Appendix B - Design Parameters

B.1 Codes of Practice

B1.1 Eurocodes

+ BS EN 1990 – Basis of Structural Design
+ BS EN 1991-1-1 - Densities, Self-Weight and Imposed Loads for Buildings
+ BS EN 1991-1-4 – Wind Actions
+ BS EN 1992-1-1 - Design of Concrete Structures
+ BS EN 1993-1-1 – Design of Steel Structures
+ BS EN 1995-1-1 – Design of Timber Structures
+ BS EN 1997-1-1 – Geotechnical Design

B1.2 Building Regulations

Approved Document A – Structure (2004)

Approved Document H – Drainage & Waste Disposal (2002)

B.2 Design Loading

The structures have been designed for the following loading:

B.2.1 Imposed Loading (kN/m²)

a. Ground floor and Basement: 4.25 BCO office loading (3.25 + 1.0 partitions)
b. Above ground floor: 3.75 BCO office loading (2.75 + 1.0 partitions)
c. Plant areas: 5.0 imposed load for plant loading
d. Accessible terrace areas (including at roof): 4.0 congregation loading

B.2.2 Superimposed Dead Loading (kN/m²)

a. Office floors above ground floor:

   Services and Raised Access Floor: 0.85

   Fire/acoustic boarding above CLT: 0.40

   Total : 1.25

b. Ground floor:

   Services and Ceiling: 0.5

   Floor finishes: 1.5

   Total: 2.0

c. Roof areas:

   Services and Ceiling: 0.5

   Blue Roof: 1.75

   Finishes: 1.05

   Total: 3.3

B.2.3 Cladding Loading

An allowance of 4.50kN/m² has been used for cladding loading based on a pre-cast cladding system

B.2.4 Wind Loading

An allowance of 1.0 kN/m² has been used for wind loading, which will be refined during Stage 3 design.

B.3 Deflection

Serviceability deflections will typically be limited to:

+ Span/250
+ Cantilever/100

Imposed load deflections will typically be limited to:

+ Span/360 (typical)
+ Span/500 (façade)
+ Cantilever/180

Local requirements may be slightly different to reflect requirements for brittle finishes, economic design and allowable head height requirements at later design stages.

B.4 Disproportionate Collapse (DC)

The structure is class 2B for disproportionate collapse (DC) requirements, such that horizontal and vertical ties are to be provided. Primary and secondary (`tie') beams have been introduced to provide additional robustness for DC, with the added benefit of also tying the frame during construction prior to slab installation.

Transfer beams prevent full continuity of columns, and as such will be designed as key elements. As a result they will be required to withstand significant accidental loading in accordance with the DC regulations.