

DEVELOPMENT SPECIFICATION

for

**WAREHOUSE DISTRIBUTION/ PRODUCTION UNIT
WITH OFFICE AND CORE FACILITIES
15 m TO HAUNCH**

at

**PLOT H
JOHN MILNE AVENUE
KINGSWAY BUSINESS PARK
ROCHDALE**

SEPTEMBER 2016

AS BUILT ISSUE – REVISION F



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**Wilson Bowden
Developments**

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PROJECT PARTICULARS

THE PROJECT:

Name: Plot H – Warehouse Distribution/ Production Unit

Nature: Warehouse Distribution/ Production Unit with Ancillary Offices

Location: Plot H, John Milne Avenue, Kingsway Business Park, Rochdale

EMPLOYER:

- ❑ Wilson Bowden Developments Ltd
Forest Business Park
Bardon Hill
Leicestershire LE67 1UB

ARCHITECT:

- ❑ DLA Architecture Limited
55 St Paul's
Leeds LS1 2TE

STRUCTURAL ENGINEER:

- ❑ BWB Consulting Limited
Carver's Warehouse
77 Dale Street
Manchester M1 2HG

BUILDING SERVICES ENGINEER:

- ❑ EDCM Building Services Consulting Engineers Ltd
3 Oxford Place
Leeds LS1 3AX

CDM CO-ORDINATOR:

- ❑ Mascot Management
Wards Court
203 Ecclesall Road
Sheffield S11 8HW

CONTRACTOR:

- ❑ Bowmer and Kirkland Ltd
High Edge Court
Church Street
Heage
Belper DE56 2BW

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EMPLOYER'S GENERAL REQUIREMENTS

SCOPE OF WORKS

Erection of a warehouse distribution centre/ production unit building with ancillary first floor offices together with associated service yard, HGV parking, car parking and landscaped areas.

STANDARDS

All elements of the works, materials and workmanship will be designed, constructed, tested and commissioned generally in accordance with the latest editions of the following "Standards" where relevant, applicable and current at the time of commencement of the Works:

- ☐ The Building Regulations
- ☐ The British Standards and Codes of Practice
- ☐ The European Standard.
- ☐ Requirements of the selected Building Control Officer
- ☐ Specific requirements of the Utility Supplies, Local Authorities and Local Planning Authorities
- ☐ Health and Safety at Work etc Act
- ☐ Local Acts of Parliament and Local Authority Bye-laws and/or regulations
- ☐ The Clean Air Act
- ☐ The Factories Act
- ☐ Construction (Design and Management) Regulations
- ☐ Regulatory Reform (Fire Safety) Order.
- ☐ The Building Act
- ☐ The Gas Safety (Installation and Use) Regulations
- ☐ The Housing Act
- ☐ The Party Wall etc. Act
- ☐ The Construction Products Regulations
- ☐ The Water Industry Act
- ☐ The Environmental Protection Act
- ☐ The CIBSE Guides
- ☐ The Gas Act 1995.
- ☐ CIBSE Code for Interior Lighting
- ☐ ILE Guidance Notes
- ☐ Water Standards Regulations
- ☐ HVCA Publications
- ☐ CIBSE Commissioning Codes
- ☐ BSRIA Commissioning Guides
- ☐ The Electricity Supply Regulations
- ☐ Institution of Gas Engineers and Managers Standards and Guidance Documents
- ☐ NJUG Guidelines

INTERPRETATION OF SPECIFICATION

This specification is to be read in conjunction with the Design Team's drawings, the Access Statement and the design assumptions made with respect to compliance with Part L2A

Building Regulations Part L2A compliance input summary sheets are appended to this specification to confirm the performance and design standards assumed for this building

LOADINGS

- ☐ Ground Floor Slab: 50 kN/m²
- ☐ The slab will be designed for a 300 mm back to back rack leg loadings of 11.5 tonne for a 15,000 mm high bulk store with centre line of a 100 mm square baseplate 300 mm away from a floor joint
- ☐ It is recommended that point loads including any racking leg positions and any mezzanine floor posts are positioned in consideration to floor movement joints and the Structural Engineer's advice should be sought in all instances
- ☐ First Floor Office Area: 5.0 kN/m² including 1 kN/m² partitioning* allowance
- ☐ Office area internal roof slab: 5.0 kN/m² including 1 kN/m² partitioning* allowance for potential future office use

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FIRE REQUIREMENTS

- ❑ The building will be constructed generally in compliance with the requirements of Part B of the Building Regulations with respect to means of escape; internal fire spread of both linings and structure; external fire spread and access and facilities for the fire service in so far as these requirements relate to the “Shell and Core” only.
- ❑ The requirements of the Regulatory Reform (Fire Safety) Order are excluded from this specification in so far as they relate to the building in occupation
- ❑ The periods of structural fire protection provided assume that the future Client will be not be installing sprinklers together with associated works

EMPLOYER'S PARTICULAR REQUIREMENTS

SUBSTRUCTURES AND FOUNDATIONS

- ❑ Foundations and lift pit generally in accordance with the Structural Engineer's details

GROUND SLABS

- ❑ Ground floor structural slabs to warehouse/ production area to be min 175mm thick reinforced concrete designed to satisfy the loading criteria noted above and to the Structural Engineer's approval
- ❑ Ground floor slab design to include for potential inner blockwork dado wall to all elevations of warehouse/ production area 2,250 mm high, 100 mm thick blockwork dado wall not provided as part of the works
- ❑ Prior to final design of the warehouse/ production area floor slab, the Client (if known) shall provide a drawing showing the proposed racking layout to enable the Structural Engineer to best position floor slab joints (where appropriate)
- ❑ Ground floor slabs to office entrance area to be min 150 mm designed to satisfy the loading criteria noted above and to the Structural Engineer's approval
- ❑ The use of steel fibre mesh reinforcement for the warehouse/ production area and ground floor office entrance area would be acceptable
- ❑ Recesses to be formed in floor slabs for 20 No dock levellers

Floor to be constructed in accordance with the Concrete Society Technical Report No. 34 (3rd Edition, Chapter 4 Surface Regularity): FM2 (Special) (Properties II and IV)

- ❑ The Client (if known) shall satisfy himself that floor slab flatness and levels specified are appropriate for the end use of the development
The warehouse/ production area floor slab is to be surveyed to prove its compliance with the design criteria within 14 days of its construction
- ❑ The number of joints will be kept to the minimum possible. Where joints are provided in the construction of the floor, they will be generally detailed in accordance with the Concrete Society Technical Report No. 34, 3rd Edition and designed so as to minimise vertical movement across the joints.

The concrete slab is to be finished as follows:

- ❑ The office entrance area concrete slab is to be finished with a power float
- ❑ The warehouse/ production area concrete slab is to be power floated to produce a hardwearing surface with an abrasion resistance generally to Class AR2 (Table 5.1 TR34)
- ❑ The concrete slab surface to be finished with an approved sealer/ hardener/ curing agent used in accordance with the manufacturer's recommendations
- ❑ Abrasion tests to be carried out in accordance with BS EN 13892-4 at the rate of one test for each 4,000 m² of floor slab with a minimum of two tests required for each unit floor slab to confirm that the appropriate abrasion resistance has been achieved
- ❑ Concrete floor slab joints will be saw-cut wherever possible and filled with Fosroc Thioflex 600 or Fosroc Nitro Seal MS300 (or similar approved). Maintenance of floor joints following Practical Completion will be the responsibility of the future Client
- ❑ It is recommended that the warehouse/ production area floor slab is maintained by the future Client in accordance with the 'Slab Aftercare Statement' prepared by the Structural Engineer
- ❑ Precast concrete dock leveller pits and walls. Walls to have tail slots
- ❑ Precast concrete lift pit where full 8-person lift to be provided
- ❑ The ground slab is to be constructed on a minimum 1200gauge PIFA. polythene membrane

STRUCTURAL STEEL FRAMING

- ❑ Structural frame to be steelwork to be designed by the Contractor. The basic parameters of the steel frame shall not be altered – e.g. structural grid, internal column positions, service zones
- ❑ Structural frame to areas of South and East elevations identified on the drawings to be designed to allow for the potential future fitting of CA 'Solarwall' cladding, weighing 10kg/m²
- ❑ Vertical bracing to be kept within the cavity where possible
- ❑ The frame is to be designed such that the outside face of the internal leaf of the masonry external walls runs through flush, i.e. no columns are to project into the cavity of the external wall

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- ❑ All external steelwork not painted is to have a galvanised finish
- ❑ All steelwork below ground or encased in external wall / block work to receive two coats bituminous coating
- ❑ Hit and miss columns to be provided at internal valleys
- ❑ Boundary conditions are to be fully considered in the design of the structural frame and its foundations
- ❑ Note: The current proposal provides for the steel frame being fire protected to the appropriate standard in fire boundary conditions using an intumescent coating rather than utilising 'Constrado' designed foundations to an unprotected frame

SECONDARY STEELWORK

- ❑ Secondary brickwork/ masonry support/ restraint steelwork – e.g. shelf angles, wind posts, will be designed by the Contractor in conjunction with any specialist supplier with due regard to the situation, appearance and specific feature requirements of the Employer
- ❑ All external steelwork not painted is to have a galvanised finish
- ❑ Restraint steelwork to be provided to division wall between offices and warehouse/ production area
- ❑ Contractor to supply and install all required restraint/ secondary steelwork to blockwork walls to Structural Engineer's approval
- ❑ Contractor to supply and install all required restraint/ secondary steelwork to windows/ curtain walling, door openings and any other element of the building to Structural Engineer's approval
- ❑ Restraint/ secondary steelwork to be provided to allow for future installation of windows for potential future office use at second floor level

UPPER FLOORS AND STAIRS

- ❑ Reinforced concrete on structural metal decking to first and second floors to be to Structural Engineer's design and details
- ❑ Classification of surface regularity to the upper floors to be in accordance with BS 8204: Part 2, Table 2 – SR2
- ❑ Precast concrete internal staircases to be to specialist supplier's design and details
- ❑ 'Knock-out' panels for future installation of staircases and lift for potential future office use at second floor level
- ❑ The first floor office concrete slab is to be finished with a wood float where raised access floor is to be installed

BRICK/ BLOCK/ MASONRY WALLING

- ❑ Due to design consideration, brickwork from 1 course below ground to DPC level will be to match main brickwork, not Engineering Class B
- ❑ Main brickwork above ground to be facing brickwork TBC. Allow a PC Sum of £350 per thousand for the supply of facing bricks
- ❑ Mortar colour to be Natural
- ❑ Bond will be stretcher with bucket handle pointing
- ❑ Internal skins of cavity walls to be concrete blockwork
- ❑ Permanent partitions to be concrete blockwork
- ❑ Internal dividing wall between the offices and warehouse/ production area to be 60 mins fire rated plasterboard lined metal stud walling to underside of office area internal roof, with secondary restraint steelwork
- ❑ Internal walls enclosing office area cores and staircases to be concrete blockwork 30 mins fire rated
- ❑ Blockwork thickness to meet Structural Engineer's design and to comply with fire resistance to meet Building Regulations
- ❑ All blockwork to be fair pointed where left exposed.
- ❑ External perimeter column surrounds not required in the warehouse/ production area
- ❑ External perimeter column surrounds in office areas to be boarded

Cavity wall insulation to be CFC/ HCFC-free urethane core board or expanded foam board partial fill or equivalent.

Airbricks to be provided as required and will be chosen to match surrounding brickwork.

All wall ties will be stainless steel.

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Movement joints to be provided as necessary with appropriately designed and applied sealant joints. Lintels as required over openings will be to Structural Engineer's requirements to design and detail by specialist supplier. Lintels will be designed and supplied with due regard to the situation, appearance and specific feature requirements of the Employer. Cavity barriers will be provided as necessary within external walls depending on the ultimate cavity insulation regime utilised.

Thermal performance of brickwork external cavity walls: Design U value of not greater than 0.30 W/m²K

ROOF CONSTRUCTION

- ❑ Roof structure generally to be steel purlins on steel frame.
- ❑ Roof structure to be designed to allow for loadings from the potential future installation of roof mounted photovoltaic panels, weighing a minimum of 19.5kg/ panel of dimensions 1640mm x 990mm, to the full area of the roof

ROOF FINISH

Roof finish to main building area to be either composite or built-up metal profiled cladding as follows:

Where built-up is proposed it is to be CA Twin Therm system, or similar approved, with a 25-year guarantee and a Tata Steel Confidex Guarantee

- ❑ 32 mm profile steel sheet laid narrow rib out with Colorcoat HPS 200 Ultra Goosewing Grey finish with LPC approved insulation and white faced metal liner tray; Tata Steel or similar approved
- ❑ Roof maintenance anchors to comprise Mansafe Transfasteners or similar if required. Access to the roof is to be by suitable MEWP
- ❑ Site assembled non-fragile triple skin rooflights over 10% of the roof area (except offices) subject to boundary and compartment wall conditions with matching flashing trims to cover exposed insulation
- ❑ Thermal performance of rooflights: Design U value of not greater than 1.3 W/m²K
- ❑ To include 1 no. external loading canopy 16,000 mm long x 5,000 mm deep attached to the building. Canopy to be clad with single top sheet and fascia. No soffit sheet

Thermal performance of roof finish: Design U value of not greater than 0.23 W/m²K

CLADDING

Wall cladding to be either composite or built-up metal profiled cladding as follows:

Where built-up is proposed it is to be a CA Twin-Therm system, or similar approved, with a 25-year guarantee and a Tata Steel Confidex Guarantee.

- ❑ 32 mm profile steel sheet with Colorcoat Prisma finish with LPC approved insulation and white faced metal liner tray; Tata Steel or similar approved
- ❑ Laid horizontally wide rib out
- ❑ Colour of cladding to be Colorcoat Prisma Silver Metallic Silver RAL 9006
- ❑ Colour of flashings to be Colorcoat Prisma to match adjacent cladding
- ❑ With mitred corners
- ❑ Top hat vertical joint detail

- ❑ 32 mm profile steel sheet with Colorcoat HPS 200 Ultra finish with LPC approved insulation and white faced metal liner tray; Tata Steel or similar approved
- ❑ Laid horizontally wide rib out
- ❑ Colour of cladding from standard range Sargasso RAL 5003. As shown on Architect's drawings
- ❑ Colour of flashings from standard range to match adjacent cladding

- ❑ 50 mm half round profile steel sheet with Colorcoat HPS 200 Ultra finish with LPC approved insulation and white faced metal liner tray; Tata Steel or similar approved
- ❑ Laid vertically
- ❑ Colour of cladding from standard range Merlin Grey BS18B25. As shown on Architect's drawings
- ❑ Colour of flashings from standard range to match adjacent cladding

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- ❑ 32 mm profile steel sheet with Colorcoat HPS 200 Ultra finish with LPC approved insulation and white faced metal liner tray: Tata Steel or similar approved
- ❑ Laid vertically narrow rib out
- ❑ Colour of cladding from standard range Sargasso RAL 5003. As shown on Architect's drawings
- ❑ Colour of flashings from standard range to match adjacent cladding

Thermal performance of built-up cladding: Design U value of not greater than 0.30 W/m²K

Built-up cladding of South and East elevations identified on the drawings to be designed to allow for the potential future fitting of CA 'Solarwall' cladding, weighing 10kg/m²

Composite metal wall cladding to comprise:

- ❑ Kingspan KS MR, or similar approved, LPC Grade B approved microrib panels with Kingspan Spectrum finish.
 - ❑ Laid horizontally
 - ❑ Colour of cladding from standard range Silver Metallic RAL 9006
 - ❑ Colour of flashings to be Silver Metallic RAL 9006
 - ❑ Select panel sizes to suit vertical setting out
 - ❑ Kingspan Total Coating and Kingspan Total Panel Guarantees to be provided

Thermal performance of composite cladding: Design U value of not greater than 0.30 W/m²K

- ❑ Boundary conditions are to be fully considered in the design of the cladding and its support system
- ❑ Any openings cut in cladding are to be suitably treated to maintain the manufacturers LPS1181 fire integrity of the system

WINDOWS/ CURTAIN WALLING/ GLAZING/ LOUVRES

- ❑ Windows generally to be thermally broken polyester powder coated aluminium system incorporating opening lights as indicated on the Architect's drawings. The minimum exposure category under BS 6375 Part 1 shall be 1200 Pa/m². The window shall be Class A under BS 6375 Part 2
 - ❑ Windows must be compliant with and certified to BS 7950, LPS 1175 sr2 or BS PAS 24
 - ❑ Ground and first floor opening lights to be top hung opening out vents with locking handles and friction stays with lockable restrictors
 - ❑ Aluminium curtain walling to areas indicated on elevations
 - ❑ It is assumed that windows will be cleaned from a suitable MEWP or using an Omnipole system
- Glazing requirements:
- ❑ Double-glazed units with grey tint to outer pane argon filled cavity and 'low e' clear inner pane to all windows and curtain walling
 - ❑ Glazing to a height of 2,400 mm above ground floor level to incorporate at least one pane with a 1.5 mm PVB interlayer (e.g. 7.5 mm laminated glass), or a glass rated as P4A under EN 356 '*Glass in building – Security glazing – Testing and classification of resistance against manual attack*'. The remaining pane may be toughened
 - ❑ Lookalike glass panels where required
 - ❑ Colour of powder coating to windows and curtain walling to be BS 18B25 (Dark Grey) from standard range available
 - ❑ Louvres, where required, to be aluminium polyester powder coated
 - ❑ Colour of powder coating to louvres to be BS 18B25 from standard range available
 - ❑ Trickle vents to be provided where required to provide background ventilation

Thermal performance of windows and curtain walling: Limiting area weighted average U value of not greater than 1.64 W/m²K

EXTERNAL DOORS

- ❑ External personnel doors must be compliant with and certified to BS PAS 24, STS202 or LPS 1175 sr2

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- ❑ External escape only doors should be certified to BS PAS 24, or LPS 1175 sr2. Escape door ironmongery must be permitted for use on these doors under the security certification of the product
- ❑ Aluminium framed glazed panelled entrance door(s) to main entrance with Adams Rite lock, nylon coated D-handles and integral letter plate. Manually operated with overhead concealed closer
- ❑ Main entrance door to be capable of future conversion to electric automatic opening
- ❑ Aluminium framed glazed panelled doors to fire exits from office areas to match windows with push pad or panic latch
- ❑ Colour of powder coating to aluminium framed external doors to be BS 18B25 from standard range
- ❑ Canopy over main entrance door to be proprietary structural glass system integral with and supported from curtain walling screen with polyester powder coated secret gutter and downpipes 1,500 mm projection
- ❑ Warehouse/ production area personnel doors are to be single/ twin steel external doorsets as indicated complete with integral panic bar and latch
- ❑ Colour of gloss paint finish to external doors to be BS 18B25 from standard range
- ❑ Door stops to be provided as necessary to prevent damage to other surfaces
- ❑ Door guards to be provided where external doors open across pathways
- ❑ Electric switch room doors are to be steel louvred external double doorsets as indicated complete with heavy duty stainless steel lever handles, security locks and associated hardware
- ❑ Colour of gloss paint finish to external doors to be BS 18B25 from standard range
- ❑ Door stops to be provided as necessary to prevent damage to other surfaces
- ❑ Door guards to be provided where external doors open across pathways
- ❑ Provide 2 no. fully insulated sectional overhead level access doors, with Kingspan XL Forte finish, colour from standard range available Merlin Grey BS18B25
- ❑ Clear opening size 3,600 mm wide x 4,800 mm high
- ❑ Door size approximately 3,900 mm wide x 4,950 mm high to suit manufacturer
- ❑ Doors to contain 1 No row of 3 No double glazed acrylic vision panels
- ❑ Electric operation by standard push button controls (excluding wiring back to main distribution board) but including wiring back to isolator located within one metre of the opening on the motor side
- ❑ Provide 20 no. fully insulated loading bay doors, with Kingspan XL Forte finish colour from standard range available Merlin Grey BS18B25
- ❑ Clear opening size 2,700 mm wide x 3,000 mm high, and integrated docking systems
- ❑ Door size 3,000 mm wide x 3,150 mm high
- ❑ To each dock access door location will be fitted an Easilift Loading System, or similar approved, fully hydraulic dock leveller to suit double deck trailers, complete with telescopic lips, size 3,000 mm long x 2,000 mm wide x 700 mm high. Loading dock to be 1,200 mm above external ground level.
- ❑ Dock levellers to have a rated load capacity of 6,000 kg in accordance with BS EN 1398
- ❑ To each dock access door location will be fitted a heavy duty pivot type retractable dock shelter with crash resistant side frames and reinforced front flats, a self-adjusting top frame with a rain channel for drainage purposes
- ❑ Shelter size x 3,600 mm wide x 4,100 mm high (measured from internal finished floor level) x 600 mm projection
- ❑ Additional items to be provided to each dock leveller to consist of the following: low voltage, energy saving LED traffic lights, energy saving LED angle-poise loading light and interlock safety device to prevent door from operation when dock is in the raised position
- ❑ Installation to be complete with internal controls and traffic light mimic panel
- ❑ All dock/ door locations are to be numbered internally and externally
- ❑ Below each door location, 2 no. heavy duty moulded rubber bumpers (457 mm x 254 mm x 150 mm) will be provided

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- ❑ Early discussions to be held with Client and Tenant (if known) to finalise exact specification and operational details for loading doors, dock levellers and dock shelters.

INTERNAL DOORS

- ❑ Internal doors to office areas to be flush doors of appropriate fire resistance, with American White Oak veneer finish
- ❑ Frames to be softwood, unless hardwood required to achieve required fire resistance
- ❑ Ironmongery to be Hoppe Paris 138F with SAA finish, comprising generally 1.5 pairs of hinges, 1 pair of lever handles, latch set with closers to fire doors. Kicking plates to be provided to all doors in circulation areas
- ❑ Door stops to be provided as necessary to prevent damage to other surfaces
- ❑ Threshold strips to be provided at change of floor finish
- ❑ Internal doors to have internal vision panels with fire rated glass as necessary

RAISED ACCESS FLOORING

- ❑ Raised access flooring system to first floor office utilising medium grade chipboard panels, 225 mm finished floor height above sub-floor
- ❑ Supports to be adjustable pedestal
- ❑ Panels to be metal encapsulated
- ❑ Panels to be left plain for carpet tiles
- ❑ Cavity barriers to be provided within raised access floor voids as required by applicable legislation

SUSPENDED CEILINGS

- ❑ Suspended ceilings to office areas to be Armstrong Prima Dune Supreme 600 mm x 600 mm in white lay-in grid with 50 mm x 25 mm softwood shadow batten - painted to match wall colour. Tile edge to be tegular throughout with Prelude 24 exposed grid
- ❑ Suspended ceilings to toilet areas to be moisture resistant
- ❑ Cavity barriers to be provided within suspended ceiling voids as required by applicable legislation

SCREEDS

- ❑ Cement and sand screeds to be provided where appropriate

PLASTER/ DRY LINING

- ❑ Plasterboard and plaster skim or taped joints to blockwork throughout all internal office areas unless otherwise scheduled
- ❑ Exposed concrete soffit of secondary stair to receive plaster finish

CERAMIC TILING

- ❑ Wall tiling to toilets to comprise H & R Johnson Group 2 – 150 mm wide x 150 mm high
- ❑ Tiles to be laid full height to shower area in Disabled Toilet
- ❑ Tiles to be laid 2 no. rows high as splashbacks above washbasins
- ❑ Tiles to be laid 3 no. rows high above sinks in Cleaner's Stores
- ❑ All wall tiling colours to be from standard range available

CARPET TILES

- ❑ Carpet tiling to office areas to be Desso Stratos, colour from standard range available
- ❑ Nosings to be provided to stairs – Gradus proprietary PVC with anti-slip contrasting inserts - colour from standard range available

ENTRANCE MATTING

- ❑ Entrance matting to be Interface Foyer barrier matting colour from standard range available

VINYL SHEET

- ❑ Vinyl sheeting to toilets to be Polyflor Standard PUR 2 mm thick with sit-on coved skirting, colours from standard range available
- ❑ Vinyl sheeting to Disabled Toilet/ Shower to be Polyflor Polysafe Hydro 2 mm thick taken up wall to form coved skirting, colour from standard range available

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PAINTING

All paint shall be classified VOC content LOW in accordance with BS EN 13300:2001

All decoration/colours to be in accordance with the finishes schedule but generally to be finished as follows:

- ☐ Steel frame to be left primed, colour White. Cladding rails and purlins to be left galvanised
- ☐ Intumescent paint where required to steelwork to be colour White
- ☐ Softwood/ MDF items to be gloss painted
- ☐ Ply faced doors to be gloss painted
- ☐ Exposed copper pipework to be gloss painted
- ☐ Plastered walls to be vinyl matt emulsion painted
- ☐ Plastered concrete soffits of stairs to be vinyl matt emulsion painted
- ☐ Fairfaced concrete soffits of stairs to be vinyl matt emulsion painted
- ☐ Internal metalwork to staircase balustrading to be gloss painted
- ☐ External galvanised bollards to be painted yellow either side of sectional overhead doors
- ☐ Galvanised structural steelwork to main entrance canopy to be painted 18B25 (Dark Grey)

HARDWOOD /SOFTWOOD/ MDF ITEMS

- ☐ Architraves to be 44 mm x 18 mm MDF pencil rounded
- ☐ Skirtings to be 94 mm x 14.5 mm MDF pencil rounded
- ☐ Window boards to be 25 mm MDF rounded
- ☐ Window jambs and heads in unplastered areas to be 25 mm thick MDF rounded

BALUSTRADES/ HANDRAILS/ METAL FIRE ESCAPES/ WALKWAYS

- ☐ Stainless steel balustrades and handrail to internal main staircase in office
- ☐ Painted tubular mild steel balustrades and handrail to internal secondary staircase in office
- ☐ Galvanised steel external stairs to personnel access/ fire exit doors in dock leveller areas

SANITARY APPLIANCES / FITTINGS

- ☐ To office toilets to be Armitage Shanks Sandringham Plus close coupled WC pan, colour white with white plastic seat and cover, close coupled vitreous china cistern with dual flush button. Dania 50 mm raised toilet seat and cover in any ambulant disabled cubicle
- ☐ Urinals in male toilets to be Armitage Shanks Sanura 50 cm with exposed trap, flushpipes and cistern
- ☐ Washbasins in office WC areas to be Armitage Shanks Portman 21 50 cm with twin tap holes 500 mm x 400 mm and overflow and will be fitted with Armitage Shanks Nuastyle 21 inclined basin pillar taps with button spray outlet
- ☐ To wheelchair accessible unisex toilets to be Armitage Shanks close coupled wc doc m pack with standing height basin comprising Contour 21 raised height close coupled WC pan, colour white with plastic seat (no cover), close coupled vitreous china cistern with spatula type lever, Contour 21 37 cm hand rinse basin with Contour 21 thermostatic basin mixer tap, and white plastic coated grab rails and hinged arm support
- ☐ Shower unit to disabled toilets, provide falls in screed to floor gully, provide Triton instantaneous shower fitting and rail with curtain
- ☐ To cleaner's stores Armitage Shanks Birch 46 cm fireclay cleaner's sink with fitted bucket grating, stainless steel legs and Nimbus wall mounted inclined bib taps

FIXTURES AND FITTINGS

- ☐ WC cubicles to be manufactured from MR chipboard with square edges - both sides faced with high pressure laminate, with pilasters post formed on long edges - set on 150mm high legs with SAA fixtures and fittings secret fixed where possible
- ☐ White plastic coated grab rails to ambulant disabled cubicles
- ☐ Mirrors to all WCs to each basin to be 400 mm wide x 600 mm
- ☐ Mirrors to wheelchair accessible unisex toilets to be 400 mm wide x 900 mm
- ☐ Toilet roll holders to be aluminium

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DRAINAGE ABOVE GROUND

Plastic pipework for WC connections, soil and vent pipes and wastes to be grey where concealed within voids and white where visible.

- ❑ Provide waste for future tea-point capped off for future use in positions shown on drawings.

Rainwater system to be designed by specialist Contractor.

- ❑ Rainwater systems to be designed to BS 12056-3:2000 CAT3, rainfall intensity determined by reference to figure NB4 (return period 500 years)
- ❑ Rainwater system to be primary and secondary syphonic
- ❑ Min. 1.2 mm gauge/ thickness galvanised steel gutters with 1.2mm thick membrane lining
- ❑ With weir overflows
- ❑ Ensure that all enclosed areas of open space within buildings have overflows incorporated in order that rainwater can be released should drainage system become blocked or fail due to excessive rainfall
- ❑ Rainwater pipes to be to specialist sub-contractor's design
- ❑ All horizontal rainwater pipework runs to be a minimum of 15,000 mm above finished floor level

DRAINAGE BELOW GROUND

Generally to the Structural Engineer's drawings and specification.

- ❑ The drainage design will take into account rainfall run off management requirements of the Environment Agency
- ❑ Drainage runs to be located in soft landscaping areas wherever possible
- ❑ Drainage to be provided to prevent surface water run-off onto yards and footpaths from landscaped areas and adjacent plots
- ❑ Land drains to be provided in accordance with Structural Engineer's design
- ❑ Petrol interceptor unit including power supplies and alarm system if required by the Local Authority
- ❑ The first manhole into which any syphonic drainage down pipe discharges is to have a vented cover
- ❑ Manholes will be laid square to the building and positioned to avoid entrance and service doors, car parking areas and loading bays
- ❑ Surface water drainage system to comprise primarily of linear drainage channels. All linear drainage channels to be of precast concrete construction complete with a reinforced concrete bed and surround
- ❑ Provision to be made for foul drainage for both Transport Office and Gatehouse
- ❑ Provision to be made for foul drainage for future Warehouse toilets, adjacent to Ground Floor office toilets
- ❑ CCTV Survey and report to be provided immediately prior to Practical Completion

EXTERNAL WORKS

All external construction thicknesses, kerbs, pavements and the like to be in accordance with the Structural Engineer's drawings and specification, and with the following finishes:

- ❑ Precast concrete kerbs, edgings, etc to all areas
- ❑ Trief concrete kerbs to areas vulnerable to damage or trafficking by HGVs
- ❑ Precast concrete retaining walls to dock leveller area
- ❑ Coated macadam surface to car park spaces where indicated on drawings
- ❑ Concrete block surface to car park roadways only
- ❑ Car parking bays to be minimum of 2,400 mm x 4,800 mm except disabled persons spaces which are to be comply with the Building Regulations
- ❑ Car parking bays and directional signs to be marked using white thermoplastic road paint
- ❑ Stone mastic asphalt or hot rolled asphalt to bellmouth
- ❑ Mesh and/or bar reinforced concrete surface with brushed finish and trowelled edges to access road, service yards and trailer parking areas
- ❑ Thermoplastic yellow lining will be provided to dock areas and HGV parking spaces
- ❑ Grey precast concrete slab paving to footpaths around buildings
- ❑ Loose granite aggregate, 20mm no fines, to margins to footpaths around buildings
- ❑ Diverted footway/ cycleway to be constructed from asphalt concrete to Local Authority adoptable standards

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- ❑ Existing footway/ cycleway running along the southern boundary to be diverted and a suitable retaining structure constructed to accommodate building plateau as described below in accordance with the Engineer's drawings
- ❑ Maximum gradient to be 1 in 3 for unsupported batter slopes comprising structure landscaping

Retaining walls to be provided in locations noted on Engineer's drawings. Construction to be as follows:

- ❑ Modular block faced reinforced earth wall system Phi Group Titan Block textured split face finish colour Amber
- ❑ Reinforced concrete faced with architectural gabion cladding comprising quarried stone filled woven wire gabion baskets
- ❑ Steel sheet piling with reinforced concrete capping beam and faced with architectural gabion cladding comprising quarried stone filled woven wire gabion baskets
- ❑ Mass gravity gabion wall system comprising quarried stone filled woven wire gabion baskets

LANDSCAPING/ PLANTING

Generally as Landscape Architect's drawings and specification and in accordance with the requirements of the Local Planning Authority

- ❑ In vulnerable locations such as close to building entrances, parking areas and footpaths, low planting should not exceed 1,000 mm in height, and tree canopies should fall no lower than 2,000 mm from the ground
- ❑ The contractor is to include for 12 months maintenance of all landscaping and planting (from Practical Completion)

FENCING/ BOLLARDS/ STREET FURNITURE

- ❑ Anti-intruder fencing/ gates to be 2400 mm high paladin anti-intruder fencing to service yard boundary, colour coated Dark Green, with electrical operation vehicular access and egress gate and 2 No single leaf swing pedestrian gates
- ❑ Provide box section barrier and combined tubular steel balustrade system to retaining walls to car parking areas
- ❑ Provide Armco type protection barrier and combined pedestrian guardrail to dock retaining walls
- ❑ Pedestrian guard rails to dock leveller ramps and any changes in level to be galvanised
- ❑ Tubular steel balustrade system to retaining walls
- ❑ Armco barrier system to be provided to exposed areas of cladding in service yard areas
- ❑ Cycle/ motorcycle stands and shelters as required by Local Planning Authority and to obtain the BREEAM credit Tra 3
- ❑ Concrete filled circular external steel bollards either side of level access loading doors
- ❑ Construct fully enclosed timber bin enclosure 3,000 mm x 5,000 mm for storing waste and recycling bins associated with the offices, accessible by refuse vehicles as shown on the drawings

TRANSPORT OFFICE

- ❑ Make provision in the building design for the potential future construction of a Transport Office in the location shown on the Architect's drawings
- ❑ Provide foul and surface water drainage connections points adjacent to location for Transport Office

GATEHOUSE

- ❑ Provide 1 No 4880 mm x 2440 mm Glasdon Warrior or equivalent prefabricated gatehouse in the location shown on the Architect's drawings
- ❑ Provide single internal toilet facility including all services requirements
- ❑ Provide internal kitchen facility comprising a kitchen sink and drainer, worktop, base unit and power points including all service requirements
- ❑ Provide reinforced concrete base and trief kerbed island for siting of the Gatehouse
- ❑ Provide electronically operated entrance and exit arm barriers
- ❑ Provide foul and surface water drainage connections points adjacent to serve the Gatehouse
- ❑ Provide adequate electricity and water services to the Gatehouse

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MECHANICAL AND ELECTRICAL SERVICES

SYSTEM DESIGN CRITERIA

The engineering services systems design calculations shall be based on the following design criteria.

Occupancy

- 1 person per 10m² net internal office area

External Conditions

Summer:	28° C db	Winter:	-3° C db
	20° C wb		-3° C wb

Office Internal Conditions

- Winter: 21° C db minimum
- Core areas: 18° C db minimum

Warehouse/Production Internal Conditions

- By Client

Office Fresh Air Supply Ventilation Rates

- Natural ventilation shall be provided where possible to the office to achieve a fresh air provision of 12 litres per second per person
- Where occupied spaces cannot be arranged to be ventilated adequately by natural means then heat recovery mechanical fresh air ventilation shall be provided to achieve a fresh air supply rate of 12 litres per second per person

Extract Ventilation

Sanitary Accommodation

- Toilets and Showers: 8 air changes per hour

Office Equipment Gains

- At terminal: Installed: 20 W/m²
- Office Lighting Gains: 15 W/m² total electrical load on net internal

Noise Criteria

- Internal with all finishes and furnishings in position measured at 1.5 m from a grille/ diffuser

Offices:	NC 38
Toilets & Circulation:	NC 40
Warehouse/ Production	NC 50
Plant Rooms	NC 55

CO-ORDINATION

All systems installed including mechanical services pipework, ductwork, electrical installations, sprinkler installations (where provided) etc shall be fully co-ordinated by the Contractor. The mechanical, electrical and sprinkler installations provided shall be fully co-ordinated with each other and with the architectural and structural elements of the building

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PART L2A COMPLIANCE

As designed SBEM calculations

- ❑ In order to obtain compliance under Part L2A Section 1 – Design Standards of the Building Regulations with respect to carbon emissions and limiting the effect of solar of heat gains a set of minimum system efficiencies, control measures, U-values etc must be adhered to. These minimum requirements are set out in the iSBEM summary sheet and BRUKL Report attached to this Development Specification
- ❑ As required by Regulations 17C and 20D, before any work commences the Contractor shall carry out the above (SBEM) calculations to demonstrate that the Building Emission Rate (BER) of the building as designed is not greater than the Target Emission Rate (TER). These design based calculations shall be provided to the Building Control Body along with a list of specifications of the building envelope and fixed building services used in the calculations. The Contractor shall note that for shell and fit-out schemes the design stage calculations shall take into account the presumed fit-out the details of which are included in the iSBEM summary sheet
- ❑ Any changes to a system type, or parameters from those set out in the following sections, must be notified to the Employer. It remains the Contractor's responsibility to comply with Building Regulations Part L
- ❑ The relevant system and component details must be noted and retained as they are required in order to perform an 'As Built' assessment of the building upon completion of construction and to inform the Client's fit-out contractor
- ❑ An 'As-Built' assessment will be carried out by the Contractor and again by the future Client following any future Client fit-out works
- ❑ The Contractor will be required to carry out commissioning of the fixed building services in accordance with CIBSE Commissioning Code M and prepare for submission to the Local Authority the required confirmation notice that this has been done
- ❑ Immediately prior to completion of the building "shell" the Contractor shall provide to the Building Control Body as-built TER/BER carbon emission calculations based only on the building and services as actually constructed. For a Shell and Core development the fit-out areas should be assumed to be conditioned to temperatures appropriate to their designated use, but no associated energy demand included
- ❑ In addition, the Contractor shall produce and lodge an Energy Performance Certificate (EPC) to meet the requirements of current legislation for the development

MECHANICAL SERVICES

WATER SUPPLY

The Contractor shall provide an adequately sized water supply pipe to the building

Arrange water supply from local water authority

- ❑ The water supply shall be 50 mm MDPE
- ❑ The water supply shall provide min 2.0 litres/second
- ❑ The new supply shall be metered by the local Water Authority at the site boundary (meter supplied and installed by Contractor)
- ❑ The new water meter shall be provided complete with pulsed output capability to obtain BREEAM credit Wat 02
- ❑ The contractor shall provide underground ducting and cable draw pits from the meter position to the building for future installation of BMS cabling between meter and building
- ❑ An unmetered supply shall be provided by the local water authority to serve the fire hydrant main and sprinkler storage tank
- ❑ A major water leak detection system shall be installed as manufactured by Aqualeak Detection Ltd or equal and approved and shall consist of a meter at the site boundary and a meter at each entry point into the building and gatehouse together with an associated control panel. The system shall also meter / monitor the fire hydrant ring main and branch to the sprinkler tank. The system shall be fully compliant to obtain BREEAM credit Wat 03. All necessary underground ductwork for cabling shall also be provided
- ❑ Externally routed MCWS, fire hydrant main and sprinkler pipe work shall be run in external grade MDPE 'Barrier Pipe' or Protecta-Line

COLD WATER SERVICE

A new potable mains water connection shall be provided and extended from the new meter into the building to serve all cold water outlets and equipment requiring a cold water supply. The Contractor shall determine the available system pressure and shall determine whether a break tank and booster arrangement is necessary to provide the pressure requirements

The installations shall be complete in all respects and shall include all things necessary to form complete and independent working installations. The whole of the installations shall be in accordance with BS 6700 and the requirements of the local water undertaking

If required, cold water storage shall be provided to cover the minimum requirement of the Statutory Authority or 15 minutes full load flow of the cold water booster set whichever is the greater.

- ❑ Provide stopcock, double check valve and drain cock assembly at each entry point into the building. Provide cold water service to all WC's, cisterns, basins, showers, sinks, hose union outlets and water heaters as necessary
- ❑ Provide a capped-off supply for future kitchen/ tea point
- ❑ Provide an adequately sized water supply to feed the gatehouse

A sanitary supply shut off system shall be installed to serve all WCs and urinals within the building and gatehouse. The system shall be consist of a solenoid installed in the cold water supply serving the sanitary fittings and shall be operated via a PIR installed within the ceiling adjacent the entry doors into the toilet facilities. The system shall be as manufactured by Aqualeak Detection or equal and approved and shall be fully compliant to obtain the BREEAM Credit Wat 04

Thermostatic showers shall be installed in the locations indicated on the architect's layouts. Shower's intended for disabled use shall be complete with automatic thermostatic shut off should the temperature exceed the pre-set limit. All showers shall have a maximum flow rate of 9l/min to obtain the BREEAM Credit Wat 01

Include an external tap with turning wheel for watering purposes with internal stop cock

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All water systems shall be designed and installed in accordance with the Health and Safety executive's "*Legionnaires' disease - The control of legionella bacteria in water systems (L8)*". Approved Code of Practice and Guidance, 2000 and CIBSE TM13 'Minimising the Risk of Legionaire's Disease' and to achieve BREEAM Hea 12

HOT WATER SERVICE

- ❑ Provide gas-fired storage water heater within office building sized in accordance with CIBSE Guide with system of secondary return circulation to all sanitary fittings
- ❑ Provide thermostatic blending valve to disabled toilet basin controlled to a temperature of 43°C
- ❑ Part L2A Compliance System Parameter – point of use electric water heaters to have automatic thermostat control, high limit thermostat, and manual re-set in the event of an over-temperature trip
- ❑ Provide capped off supply for future kitchen/ tea point.

Thermostatic showers shall be installed in the locations indicated on the Architect's layouts. Showers intended for disabled use shall be complete with automatic thermostatic shut off should the temperature exceed the pre-set limit. All showers shall have a maximum flow rate of 9 litres/ minute to obtain the BREEAM Credit Wat 01

All water systems shall be designed and installed in accordance with the Health and Safety executive's "*Legionnaires' disease - The control of legionella bacteria in water systems (L8)*". Approved Code of Practice and Guidance, 2000 and CIBSE TM13 'Minimising the Risk of Legionaire's Disease'

FIRE PROTECTION

A fire hydrant main in accordance with the requirements of Building Control and the local Fire Officer shall be provided to the building and the system shall be designed to withstand a pressure of one and half times its predicted maximum operating pressure and capable of conveying 1500 litres/minute (25 l/sec)

Isolating valves shall be incorporated in the system to meet the requirements of BS9990:2006 so that sections of the fire main can be isolated to enable repairs to be carried out. Such valves shall be secured in the open position by a chain and padlock or incorporated within a monitoring system to indicate when the valve is not fully open

Fire hydrants shall be positioned in such a way that the parking, loading and unloading of vehicles is unlikely to obstruct them, and in choosing locations for them regard shall be paid to the availability of statutory hydrants in public thoroughfares nearby. Hydrants shall be positioned not less than 6m away from the building.

Where fire hydrants are to be installed, they shall be included as part of a fire main system and be positioned not more than 90m from an entry to any building on the site and not more than 90m apart. They shall preferably be sited immediately adjacent to roadways or hard-standing facilities suitable for fire and rescue service appliances

Siting of underground fire hydrants in roadways shall be avoided but where necessary the frame and cover shall be in accordance with BS750 and capable of bearing the heaviest vehicle anticipated using the roadway

Underground fire hydrants shall be in accordance with BS750 and BEN14339

NATURAL GAS SUPPLY

The Contractor shall provide an adequately sized gas supply pipe to building

Arrange gas supply with suitable supplier

- ❑ The gas supply shall be procured to provide 118 cubic metres/hour and 1,250 kW peak load. Assume an annual gas load of 965,000 kWhrs/annum
- ❑ The new supply shall be metered by the Employer's nominated service provider [meter supplied and installed by the Contractor]

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- ❑ The new meter shall be of a pulsed output type for direct connection to monitoring software. It will be the contractor's responsibility to co-ordinate with the Employer for the new meter to be installed in line with the programme of works
- ❑ The meter shall be housed within an adequately ventilated meter chamber supplied and installed by the Contractor
- ❑ Underground ducting shall be provided for future BMS cabling between meter and building
- ❑ A capped off gas connection shall be provided to serve the future Client's warehouse/ production area heating complete with isolating valve
- ❑ Gas connection to be provided to the office water heater
- ❑ Sub-meters shall be installed to serve each gas fired unit heater to obtain the BREEAM credit

OFFICE HEATING AND VENTILATION

Heating

- ❑ Install centralised gas fired condensing boiler to provide LPHW space heating to office, core and toilet areas only
- ❑ Boilers to have balanced flues
- ❑ Boilers to have dry NOx emissions ≤ 70 mg/kWh delivered heating energy or less (at 0% excess O₂) to obtain BREEAM credit
- ❑ All areas to be heated by a system of steel panel radiators and distribution pipework
- ❑ Each radiator shall be provided with a thermostatic radiator valve
- ❑ Provision and distribution of radiators shall be arranged to achieve the BREEAM credit for thermal zoning and local occupancy control Hea 11
- ❑ Heating and hot water services shall be provided with automatic control systems meeting the requirements of the Building Regulations Part L and shall include weather compensation and optimised time control of heating
- ❑ All pipework to be concealed where possible, except for radiator feeds
- ❑ The systems shall be pressurised by a packaged pressurisation and expansion unit

Energy meters to be installed in accordance with 'General Information Leaflet 65' and Part L2A and agreed Log Book requirements

The Contractor shall include for the production of thermal modelling in accordance with AM11 in order to achieve credit Hea 10 under the BREEAM Assessment. This thermal modelling shall also inform the thermal zoning of the building

Ventilation

The Contractor shall design, supply, install, test and commission a supply air handling unit to provide a minimum fresh air supply to the offices at the rate specified within the System Design criteria section. The air shall be filtered and, when required, heated to provide a minimum supply air temperature. Ventilation air shall be introduced into each occupied space via ceiling mounted diffusers

Air volumes, velocities and temperatures shall be such that comfort criteria and acoustic requirements are met

The lift lobbies shall have air supplied to the space at a rate of 3 air changes per hour via a ceiling mounted diffusers

Air shall be extracted through air handling ceiling mounted extract grilles. Where possible the ceiling void shall be used as a plenum otherwise extract grilles shall be directly connected to the extract air ductwork

Mechanical extract ventilation shall be provided for each toilet area using a single extract unit where there is a single cubicle and twin extract unit where there are multiple cubicles. The unit shall be complete with automatic changeover

Replacement air to the toilet areas shall be provided from the local lobby area. Appropriate air transfer ducts and grilles located in the ceiling and ceiling void shall be provided between spaces.

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- ❑ Part L2A Compliance System Parameter – Specific Fan Power shall be not more than 1.5 W/(l/sec) calculated in accordance with the ‘Non-Domestic Heating, Cooling and Ventilation Guide’ and the ‘as designed’ Part L compliance documentation

Thermal Insulation

All thermal insulation shall be selected from the Green Guide rating A+ or A

At least 80% by volume of the thermal insulation used in the building elements identified above must be responsibly sourced i.e. each insulation product must be certified in accordance with either tier levels 1, 2, 3, 4, 5 or 6 as described in BREEAM issue Mat 06

Commissioning

The entire mechanical installation shall be tested and commissioned in accordance with requirements of the CIBSE Commissioning Codes.

Code A	Air Distribution Systems
Code C	Automatic Controls
Code R	Refrigeration Systems
Code W	Water Distribution

BREEAM Specific Requirements

An appropriate project team member(s) shall be appointed to monitor and programme pre-commissioning, commissioning and, where necessary, re-commissioning on behalf of the future Client

All building services shall be included in the commissioning schedule and commissioning shall be carried out in line with current Building Regulations, BSRIA and CIBSE guidelines and/or other appropriate standard, where applicable (where a BMS is specified see also relevant Compliance note BMS commissioning procedures).

The contractor shall account for the commissioning programme, responsibilities and criteria within the main programme of works.

A specialist commissioning manager shall be appointed during the design stage by the Contractor for complex systems and the scope of their responsibility includes:

- a. Design input: commissionability design reviews
- b. Commissioning management input to construction programming
- c. Commissioning management input during installation stages
- d. Management of commissioning, performance testing and handover/ post handover stages.

Seasonal Commissioning

The following seasonal commissioning responsibilities shall be completed over a minimum 12 month period, once the building becomes occupied and shall be allowed for by the Contractor:

Complex systems - Specialist commissioning manager

- a. Testing of all building services under full load conditions, i.e. heating equipment in mid-winter, cooling/ventilation equipment in mid-summer, and under part load conditions (Spring/ Autumn)
- b. Where applicable, testing should also be carried out during periods of extreme (high or low) occupancy
- c. Interviews with building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems
- d. Re-commissioning of systems (following any work needed to serve revised loads), and incorporating any revisions in operating procedures into the O&M manuals.

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ELECTRICAL SERVICES

ELECTRICITY SUPPLY

The electricity supply to the building shall be provided at

- ❑ High voltage, 11 kV with a standard phase rotation
- ❑ The electricity supply shall be procured at 770 kVA
- ❑ The new supply shall be metered by the Employer's nominated service provider [meter supplied and installed by the Contractor]

SUBSTATION

- ❑ All required HV Switchgear, HV/LV transformers, protective devices and LV Switchgear shall be provided by the Contractor
- ❑ The HV Switchgear and HV/LV transformers shall be installed in a purpose built external building adjacent the new building
- ❑ All HV/ LV transformers provided as part of these works shall be MIDEAL filled
- ❑ Emergency DC trip unit connected back to the REC HV incomer shall be installed within the meter cabinet by the Contractor

BUILDING LV DISTRIBUTION

The LV switchboard for the building shall be located in a designated zone comprising:

- ❑ A zone located adjacent to the office accommodation as identified on the drawings
- ❑ Main LV Panel to include generator interface. The Generator will be installed by the future Client
- ❑ Energy meters to be installed in accordance with 'General Information Leaflet 65' and Part L2A and additionally to cover all relevant functional areas e.g. Offices, Warehouse/ Production, gatehouse and Ancillary to meet the requirements of BREEAM credit Ene 3
- ❑ Energy meters shall be digital, pulsed output and shall monitor a minimum of voltage, current, kilowatts and maximum demand
- ❑ All energy meters shall be labelled with their end energy consuming use
- ❑ Energy sub meters to be installed on the following systems where present to achieve BREEAM credit Ene 2
 - a. Space Heating
 - b. Domestic Hot Water
 - c. Humidification
 - d. Cooling
 - e. Fans (major)
 - f. Lighting
 - g. Small Power (lighting and small power can be on the same sub-meter where supplies are taken at each floor/department).
 - h. Other major energy-consuming items where appropriate
- ❑ A low voltage moulded case circuit breaker extendable panel board shall be provided adjacent to the electrical intake position and will be sized to provide sufficient outgoing ways for the installation provided by the Contractor, 6 no. 3-phase ways for fit out by the future Client plus a further 25% spare ways
- ❑ In the office accommodation low voltage miniature circuit breaker distribution boards will be provided and will be sized to provide sufficient outgoing ways for the installation provided by the Contractor, 4 no. 3-phase ways for fit out by the future Client plus a further 25% spare ways
- ❑ An adequately sized electric supply shall be installed to feed the gatehouse

SMALL POWER SYSTEMS

Small power shall be provided to office areas as follows:

- ❑ In office areas with raised floors, floor outlet boxes spaced at 1 no. box per 10 m² of net floor area shall be provided. Each outlet box shall contain 1 no. dual earth twin switch socket, 1 no. twin blank plate and space for a quad data outlet. Power supply to be fed through a flexible connector 3,000 mm long connected to an underfloor busbar system. The floor boxes shall have a minimum depth of 85 mm. Boxes shall be pre-wired with power outlets only
- ❑ Wall or column mounted socket outlets for cleaning purposes shall be provided throughout circulation areas, reception areas and office areas. These socket outlets shall be hard wired direct from the distribution board on each relevant floor

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- ❑ Within plant areas 2 no. metal clad surface wall mounted 13 amp twin switched power socket outlets shall be provided
 - ❑ Power supplies within toilet areas for electric hand dryers [to be supplied and installed by the future Client] shall be provided
 - ❑ Provide audible alarms systems complete with power supply to disabled WC provision
 - ❑ Provide disabled refuge emergency voice communication system complete with power supply to disabled refuges indicated on the Architect's layouts connected back to the ground floor office
- Small power systems shall NOT be provided to the warehouse/ production area apart from the provision of suitably sized permanent supplies to the electric doors and dock levellers within the Warehouse/ Production

LIGHTING SYSTEMS AND CONTROLS

Within the office areas the lighting will be designed in accordance with the current edition of the CIBSE code for interior lighting and in the spirit of CIBSE LG7 on the basis of an open plan layout only

Additional lighting may be required to be installed by the future Client to suit internal fit out and office furniture scheme

- ❑ 600 mm x 600 mm modular fluorescent or LED luminaires will be provided to office areas complete with high frequency control gear and using low power density lamps, T5 fluorescents or compact fluorescent lamps where appropriate and in accordance with iSBEM
- ❑ All fluorescent and compact fluorescent lamps shall be complete with high frequency ballasts to achieve BREEM credit Hea 4
- ❑ Switching of light fittings shall comply with Part L2A of the Building Regulations and iSBEM calculations. Lighting control to all areas shall be by a combination of manually operated lighting grid switches and automatic infra-red presence detection units as suitable. In addition in all areas with natural daylight, automatic dimming and switching control shall be provided by means of automatic photo cell control
- ❑ The switching of light fittings shall comply with the following to meet the requirements of BREEAM credit Hea 6;
Lighting is zoned to allow *separate occupant control* of the following areas (where applicable):
 - a. Office and circulation spaces
 - b. In office areas, zones of no more than four workplaces
 - c. Workstations adjacent to windows/atria and other building areas separately zoned and controlled
- ❑ Toilet, lobby area and staircase lighting shall generally comprise of energy efficient recessed downlighter or surface mounted amenity bulkhead luminaires
- ❑ Lighting systems with controls shall NOT be provided to the warehouse/ production area
- ❑ The lighting installation design calculations shall be based on the average illuminance method to give the following average values on the working plane for the initial layout:

❑ Office Areas	500 lux (desk top)
❑ Entrance Lobby	250 lux (at floor level)
❑ Reception Areas	300 lux (desk top)
❑ Stairs and Landing/Circulation	100 lux (at floor level)
❑ Toilets	200 lux (at floor level)
❑ Plant Rooms	200 lux (at floor level)
❑ Corridors	100 lux (at floor level)
- ❑ The uniformity for the average values on the working plane shall achieve the minimum defined by the CIBSE Codes for the relevant use or higher unless the room dimensions so prohibit
- ❑ The above values are maintained service illuminance values, as defined in the CIBSE Codes. Where the maintenance regime for the building is unknown a maintenance factor of 0.8 should be used for calculation purposes
- ❑ Illuminance (lux) levels in all internal areas of the building shall be in accordance with the CIBSE Code for Lighting 2006 to achieve BREEAM credit Hea 5
- ❑ For all of the office areas where computer screens are regularly used, the lighting design shall comply with CIBSE Lighting Guide 7 sections 3.3, 4.6, 4.7, 4.8 and 4.9 to achieve BREEAM credit Hea 5
- ❑ The lighting installation shall achieve an average initial efficacy of not less than 55-luminaire lumens/ circuit-watt to meet the requirements and Part L2A of the Building Regulations

WILSON BOWDEN DEVELOPMENTS

DEVELOPMENT SPECIFICATION – CONSTRUCTION ISSUE REV F
WAREHOUSE DISTRIBUTION UNIT – PLOT H – KINGSWAY ROCHDALE

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EXTERNAL LIGHTING SYSTEMS

- ❑ External service yard, car parking, pedestrian and access road areas shall be provided with lighting at an average services illuminance of 20 lux with 30% uniformity ratio through the use of column and building mounted metal halide luminaires
- ❑ Lighting levels shall be provided at the location of the cycle storage facilities in accordance with BS5489 Part 1 to achieve BREEAM credit Tra 3
- ❑ All accessible pedestrian areas shall be provided with a minimum illumination of 5 lux with 25% uniformity
- ❑ Supplementary floodlights shall be provided to service yard areas positioned to provide an average of 150 lux in front of the loading doors
- ❑ Illuminance levels for lighting all external areas shall be in accordance with CIBSE Lighting Guide 6, '*The outdoor environment*' to achieve BREEAM credit Hea 5
- ❑ Canopies shall be provided with luminaires installed below the canopy level, positioned so that the average levels are maintained when the docks are occupied with a vehicle
- ❑ All luminaires shall utilise the same light source or colour rendering value
- ❑ All external luminaires will be controlled by a photoelectric cell and electronic timeclock with battery back-up and manual override facility
- ❑ All external lighting (except for safety and security lighting) shall have the facility to be automatically switched off between 2300hrs and 0700hrs. All safety and security lighting used between 2300hrs and 0700hrs, shall comply with the lower levels of lighting recommended during these hours in Table 1 of the ILE's Guidance notes to achieve BREEAM credit Pol 7
- ❑ The external lighting will designed in accordance with Institution of Lighting Engineers (ILE) Guidance Notes for the Reduction of Obtrusive Light 2005, Table 1 to achieve BREEAM credit Pol 7
- ❑ All floodlights shall be complete with glare control hoods or baffles to minimize light spill
- ❑ The external lighting efficiency shall comply with the following minimum values to meet the requirement of BREEAM credit Ene 4;
 - Access ways and Pathways – 50 lamp lumens/ circuit watt and a colour rendering index of Ra 60 or greater
 - Car Parking / Associated Roads and Floodlighting – 70 lamp lumens/ circuit watt and a colour rendering index of Ra 60
 - Signage and Uplighting – 60 lamp lumens/ circuit watt

EMERGENCY/ESCAPE LIGHTING SYSTEMS

- ❑ Emergency escape lighting shall be afforded by the provision of luminaires to comply with current legislation. The luminaires shall be situated at various strategic positions throughout the office areas with local circuit failure monitoring
- ❑ To achieve this the Contractor shall design and provide a complete and functional escape lighting system in accordance with the requirements of the BS5266 - 1, BS EN 50172 and the recommendations of the Local Authority Fire Officer
- ❑ All fittings shall provide a 3-hour period of emergency illumination in the event of mains failure.
- ❑ Emergency lighting shall NOT be provided to the Warehouse/ Production area

FIRE ALARM SYSTEM

- ❑ Provide an open protocol analogue addressable fire alarm system to the requirements of the Local Fire Officer to the office areas
- ❑ The warehouse/ production area shall be provided with a fire alarm system in compliance with BS5839 category M and to meet the specific requirements of the local Fire Officer
- ❑ System to allow for later connection of smoke detectors necessitated by fitting out works by future Client
- ❑ Shell and core areas of the building shall be provided with a fire alarm system in compliance with BS5839: Part 1:2013 L2 and to meet the specific requirements of the Local Fire Officer. The main enunciator panel shall be located adjacent the office entrance doors
- ❑ The panel shall be capable of extension to accommodate future Client's modifications, including later connection of smoke detectors necessitated by fitting out works (all by future Client)
- ❑ The fire alarm systems shall be linked via red care facility to a 24 hour automatic monitoring station. The Contractor shall allow for the required monitored telephone line and 12 month contract with a 24 hour monitoring provider

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WIRING FOR MECHANICAL SYSTEMS

Power and control wiring systems by the Contractor shall be provided to fully support all mechanical engineering systems that are provided by the Contractor

LIGHTNING PROTECTION

Provide lightning protection if required in accordance with the recommendations of BS EN 62305.

INCOMING DUCTS

Provide two ducts from the existing off site infrastructure for BT and one other provider to the main office. 4 No ducts in total

Additional ducts shall be installed externally for provision of CCTV distribution by the future Client as indicated on the Services Engineer's drawing

Two ducts shall be installed from the building to the gatehouse for CCTV and Data connection as indicated on the Services Engineer's drawing.

LIFTS

- ☐ Provide 1 no Kone Monospace, or similar approved, machine room-less lift, 8-person 630 kg passenger lift with a minimum of 0.6 m/s travel speed
- ☐ Provide stainless steel interior with vinyl floor finish, stainless steel walls with color contrasting handrail, glass mirror to upper half of rear wall
- ☐ Standard ceiling panel with recessed fluorescent or LED luminaries
- ☐ The Contractor shall supply and install any required BT line
- ☐ Lift to be supplied with centre opening doors
- ☐ Lift shall be fully compliant with Part M of the Building Regulations
- ☐ Power supply, testing and commissioning

The contractor shall ensure that the required power supply and live telephone line are provided in sufficient time to fully test and commission the lift within the proposed programme of works

The installed lift shall serve ground, first and second floor levels albeit the access to the second floor will be restricted until such time the area is available for access

The contractor is to include for all builder's work in constructing lift shaft to potential second floor offices together with all lift guide rails for a complete lift installation. Lift will be restricted to serve only ground and first floor levels until second floor office is provided at a later date

TELECOMMUNICATIONS

Provide a 20 pair public switched telephone network (PSTN) line from the off-site BT infrastructure to an agreed internal position, terminated within a BT distribution point (DP)

- ☐ All required ducts and cable access boxes shall be provided as per the agreed BT scheme drawing
- ☐ All required liaison and coordination with BT Openreach to install and make the line live to meet the agreed programme shall be included

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EXCLUSIONS

Specifically the following items are excluded from the specification:

- ☐ Telephone instruments, exchange equipment, patch panels, voice wiring, outlet plates, main service wiring connections, underfloor data and telecommunication wiring, etc
- ☐ Small power distribution in warehouse/ production area
- ☐ Computer equipment, data wiring, patch panels, outlet plates, underfloor wiring, etc
- ☐ Catering or vending equipment.
- ☐ Office furniture electrical equipment
- ☐ Final connection to catering equipment, vending machines, office furniture, computer equipment and other fixed equipment
- ☐ Provision for RFI screening or other data security measures
- ☐ Special provision to protect equipment from static electricity effects
- ☐ Public address systems
- ☐ UHF/ VHF/ satellite systems reception and distribution
- ☐ Specialist computer systems i.e. VESDA/ moisture detection etc. and information security screening
- ☐ Standby generation
- ☐ Uninterruptible power supplies
- ☐ CCTV and associated builders work
- ☐ Security systems and associated builders work
- ☐ Hand dryers and macerators in toilet areas
- ☐ Maintenance on movement joints
- ☐ Use of hard-wheeled forklift trucks and/or other specialist equipment likely to accelerate warehouse/ production area and service yard concrete slab damage
- ☐ Fire fighting equipment including private fire hydrant system.
- ☐ Smoke detectors to offices (other than any statutory requirement)
- ☐ Notices other than those required to the Building Regulations
- ☐ Sprinklers together with associated works
- ☐ All mechanical and electrical work where specifically not described within this Development Specification
- ☐ Building mounted or freestanding external signage and support
- ☐ Furniture and fittings including shelving
- ☐ Provision of any specialist services such as compressed air systems
- ☐ Gas, electricity and water services for Client equipment and machinery
- ☐ Storage racking systems
- ☐ Comfort cooling to Office Area
- ☐ Vehicle wash and fuel facilities
- ☐ Internal office partitions
- ☐ Mechanical and electrical installation to the warehouse/ production area except temporary manual fire alarm system
- ☐ Smoke vents and smoke curtains to the warehouse/ production area
- ☐ Toilets and associated services within the warehouse/ production area
- ☐ Process water supply
- ☐ Transport Office

REVISION SCHEDULE

REVISION REF	DATE	DETAILS
D	15/12/2015	Page 13 - External Doors – Sectional overhead level access door finish revised to Kingspan XL Forte
		Page 13 - External Doors – Loading bay door finish revised to Kingspan XL Forte
		Page 13 - External Doors – Dock leveller dimensions revised to 2,000 mm wide x 700 mm high
		Page 17 – External Works – Modular block retaining wall revised to Phi Group Titan Block colour Amber
E	15/02/2016	Page 5 – Project Particulars – Details of Contractor added
		Page 13 – External doors – Description of aluminium entrance/ fire exit doors revised to glazed panelled doors
		Page 14 – Vinyl Sheet – Polyflor Design revised to Polyflor Standard PUR
		Page 27 – Telecommunications – Provision of a 20-pair public switched telephone network (PSTN) line added
F	06/09/2016	As-Built Issue
		Page 9 – Ground Slabs – Requirement for abrasion testing revised
		Page 14 – Plaster/Dry Lining - Exposed concrete soffit of secondary stair only to receive plaster finish
		Page 15 – Painting – Fairfaced concrete soffits of stairs to be vinyl matt emulsion painted
		Page 15 – Painting – External bollards paint colour revised from yellow and black to yellow
		Page 15 – Painting – Balustrading revised from polyester powder coated to gloss painted
		Page 15 – Balustrades/Handrails – Hardwood handrail to secondary staircase omitted
		Page 20 – Water Supply – Reference to fire hydrant ring main revised to fire hydrant main (in two places)
		Page 21 – Fire Protection - Reference to fire hydrant ring main revised to fire hydrant main
		Page 21 – Fire Protection – Reference to BS9990:2006 revised to the requirements of Building Control and the local Fire Officer

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		Page 21 – Fire Protection – Reference to around the building revised to to the building
		Page 22 – Ventilation – Requirement to comply with BREEAM Hea 08 omitted
		Page 24 – Substation – Reference to trip unit installed within substation revised to within meter cabinet
		Page 26 – External Lighting System – Reference to linear fluorescent battens complete with IP65 rated diffusers to canopies revised to luminaires installed below the canopy level
		Page 31 - Part L Summary and BRUKL Report added

APPENDIX – AS-BUILT PART L SUMMARY AND BRUKL REPORT

WILSON BOWDEN DEVELOPMENTS

DEVELOPMENT SPECIFICATION – CONSTRUCTION ISSUE REV F
WAREHOUSE DISTRIBUTION UNIT – PLOT H – KINGSWAY ROCHDALE

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Project name

Shell and Core

Rochdale - Plot H

As built

Date: Thu Aug 18 14:17:45 2016

Administrative information

Building Details

Address: Unit H, ROCHDALE, OL16 4NH

Certification tool

Calculation engine: SBEM

Calculation engine version: v4.1.e.5

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v6.4.0

BRUKL compliance check version: v4.1.e.5

Owner Details

Name: Wilson Bowden Developments

Telephone number: 01530 276276

Address: Wilson Bowden Developments, Forest Business Park, Bardon Hill, Leicestershire, LE67 1UB

Certifier details

Name: Scott Ryan Shaw

Telephone number: 07515148587

Address: Deerns UK, The Observatory, Chapel Walks, Manchester, M2 1HL

Criterion 1: The calculated CO₂ emission rate for the building should not exceed the target

1.1	CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	28.8
1.2	Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	28.8
1.3	Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	24.9
1.4	Are emissions from the building less than or equal to the target?	BER ≤ TER
1.5	Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and the building services should achieve reasonable overall standards of energy efficiency

2.a Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.3	0.3	RM000000_W1_-1
Floor	0.25	0.17	0.17	RM000000_F_-1
Roof	0.25	0.23	0.23	RM000015_C_-1
Windows***, roof windows, and rooflights	2.2	1.41	1.41	RM000000_W1-W0
Personnel doors	2.2	2.2	2.2	RM000000_W2-W2
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
U _a -Limit = Limiting area-weighted average U-values [W/(m ² K)] U _a -Calc = Calculated area-weighted average U-values [W/(m ² K)] U _i -Calc = Calculated maximum individual element U-values [W/(m ² K)] * There might be more than one surface where the maximum U-value occurs. ** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. *** Display windows and similar glazing are excluded from the U-value check. N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	1.24

2.b Building services

The building services parameters listed below are expected to be checked by the BCO against guidance. No automatic checking is performed by the tool.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	<0.9

1- Circulation Areas

Heating seasonal efficiency	Cooling nominal efficiency	SFP [W/(l/s)]	HR seasonal efficiency
0.96	-	-	-
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system			YES

2- Toilet Systems

Heating seasonal efficiency	Cooling nominal efficiency	SFP [W/(l/s)]	HR seasonal efficiency
0.96	-	-	-
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system			YES

3- Office System

Heating seasonal efficiency	Cooling nominal efficiency	SFP [W/(l/s)]	HR seasonal efficiency
0.96	-	-	-
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system			YES

1- SYST0000-DHW

Heating seasonal efficiency	Hot water storage loss factor [kWh/litre per day]
0.94	0.015

Local mechanical ventilation and exhaust

Zone	Supply/extract SFP [W/(l/s)]	HR seasonal efficiency	Exhaust SFP [W/(l/s)]
Dis Shower	-	-	0.3
Female WC	-	-	0.3
Dis WC	-	-	0.3
Male WC	-	-	0.3
Cleaner	-	-	0.3
Male WC	-	-	0.3
Female WC	-	-	0.3
Office	1.5	0.7	-

Shell and core configuration

Zone	Excluded from calculation?
GF Lobby	NO
Mech Plant Room	NO
AHU Room	NO
Final Exit	NO
Elec Plant Room	NO
Exit Stairs	NO
Stairs	NO
FF Lobby	NO
Dis Shower	NO
Female WC	NO
Dis WC	NO
Male WC	NO
Cleaner	NO

Shell and core configuration

Zone	Excluded from calculation?
Male WC	NO
Female WC	NO
Office	NO
Warehouse Area above Offices	YES
Warehouse under office	YES
Warehouse	YES

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
GF Lobby	1050	-
Mech Plant Room	530	-
AHU Room	510	-
Final Exit	290	-
Elec Plant Room	310	-
Exit Stairs	250	-
Stairs	50	-
FF Lobby	1010	-
Dis Shower	250	-
Female WC	60	-
Dis WC	100	-
Male WC	320	-
Cleaner	50	-
Male WC	260	-
Female WC	240	-
Office	6130	-
Warehouse Area above Offices	4750	-
Warehouse under office	3620	-
Warehouse	90990	-

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Office	NO (-45.9%)	NO
Warehouse Area above Offices	N/A	N/A
Warehouse under office	N/A	N/A
Warehouse	N/A	N/A

Criterion 4: The performance of the building, as built, should be consistent with the BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	1175	1175
External area [m ²]	47289.8	47289.8
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	1	7
Average conductance [W/K]	10466.8	11668.7
Average U-value [W/m ² K]	0.22	0.25
Alpha value* [%]	2.51	18.41

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
	B1 Offices and Workshop businesses
	B2 to B7 General Industrial and Special Industrial Groups
1791	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Inst.: Hospitals and Care Homes
	C2 Residential Inst.: Residential schools
	C2 Residential Inst.: Universities and colleges
	C2A Secure Residential Inst.
	Residential spaces
	D1 Non-residential Inst.: Community/Day Centre
	D1 Non-residential Inst.: Libraries, Museums, and Galleries
	D1 Non-residential Inst.: Education
	D1 Non-residential Inst.: Primary Health Care Building
	D1 Non-residential Inst.: Crown and County Courts
	D2 General Assembly and Leisure, Night Clubs and Theatres
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others - Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	10.32	24.73
Cooling	0	0
Auxiliary	7.85	3.83
Lighting	17.67	23.22
Hot water	48.69	51.79
Equipment*	51.3	51.3
TOTAL **	84.53	103.57

* Energy used by equipment does not count towards the total for calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Indicative Target
Heating + cooling demand [MJ/m ²]	5864.04	8329.18
Primary energy* [kWh/m ²]	134.71	155.07
Total emissions [kg/m ²]	24.9	28.8

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.

HVAC Systems Performance									
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	91.5	73.7	28.2	0	1.9	0.9	0	0.96	0
Notional	197.5	49.9	69.3	0	1	0.79 / 0.81	0	----	----
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	148.4	132.3	45.7	0	4.8	0.9	0	0.96	0
Notional	273.6	62.4	95.9	0	4.1	0.79 / 0.81	0	----	----
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	5067	3602.6	0.2	0	8.7	0.9	0	0.96	0
Notional	8160.3	4153.2	0.7	0	5	0.79 / 0.81	0	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Key Features

The BCO can give particular attention to items with specifications that are better than typically expected.

Building fabric

Element	U _{i-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	-	RM000000_W9_0_0
Floor	0.2	-	RM000015_F_8_8
Roof	0.15	-	RM000000_C_4_4
Windows, roof windows, and rooflights	1.5	1.41	RM000000_W1-W0
Personnel doors	1.5	2.2	RM000000_W2-W2
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m²K)]		U _{i-Min} = Minimum individual element U-values [W/(m²K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	1.24

Energy Performance Certificate

Non-Domestic Building



Unit H

Kingsway Business Park

John Milne Avenue

ROCHDALE

OL16 4NH

Certificate Reference Number:

0230-1926-0326-3100-4000

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Asset Rating

More energy efficient

A+

Net zero CO₂ emissions

A 0-25

20

This is how energy efficient the building is.

B 26-50

C 51-75

D 76-100

E 101-125

F 126-150

G Over 150

Less energy efficient

Technical information

Main heating fuel:	Natural Gas
Building environment:	Heating and Natural Ventilation
Total useful floor area (m ²):	21047
Building complexity (NOS level):	3
Building emission rate (kgCO ₂ /m ²):	28.51

Benchmarks

Buildings similar to this one could have ratings as follows:

22 If newly built

59 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in SI2007:991 as amended

Assessment Software: Virtual Environment v6.4.0 using calculation engine SBEM v4.1.e.5

Property Reference: 102264030000

Assessor Name: Scott Ryan Shaw

Assessor Number: LCEA165318

Accreditation Scheme: CIBSE Certification Ltd

Employer/Trading Name: Deerns UK

Employer/Trading Address: Deerns Manchester, 2nd Floor, The Observatory, Chapel Walk

Issue Date: 01 Aug 2016

Valid Until: 31 Jul 2026 (unless superseded by a later certificate)

Related Party Disclosure: Not related to the owner

Recommendations for improving the property are contained in Report Reference Number: 9130-4003-0262-0400-1621

If you have a complaint or wish to confirm that the certificate is genuine

Details of the assessor and the relevant accreditation scheme are on the certificate. You can get contact details of the accreditation scheme from the Government's website at www.communities.gov.uk/epbd, together with details of the procedures for confirming authenticity of a certificate and for making a complaint.



For advice on how to take action and to find out about technical and financial assistance schemes to help make buildings more energy efficient visit www.carbontrust.co.uk or call us on 0800 085 2005

Recommendation Report



Report Reference Number: 9130-4003-0262-0400-1621

Unit H
Kingsway Business Park
John Milne Avenue
ROCHDALE
OL16 4NH

Building Type(s): B8 Storage or Distribution

ADMINISTRATIVE INFORMATION

Issue Date:	22 Aug 2016
Valid Until:	21 Aug 2026 (*)
Total Useful Floor Area (m ²):	21047
Calculation Tool Used:	Virtual Environment v6.4.0 using calculation engine SBEM v4.1.e.5
Property Reference:	102264030000
Energy Performance Certificate for the property is contained in Report Reference Number: 0230-1926-0326-3100-4000	

ENERGY ASSESSOR DETAILS

Assessor Name:	Scott Ryan Shaw
Employer/Trading Name:	Deerns UK
Employer/Trading Address:	Deerns Manchester, 2nd Floor, The Observatory, Chapel Walk
Assessor Number:	LCEA165318
Accreditation scheme:	CIBSE Certification Ltd
Related Party Disclosure:	Not related to the owner

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ONLY FOR ILLUSTRATION

1. Background

Statutory Instrument 2007 No. 991, *The Energy Performance of Buildings (Certificates and Inspections) (England and Wales) Regulations 2007*, as amended, transposes the requirements of Articles 7.2 and 7.3 of the Energy Performance of Buildings Directive 2002/91/EC.

This report is a Recommendation Report as required under regulations 16(2)(a) and 19 of the Statutory Instrument SI 2007:991.

This section provides general information regarding the building:

Total Useful Floor Area (m ²):	21047
Building Environment:	Heating and Natural Ventilation

2. Introduction

This Recommendation Report was produced in line with the Government's approved methodology and is based on calculation tool Virtual Environment v6.4.0 using calculation engine SBEM v4.1.e.5 .

In accordance with Government's current guidance, the Energy Assessor did undertake a walk around survey of the building prior to producing this Recommendation Report.

3. Recommendations

The following sections list recommendations selected by the energy assessor for the improvement of the energy performance of the building. The recommendations are listed under four headings: short payback, medium payback, long payback, and other measures.

a) Recommendations with a short payback

This section lists recommendations with a payback of less than 3 years:

No recommendations of short term payback have been identified

b) Recommendations with a medium payback

This section lists recommendations with a payback of between 3 and 7 years:

No recommendations of medium term payback have been identified

c) Recommendations with a long payback

This section lists recommendations with a payback of more than 7 years:

Recommendation	Potential impact
Consider installing building mounted wind turbine(s).	LOW
Consider installing solar water heating.	LOW
Consider installing PV.	LOW

d) Other recommendations

This section lists other recommendations selected by the energy assessor, based on an understanding of the building, and / or based on a valid existing energy report.

No recommendations defined by the energy assessor have been identified

4. Next steps

a) Your Recommendation Report

As the building occupier, regulation 10(1) of SI 2007:991 requires that an Energy Performance Certificate "must be accompanied by a recommendation report".

You must be able to produce a copy of this Recommendation Report within seven days if requested by an Enforcement Authority under regulation 39 of SI 2007:991.

This Recommendation Report has also been lodged on the Government's central register. Access to the report, to the data used to compile the report, and to previous similar documents relating to the same building can be obtained by request through the Non-Dwellings Register (www.epcregister.com) using the report reference number of this document.

b) Implementing recommendations

The recommendations are provided as an indication of opportunities that appear to exist to improve the building's energy efficiency.

The calculation tool has automatically produced a set of recommendations, which the Energy Assessor has reviewed in the light of his / her knowledge of the building and its use. The Energy Assessor may have comments on the recommendations based on his / her knowledge of the building and its use. The Energy Assessor may have inserted additional measures in section 3d (Other Recommendations). He / she may have removed some automatically generated recommendations or added additional recommendations.

These recommendations do not include matters relating to operation and maintenance which cannot be identified from the calculation procedure.

c) Legal disclaimer

The advice provided in this Recommendation Report is intended to be for information only. Recipients of this Recommendation Report are advised to seek further detailed professional advice before reaching any decision on how to improve the energy performance of the building.

d) Complaints

Details of the assessor and the relevant accreditation scheme are on this report and the energy performance certificate. You can get contact details of the accreditation scheme from our website at www.communities.gov.uk/epbd, together with details of their procedures for confirming authenticity of a certificate and for making a complaint.

5. Glossary

a) Payback

The payback periods are based on data provided by Good Practice Guides and Carbon Trust energy survey reports and are average figures calculated using a simple payback method. It is assumed that the source data is correct and accurate using up to date information.

The figures have been calculated as an average across a range of buildings and may differ from the actual payback period for the building being assessed. Therefore, it is recommended that each suggested measure be further investigated before reaching any decision on how to improve the energy efficiency of the building.

b) Carbon impact

The High / Medium / Low carbon impact indicators against each recommendation are provided to distinguish, between the suggested recommendations, those that would have most impact on carbon emissions from the building. For automatically generated recommendations, the carbon impact indicators are determined by software, but may have been adjusted by the Energy Assessor based on his / her knowledge of the building. The impact of other recommendations are determined by the assessor.

c) Valid report

A valid report is a report that has been:

- Produced within the past 10 years
- Produced by an Energy Assessor who is accredited to produce Recommendation Reports through a Government Approved Accreditation Scheme
- Lodged on the Register operated by or on behalf of the Secretary of State.