shutter/gate
- Stair passes through this level and is accessible from extended core/amenity
- Stair passes through this level and is open for general circulation

Indicates level o Indicates level of final exit for fire egress

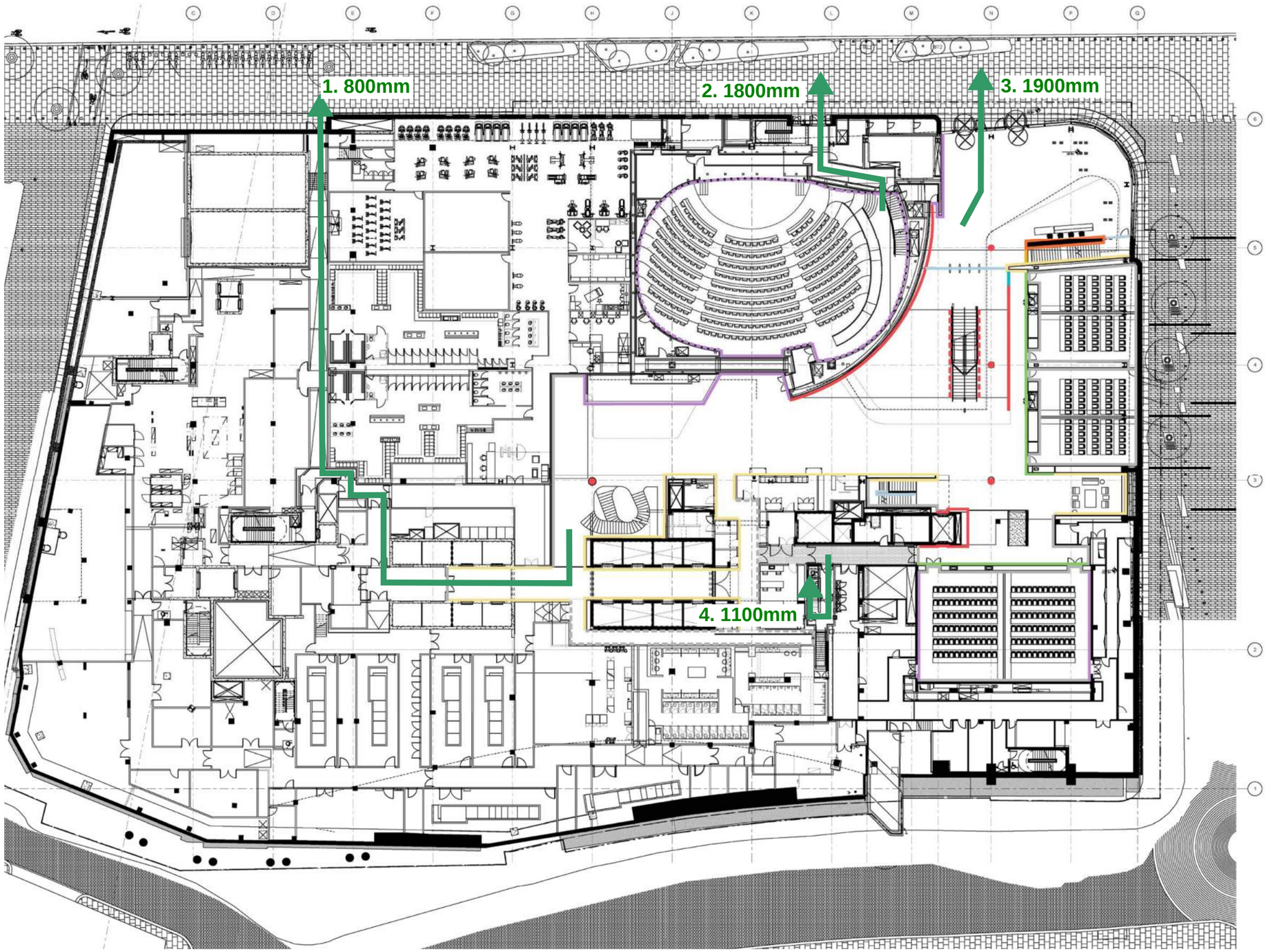
ACI - Access Control In
ACO - Access Control Out
GBI - Green Breakglass In
GBO - Green Breakglass Out (or Pushbar)
SG - Security Gate
SS - Security Shutter

NOTES:

1. Stair doors are assumed to be security rated unless noted otherwise
2. Stair doors at the office floors do not require green breakglass units on the inside, i.e. to allow people to pass from the stair onto the floors.
3. Stair doors on hold open can be released in security lockdown and maglock activated with card reader access
4. ST2 and ST5 should have the option to be fitted with a security gate at Level 1 if enclosure at Shoe Lane lobby is not security rated
5. ST8 is a secondary means of egress from bicycle storage; people go down to ground floor and transfer to ST1 to exit building
6. ST10 transfers to ST9 at basement mezzanine level for final exit
7. Any fire alarm call points in public areas are to be alert only with a signal to the security control room for confirmation
8. All final exit doors leading to the street are SR2 or equal.

APPENDIX D-2

AMENITY FIRE EGRESS STRATEGY



Notes

- Total exit width discounting largest exit
= 800 + 1800 + 1900 + 1100 + 800 + 1300 +1300 + 1400
= 10400 mm

- Exit width sized on 3.06mm per person (BS 9999). Therefore, total capacity = 10400 / 3.06
= 3398 persons

- This exceeds the 3249 aspirational target by 149 persons or 455mm of exit width.

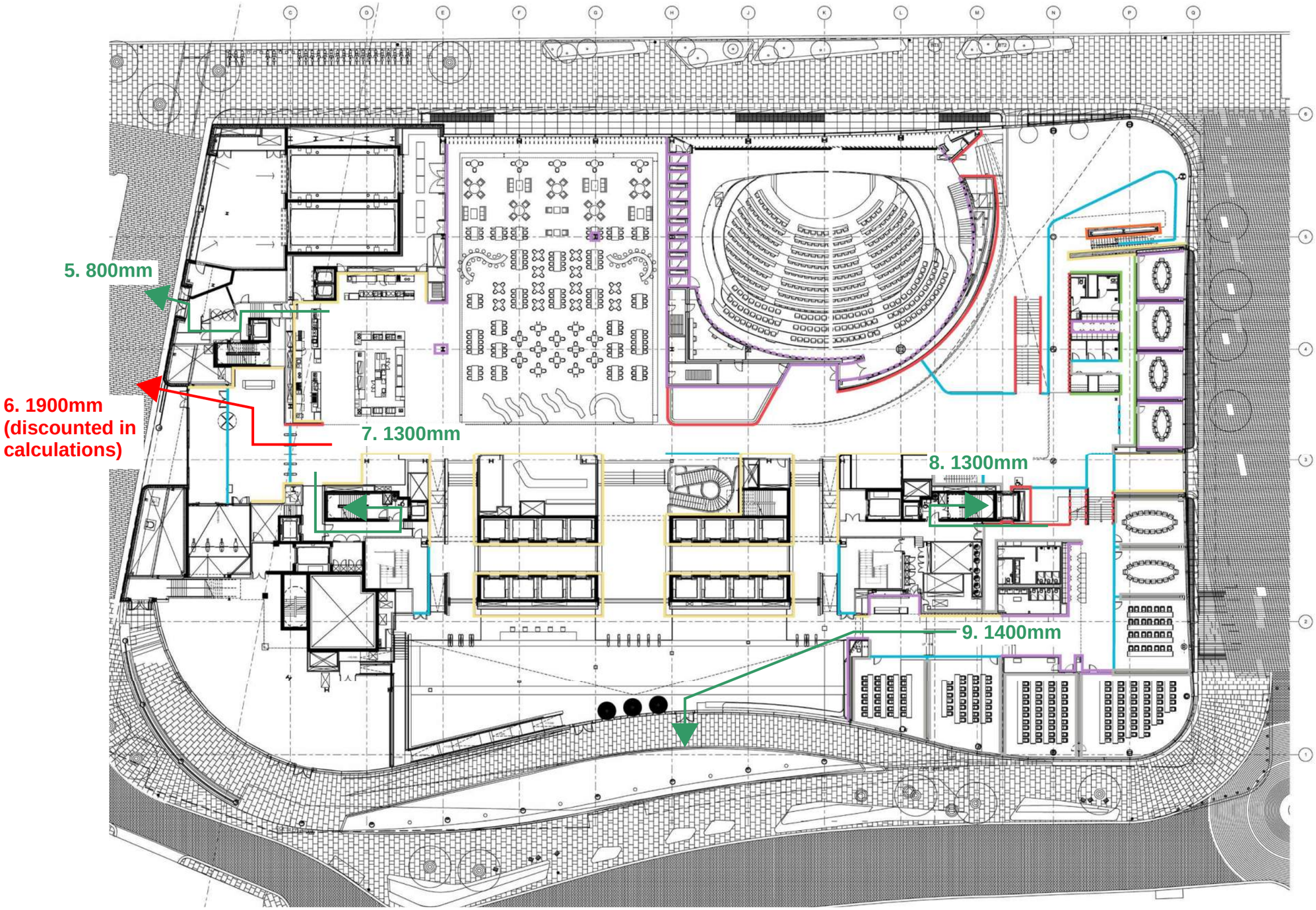
WSP

PROJECT REF:
The London Development

TITLE:
AMENITIES ESCAPE PLAN
Ground Floor

DRAWN: SB (Astute Fire)

DATE: SEPT 15



Notes

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= 3398 persons

- This exceeds the 3249 aspirational target by 149 persons or 455mm of exit width.

WSP

PROJECT REF:
The London Development

TITLE:
AMENITIES ESCAPE PLAN
First Floor

DRAWN: SB (Astute Fire)

DATE: SEPT 15

K. Tenant Design Guidelines

Examples for Discussion:

- Partition connection detail etc. to different facades.
- Retail shopfront design restrictions: Signage not to be 500mm from façade; Circular light fittings, white plaster board ceiling etc.
- Blind restriction external face white to be a consistent colour i.e. RAL 9010 white.
- Signage in lobbies' or landlord space.
- Philosophy not to have desks against façade.

IT routes from Point of Entry to office floor –tray installed by landlord and space allocation (vertical and horizontal distribution) for tenants.

L. Tenant Fit-out Guide

The following is a list of sections to be developed in a full tenant fit out guide to give all information to allow a tenant to fit out within the building. The organisation of the document will be the same as required for the operation manual.

- Introduction
- Contact Details
- Security - Rules for Tenants
- Loading Bay
- Cycle Storage; Showers; Lobbies
- Disabled Parking
- Reception Areas – Shoe Lane; Farringdon Street; Plumtree Court
- Use of Amenities Space
- Use of Lifts
- Health and Safety
- Specialist works – Hot works; connections etc
- Utilities including availability
- Contacts- in case of emergency – i.e. landlord team
- Metering requirements
- IT technical routes from POE to riser
- Noise levels during construction/fitout
- Rules for noisy working
- Rules for deliveries – including confirmation of courier delivery; post deliveries; postal address
- Fire & Life safety rules and procedures (alarm activation etc)
- Wayfinding plans
    - Pedestrian
    - Bike
    - Disabled drivers
    - Contactor/Vendor – people and cars

- Advice and recommendation for car parking and motor bike parking
- Advice on local Barclay bike scheme docking station
- General information – Rules: Rules on fire and life safety sub-contractors; Logistic meetings etc.;
  Specific permits and document for tenants
- Appendix
    - Access Permits
    - Connection Permits
    - Loading Bay Form
    - Delivery Form
    - Loading Bay Schedule

16. APPENDICES

M. Area Schedule

London Development Project (LDP-1209-00)

ADAMSON ASSOCIATES 06-Nov-15

Area Calculation

LEVEL	GIA		FUNCTION NIA								OTHER AREAS					
			OFFICE		ATRIUM BASE		SKY GARDEN		STORAGE		RECEPTION		TERRACES		ROOF	
	m2	ft2	m2	ft2	m2	ft2	m2	ft2	m2	ft2	m2	ft2	m2	ft2	m2	ft2
LEVEL 9 (ROOF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,254	35,026
LEVEL 8	8,074	86,908	6,204	66,779	0	0	149	1,604	0	0	0	0	581	6,254	0	0
LEVEL 7	8,909	95,896	7,273	78,286	0	0	0	0	0	0	0	0	0	0	0	0
LEVEL 6	8,909	95,896	7,273	78,286	0	0	0	0	0	0	0	0	0	0	0	0
LEVEL 5	9,830	105,809	7,288	78,447	907	9,763	0	0	0	0	0	0	0	0	0	0
LEVEL 4	9,830	105,809	8,195	88,210	0	0	0	0	0	0	0	0	0	0	0	0
LEVEL 3	9,830	105,809	8,195	88,210	0	0	0	0	0	0	0	0	0	0	0	0
LEVEL 2	9,830	105,809	8,195	88,210	0	0	0	0	0	0	0	0	0	0	0	0
LEVEL 1	9,830	105,809	8,195	88,210	0	0	0	0	0	0	0	0	0	0	0	0
UPPER GROUND MEZZ	2,051	22,077	1,659	17,857	0	0	0	0	91	980	0	0	0	0	0	0
UPPER GROUND	8,516	91,665	4,633	49,869	0	0	0	0	0	0	973	10,473	0	0	0	0
GROUND MEZZ	1,216	13,089	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GROUND	9,131	98,285	4,796	51,624	0	0	0	0	719	7,739	285	3,068	0	0	0	0
BASEMENT MEZZ	1,612	17,351	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT	8,696	93,603	0	0	0	0	0	0	1,657	17,836	0	0	0	0	0	0
TOTALS	106,264	1,143,815	71,906	773,989	907	9,763	149	1,604	2,467	26,555	1,258	13,541	581	6,254	3,254	35,026

TOTAL FOR OFFICE AND LOBBY:	**73,164 m2**	**787,530 ft2**

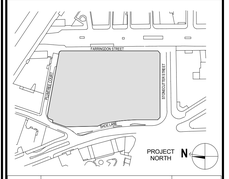
GRAND TOTAL:	**80,522 m2**	**866,731 ft2**

Notes:

1 *Atrium, NIA taken to edge of slab as detail not finalised*
2 *Sunken garden, NIA taken to edge of slab as detail not finalised*
3 *The measurement of the areas is in accordance with RICS Code of Measuring Practice 6th Edition*
4 *NIA for the facade is taken to the back of the extended transom box, containing diffuser box of an overall zone of 355mm from external face of glass.*

LDP

LONDON DEVELOPMENT PROJECT



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05 NOV 2015

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adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

BASEMENT LEVEL
GIA + NIA AREAS

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DATE: 28 AUG 2015

GRAPHIC SCALE
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SCALE IN METRES

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40SLSKM-A-0980AA

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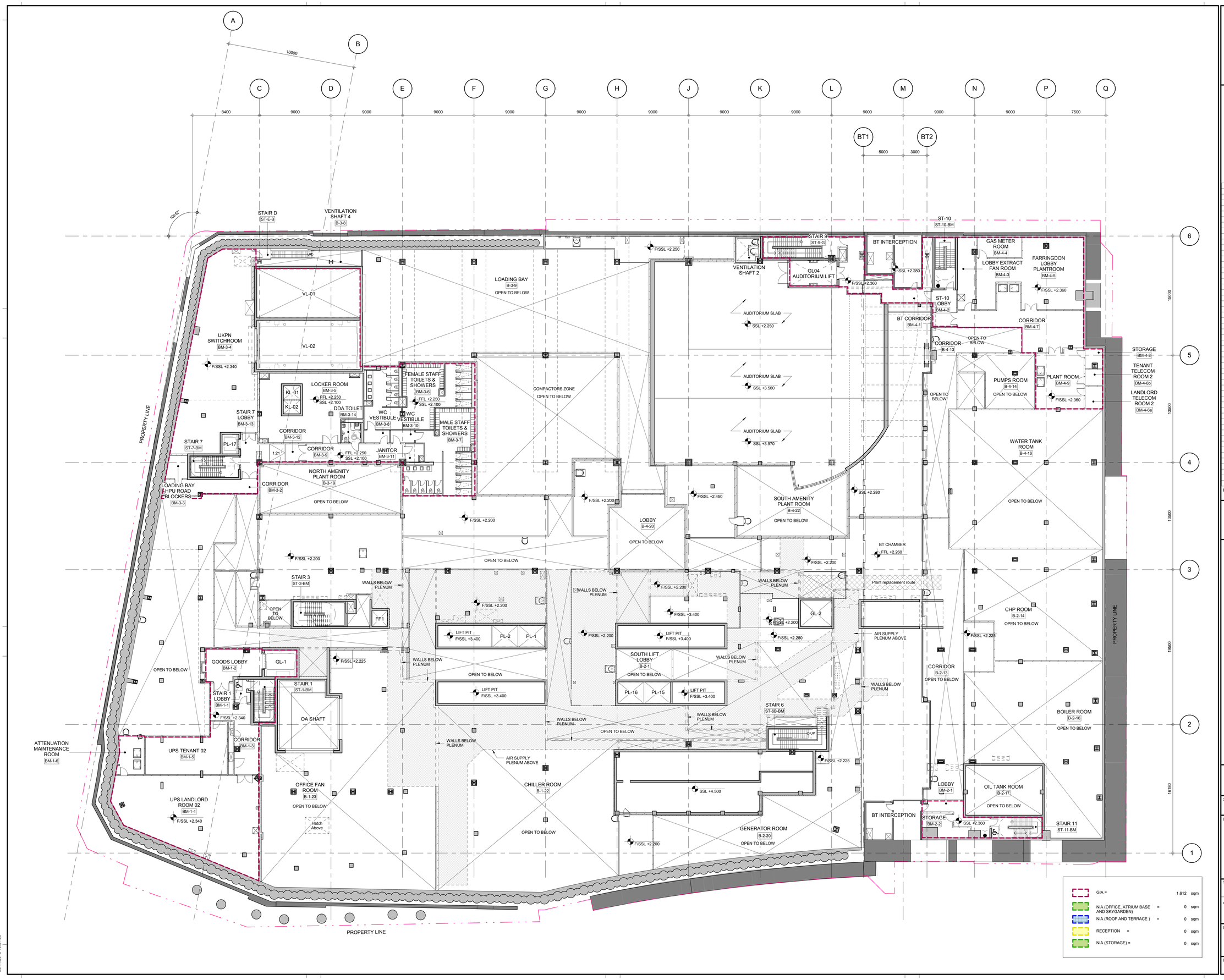

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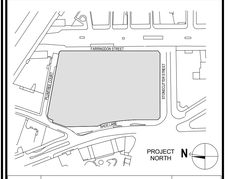

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BASEMENT MEZZ LEVEL GIA + NIA AREAS

SCALE: A0 1 : 150

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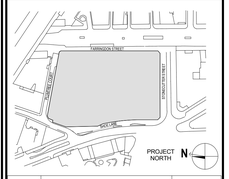

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WSP House, 70 Chancery Lane, London, WC2A 1AF

MEP
WSP | Parsons Brinckerhoff
WSP House, 70 Chancery Lane, London, WC2A 1AF

Quantity Surveyor
Turner & Townsend
7 Savoy Court, Strand, London, WC2R 0EX

Fire Consultant
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WSP House, 70 Chancery Lane, London, WC2A 1AF

Facade Consultant
ARUP
13 Fitzroy Street, London, W1T 4BQ

Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

GROUND LEVEL GIA + NIA AREAS

SCALE: A0	DATE:
1 : 150	28 AUG 2015

GRAPHIC SCALE
0 1 2 4 6 8 9m
SCALE IN METRES

DRAWING NO.
40SLSKM-A-0990AA

PROJECT NO.	REVISION
1209-00	

QUALITY CHECK

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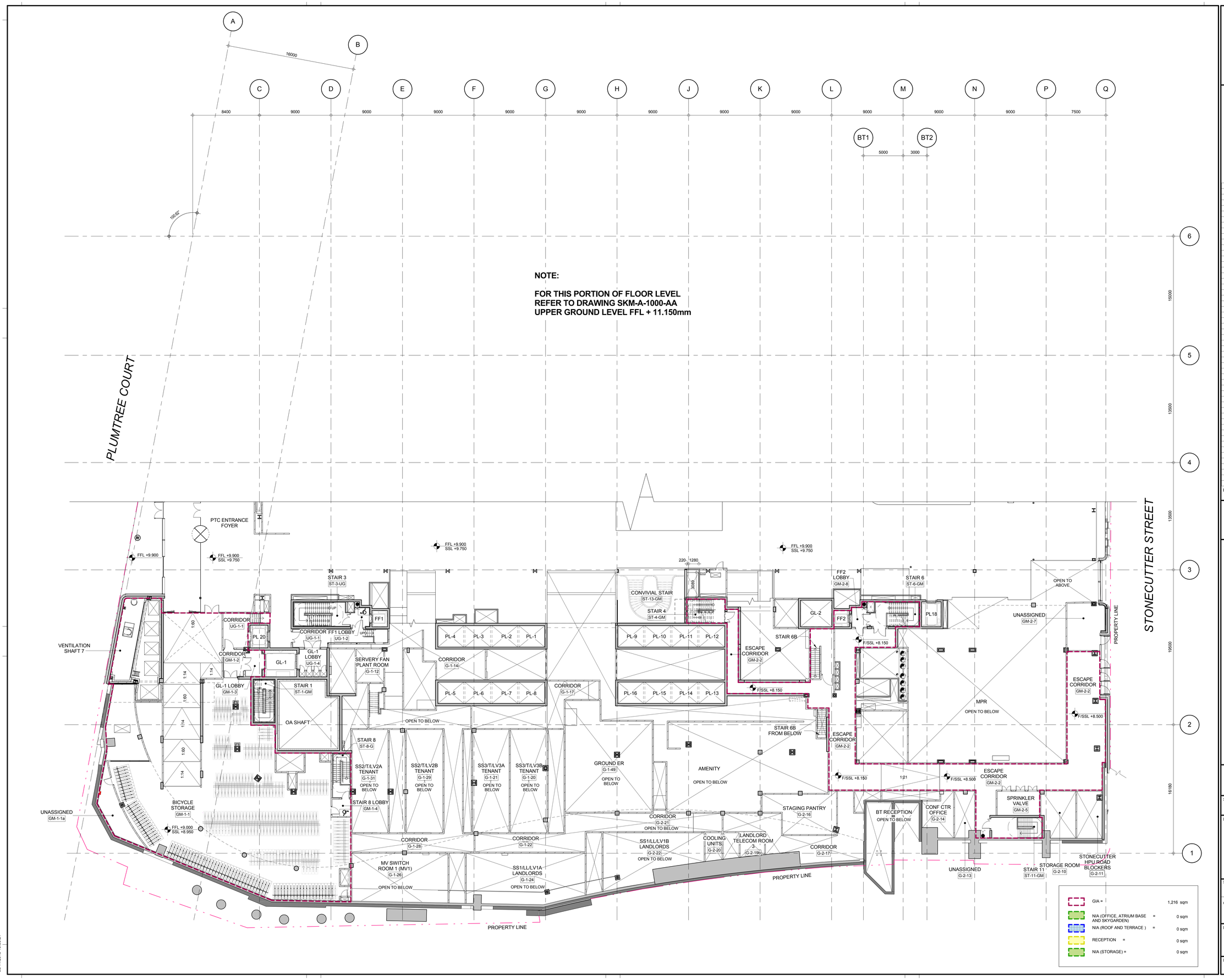
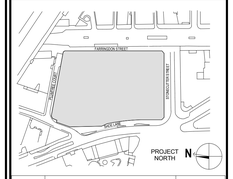


LDP

LONDON DEVELOPMENT PROJECT



IN PROGRESS
05 NOV 2015

NO.	ISSUED	DATE

REVISIONS

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CONSULTANTS

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11 West 42nd Street New York, NY 10036

Executive Architect
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Facade Consultant
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Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

GROUND MEZZ LEVEL
GIA + NIA AREAS

SCALE: A0 1 : 150

DATE: 08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-0996AA

PROJECT NO. 1209-00

REVISION

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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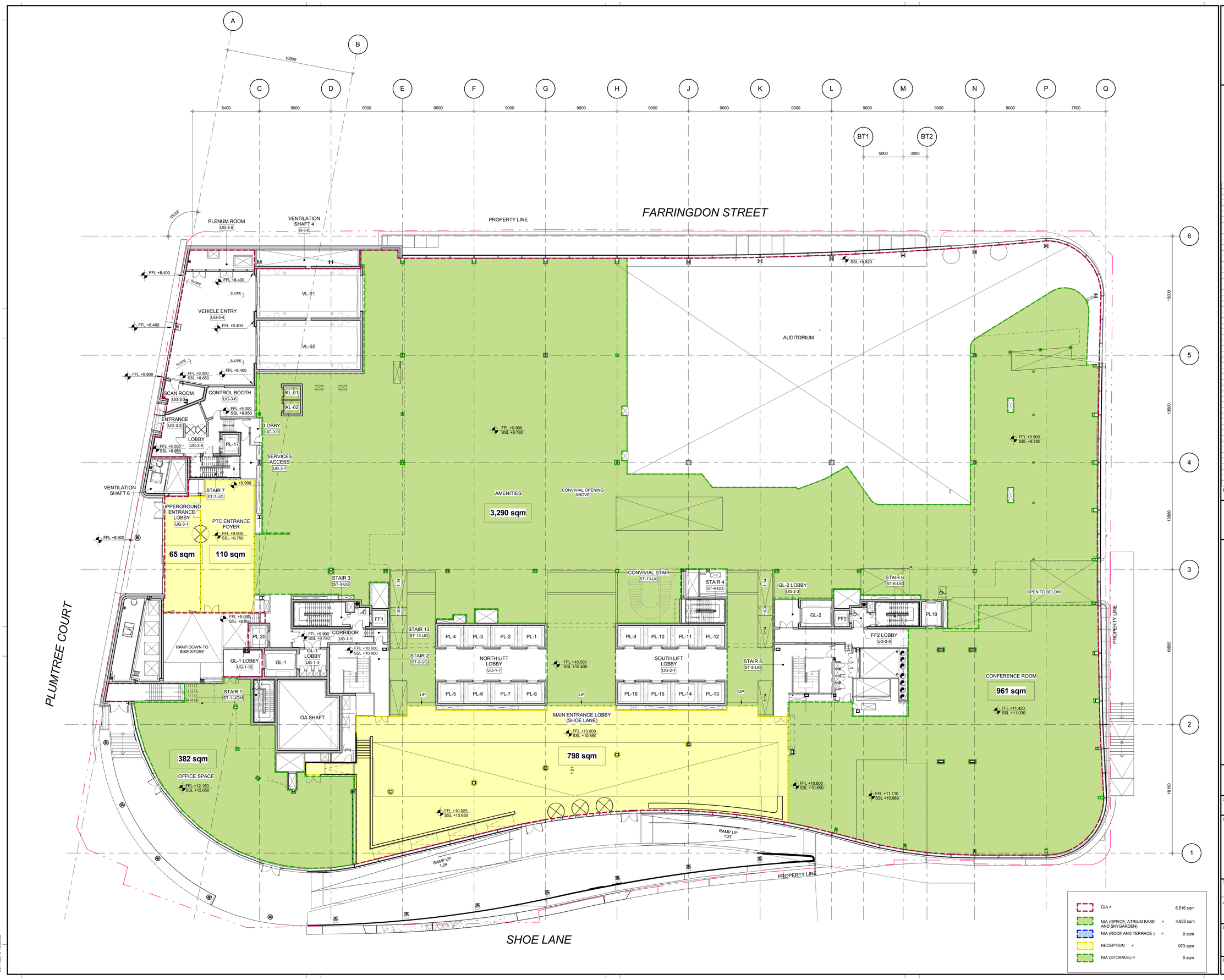

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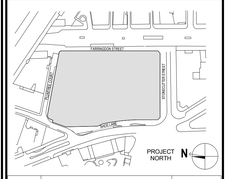
LONDON DEVELOPMENT PROJECT



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05 NOV 2015

NO.	ISSUED	DATE

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Vertical Transportation
HOARE LEA
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adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

UPPER GROUND LEVEL GIA + NIA AREAS

SCALE: A0 1 : 150

DATE: 08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1000AA

PROJECT NO. 1209-00

REVISION

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Author
CHECKED
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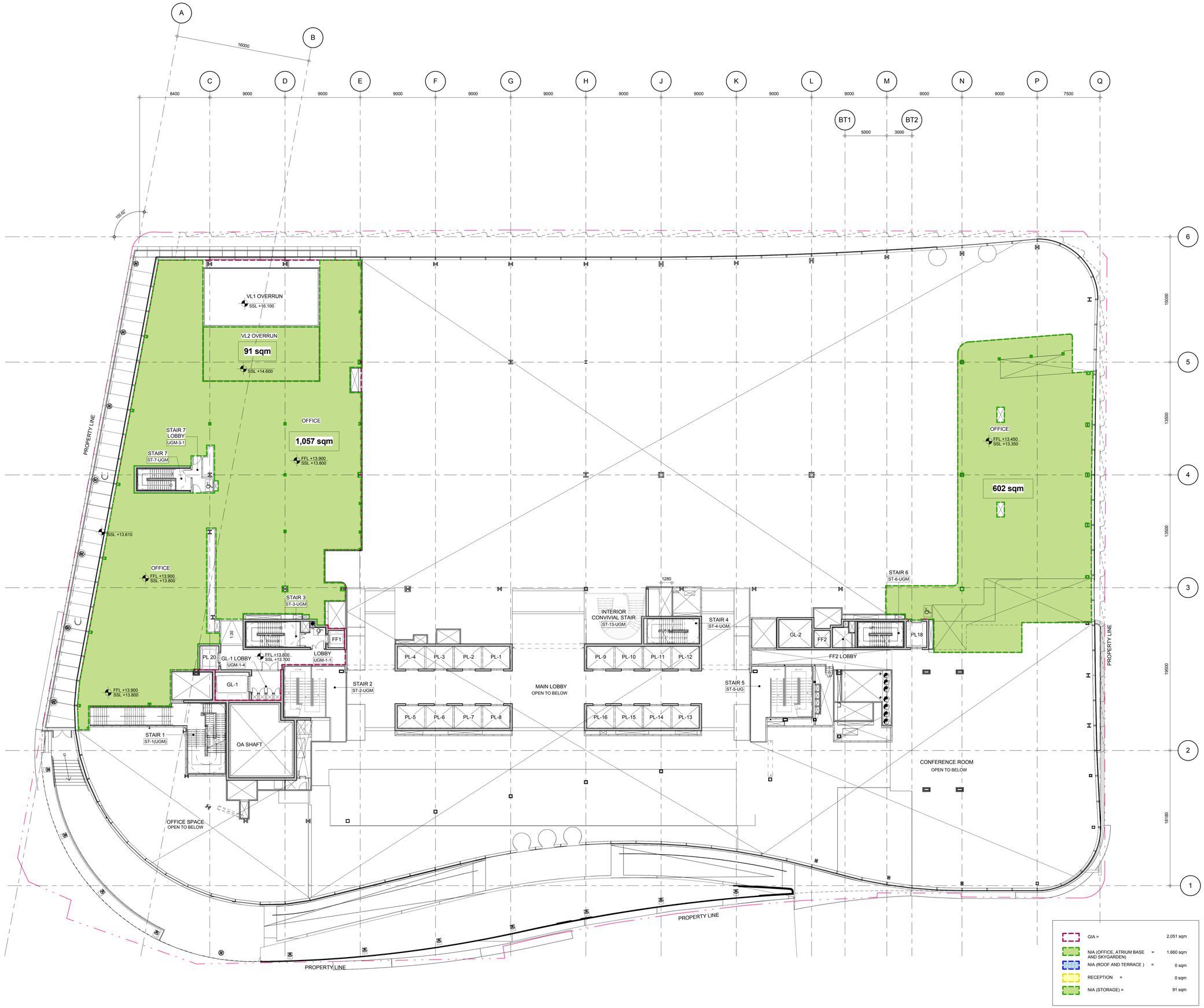
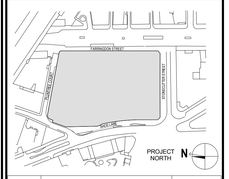


GIA =	2,051 sqm
NIA (OFFICE, ATRIUM BASE AND SKYGARDEN) =	1,660 sqm
NIA (ROOF AND TERRACE) =	0 sqm
RECEPTION =	0 sqm
NIA (STORAGE) =	91 sqm

LDP

LONDON DEVELOPMENT PROJECT



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05 NOV 2015

NO.	ISSUED	DATE

REVISIONS

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HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

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ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

UPPER GROUND MEZZ LEVEL GIA + NIA AREAS

SCALE: A0	DATE:
1 : 150	08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1005AA

PROJECT NO.	REVISION
1209-00	

QUALITY CHECK

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	Author	Checker

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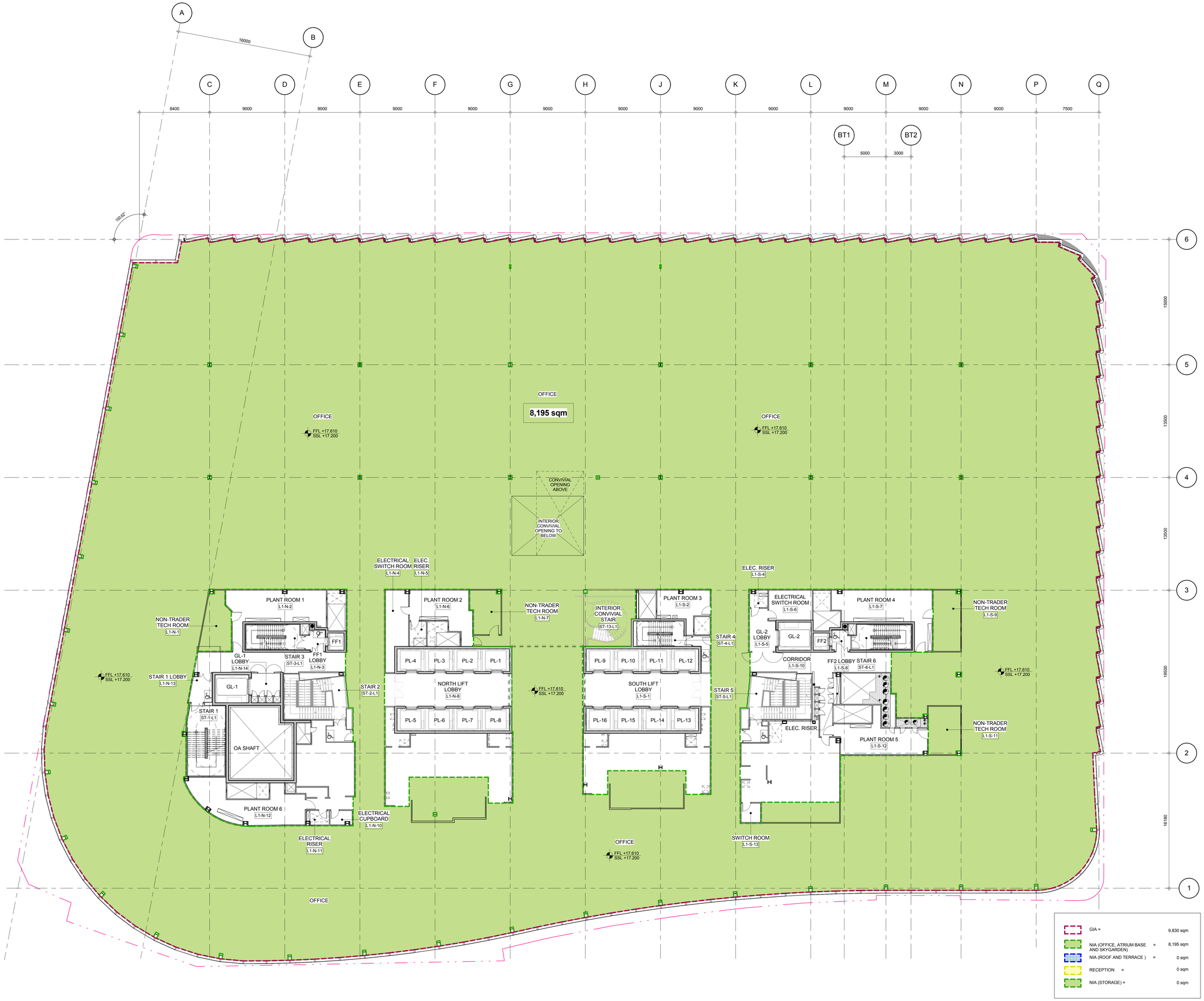

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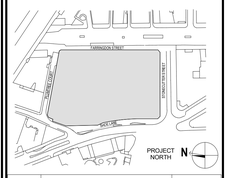
LONDON DEVELOPMENT PROJECT



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Fire Consultant
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Facade Consultant
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HOARE LEA
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ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

LEVEL 1
GIA + NIA AREAS

SCALE: A0 1 : 150

DATE: 08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1010AA

PROJECT NO. 1209-00

REVISION

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker
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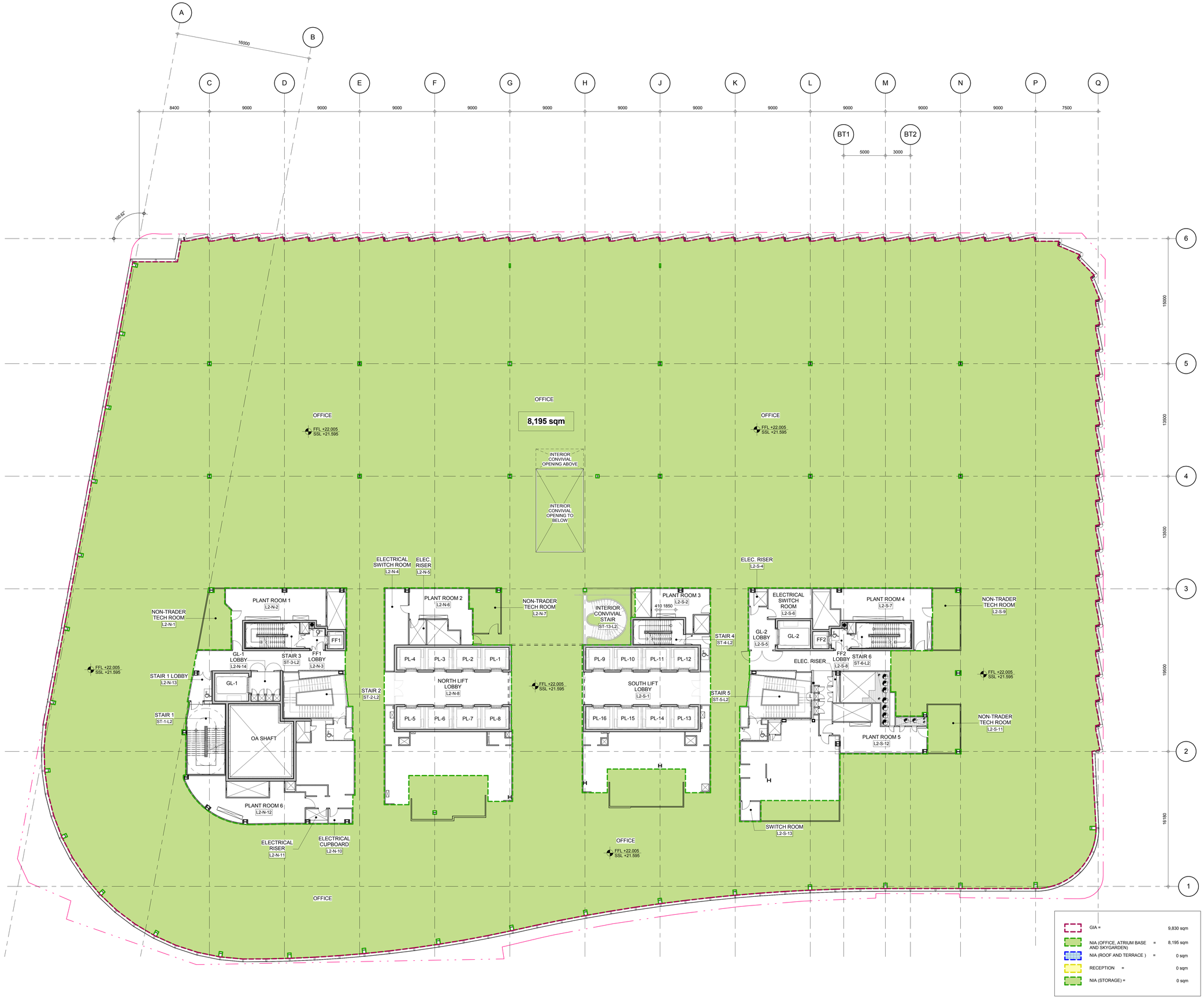

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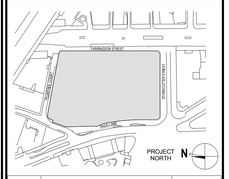
LONDON DEVELOPMENT PROJECT



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05 NOV 2015

NO.	ISSUED	DATE

REVISIONS

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CONSULTANTS

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Facade Consultant
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Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

LEVEL 2
GIA + NIA AREAS

SCALE: A0 1 : 150

DATE: 08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1020AA

PROJECT NO. 1209-00

REVISION

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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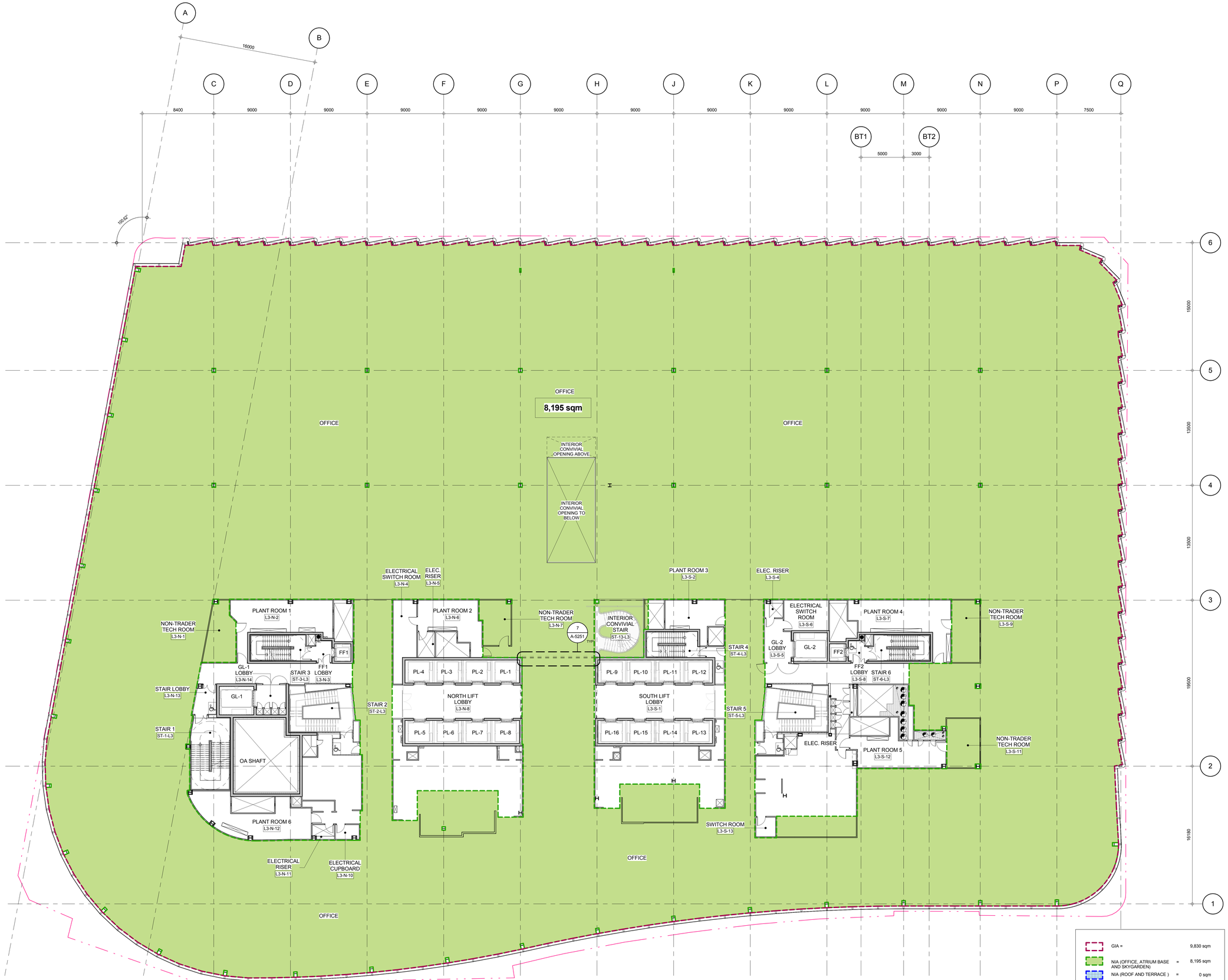

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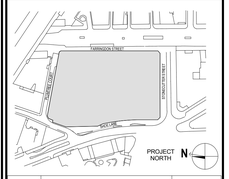
LONDON DEVELOPMENT PROJECT



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05 NOV 2015

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Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

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ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

LEVEL 3
GIA + NIA AREAS

SCALE: A0 1 : 150	DATE: 08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1030AA

PROJECT NO.	REVISION
1209-00	

QUALITY CHECK	DRAWN	CHECKED	Checker
DATE	Author		

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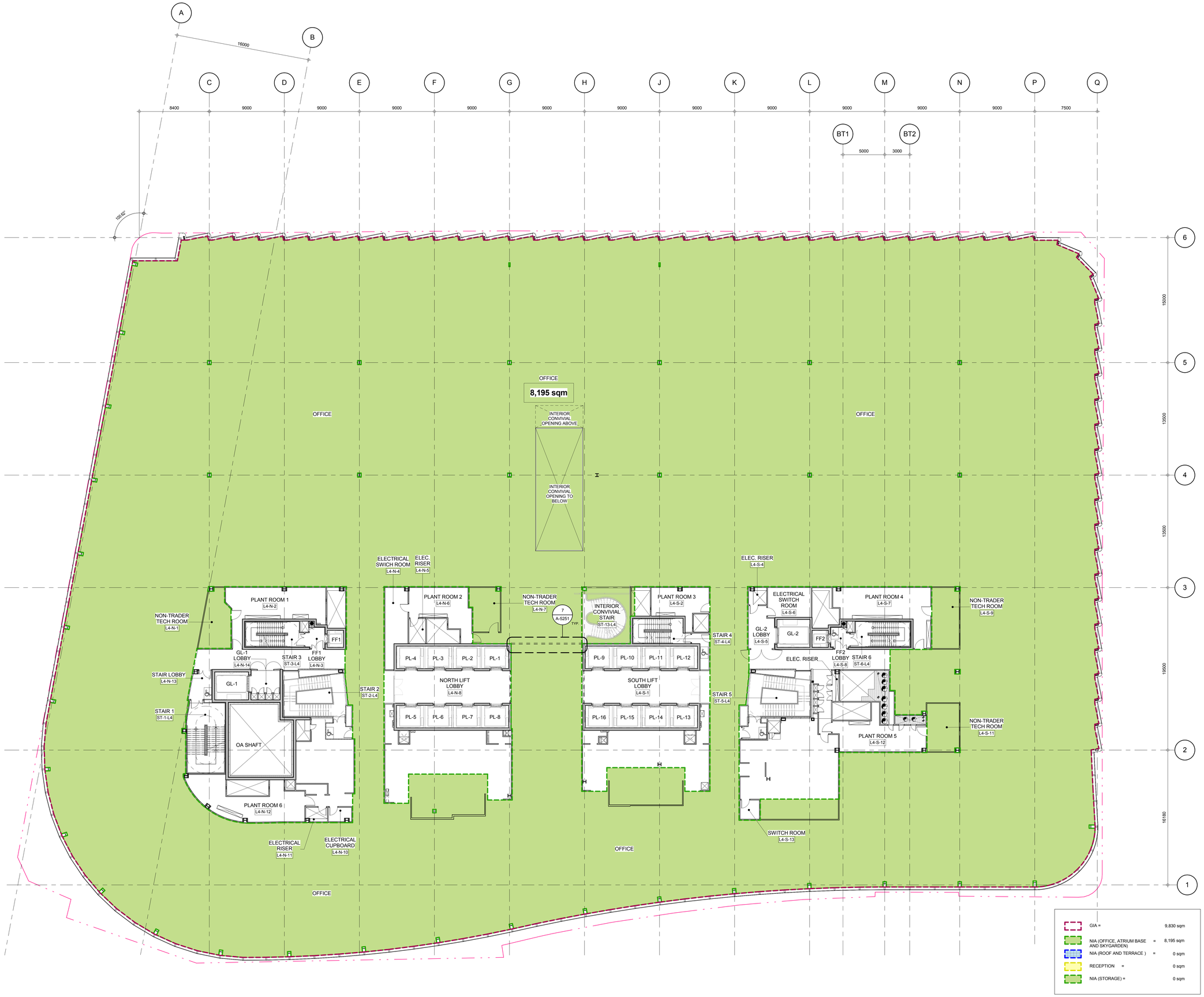

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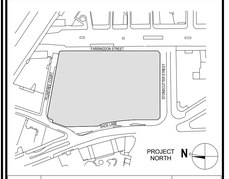
LONDON DEVELOPMENT PROJECT



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Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

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ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

LEVEL 4
GIA + NIA AREAS

SCALE: A0 1 : 150

DATE: 08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1040AA

PROJECT NO. 1209-00

REVISION

QUALITY CHECK
DATE
DRAWN
Author
CHECKED
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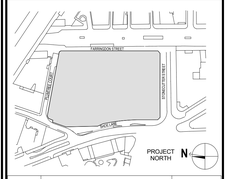
LDP

LONDON DEVELOPMENT PROJECT



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05 NOV 2015

NO.	ISSUED	DATE

REVISIONS

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MEP
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Fire Consultant
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WSP House, 70 Chancery Lane, London, WC2A 1AF

Facade Consultant
ARUP
13 Fitzroy Street, London, W1T 4BQ

Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

LEVEL 5
GIA + NIA AREAS

SCALE: A0 1 : 150

DATE: 08/27/15

GRAPHIC SCALE

DRAWING NO.

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PROJECT NO. 1209-00

REVISION

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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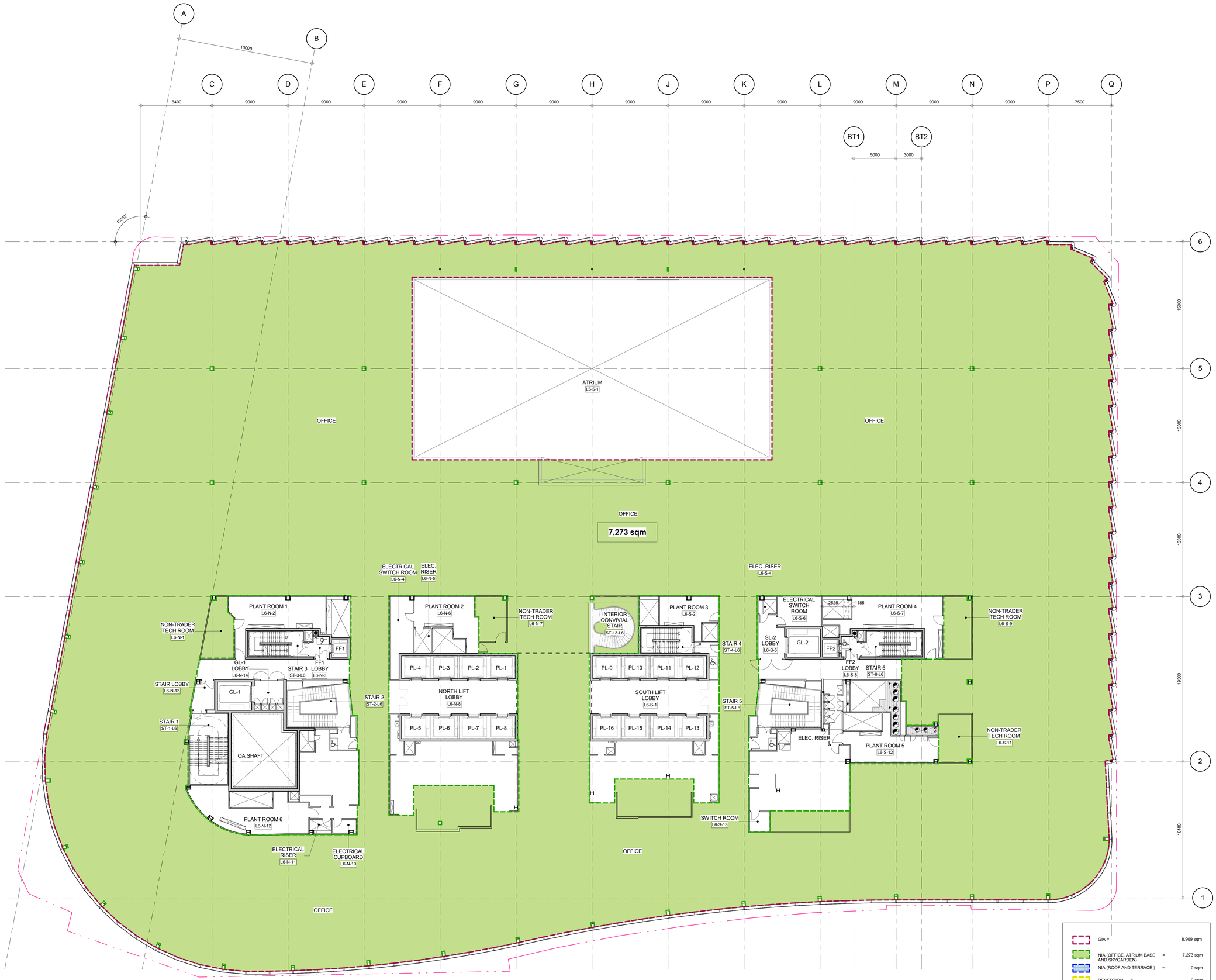
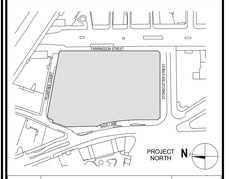


GIA =		8,909 sqm
NIA (OFFICE, ATRIUM BASE AND SKYGARDEN)	=	7,273 sqm
NIA (ROOF AND TERRACE)	=	0 sqm
RECEPTION	=	0 sqm
NIA (STORAGE) =		0 sqm

LDP

LONDON DEVELOPMENT PROJECT



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05 NOV 2015

NO.	ISSUED	DATE

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adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

LEVEL 6
GIA + NIA AREAS

SCALE: A0	DATE:
1 : 150	08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1060AA

PROJECT NO.	REVISION
1209-00	

QUALITY CHECK

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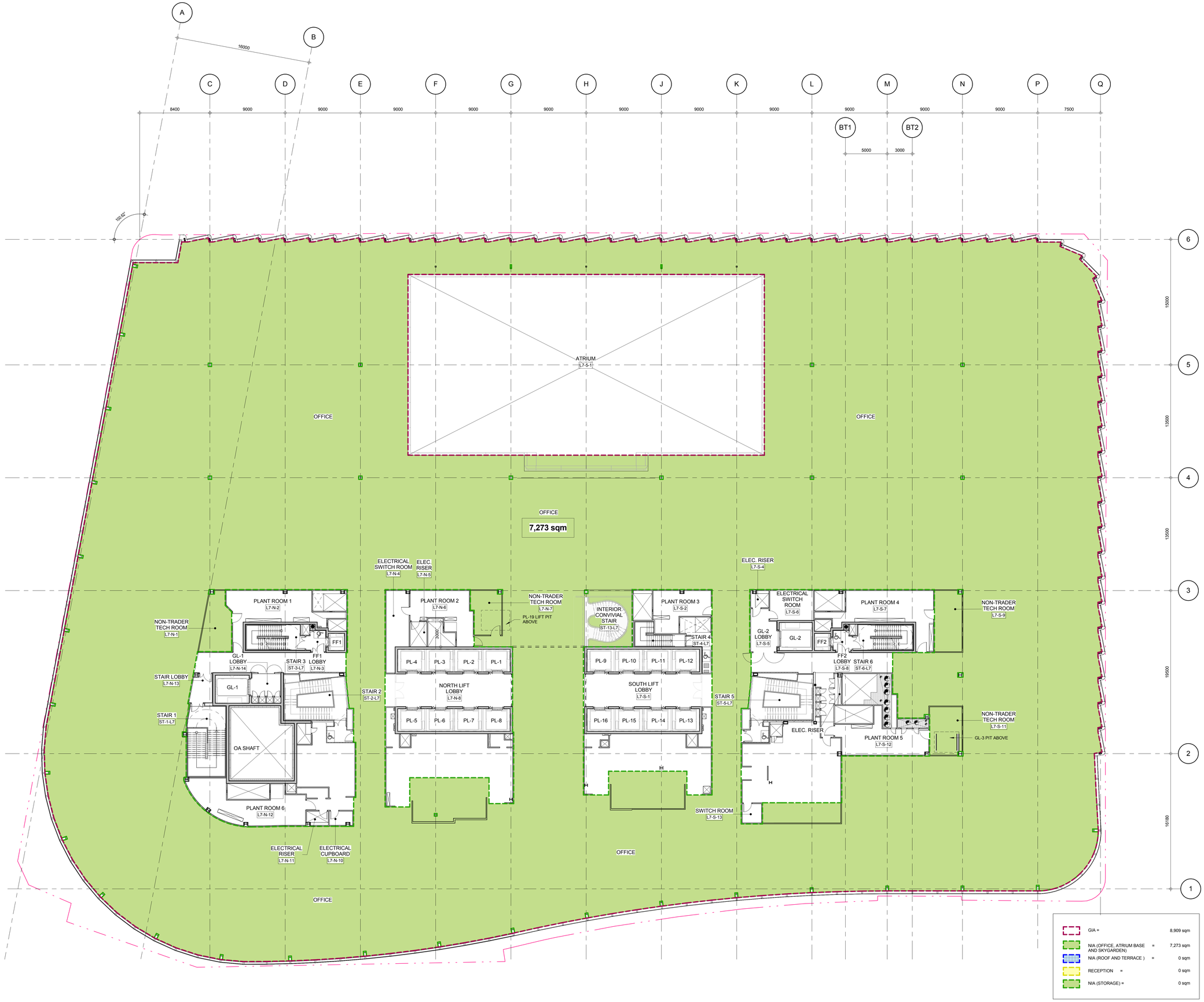

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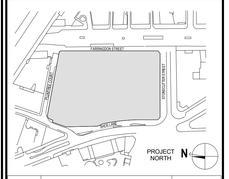
LONDON DEVELOPMENT PROJECT



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MEP
WSP | Parsons Brinckerhoff
WSP House, 70 Chancery Lane, London, WC2A 1AF

Quantity Surveyor
Turner & Townsend
7 Savoy Court, Strand, London, WC2R 0EX

Fire Consultant
WSP | Parsons Brinckerhoff
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Facade Consultant
ARUP
13 Fitzroy Street, London, W1T 4BQ

Vertical Transportation
HOARE LEA
Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

LEVEL 7
GIA + NIA AREAS

SCALE: A0	DATE:
1 : 150	08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1070AA

PROJECT NO.	REVISION
1209-00	

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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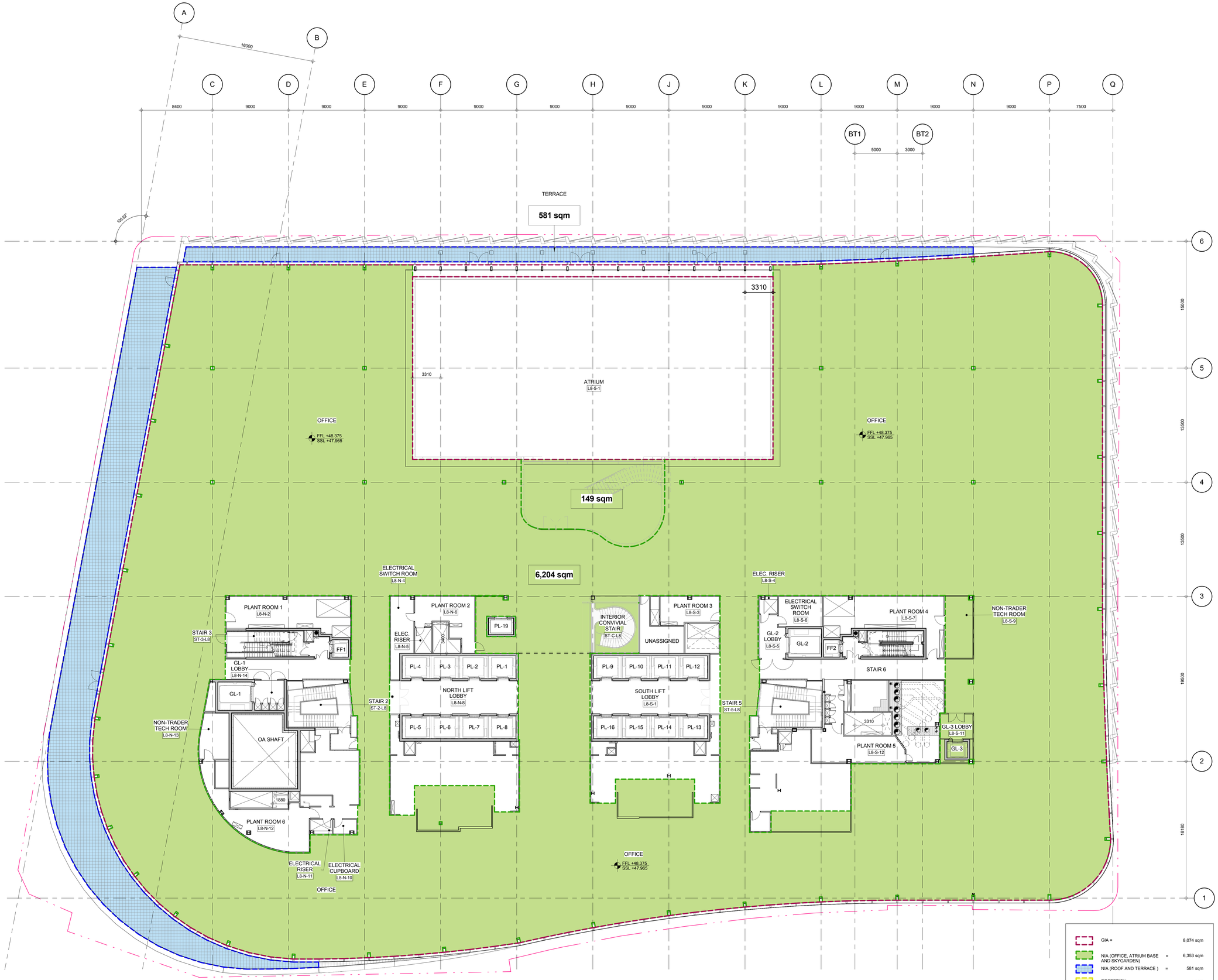
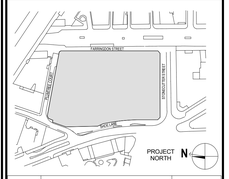


LDP

LONDON DEVELOPMENT PROJECT



IN PROGRESS
05 NOV 2015

NO.	ISSUED	DATE

REVISIONS

Discrepancies must be reported immediately to the Architect before proceeding. Only figured dimensons are to be used. Contractors must check all dimensions on site. This drawing is protected by copyright.

ALL DIMENSIONS ARE SHOWN IN METRIC.

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New York, NY 10036

Executive Architect
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adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

LEVEL 8
GIA + NIA AREAS

SCALE: A0	DATE:
1 : 150	08/27/15

GRAPHIC SCALE

DRAWING NO.

40SLSKM-A-1080AA

PROJECT NO.	REVISION
1209-00	

QUALITY CHECK

DATE	DRAWN	Author	CHECKED	Checker

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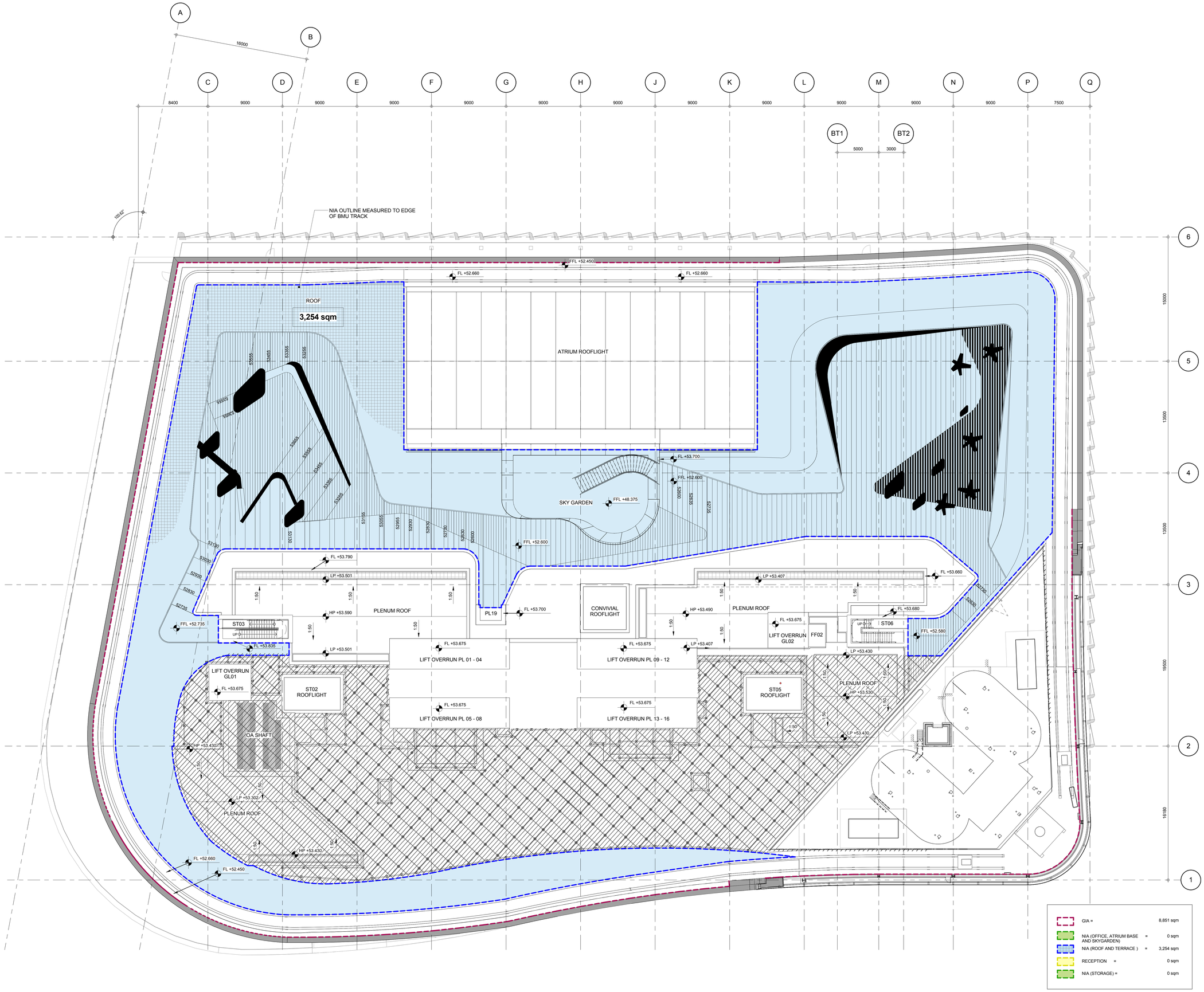
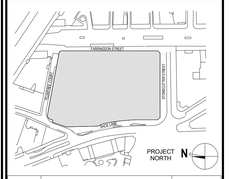


GIA =		8,851 sqm
NIA (OFFICE, ATRIUM BASE AND SKYGARDEN)	=	0 sqm
NIA (ROOF AND TERRACE)	=	3,254 sqm
RECEPTION	=	0 sqm
NIA (STORAGE)	=	0 sqm

LDP

LONDON DEVELOPMENT PROJECT



IN PROGRESS
06 NOV 2015

NO.	ISSUED	DATE

REVISIONS

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CONSULTANTS

Design Architect
Kohn Pedersen Fox Associates
7a Langley Street, London, WC2H 9JA
11 West 42nd Street New York, NY 10036

Executive Architect
Adamson Associates (International) Ltd
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Vertical Transportation
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Western Transit Shed, 12-13 Stable Street, London, N1C 4AB

adamson
ASSOCIATES (INTERNATIONAL) LIMITED

SERIES:

DRAWING TITLE:

ROOF LEVEL
GIA + NIA AREAS

SCALE: A0 1 : 150

DATE: 28 AUG 2015

GRAPHIC SCALE
0 1 2 4 6 8 9 0m
SCALE IN METRES

DRAWING NO.
40SLSKM-A-1090AA

PROJECT NO. 1209-00

REVISION **0**

QUALITY CHECK

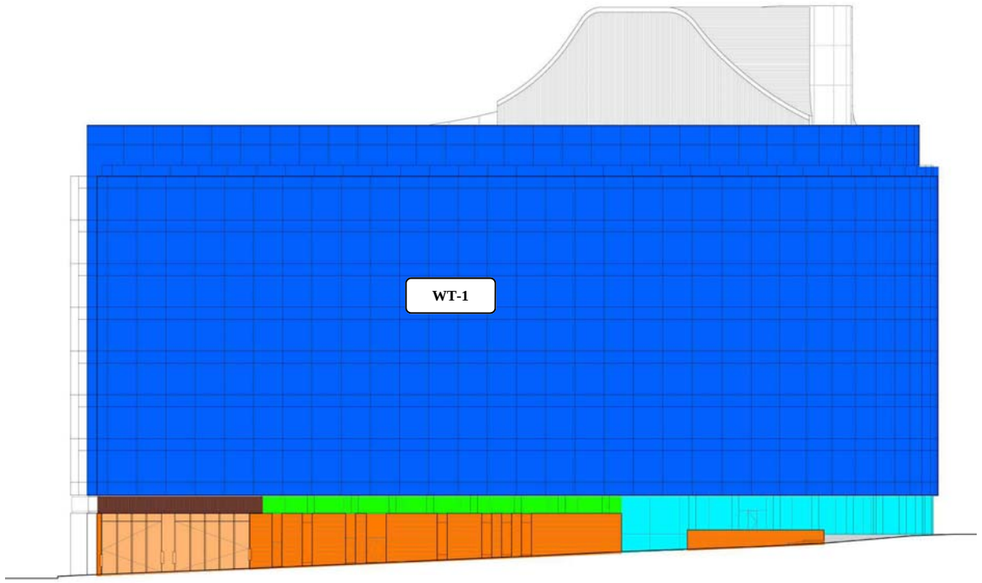
DATE	DRAWN	Author	CHECKED	Checker
06/11/2015 16:13:15	C:\Users\Damrawi\Documents\Revit Local Files\AA LDP-MAIN_Damrawi3.rvt			

16. APPENDICES

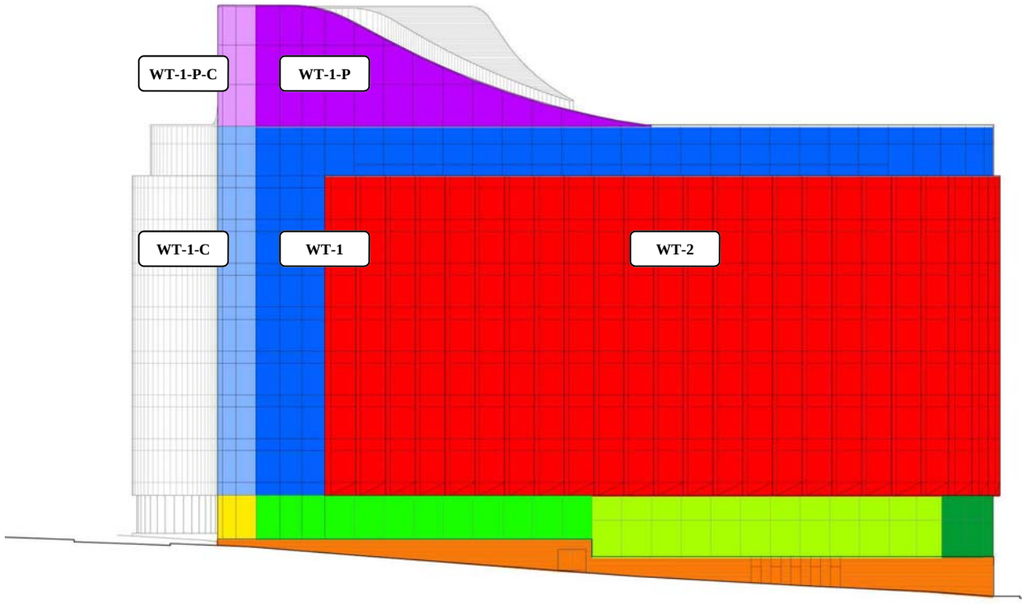
N. Façade Matrix

Typology: Upper Facades

KPF have provided the façade typologies shown on the left, and these will be the basis of our design work.



Plumtree Court elevation

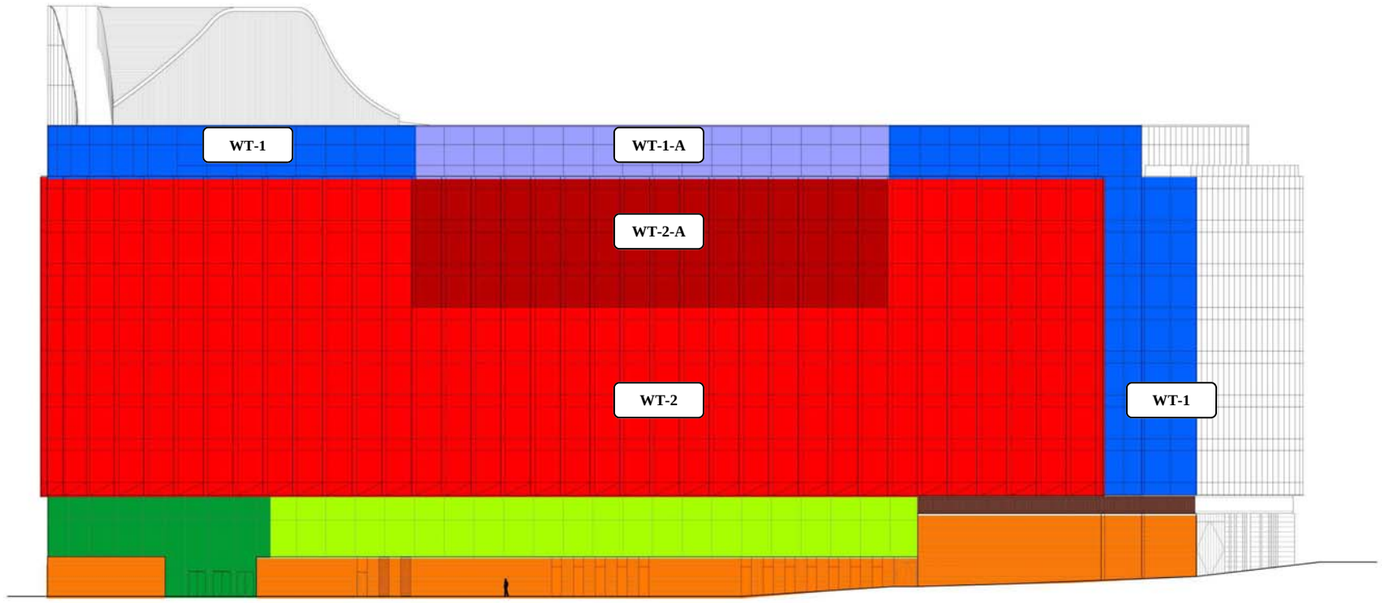


Stonecutter street elevation

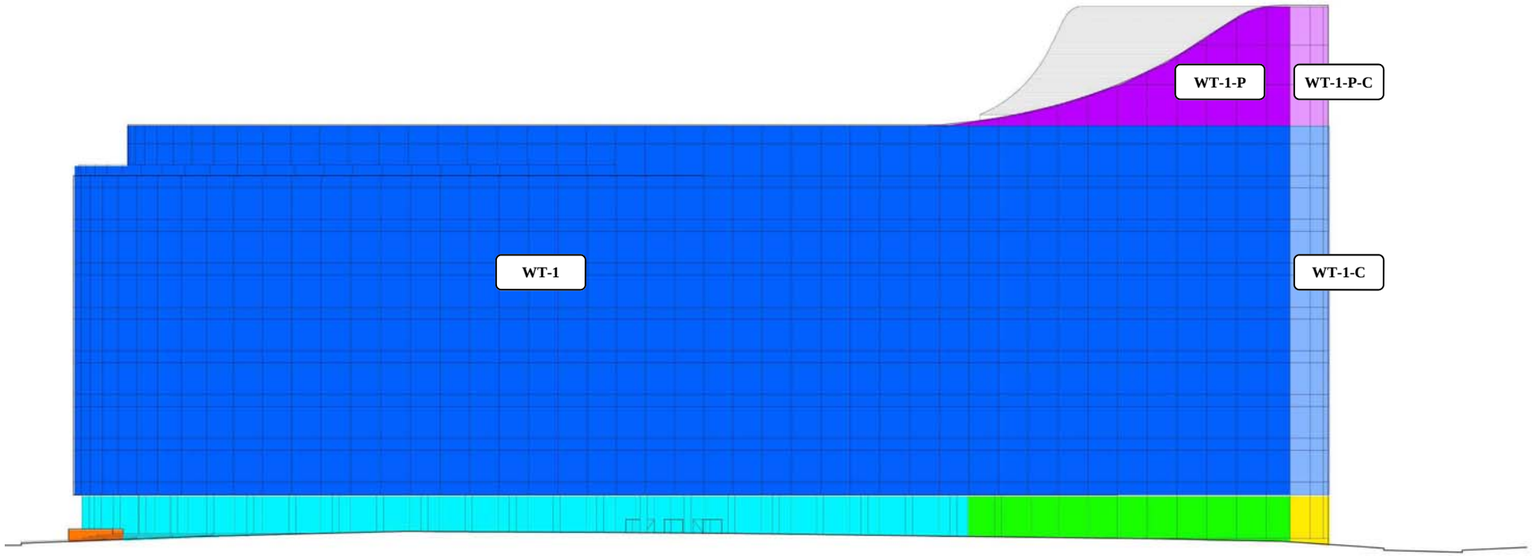
	WT-1:	Unitized curtainwall – Shoe lane wall
	WT-1-A:	Unitized curtainwall at atrium – Shoe lane wall
	WT-1-C:	Unitized curtainwall with curved glass – SW corner
	WT-1-P:	Unitized curtainwall at LAA Cooling tower enclosure – SW parapet
	WT-1-P-C:	Unitized curtainwall at LAA Cooling tower enclosure with curved glass – SW parapet
	WT-2:	Unitized curtainwall – Farringdon street wall
	WT-2-A:	Unitized curtainwall at atrium – Farringdon street wall

KPF upper level façade typology

Typology: Upper Facades

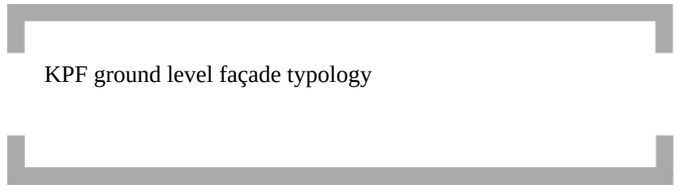


Farringdon street elevation



Shoe Lane elevation

WT-1:	Unitized curtainwall – Shoe lane wall
WT-1-A:	Unitized curtainwall at atrium – Shoe lane wall
WT-1-C:	Unitized curtainwall with curved glass – SW corner
WT-1-P:	Unitized curtainwall at LAA Cooling tower enclosure – SW parapet
WT-1-P-C:	Unitized curtainwall at LAA Cooling tower enclosure with curved glass – SW parapet
WT-2:	Unitized curtainwall – Farringdon street wall
WT-2-A:	Unitized curtainwall at atrium – Farringdon street wall



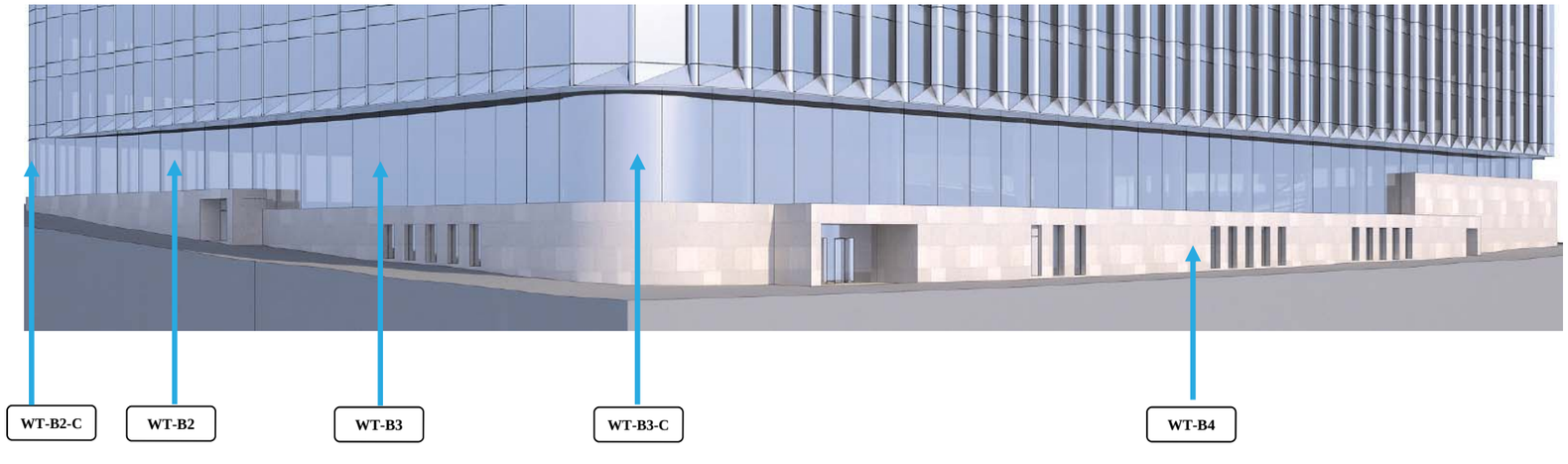
KPF ground level façade typology

Typology

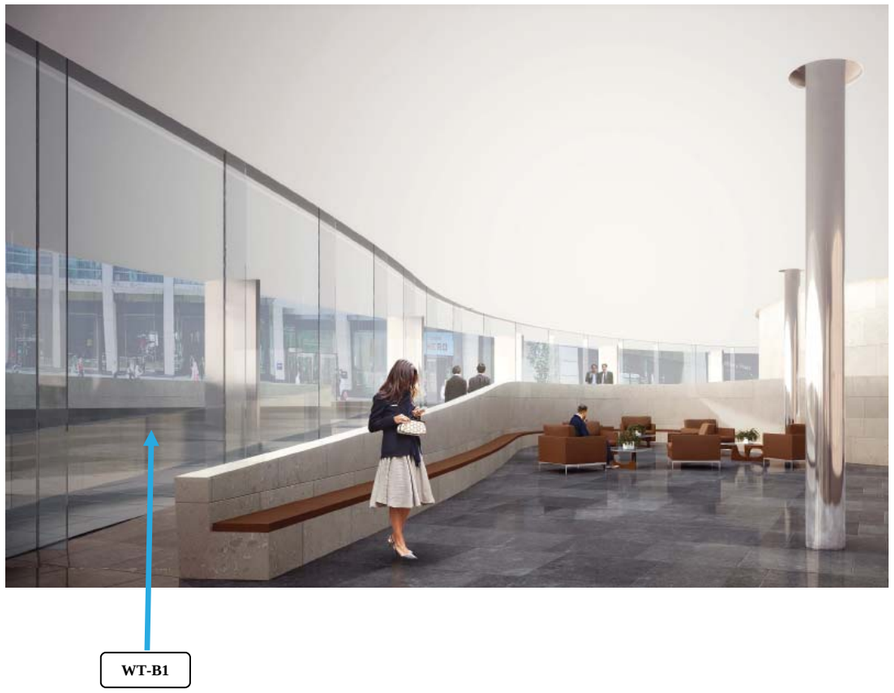
This sketchbook provides a summary of the components, details, and design topics concerning the base of building façade types for the London Development.

The base of building façade types are considered with a general typology as indicated on this page.

Stonecutter Street and Farringdon Street base of building elevations



Shoe Lane lobby entrance wall



WT-B1:	Storefront with glass fin - lobby entrance wall
WT-B2:	Storefront with metal mullion - lobby retail wall
WT-B2-C:	Storefront with curved glass and metal mullion – SW corner
WT-B3:	Storefront with double/triple height glass with metal mullion/additional struc. support – double/triple height wall
WT-B3-C:	Storefront with double/triple height curved glass with metal mullion/additional struc. support – double/triple height wall
WT-B4:	Stone wall with punched window wall

Base of building façade typology

ARUP

Matrix: Main facades

The London Development (225157-00)

Main Facades: Stage D
Draft Stage D Issue | 23 May 2013 |

ARUP

Major Group Minor Group System Number	From level 01 to level 08 Unitized curtainwall vision and spandrel WT-1	level 08 Unitized curtainwall vision and spandrel atrium WT-1-A	From level 01 to level 08 Unitized curtainwall vision and spandrel curved glass WT-1-C	Roof Unitized curtainwall vision SW parapet WT-1-P	Roof Unitized curtainwall vision SW parapet curved glass WT-1-P-C	From level 01 to level 07 Unitized curtainwall WT-2	From level 05 to level 07 Unitized curtainwall atrium WT-2-A
General description	This wall type covers the larger part of the building from level 01 to level 08. It occurs at the Plumtree Court elevation, and extends to the Shoe Lane elevation. On the Stonecutter Street and Farringdon street is present for a small portion. Unitised curtain walling vision area - double laminated glazed 4-side SSG bonded. Spandrel area - double glazed. 4-side SSG bonded. Flush anodised aluminium nib to horizontal stack joint and intermediate transom. Glass-to-glass joint in the vertical joints.	This wall type covers an limited area on the level 08. Unitised curtain walling vision area - double laminated glazed 4-side SSG bonded. Spandrel area - double glazed. 4-side SSG bonded. Flush anodised aluminium nib to horizontal stack joint and intermediate transom. Glass-to-glass joint in the vertical joints.	This façade, as WT-1 but incorporating curved glass, covers a small part of the building from level 01 to level 08, at the corner between Shoe Lane and Stonecutter Street. Unitised curtain walling vision area - double laminated glazed 4-side SSGT bonded. Spandrel area - double glazed. 4-side SSGT bonded. Flush anodised aluminium nib to horizontal stack joint and intermediate transom. Glass-to-glass joint in the vertical joints.	This parapet façade covers the LAA Cooling tower on the roof level, on the Stonecutter Street and Shoe Lane Street. Unitised curtain walling vision area - double glazed 4-side SSGT bonded. Flush anodised aluminium nib to horizontal stack joint. Glass-to-glass joint in the vertical joints.	This parapet façade, as WT-1-P but incorporating curved glass, covers the LAA Cooling tower on the roof level, at the corner between Shoe Lane and Stonecutter Street. Unitised curtain walling vision area - double glazed 4-side SSGT bonded. Flush anodised aluminium nib to horizontal stack joint. Glass-to-glass joint in the vertical joints.	This wall type covers the larger part of the building from level 01 to level 07. It occurs at the Farringdon Street elevation and Stonecutter Street elevation. The Unitised curtain-walling facade WT-2 presents two typologies of panels: 1. glass panel: vision/spandrel; vision area - double laminated glazed 4-side SSGT bonded. Spandrel area - double glazed. 4-side SSGT bonded. Flush anodised aluminium nib to horizontal stack joint and intermediate transom. 2. opaque reinforced insulated panel in stainless steel	The Atria facade based upon WT-2. The same façade system is considered with flexibility for the Atria zone to be in either "atria filled" or "atria not filled" modes.
Cladding geometry	Typical units are 3m wide and up to 4.41m tall. All units are vertical and rectilinear. As the building is curved in plan, the angle between panels varies.	Typical units are 3m wide and up to 4.41m tall. All units are vertical and rectilinear. As the building is curved in plan, the angle between panels varies.	These curved units are 2.38 m wide and up to 4.41m tall. All units are vertical and rectilinear. Curved units are curved in one direction only.	Typical units are 3m wide and up to 4m tall. Units are vertical and rectilinear but some of these have a different shape and height, modelling on the curve of parapet. As the building is curved in plan, the angle between panels varies from 0 to xx degrees.	Curved units are 2.38m wide and 4m tall. Units are vertical and rectilinear Curved units are curved in one direction only.	1. glass panel: 2.525 m wide and up to 4.41m tall. 2. opaque 0.425 m wide and up to 4.41m tall. The façade has a "saw tooth" stepped geometry in plan.	1. glass panel: 2.525 m wide and up to 4.41m tall. 2. opaque 0.425 m wide and up to 4.41m tall. The façade has a "saw tooth" stepped geometry in plan.
Framing	Aluminium framing with steel bar reinforced inside. Flush anodised aluminium nib to horizontal stack joint and intermediate transom.	Aluminium framing with steel bar reinforced inside. Flush anodised aluminium nib to horizontal stack joint and intermediate transom.	Aluminium framing with steel bar reinforced inside. Flush anodised aluminium nib to horizontal stack joint and intermediate transom.	Aluminium framing with steel bar reinforced inside. Flush anodised aluminium nib to horizontal stack joint and intermediate transom.	Aluminium framing with steel bar reinforced inside. Flush anodised aluminium nib to horizontal stack joint and intermediate transom.	1. glass panel: Aluminium framing with steel bar reinforced inside. Flush anodised aluminium nib to horizontal stack joint and intermediate transom. 2. opaque: Aluminium framing with steel bar reinforced inside.	1. glass panel: Aluminium framing with steel bar reinforced inside. Flush anodised aluminium nib to horizontal stack joint and intermediate transom. 2. opaque: Aluminium framing with steel bar reinforced inside.
Secondary structure, brackets and fixings	Deadload and restraint brackets with tolerance adjustment about 3 axis	Deadload and restraint brackets with tolerance adjustment about 3 axis	Deadload and restraint brackets with tolerance adjustment about 3 axis	Deadload and restraint brackets with tolerance adjustment about 3 axis	Deadload and restraint brackets with tolerance adjustment about 3 axis	Deadload and restraint brackets with tolerance adjustment about 3 axis	Deadload and restraint brackets with tolerance adjustment about 3 axis
Accommodation of movement	Panels are hung from the floor above with inter-storey movements to be accommodated at stack joint between panels. Primary structural grid ~9m. Mid-span defelction 10mm, differential settlement/vertical movement of primary structural columns XXmm on ~9m grid. To be confirmed with WSP.	Panels are hung from the floor above with inter-storey movements to be accommodated at stack joint between panels. Primary structural grid ~9m. Mid-span defelction 15mm, differential settlement/vertical movement of primary structural columns XXmm on ~9m grid. To be confirmed with WSP.	Panels are hung from the floor above with inter-storey movements to be accommodated at stack joint between panels. Primary structural grid ~9m. Mid-span defelction 10mm, differential settlement/vertical movement of primary structural columns XXmm on ~9m grid. To be confirmed with WSP.	Panels are hung from a free standing steel structure at roof level with deadload and restraint brackets integrated in response to panel module size. Typical panes are 3m and 3.8m tall. The height of the upper most panel varies in response to curved geometry (curved on elevation). Primary structural grid of freestanding steel structure ~9m. Mid-span defelction XXmm, differential settlement/vertical movement of primary structural columns XXmm. To be confirmed with WSP.	Panels are hung from a free standing steel structure at roof level with deadload and restraint brackets integrated in response to panel module size. Typical panes are 3m and 3.8m tall. The height of the upper panel varies in response to curved geometry (curved on elevation). Primary structural grid of freestanding steel structure ~9m. Mid-span defelction XXmm, differential settlement/vertical movement of primary structural columns XXmm. To be confirmed with WSP.	Panels are hung from the floor above. Primary structure cantilevered from typical structural grid ~9m. Perimeter primary structure incorporates columns at ~3m centres. Differential settlement/vertical movement of primary structural columns XXmm on ~3m grid. To be confirmed with WSP.	Panels are hung on a "floor by floor" basis from primary struture at the perimeter of the Atria. Movements and deflections of the primary structure To be confirmed with WSP.
Glass restraint	Glass to be structural silicone bonded on 4 sides. Dead load of glazing to be supported by setting blocks on lower transom	Glass to be structural silicone bonded on 4 sides. Dead load of glazing to be supported by setting blocks on lower transom	Glass to be structural silicone bonded on 4 sides. Dead load of glazing to be supported by setting blocks on lower transom	Glass to be structural silicone bonded on 4 sides. Dead load of glazing to be supported by setting blocks on lower transom	Glass to be structural silicone bonded on 4 sides. Dead load of glazing to be supported by setting blocks on lower transom	Glass to be structural silicone bonded on 4 sides. Dead load of glazing to be supported by setting blocks on lower transom	Glass to be structural silicone bonded on 4 sides. Dead load of glazing to be supported by setting blocks on lower transom

Major Group Minor Group System Number	From level 01 to level 08 Unitized curtainwall vision and spandrel WT-1	level 08 Unitized curtainwall vision and spandrel atrium WT-1-A	From level 01 to level 08 Unitized curtainwall vision and spandrel curved glass WT-1-C	Roof Unitized curtainwall vision SW parapet WT-1-P	Roof Unitized curtainwall vision SW parapet curved glass WT-1-P-C	From level 01 to level 07 Unitized curtainwall WT-2	From level 05 to level 07 Unitized curtainwall atrium WT-2-A
Protective hardening (blast) enhancement	Dynamic finite element analysis being undertaken to verfiy performance. The base design includes: - interlocking catenary clips between panels. - 0.76pvb interlayers to the inner glass lites. - mild steel stiffener plates and profiles within the aluminium extrustions & opaque/opacified cladding zones.	To be confirmed	To be confirmed	To be confirmed	To be confirmed	Dynamic finite element analysis being undertaken to verfiy performance. The base design includes: - interlocking catenary clips between panels. - 0.76pvb interlayers to the inner glass lites. - mild steel stiffener plates and profiles within the aluminium extrustions & opaque/opacified cladding zones.	To be confirmed
Security requirements and intrusion resistance	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Glazing - Vision	The maximum panel size is 3m wide by 3.2m tall. Double glazed unit, monolithic outer & laminated inner pane. WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.	The maximum panel size is 3m wide by 3.2m tall. Double glazed unit, monolithic outer & laminated inner pane. WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.	The maximum panel size is 3m wide by 3.2m tall. Double glazed unit, monolithic outer & laminated inner pane. WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual match (to flat vision glazing) of bendable solar control coatings to be reviewed and confirmed with KPF.	The maximum panel size is 3m wide by 4m tall. To be confirmed.	The maximum panel size is 3m wide by 4m tall. To be confirmed.	The maximum panel size is 2.525 m wide and up to3.2m tall. Double glazed unit, monolithic outer & laminated inner pane. WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.	The maximum panel size is 2.525 m wide and up to3.2m tall. Double glazed unit, monolithic outer & laminated inner pane. WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.
Glazing - Spandrel	Double glazed unit, monolithic inner and outer pane, pressure equalised cavity, PPC aluminium "shadow box" sheet, insulation, continuous backing panel providing vapour control line.	Double glazed unit, monolithic inner and outer pane, pressure equalised cavity, PPC aluminium "shadow box" sheet, insulation, continuous backing panel providing vapour control line.	Double glazed unit, monolithic inner and outer pane, pressure equalised cavity, PPC aluminium "shadow box" sheet, insulation, continuous backing panel providing vapour control line.	Not required	Not required	Double glazed unit, monolithic inner and outer pane, pressure equalised cavity, PPC aluminium "shadow box" sheet, insulation, continuous backing panel providing vapour control line.	As WT-2 with polyester powder coated backing panel to provide visual aesthetic during "atria not filled mode".
Glazing - Guardrails	This cladding type includes a laminated glass balustrade at terrace level. The balustrade shall be 1.1m from finish floor level. Any balustrade will require a top rail.	This cladding type includes a cantilevered laminated glass balustrade at terrace level. The balustrade shall be 1.1m from finish floor level. Any balustrade will require a top rail.	This cladding type includes a cantilevered laminated glass balustrade at terrace level. The balustrade shall be 1.1m from finish floor level. Any balustrade will require a top rail.	Not required	Not required	A terrace incorporating a glazed balustrade exists at level 08	A terrace incorporating a glazed balustrade exists at level 08
Fritting requirements	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Doors and operable lights	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Balconies and terraces	A terrace incorporating a glazed balustrade exists at level 08	A terrace incorporating a glazed balustrade exists at level 08	A terrace incorporating a glazed balustrade exists at level 08	Not required	Not required	A terrace incorporating a glazed balustrade exists at level 08	A terrace incorporating a glazed balustrade exists at level 08
Soffits	Not required	Not required	Not required	Not required	Not required	Not required	Not required
Aluminium profiles grades and finishes	All aluminium extrusions shall be grade 6063-T6 or better. The finish for the aluminium mullion and transoms will be polyester powder coated, RAL colour to be confirmed.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for the aluminium mullion and transoms will be polyester powder coated, RAL colour to be confirmed.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for the aluminium mullion and transoms will be polyester powder coated, RAL colour to be confirmed.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for the aluminium mullion and transoms will be polyester powder coated, RAL colour to be confirmed.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for the aluminium mullion and transoms will be polyester powder coated, RAL colour to be confirmed.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for the aluminium mullion and transoms will be polyester powder coated, RAL colour to be confirmed.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for the aluminium mullion and transoms will be polyester powder coated, RAL colour to be confirmed.

Major Group Minor Group System Number	From level 01 to level 08 Unitized curtainwall vision and spandrel WT-1	level 08 Unitized curtainwall vision and spandrel atrium WT-1-A	From level 01 to level 08 Unitized curtainwall vision and spandrel curved glass WT-1-C	Roof Unitized curtainwall vision SW parapet WT-1-P	Roof Unitized curtainwall vision SW parapet curved glass WT-1-P-C	From level 01 to level 07 Unitized curtainwall WT-2	From level 05 to level 07 Unitized curtainwall atrium WT-2-A
Steel grades and finishes	Stiffener profiles grade S355	Stiffener profiles grade S355	Stiffener profiles grade S355	Stiffener profiles grade S355	Stiffener profiles grade S355	All stainless steel components shall be grade 1.4401 (AISI grade 316). Stiffener profiles grade S355	All stainless steel components shall be grade 1.4401 (AISI grade 316). Stiffener profiles grade S355
Stone elements and finishes	Not required	Not required	Not required	Not required	Not required	Not required	Not required
Insulation	External insulation at spandrel panel	External insulation at spandrel panel	External insulation at spandrel panel	Not required	Not required	External insulation at spandrel panel and stainless steel panel	External insulation at spandrel panel and stainless steel panel
Cappings, flashings and trims	Includes minimum 3mm coping and external aluminium cladding at top level.	Includes minimum 3mm coping and external aluminium cladding at top level.	Includes minimum 3mm coping and external aluminium cladding at top level.	Includes minimum 3mm coping and external aluminium cladding at top level.	Includes minimum 3mm coping and external aluminium cladding at top level.	Includes minimum 3mm external stainless steel cladding.	Includes minimum 3mm external stainless steel cladding.
Gutters and drainage	Exterior drainage channels and downpipes will be required on the terraces and roof. To be coordinated with the building environmental engineer.	Exterior drainage channels and downpipes will be required on the terraces and roof. To be coordinated with the building environmental engineer.	Exterior drainage channels and downpipes will be required on the terraces and roof. To be coordinated with the building environmental engineer.	Exterior drainage channels and downpipes will be required on the terraces and roof. To be coordinated with the building environmental engineer.	Exterior drainage channels and downpipes will be required on the terraces and roof. To be coordinated with the building environmental engineer.	Exterior drainage channels and downpipes will be required on the terraces and roof. To be coordinated with the building environmental engineer.	Not required
Fire/Smoke seals	Mechanically fixed fire and smoke seals to be provided between slab and façade system.	Mechanically fixed fire and smoke seals to be provided between slab and façade system.	Mechanically fixed fire and smoke seals to be provided between slab and façade system.	To be confirmed	To be confirmed	Mechanically fixed fire and smoke seals to be provided between slab and façade system.	Mechanically fixed fire and smoke seals to be provided between slab and façade system during "Atria filled" mode. Requirements during "Atria not filled" mode to be confirmed.
Smoke Vents	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Thermal performance (U-value)	WSP proposed weighted average 1.3W/sqmK	WSP proposed weighted average 1.3W/sqmK	WSP proposed weighted average 1.3W/sqmK	Not applicable	Not applicable	WSP proposed weighted average 1.3W/sqmK	WSP proposed weighted average 1.3W/sqmK
Solar performance (g-value)	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	Not required
Acoustic performance	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Interior shading	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Penetrations	No significant penetrations are envisaged in this cladding type	No significant penetrations are envisaged in this cladding type	No significant penetrations are envisaged in this cladding type	No significant penetrations are envisaged in this cladding type	No significant penetrations are envisaged in this cladding type	No significant penetrations are envisaged in this cladding type	No significant penetrations are envisaged in this cladding type
Lighting, signage, cctv integration	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Access for maintenance and cleaning	Outside: Access for cleaning, inspection, maintenance, and replacement will be carried out from BMU and GRU mounted at roof level. Inside: Cleaning will be done from office space.	Outside: Access for cleaning, inspection, maintenance, and replacement will be carried out from BMU and GRU mounted at roof level. Inside: Cleaning will be done from office space.	Outside: Access for cleaning, inspection, maintenance, and replacement will be carried out from BMU and GRU mounted at roof level. Inside: Cleaning will be done from office space.	To be confirmed	To be confirmed	Outside: Access for cleaning, inspection, maintenance, and replacement will be carried out from BMU and GRU mounted at roof level. Inside: Cleaning will be done from office space.	Outside: Access for cleaning, inspection, maintenance, and replacement will be carried out from BMU and GRU mounted at roof level. Inside: Cleaning will be done from office space during "Atria filled" mode. To be confirmed during "Atria not filled" mode.
Pigeon and vermin deterrents	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed

Major Group **Minor Group** **System Number**	**From level 01 to level 08** **Unitized curtainwall vision and spandrel** **WT-1**	**level 08** **Unitized curtainwall vision and spandrel** **atrium** **WT-1-A**	**From level 01 to level 08** **Unitized curtainwall vision and spandrel** **curved glass** **WT-1-C**	**Roof** **Unitized curtainwall vision** **SW parapet** **WT-1-P**	**Roof** **Unitized curtainwall vision** **SW parapet curved glass** **WT-1-P-C**	**From level 01 to level 07** **Unitized curtainwall** **WT-2**	**From level 05 to level 07** **Unitized curtainwall** **atrium** **WT-2-A**
Cladding system interfaces	WT-1-A WT-1-C WT-1-P WT-B1 WT-B2 WT-B5 WT-2	WT-1 WT-2-A	WT-1 WT-1-P-C	WT-1 WT-1-P-C	WT-1-P WT-1-C	WT-1 WT-B2 WT-B3 WT-2-A WT-B3-C WT-B5	WT-2 WT-1-A
M&E interfaces	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed

Matrix: Base of building facades

The London Development (225157-00)

Main Facades: Stage D
Draft Stage D Issue | 23 May 2013 |

ARUP

Major Group Minor Group System Number	Ground Floor Storefront Glass Fin WT-B1	Ground Floor Storefront Metal Mullion WT-B2	Ground Floor Storefront Metal Mullion WT-B2-C	Ground Floor Storefront Double Height WT-B3	Ground Floor Storefront Double Height WT-B3-C	Ground Floor Stone Wall Punched Windows WT-B4
General description	This wall type covers the storefront facade at the lobby entrance.	This wall type covers the storefront façade areas.	As WT-B2, but incorporating curved glass.	This wall type covers the double height storefront façade areas.	As WT-B3, but incorporating curved glass.	This wall type covers the stone wall cladding with punched recessed full height glazing.
Cladding geometry	Typical units are 3m wide and up to 5.18m tall. All units are vertical and rectilinear. As the building is curved in plan, the angle between panels varies.	Typical units are 3m wide by Xm tall. The All units are vertical and rectilinear. As the building is curved in plan, the angle between panels varies from 0 to xx degrees.	Typical units are 3m wide by Xm tall. All units are vertical and rectilinear. Curved units are curved on a set radius of xxm in one direction only.	Typical units are 3m wide by Xm tall. All units are vertical and rectilinear. As the building is curved in plan, the angle between panels varies from 0 to xx degrees.	Maximum units are 3m wide by Xm tall. All units are vertical and rectilinear. Curved units are curved on a set radius of xxm in one direction only.	Stone panels are small format modules, set as a running bond. Vision units are full height with a glazed shadow box detail above ceiling level.
Framing	Glass Fin + Aluminium extruded stick system with stainless steel cover trims. The overall depth of the framing + the glass fin ~470mm. .	Stainless steel clad aluminium stick system. Steel Re-enforcement within profile and stainless steel cover trims. Depth of framing with consideration for service loads is ~Xmm.	Stainless steel clad aluminium stick system. Steel Re-enforcement within profile and stainless steel cover trims. Depth of framing with consideration for service loads is ~Xmm.	Stainless steel clad aluminium stick system. Steel Re-enforcement within profile and stainless steel cover trims. Depth of framing with consideration for service loads is ~Xmm.	Stainless steel stick system, with aluminium/stainless steel glazing adaptors. Depth of framing with consideration for service loads is ~Xmm.	Stainless steel clad stick system. Framing for the stone panels will likely be a metal frame system with exterior insulation and bracketry for the stone rainscreen.
Secondary structure, brackets and fixings	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Accommodation of movement	Vertical movement accomodated at head of facde system. Movements to be confirmed with the structural engineer.	Vertical movement accomodated at head of facde system. Movements to be confirmed with the structural engineer.	Vertical movement accomodated at head of facde system. Movements to be confirmed with the structural engineer.	Vertical movement accomodated at head of facde system. Movements to be confirmed with the structural engineer.	Vertical movement accomodated at head of facde system. Movements to be confirmed with the structural engineer.	Long spans floor to floor, and the complexity of panel returns may require special accommodation of structural movements. Movements to be confirmed with the structural engineer.
Glass restraint	Four side structural sealant glazing. Structural silicone will be applied to an adapter channel to the glass fins.	Four side structural sealant glazing with aluminium carrier frame.	Four side structural sealant glazing with aluminium carrier frame.	Four side structural sealant glazing with aluminium carrier frame.	Four side structural sealant glazing with aluminium carrier frame.	Four side structural sealant glazing with aluminium carrier frame.
Protective hardening (blast) enhancement	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed

Major Group Minor Group System Number	Ground Floor Storefront Glass Fin WT-B1	Ground Floor Storefront Metal Mullion WT-B2	Ground Floor Storefront Metal Mullion WT-B2-C	Ground Floor Storefront Double Height WT-B3	Ground Floor Storefront Double Height WT-B3-C	Ground Floor Stone Wall Punched Windows WT-B4
Security requirements and intrusion resistance	SR2 or SR3 or SR4 to be confirmed which provides confirmation of test tools and test duration. A complete definition of intruder resistance for glazing units may also require a 3 digit classification which is to be confirmed by the security consultant.	SR2 or SR3 or SR4 to be confirmed which provides confirmation of test tools and test duration. A complete definition of intruder resistance for glazing units may also require a 3 digit classification which is to be confirmed by the security consultant.	SR2 or SR3 or SR4 to be confirmed which provides confirmation of test tools and test duration. A complete definition of intruder resistance for glazing units may also require a 3 digit classification which is to be confirmed by the security consultant.	SR2 or SR3 or SR4 to be confirmed which provides confirmation of test tools and test duration. A complete definition of intruder resistance for glazing units may also require a 3 digit classification which is to be confirmed by the security consultant.	SR2 or SR3 or SR4 to be confirmed which provides confirmation of test tools and test duration. A complete definition of intruder resistance for glazing units may also require a 3 digit classification which is to be confirmed by the security consultant.	SR2 or SR3 or SR4 to be confirmed which provides confirmation of test tools and test duration. A complete definition of intruder resistance for glazing units may also require a 3 digit classification which is to be confirmed by the security consultant.
Glazing - Vision	This cladding type includes full height fixed lights. The maximum panel size is 3m wide by 5.18m tall. Glazing is low iron laminated exterior and interior lights. Solar control and low emissivity coatings to be confirmed.	This cladding type includes full height fixed lights. The maximum panel size is 3m wide by Xm tall. Glazing is low iron laminated exterior and interior lights. Solar control and low emissivity coatings to be confirmed.	This cladding type includes full height fixed lights. The maximum panel size is 3m wide by Xm tall. Glazing is low iron laminated exterior and interior lights. Solar control and low emissivity coatings to be confirmed.	This cladding type includes full height fixed lights. The maximum panel size is 3m wide by Xm tall. Glazing is low iron laminated exterior and interior lights. Solar control and low emissivity coatings to be confirmed.	This cladding type includes full height fixed lights. The maximum panel size is 3m wide by Xm tall. Glazing is low iron laminated exterior and interior lights. Solar control and low emissivity coatings to be confirmed.	This cladding type includes inset full height (to ceiling level) fixed lights. Glazing is low iron laminated exterior and interior lights. Solar control and low emissivity coatings to be confirmed.
Glazing - Spandrel	Not required	Not required	Not required	Not required	Not required	Glazed Shadow box above ceiling level.
Glazing - Guardrails	Not required	Not required	Not required	Not required	Not required	To be confirmed.
Glass laminate interlayers	Standard polyvinyl buteral or SGP interlayers are assumed, and the required laminates will likely be determined by blast enhancement requirements.	Standard polyvinyl buteral or SGP interlayers are assumed, and the required laminates will likely be determined by blast enhancement requirements.	Standard polyvinyl buteral or SGP interlayers are assumed, and the required laminates will likely be determined by blast enhancement requirements.	Standard polyvinyl buteral or SGP interlayers are assumed, and the required laminates will likely be determined by blast enhancement requirements.	Standard polyvinyl buteral or SGP interlayers are assumed, and the required laminates will likely be determined by blast enhancement requirements.	Standard polyvinyl buteral or SGP interlayers are assumed, and the required laminates will likely be determined by blast enhancement requirements.
Fritting & Manifestation requirements	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed

Major Group Minor Group System Number	Ground Floor Storefront Glass Fin WT-B1	Ground Floor Storefront Metal Mullion WT-B2	Ground Floor Storefront Metal Mullion WT-B2-C	Ground Floor Storefront Double Height WT-B3	Ground Floor Storefront Double Height WT-B3-C	Ground Floor Stone Wall Punched Windows WT-B4
Doors and operable lights	This cladding type includes the following doorways: 3 No. glazed revolving doors. Revolving door glazing will be single glazed laminated glass. 3 No. glass swing doors.	Not required	Not required	Not required	This cladding type includes the following doorways: 2 No. glazed revolving doors. Revolving door glazing will be single glazed laminated glass. Adjacent to the revolving door is 1 No. pair of glass swing doors.	This cladding type includes the following doorways: 1 No. loading bay entrance at ground level at the Plumtree Court elevation 1 No. service entrance at ground level at the Plumtree Court elevation 1 No. fire exit at ground level at the Plumtree Court elevation 1 No. fire exit at ground level at the Farringdon Street elevation 1 No. cycle entrance at ground level at the Plumtree Court elevation
Soffits	This façade incorporates a significant shaped curved soffit. Soffit materials and details to be confirmed	This façade incorporates a metal soffit. Soffit material and finish to be confirmed Insulation is currently shown boxing in the primary structure. It is necessary to keep all insulation outboard of the primary structure.	Not required	This façade incorporates a metal soffit. Soffit material and finish to be confirmed	This façade incorporates a metal soffit. Soffit material and finish to be confirmed	Returns are indicated at door heads.
Aluminium profiles grades and finishes	All aluminium extrusions shall be grade 6063-T6 or better. The finish for aluminium components will be mill finish, as all extrusions. The stainless steel finish of the cover trims, glass fin adaptor shoe and visible faces of the T-profile are to be confirmed by KPF.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for aluminium components will be mill finish, as all extrusions. The stainless steel finish of the cover trims, glass fin adaptor shoe and visible faces of the T-profile are to be confirmed by KPF.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for aluminium components will be mill finish, as all extrusions. The stainless steel finish of the cover trims, glass fin adaptor shoe and visible faces of the T-profile are to be confirmed by KPF.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for aluminium components will be mill finish, as all extrusions. The stainless steel finish of the cover trims, glass fin adaptor shoe and visible faces of the T-profile are to be confirmed by KPF.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for aluminium components will be mill finish, as all extrusions. The stainless steel finish of the cover trims, glass fin adaptor shoe and visible faces of the T-profile are to be confirmed by KPF.	All aluminium extrusions shall be grade 6063-T6 or better. The finish for aluminium components will be mill finish, as all extrusions. The stainless steel finish of the cover trims, glass fin adaptor shoe and visible faces of the T-profile are to be confirmed by KPF.
Steel grades and finishes	Not required	All stainless steel components shall be grade 1.4401 (AISI grade 316). The finish for stainless steel framing components is to be confirmed	All stainless steel components shall be grade 1.4401 (AISI grade 316). The finish for stainless steel framing components is to be confirmed	All stainless steel components shall be grade 1.4401 (AISI grade 316). The finish for stainless steel framing components is to be confirmed	All stainless steel components shall be grade 1.4401 (AISI grade 316). The finish for stainless steel framing components is to be confirmed	All stainless steel components shall be grade 1.4401 (AISI grade 316). The finish for stainless steel framing components is to be confirmed
Stone elements and finishes	Not required	Not required	Not required	Not required	Not required	Portland stone plates on a 1.5m wide by approximately .75m wide module shall be either hand set on site to a rainscreen subframe, or delivered in pre framed units.

Major Group Minor Group System Number	Ground Floor Storefront Glass Fin WT-B1	Ground Floor Storefront Metal Mullion WT-B2	Ground Floor Storefront Metal Mullion WT-B2-C	Ground Floor Storefront Double Height WT-B3	Ground Floor Storefront Double Height WT-B3-C	Ground Floor Stone Wall Punched Windows WT-B4
Insulation	Not required	The soffit will require a significant amount of insulation.	Not required	The soffit will require a significant amount of insulation.	The soffit will require a significant amount of insulation.	The stone cladding works as a rainscreen wall. Sufficient space must be allowed for insulation in the cavity in order to achieve the required thermal performance. Sufficient space must be allowed to insulate mullions at the return, as they will be running perpendicular to the face of stone cladding.
Cappings, flashings and trims	Flashing will be required between the soffit and the glazing, between the glazing and the door portal, and at ground level.	Flashing will be required between the soffit and the glazing, and at ground level.	To be confirmed	Flashing will be required between the soffit and the glazing, and at ground level.	Flashing will be required between the soffit and the glazing, and at ground level.	This façade type interfaces with a terrace at upper ground mezzanine level at both the Plumtree Court and Farringdon Street elevations, and will require a parapet detail at the top.
Gutters and drainage	A positive drainage slope away from the glazing is required. An exterior ground level gutter channel is preferable in order to protect the bottom edge of the glazing.	A positive drainage slope away from the glazing is required. An exterior ground level gutter channel is preferable in order to protect the bottom edge of the glazing.	A positive drainage slope away from the glazing is required. An exterior ground level gutter channel is preferable in order to protect the bottom edge of the glazing.	A positive drainage slope away from the glazing is required. An exterior ground level gutter channel is preferable in order to protect the bottom edge of the glazing.	A positive drainage slope away from the glazing is required. An exterior ground level gutter channel is preferable in order to protect the bottom edge of the glazing.	Provision of drainage channels and downpipes will be required either through the façade, or through the building; to be coordinated with the building environmental engineer. Exterior drainage channels will be required at the stone panel façade in order to prevent damage to the stone panels.
Fire/Smoke seals	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Smoke Vents	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
Thermal performance (U-value)	To be confirmed. WSP proposed overall weighted average for the project 1.3W/sqmK	To be confirmed. WSP proposed overall weighted average for the project 1.3W/sqmK	To be confirmed. WSP proposed overall weighted average for the project 1.3W/sqmK	To be confirmed. WSP proposed overall weighted average for the project 1.3W/sqmK	To be confirmed. WSP proposed overall weighted average for the project 1.3W/sqmK	To be confirmed. WSP proposed overall weighted average for the project 1.3W/sqmK
Solar performance (g-value)	WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.	WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.	WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.	WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.	WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.	WSP performance requirements to be confirmed, G-value 0.28, LT 50%. Low iron to be confirmed. Visual appearance to be confirmed with KPF and samples.
Acoustic performance	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	Areas surrounding the loading bay may require additional acoustic isolation against flanking noise. To be confirmed
Interior shading	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed

Major Group Minor Group System Number	Ground Floor Storefront Glass Fin WT-B1	Ground Floor Storefront Metal Mullion WT-B2	Ground Floor Storefront Metal Mullion WT-B2-C	Ground Floor Storefront Double Height WT-B3	Ground Floor Storefront Double Height WT-B3-C	Ground Floor Stone Wall Punched Windows WT-B4
Penetrations	A significant structural penetration is shown at soffit level. It is imperative to insulate the soffit in order to prevent thermal bridging.	A significant structural penetration is shown at soffit level. It is imperative to insulate the soffit in order to prevent thermal bridging.	No significant penetrations are envisaged in this cladding type	A significant structural penetration is shown at soffit level. It is imperative to insulate the soffit in order to prevent thermal bridging.	A significant structural penetration is shown at soffit level. It is imperative to insulate the soffit in order to prevent thermal bridging.	To be confirmed
Lighting, signage, cctv integration	Façade lighting will likely be required in this location as well as provision for cctv cameras. It is desirable to coordinate these components early in the design process.	Façade lighting will likely be required in this location as well as provision for cctv cameras. It is desirable to coordinate these components early in the design process.	Façade lighting may be required in this location. It is desirable to coordinate these components early in the design process.	Façade lighting may be required in this location. It is desirable to coordinate these components early in the design process.	Façade lighting may be required in this location. It is desirable to coordinate these components early in the design process.	Façade lighting will likely be required in this location as well as provision for cctv cameras. It is desirable to coordinate these components early in the design process.
Access for maintenance and cleaning	Access for cleaning, inspection, maintenance, and replacement will be from the ground. All additional equipment, including MEWPS will be brought to site. It is imperative to confirm that the exterior slab has sufficient capacity to accommodate any equipment required for these operations.	Access for cleaning, inspection, maintenance, and replacement will be from the ground. All additional equipment, including MEWPS will be brought to site. It is imperative to confirm that the exterior slab has sufficient capacity to accommodate any equipment required for these operations.	Access for cleaning, inspection, maintenance, and replacement will be from the ground. All additional equipment, including MEWPS will be brought to site. It is imperative to confirm that the exterior slab has sufficient capacity to accommodate any equipment required for these operations.	Access for cleaning, inspection, maintenance, and replacement will be from the ground. All additional equipment, including MEWPS will be brought to site. It is imperative to confirm that the exterior slab has sufficient capacity to accommodate any equipment required for these operations.	Access for cleaning, inspection, maintenance, and replacement will be from the ground. All additional equipment, including MEWPS will be brought to site. It is imperative to confirm that the exterior slab has sufficient capacity to accommodate any equipment required for these operations.	Access for cleaning, inspection, maintenance, and replacement will be from the ground. All additional equipment, including MEWPS will be brought to site. It is imperative to confirm that the exterior slab has sufficient capacity to accommodate any equipment required for these operations.
Flood risk measures	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Flood prevention measures required to Stonecutter Street and Farringdon Street up to a level of +8.00AOD. Provide for prevention of water penetration (aside from minor leakage) at all access and non-access points. Concrete substrate to solid portion of wall to be design and weatherseald for hydostatic loads. Stone cladding in front of glazed windows to incorporate independent barrier gate channels/receptors, the temporary barriers/gates are installed when required. The Farringdon Entrance will incorporate a similar independent barrier/gate system which is also integrated into the street scape.
Pigeon and vermin deterrents	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed

Major Group Minor Group System Number	Ground Floor Storefront Glass Fin WT-B1	Ground Floor Storefront Metal Mullion WT-B2	Ground Floor Storefront Metal Mullion WT-B2-C	Ground Floor Storefront Double Height WT-B3	Ground Floor Storefront Double Height WT-B3-C	Ground Floor Stone Wall Punched Windows WT-B4
Cladding system interfaces	Ground WT-B2 WT-1	Ground WT-B1 WT-B2C WT-B4 WT-1 WT-2	Ground WT-B1 WT-B2 WT-B4 WT-1 WT-2	WT-B3-C WT-B2-C WT-B4 WT-2	WT-B3 WT-B2-C WT-B4 WT-2	Ground WT-B2 WT-B2-C WT-B3-C
M&E interfaces	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed

16. APPENDICES

O. Resilience Matrix

		SINGLE POINT FAILURE					
	Scenario →	1	2	3	4	5	
SYSTEMS	DESIGN	Single HV mains failure	Dual HV mains failure	Mains water failure	Gas failure	Single sewer blockage	NOTE(S)
Electrical							
- Incoming mains	2N	N		2N	2N	2N	
Transformers	N+1	N+1	N+1	N+1	N+1	N+1	
- Distribution	N	N	N	N	N	N	
Water							
- Incoming service	2N	2N	N	-	2N	N	
- Cooling tower storage	145 m3	∞	∞	8.2 hrs	∞	∞	3
- Potable water storage	160 m3	∞	∞	24 hrs	∞	∞	2,3
- Pumps	N+1	N+1	N+1	N+1	N+1	N+1	
Natural Gas							
- Incoming service	N	N	N	N	-	N	4,5
Drainage							
- Sewer connections	2N	2(N/2)	2(N/2)	2(N/2)	2(N/2)	N/2	6
Cooling							
- Chillers	N	N	N	N	N	N	
- Pumps	N+1	N+1	N+1	N+1	N+1	N+1	
- Distribution	N	N	N	N	N	N	
Condenser Circuits							
- Towers	N+1	N+1	N+1	N+1	N+1	N+1	
- Pumps	N+1	N+1	N+1	N+1	N+1	N+1	
- Distribution	N	N	N	N	N	N	
Heating							
- Boilers	N+1	N+1	N+1	N+1		N+1	
- Pumps	N+1	N+1	N+1	N+1	N+1	N+1	
- Distribution	N	N	N	N	N	N	
Fresh Air							
- Intake shaft	N	N	N	N	N	N	
- AHU	N	N	N	N	N	N	
- EFU	N	N	N	N	N	N	

Notes:

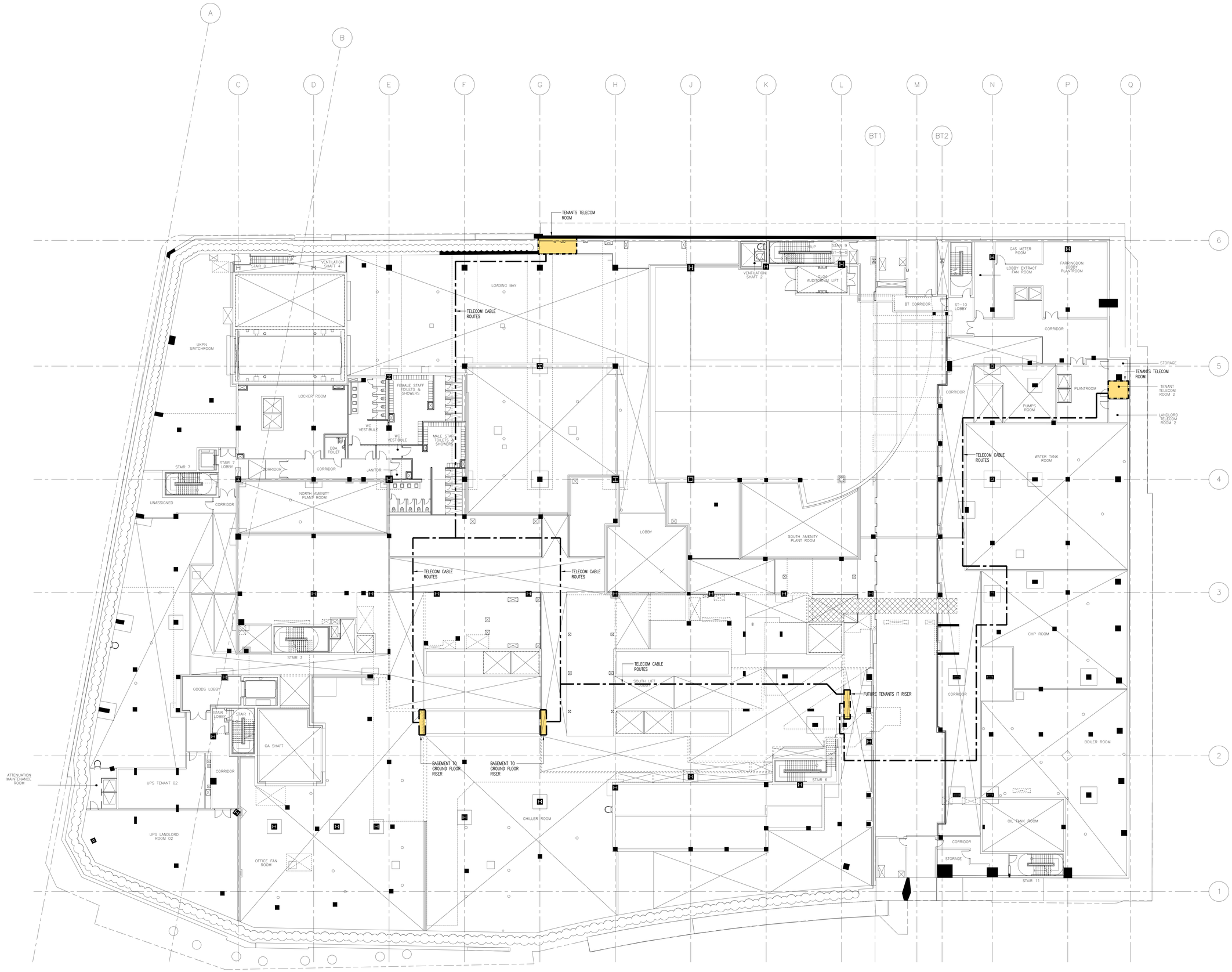
1. Storage tank sized for GS peak heat rejection of 8.0 MW at 3 cycles of concentration
2. Storage tank sized at BCO usage rates for catering and showers to support 6,488 people (39 hours available for 4,000 people)
3. Provisions to refill water tanks from an external point; requires 10 x 15,000 litre tankers to refill cooling tower tank and 11 to refill potable water tank
4. In winter, systems automatically go to minimum fresh air; if internal temperatures drop then air towers in to recicrculation mode
5. Electric heat perimeter fan coil units can add heat to the space, with net impact being dependent on outside ambient conditions
6. Two separate sewer connections at either end of building; losing one would limit use of toilets, etc. to either north or south of

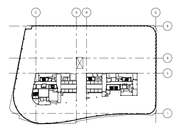
16. APPENDICES

P. Tenants IT Distribution Routes

DO NOT SCALE				
BACKGROUND DRAWING INFORMATION				
FILENAME	ORIGINATOR	DESCRIPTION	REV	DATE REC'D
40SL-A-0985-A4	Adamsons	Basement Mezz	02	19-08-2015

NOTES:





KEY PLAN

REV	DATE	BY	DESCRIPTION	CHK	APD
01	23.10.2015	PJ	STAGE F UPDATE	NP	TA

WSP | PARSONS BRINCKERHOFF

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES
BASEMENT MEZZANINE
TENANT TELECOM DISTRIBUTION ROUTES

SCALE @ A0:	CHECKED:	APPROVED:
1:150	NP	TA

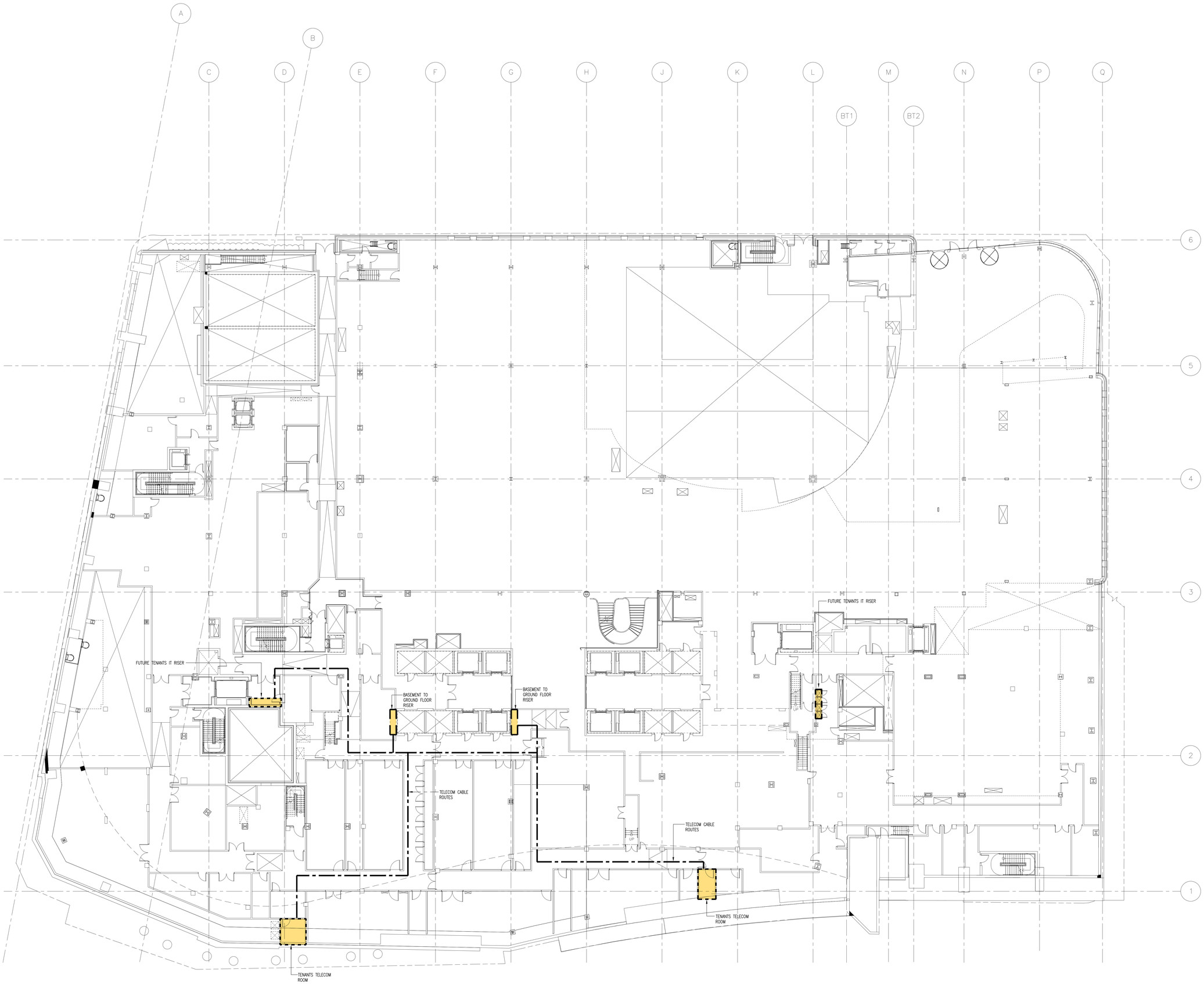
PROJECT No:	DESIGNED:	DRAWN:	DATE:
50200153	NP	CAD	JULY 2015

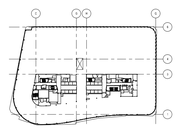
DRAWING No:	REV:
40SL-ET-1101-WS	01

WSP Gr

DO NOT SCALE				
BACKGROUND DRAWING INFORMATION				
FILENAME	ORIGINATOR	DESCRIPTION	REV	DATE REC'D
40SL-A-0990-A4	Adamsons	GROUND FLOOR GA	02	19-08-2015

NOTES:





KEY PLAN

REV	DATE	BY	DESCRIPTION	CHK	APD
01	23.10.2015	PJ	STAGE F UPDATE	NP	TA

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ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES
GROUND FLOOR
TENANT TELECOM DISTRIBUTION ROUTES

SCALE @ A1:	CHECKED:		APPROVED:
1:150	NP		TA
PROJECT No: 50200153	DESIGNED: NP	DRAWN: CAD	DATE: JULY 2015

DRAWING No: 40SL-ET-1102-WS

REV: 01

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DO NOT SCALE				
BACKGROUND DRAWING INFORMATION				
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40SL-A-1030-A4	Adamsons	Level 03	01	17-08-2015

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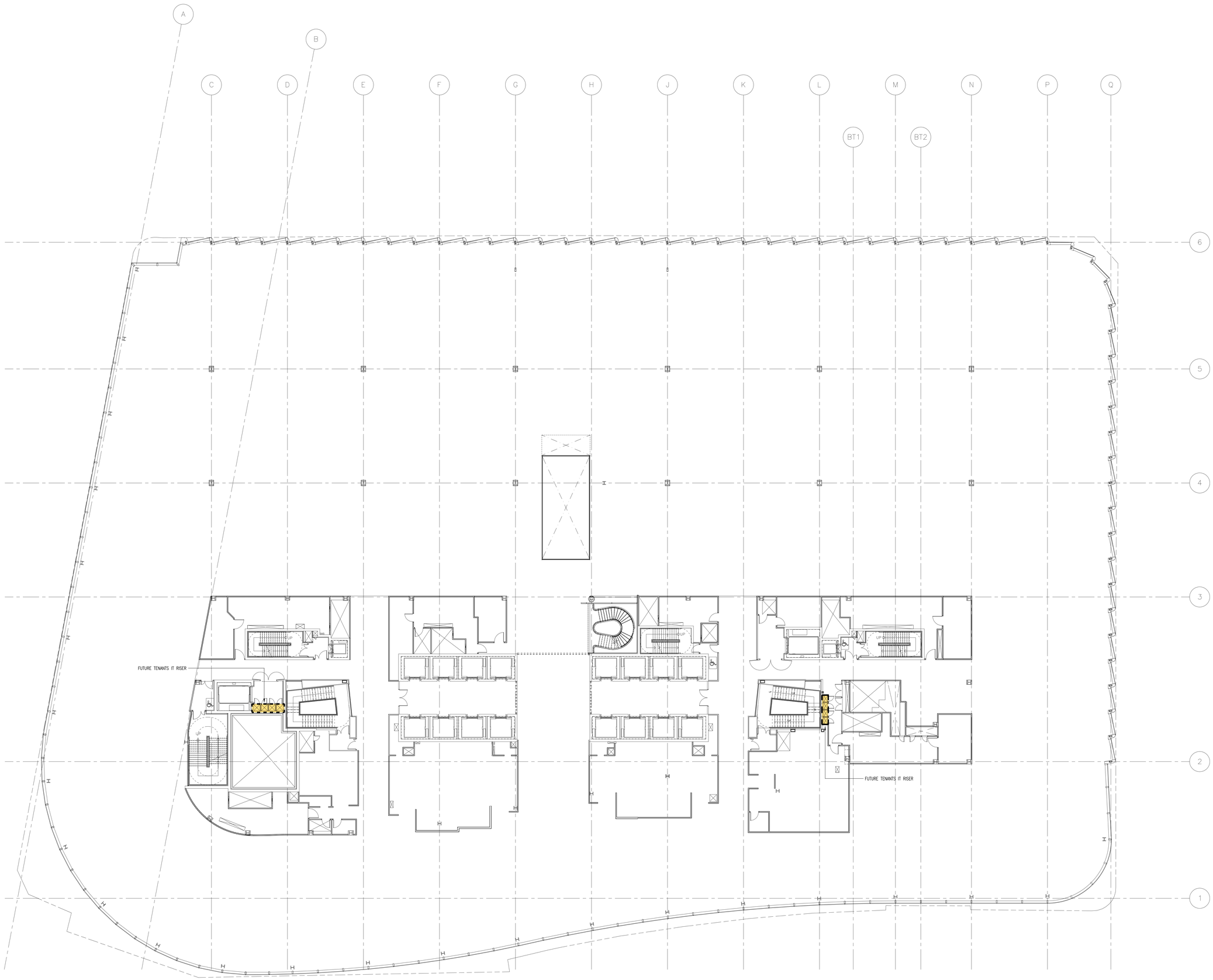

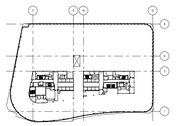

KEY PLAN

REV	DATE	BY	DESCRIPTION	CHK	APD
01	23.10.2015	PJ	STAGE F UPDATE	NP	TA

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CLIENT:

ARCHITECT: ADAMSON

PROJECT: LONDON DEVELOPMENT PROJECT

TITLE: ELECTRICAL SERVICES
TYPICAL FLOOR
TENANT TELECOM DISTRIBUTION ROUTES

SCALE @ A0:	CHECKED:		APPROVED:
1:150	NP		TA
PROJECT No: 50200153	DESIGNED: NP	DRAWN: CAD	DATE: JULY 2015

DRAWING No: 40SL-ET-1103-WS | REV: 01

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