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Developers Outline Specification

Butterfields Business Park, Luton Spec Development - Unit 2B

Henry Boot Developments Limited

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Outline Specification

DEVELOPER'S WORK

THE BUILDING SPECIFICATION

1.0 GENERAL INFORMATION

1.1 OUTLINE SPECIFICATION & DRAWINGS

The unit shall be constructed in accordance with this Specification and the following drawings:-

To Be Confirmed

1.2 INTRODUCTION

- 1.2.1 The project is sited at Butterfields Business Park, Luton as indicated on the site plan.
- 1.2.2 This document provides the details of the building shell and external works for a Warehouse unit with ground & first floor offices, external yard and car park and service access.
- 1.2.3 The development proposal will consist of the following accommodation measured on a gross internal area basis, to be measured on completion in accordance with the RICS code of measuring practice and measured from internal face to internal face of internal wall. A tolerance of -0%/+2% will apply to warehouse area and - 0%/+3% to the office areas as defined below.

Schedule of Accommodation (Gross internal floor area)

Unit 2B	- 782 sqm	- 8,418 sq ft
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- 1.2.4 All accommodation forming part of the Developer's Works to be as indicated on the drawings.
- 1.2.5 Car parking shall be provided to accommodate 16 cars as indicated on the Jefferson Sheard drawings.

1.3 APPROVALS & CONSENTS

- 1.3.1 The Developer shall apply for, obtain and comply with all relevant approvals, in so far as the Developer's works detailed herein, required under the current Town and Country Planning Act, Building Regulations, Highways Acts, CDM Regulations, Environmental Protection Act and other relevant Acts including comments/approvals made by the Environment Agency for the works.

1.4 DESIGN

- 1.4.1 All work will be carried out in accordance with all Statutory Regulations, British Standards and Code of Practice, Building Regulations, Local Bylaws and Fire Officer's requirements.

1.4.2 All design is to be carried out in accordance with the appropriate Eurocode, the principles of which are:-

- a) BS EN 1990 Eurocode 0 - Basis of structural design
- b) BS EN 1991-1-1 Eurocode 1: Actions on structures - Part 1-1: General actions - Densities, self-weight and imposed loads
- c) BS EN 1991-1-3 Eurocode 1: Actions on structures - Part 1-3: General actions - Snow loads
- d) BS EN 1991-1-4 Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions
- e) BS EN 1992-1-1 Eurocode 2: Design of concrete structures - Part 1-1: General - Common rules for building and civil engineering structures
- f) BS EN 1993-1-1 Eurocode 3: Design of steel structures - Part 1-1: General rules and rules for buildings
- g) BS EN 1993-1-3 Eurocode 3: Design of steel structures - Part 1-3: General - Cold formed thin gauge members and sheeting
- h) BS EN 1994-1-1 Eurocode 4: Design of composite steel and concrete structures - Part 1-1: General - Common rules and rules for buildings
- i) BS EN 1997-1 Eurocode 7: Geotechnical design - Part 1: General rules
- j) BS EN 1997-2 Eurocode 7: Geotechnical design - Part 2: Ground investigation and testing
- k) BS 8300, 2009 - Design of buildings and their approaches to meet the needs of disabled people
- l) The 17th Edition of the IEE Wiring Regulations
- m) The CIBSE Guides including Technical Memorandums
- n) Health & Safety at Work Act, derivative Regulations and associated Codes of Practice
- o) The British Standards Codes of Practice
- p) The Gas Safety Regulations
- q) The Clean Air Acts
- r) Local Water Board Requirements and Regulations
- s) The requirements of the Local Fire Authority
- t) The Factories Act
- u) Local Authority Bye-Laws
- v) Specific requirements of the Utility Supply Local Authorities and Planning Authorities
- w) The Electricity Supply Act
- x) Construction (Design and Management) Regulations 2007
- y) Freight Transport Association Guidelines "Designing for Deliveries"
- z) Good practice in the selection of construction materials
- aa) Equality Act 2010

Appropriate consideration has been taken of the Equality Act, as necessary to fulfil the obligations of the Developer for access in compliance with the Equality Act.

1.4.3 Design Loads to be as follows:-

All floor and roof loads are to be in general accordance with BS 6399, Pt 1, 1984 and as follows:-

Warehouse area floor	=	30.00 kn/m ²
Ground floor offices, etc.	=	10.00 kn/m ²
Upper floors	=	4.00 kn/m ²
Demountable office partitions	=	1.00 kn/m ²



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Roof	=	0.60 kn/m ²
Services - load on frame	=	0.25 kn/m ²
Height to eaves (units 1, 2, 3 & 4)	=	8 m

1.5 MATERIALS & WORKMANSHIP

Materials and workmanship shall comply with the latest editions of the relevant British Standards and Codes of Practice and are to be in accordance with good building practice and suitable for the purpose of the works.

Proprietary materials shall be used strictly in accordance with the manufacturer's specifications. Where amendments to the design, specification or scope of works are envisaged, approval of Occupier's Representative will be sought, consent not to be unreasonably withheld.

1.6 DELETERIOUS MATERIALS

None of the following materials will be used in the construction of any part of the Works:-

- (a) any of the materials identified as potentially hazardous in the British Property Federation/ British Council for Offices report *Good practice in the selection of construction materials* (current edition), other than in accordance with the recommendations as to good practice contained in section 2 of that report; and
- (b) any other materials which do not comply with relevant British Standard Specifications (or their European Union equivalent) and Codes of Practice or are otherwise generally known within the contracting industry at the time of use to be deleterious to health or safety or to the durability of the Works in the particular circumstances in which they are used.

2.0 WAREHOUSE & OFFICE ACCOMODATION

2.1 GROUND PREPARATION & FOUNDATIONS

2.1.1 Any localised cut and fill works shall be undertaken to provide final formation levels. Any ground treatment is to be carried out all in accordance with the Structural Engineer's recommendations.

2.1.2 The foundations to all structures are to be the Structural Engineers details and to the satisfaction of the Local Authority's Engineer's Section and the Approved Building Inspector. All foundation design and work on site shall be carried out in accordance with BS 8004: 2015 Code of Practice for Foundations & BS EN 1997 and be based upon the assumption that the existing ground will support the design loads without any requirement for preparatory work of any kind.

2.2 CONCRETE FLOOR SLAB

2.2.1 The slab is to be reinforced concrete to the Structural Engineer's detail laid on suitable gauge damp proof membrane.

2.2.2 The floor is to be concrete constructed with a concrete strength, cement content and water cement ratio selected by the Engineer to achieve the stated performance parameters. The

floor shall be capable of withstanding a uniformly distributed superimposed load of 30.00 kn/m² and to support the rack loading which is no greater than 7.00 tonnes for each leg which are back-to-back and supported on a 140 x 90 mm foot. It will have expansion, contraction and day joints to the Structural Engineer's details and as described at 2.2.3.

- 2.2.3 Where joints are provided in the construction of the floor, they should be generally detailed in accordance with TR34. All joints are to be sealed prior to completion with sealing compounds having a minimum shore hardness of 40. At the end of the defects liability period any significant arris damage will be repaired with an epoxy mortar placed in accordance with the manufacturers recommendations. At the end of the defects liability period, the trafficked joints in aisles or free movement areas of the floor slab are to be resealed. The final sealant shall have a minimum shore hardness of 70 for sawn joints and a suitable shore hardness for the design width of movement joints. All reasonable efforts will be made in the construction and detailing of the floor to reduce the possibility of random cracking. If cracks occur, they are to be pressure grouted with a low viscosity epoxy mortar if they are wider than 0.8 mm.
- 2.2.4 The ground floor slab to areas to be racked in the warehouse are to provide a surface tolerance of FM2 properties as defined by the Concrete Society Technical Report 34, 3rd Edition 2003, revised table 3. with a tolerance of +/- 15 mm to a plane datum and an abrasion resistance to Class AR2 as BS 8204-2. A profileograph survey is to be undertaken on completion to confirm that the required tolerances have been achieved; a copy of the survey to be provided to the Occupier.
- 2.2.5 The ground floor slab of the office area is to be capable of withstanding a uniformly distributed superimposed load of 10 KN/m².

2.3 STRUCTURAL FRAME, UPPER FLOORS & STAIRS

- 2.3.1 All steelwork shall be designed, detailed, fabricated and constructed in accordance with BS EN 1993-1-1 Eurocode: Design of Steel Structures including all relevant revisions and amendments in place at the time of design and the National Structural Steelwork specification for Building Construction.
- 2.3.2 The steel frame shall be at centres as indicated on the drawings and shall be designed to accommodate a uniformly distributed service loading of 0.25 KN/m² and imposed roof loading in accordance with BS EN 1991-1-1 with wind loads in accordance with BS EN 1991-1-4.

The steel frame shall include all necessary galvanised purlins, tie bars, sheeting rails, anti-sag rods and bracings suitable for roof and wall cladding and perimeter eaves and verge details.

The roof shall be designed to have a minimum pitch of 6°.

The minimum height to the underside of haunch shall meet the requirements set out in clause 1.4.3.



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- 2.3.3 Steelwork to be shot blasted and primed to a nominal thickness of 75 microns before delivery to site and any areas of damage are to be rubbed down and re-primed in-situ. All structural steelwork (other than encased) to be provided with zinc phosphate primer.
- 2.3.4 Cold rolled galvanised section to cladding rails and roof purlins etc. are to be unpainted.
- 2.3.5 All steelwork encased in blockwork, concrete or masonry to be given 2 coats of Bitumen Paint.
- 2.3.6 Steelwork to the offices to be fire protected as required by Building Regulations. Where steelwork is visible and where fire protection is required a proprietary intumescent system shall be utilised.
- 2.3.7 Secondary steelwork for main access doors, fire exit and personnel doors shall be included.
- 2.3.8 The upper floors are to be constructed from composite metal deck and concrete slab with a power float finish, supported on a steel frame to meet the floor loadings stated at paragraph 1.4.3.
- 2.3.9 Stairs to the offices to be pre-cast concrete constructed with surfaces to receive the stated finishes and be complete with stainless steel handrail and suitable balustrade.
- 2.3.10 Escape stairs from the offices to be galvanised mild steel construction with chequer-plate treads and be complete with galvanised tubular mild steel balustrades and handrails.
- 2.3.11 For units with upper floors, space to be allocated within Reception Area and First floor lobby for future installation of an enclosed DDA Platform. DDA to be supplied and installed by End User

2.4 ROOF

- 2.4.1 The roof will be the Twin-Therm® system or similar utilising TATA HPS200® Ultra coated steel sheets supported by the Confidex® Guarantee of up to 40 years and fixed as per the system requirements. The roof external profile will be nominal 0.70 mm thick and the liner panel will be minimum 0.4 mm thick with a PE15 bright white liner internal finish.
- 2.4.2 Colours of roof cladding to be as noted on the drawings.
- 2.4.3 A minimum 180 mm non-combustible glass fibre insulation, to achieve a minimum designed thermal U-value of 0.23 W/m²K. Final U-value will depend on SBEM calculations.
- 2.4.4 The roof, rainwater goods and wall cladding is to provide a manufacturer's warranty for the entire installation for a period of 25 years.
- 2.4.5 The roof and wall cladding will be delivered as a Carbon Neutral metal building envelope.
- 2.4.6 The roof system is to be covered by a BBA Agreement Certificate.

Outline Specification

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- 2.4.7 An air-tightness test is to be carried out to the whole building prior to practical completion. The test must conform to all current legislative requirements and Building Regulations. The air test shall, as a minimum, comply with BS EN 13829: 2001 and to be a minimum requirement of $5\text{m}^3/\text{hr}/\text{m}^2$ @ 50 Pa positive air pressure to comply with (and improve on) Building Regulations Approved Document Part L2A. A copy of the resultant report is to be provided to the Developer. Any defects, etc., highlighted by the test are to be rectified prior to practical completion. This test is to be carried out whether or not required by the Building Control.
- 2.4.8 The minimum designed roof pitch will be 6.0° (5.0° after deflection).
- 2.4.9 The rooflight assemblies will be triple skinned GRP, with an 8oz ($2.44\text{kg}/\text{m}^2$) inner and a 6oz ($1.83\text{kg}/\text{m}^2$) outer skin, with a separate intermediate core and all relevant components to achieve a U-value of $1.30\text{W}/\text{m}^2\text{K}$. Rooflights will be provided to approximately 10% of the floor area, installed as the system manufacturer's recommendations, and are to be a minimum Class B Non-Fragile for a period of 25 years.
- 2.4.10 The roof and wall cladding systems are to be tested in accordance with LPS1181 to achieve a minimum grade 'EXT-B' certification, certificate reference LPCB 443a. The internal lining to the main roof will be Class O rating for surface spread of flame as tested to BS 476 Part 7:1987. In accordance with the latest test standards all liner fillers to be flame retardant.
- 2.4.11 The installed roof system is to be a Class B Non-Fragile roof assembly, tested in accordance with the HSE materials standard ACR(M)001 :2011 'Test for Non-Fragility of Profiled Sheeted and Large Element Roofing Assemblies (fourth edition)'. The system will be tested for all spans up to a maximum of 1800 mm. Annex 'C' from the HSE Document ACR (CP)001 :2007 Rev 3 "Recommended Practice for work on Profiled sheeted Roofs", is to be completed and submitted by the Contractor for approval before work commences.
- 2.4.12 Detail work to ridge, eaves, hip and verge will be in accordance with the manufacturer's recommendations and standard approved design details. On pitched roofs cranked ridge liner panels shall be installed. Internal flat ridge flashings are not acceptable.
- 2.4.13 Valley and perimeter gutters are to be membrane lined gutters being single skin externally or insulated where internal. Boundary and valley gutter material will be a minimum 1.2 mm thick nominal pre-galvanised steel, complete with 1.2 mm PVC pre-laminated membrane, in accordance with the Metal Gutter Manufacturers Association (MGMA). The gutter system to have a minimum 25 year guarantee to match the roof system. All internal gutters to be factory insulated using rigid 50 mm thick rock fibre insulation.
- 2.4.14 Gutters and outlets will be designed as a gravity drainage system to the offices using project specific information to determine rainfall rate. Weir outlets will be provided to gutters with positions to be approved. The rainwater pipes, sized to suit project specific requirements will be connected to the storm drainage system and fitted with a rodding eye access plate at the base and discharging via a slow bend in the drain.
- 2.4.15 Rainwater roof drainage system to be provided to the warehouse units.



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- 2.4.16 Externally exposed downpipes are to match the colour of the adjacent cladding, unless specified otherwise.
- 2.4.17 The drainage system shall be designed and constructed to comply with BS EN 12056-3:2000 and the following design criteria:-
- The geographical location of the building;
 - A building design life of 25 years;
 - 'Category 1' for external eaves gutters.
 - 'Category 3' for internal/valley gutters
- 2.4.18 All pipework to be installed above the portal haunch level to maintain minimum clear height and internal rainwater pipes are to be located within the web of the steel and suitably protected to prevent against accidental damage.
- 2.4.19 All components of the system shall be in accordance with any relevant British or European standards.
- 2.4.20 The rainwater outlets will be distributed evenly along the total gutter length and where practically possible outlets should be at the mid bay position of the gutter with quantity and size to suit rainwater drainage design. Discharge locations to be agreed before work commences. Secondary eaves downpipes intermittently spaced along the eaves are not acceptable.
- 2.4.21 Rainwater drainage pipework shall be firmly attached to an engineered continuous railing system, using appropriate pipe clamps it shall be securely fastened back to the main structure at a maximum of 2m centres, to provide adequate and proper restraint against thermal movement. Additional bracing will be provided within 100mm of the closest edge of the pipework, end branch connections and where required.
- 2.4.22 Indicative weir outlets will be provided to the ends of valley gutters and at 50m intervals on perimeter gutters to provide advance warning of blockage of the syphonic system.

2.5 EXTERNAL WALLS, WINDOWS & DOORS

Warehouse

- 2.5.1 Cladding to be the Twin-Therm® wall system or similar utilising the selected profiles or an insulated panel such as Trimo Rockfibre insulated panels or similar, as noted on the drawings.
- 2.5.2 Finish to be TATA HPS200* Ultra or Prisma supported by Confidex® Guarantee of up to 40 years and fixed as per the system requirements with a PE15 bright white liner internal finish.
- 2.5.3 The Standing Seam feature cladding to main entrance on Unit 3 to be TATA Kalzip system or similar approved. Cladding finish as noted on drawing.
- 2.5.4 External profile for Twin-Therm or similar system to be 0.7 mm and liner minimum 0.4 mm.
- 2.5.5 Colours of the wall cladding as noted on the drawing.



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- 2.5.6 The cladding system to provide a minimum designed thermal insulation value of 0.35W/m²K in accordance with current Building Regulation Standards. Final U-value will depend on SBEM calculations.
- 2.5.7 All wall systems to be tested in accordance with LPS1181 to achieve a minimum grade 'EXT-B' certification, certificate reference LPCB 443a. The internal lining to the main roof will be Class O rating for surface spread of flame as tested to BS 476 Part :1987. In accordance with the latest test standards all liner fillers to be flame retardant.
- 2.5.8 All external coatings to be either TATA HPS200® Ultra or Colorcoat Prisma® as noted on the architect's drawings. All site cut edges will be suitably treated.
- 2.5.9 The internal finish to the external production/storage space will be PE15 bright white liner enamel to the exposed face of the cladding lining panel.
- 2.5.10 Fire escape doors where indicated on plans shall be security steel door sets with paint finish, colour to match the wall cladding and complete with hinge bolts and panic bolts. All statutory safety notices are included in the Developer's works.
- 2.5.11 Level entry doors to the Warehouse Units will be provided via 1Nr standard colour coated level vehicular access doors which will be electrically operated, 4.00 m wide x 5.00 m high, with TATA HPS 200 ultra or equivalent proprietary finish and equipped with one touch start and stop.
- 2.5.12 Bollards will be provided to protect level access doors externally, being 150 mm diameter CHS tube 1500 mm high to each jamb and cast into the concrete slab. Gloss paint finish to be 100 mm horizontal black/yellow alternate stripes.

Office Area

- 2.5.13 Office cladding to comprise Tata Trimapanel or similar with HPS 200 Ultra finish. The inner lining to external walls to comprise proprietary metal stud with plasterboard and skim finish.

Thermal insulation to walls to meet the current Building Regulations and to be non-hydroscopic and non-combustible.

The cladding to be LPC/FM and Association of British Insurers approved proprietary system with rigid non-combustible insulation core, with factory finish to internal and external finishes.
- 2.5.14 Glazing and curtain walling to comprise of thermally broken polyester powder coated aluminium framed windows complete with hermetically sealed and solar reflective tinted double glazed units with either top or side hung casements and stays and all necessary flashings, hinges, key operated locking mechanisms and ironmongery to permit cleaning from inside the building.

The main office entrance is to comprise glazed doors as indicated on the drawing with aluminium framing and power assistance to comply with DDA requirements, all to match

the windows and to be complete with glazed canopy as indicated on the drawings. Escape doors to offices to be steel faced.

- 2.5.15 The division wall between the office and the warehouse area is to be dense concrete paint grade fair faced blockwork.

2.6 OFFICE, WELFARE AREAS & TOILETS

- 2.6.1 Internal walls as the agreed layout drawing to be either metal framed stud partitions with insulation and plasterboard facings to give 44dB Rw sound insulation and to receive the finish stated below. Partitions to be constructed full height BS5234 duty grade sever.
- 2.6.2 Internal doors to office areas to be solid core with light oak hardwood veneered facings and hardwood lippings complete with light oak hardwood frames and architraves. Internal doors to warehouse entrance corridor, warehouse toilets, lockers and kitchen to be solid core with plywood facing and softwood lippings for oil paint decoration; frames and architraves to be softwood; decorations to comprise primer and two coats of oil paint. Fire doors as required by the Building Regulations including vision panels.

Ironmongery to be heavy duty with satin anodised finished to exposed elements.

Typical specification for office doors to be 1½ pair hinges, lever handles. Mortice lock. Corridor doors to have pull handle/push plate. Kick plates to be provided to all doors, 1 side. Door closers to corridor/internal lobby doors and fire resisting office doors. Window boards to be painted softwood. All internal and external door locks shall be suited to take the same master key.

- 2.6.3 Toilets are to have heavy duty proprietary toilet cubicles complete with all door furniture, door stops, and toilet roll holders.
- 2.6.4 Finishes to be as follows:-

Offices

- Walls: 2 Nr. coat 13 mm thick plaster with 1 Nr. mist and 2 Nr. full coats vinyl silk emulsion to finish. All external plaster angles to be reinforced with angle beads and stop beads to be provided as expansion joints and internal corners and appropriately sealed.
- Ceilings: 600 x 600 Armstrong Dune (or similar) with Tegular edge in pre-finished lay-in grid system supported from the purlins at first floor level.
- Floors: Carpet tiles (PC sum of £ 16/m² for supply only), laid with adhesive tack coat.

Reception Area, Main Stairs and Lobby

Walls: As offices.

Ceilings: 600 x 600 Rockfon non-hygroscopic Deckor tile (or similar) with Tegular edge in pre-finished lay-grid system supported from the underside of the first floor slab at ground level.

Floor: Clay tile and skirting (PC sum of £20/m² for supply only). The floor to include an entrance matwell including a Gradus 4000 or similar mat.

Toilet to Office Areas

Walls: Integrated plumbing duct casing with plastic finish to conceal cylinders and pipework, full width mirrors over vanity units to wash basins and full height tiling to vanity unit returns. Other walls plastered as offices.

Ceilings: Suspended ceilings as above but with moisture resistant vinyl tiles. Tiles to be cleanable with smooth surface.

Floors: Vinyl sheet with matching coved skirtings.

2.7 ELECTRICAL INSTALLATIONS

Incoming Services

2.7.1 A new District Network Operator (DNO) managed incoming Low Voltage (LV) electrical supply and supply authority energy meter shall be installed, terminating within the Warehouse. The new LV supplies are currently proposed as follows or to the end users specific requirements:-

- Unit 2B 140 kVA

2.7.2 The electrical service shall be connected to the District Network Operator electrical supply at all normal times. Provision for a standby power supply (generator or other) is not included.

LV Distribution

2.7.3 A new main LV switch panel shall be installed in the Warehouse adjacent the incoming electrical supply and meter and shall serve all electrical services in the building.

2.7.4 The panel shall be floor standing, manufactured and assembled to BS EN 60439-1 & IEC 439 and be complete with a main incoming multi meter able to display the following information:- Voltage, Current, Frequency, Power kW, Power factor, Reactive power kVAr, Apparent power kVA & Real Energy kWh.

2.7.5 Each outgoing way shall be MCCB protected and have a separate Energy Meter kWh to monitor consumption.

Sub-Distribution Boards

- 2.7.6 Sub distribution boards/supplies shall be installed for the building services (as a minimum) as follows:-
- Warehouse power (door supplies)
 - Office lighting and power
 - Office mechanical services
 - External services
- 2.7.7 The distribution equipment and sub-main cabling shall include:-
- LV distribution equipment manufactured and assembled to BS EN 60439 & IEC 439
 - Sub-metering in accordance with Building Regulations Part L and CIBSE TM39
 - Steel wired armoured sub-main cabling to distribution equipment and control panels
 - All containment necessary for the LV distribution installation
 - An earthing system in accordance with BS 7671 & BS 7430

All distribution equipment shall be left with 25% spare capacity.

Lighting and Emergency Lighting

- 2.7.8 Lighting within the office areas shall provide an average illuminance of 300-450lux at desk height level. Corridors and ancillary areas shall be illuminated to 200lux at floor level.
- 2.7.9 All office area lighting shall be provided by LED luminaires with a typical "lamp" life of up to 50,000 hours. The office areas lighting installation shall consist of recessed LED 600mmx600mm modular luminaires. Prismatic louvres shall be installed in the canteen and "LG7" style louvres shall be installed in office areas. The reception, WC's and corridor shall be illuminated by LED down lights. Stairwells shall be illuminated by circular wall mounted LED luminaires.
- 2.7.10 Office lighting control shall be in the form of daylight sensors, presence detectors and manual switches as appropriate for the area served.
- 2.7.11 The office lighting installation shall be wired in PVC twin & earth cable (6242B) installed on steel wire basket within the ceiling void. Final connection shall be via plug-in ceiling roses or lighting modules.
- 2.7.12 All Warehouse lighting (temporary or permanent) shall be by the occupier.
- 2.7.13 Emergency lighting shall be installed to the Office only to allow safe egress out and away from the building in the event of a circuit or total mains failure. The emergency lighting system shall indicate clearly and unambiguously all escape routes, internally and externally as required and provide illuminance along exit routes and external areas so as to allow safe movement towards and through exits. The system shall also ensure that the fire alarm call points and fire fighting equipment provided along escape routes can be located when the normal lighting has failed.



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2.7.14 Emergency lighting shall be the form of standard luminaires fitted with 3hr integral inverters and batteries. All works associated with the emergency lighting system shall be carried out in accordance with the requirements set out in BS 5266-1:2005 and 8:2004.

General LV Power

2.7.15 Office Power

The office area general power installation shall include the following:-

- 2No twin switch sockets per 3Lm of skirting trunking.
- Supplies for cleaner sockets
- Supplies for tea points/kitchenettes/fridges/dishwashers (as detailed on the architects drawing)
- Supplies for hand driers
- Supplies for the fire system
- DDA toilet alarm, supplied and installed

2.7.16 The office power installation shall be wired in PVC twin & earth cable (6242B) installed on steel wire basket within the ceiling void serving surface mounted 3 compartment white PVC skirting trunking applied to all walls.

2.7.17 In addition to the skirting trunking four recessed 3 compartment floor boxes shall be installed in the ground floor meeting room and two 3 compartment floor boxes in the first floor meeting room. Each floor boxes shall contain two twin switch sockets and one spare way for the Client's data services. The ground floor (floor) boxes shall be served by screed trunkings and the first floor from the ceiling void below.

2.7.18 Warehouse Power

The general power installation within Warehouse shall include the following as required:-

- Supplies for external loading doors/dock leveller doors.
- General maintenance socket (1No SPN TSSO) adjacent main panel.

2.7.19 The power installations shall be wired in steel wired armoured cable secured to galvanised steel tray or single LSZH insulated cables contained within PVC or steel trunking/conduits (as required). All services shall be surface mounted.

2.7.20 Small power accessories shall be surface mounted and suitably IP rated for the environment in which they are installed.

2.7.21 All works associated with the small power installation shall be carried out in accordance with the drawings, schedules and BS 7671 17th Edition of the Wiring Regulations.

2.7.22 All other Warehouse power (temporary or permanent) shall be by the end user.

Information Technology and Communication

2.7.23 The telecommunication incoming supply and ITC installation shall be by the occupier. A BT free issue telecom duct shall be installed by the main contractor between boundary and building (office) and left with a draw rope.

Fire Detection and Alarm

- 2.7.24 The fire detection and alarm system shall be installed in the office area only to meet requirements of BS 5839-1:2002 + A2:2008 and the Approved Inspector, providing a L1 level of protection. The system shall be an analogue addressable system and have the capacity to be extended (by the client) to provide coverage to the Warehouse area.
- 2.7.25 No allowance has been made for Sprinkler or Gas Suppression Systems.

Access and Security Systems

- 2.7.26 All access and security systems shall be by the end user. However cable ducts (for future use) to the external gates shall be installed, refer to Section 3.10 below.

Music Systems and Public Announcement

- 2.7.27 All music and public announcement systems shall be by the end user.

Lightning Protection System

- 2.7.28 A lightning protection system shall be installed in accordance with British Standard BS 62305:2006.

External Services

- 2.7.29 External lighting shall be provided to the car park, dispatch yard and to provide safe egress from the buildings exits. The design of the lighting shall utilise building and column mounted luminaires as required to provide the following average illuminance levels:-
- Car park, service yard and road ways 15lux minimum
 - Level entry doors 50lux
 - Building exits 20lux
- 2.7.30 The external lighting shall be in accordance with CIBSE Lighting Guide 6, BS 5489-1:2003 and ILE Guidance notes table 1 for the reduction of obtrusive light. The lighting design will also be developed with the guidance of the Architect and the Local Planning Authority.
- 2.7.31 Luminaires shall be from Kingfisher lighting or equal.

External Signage

- 2.7.32 Three single phase power supplies shall be provided for building mounted illuminated signage and one single phase power supply shall be provided for a Totem style sign. All signage shall be by the occupier.
- 2.7.33 All external lighting and the signage supplies shall be controlled via a day light saving time clock and photocell.

External Ducts



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- 2.7.34 A BT free issue telecom duct shall be installed between boundary and office and left with a draw rope.
- 2.7.35 2No 100mm PVC ducts shall be installed between Office and the Car Park Barrier. A further 2No 100mm PVC ducts shall be installed between and the Office and the Services Yard Gate.
- 2.7.36 All Ducts shall be left with a draw rope for the future provision of a power and intercom services cables as required by the end user.

2.8 MECHANICAL INSTALLATIONS

2.8.1 Each unit shall be served with a new supply authority meter terminated at the site boundary. The supply shall then be extended over to and terminated within the production area. The water supply shall be sized as follows to serve the building services requirements or to the end users specific requirements:-

- Unit 2B 40 mm

2.8.2 Each unit shall be served with a new incoming gas supply terminated at a supply authority meter located within the production area. The gas supply shall be sized as follows to serve the building services heating requirements or to the end users specific requirements:-

- Unit 2B 105kWh (Peak)

Heating & Cooling

- 2.8.3 Heating to the office areas shall be provided by energy efficient air source heat pump heating system with variable thermostatic controls and 24hr timer. The system shall be designed to maintain an internal temperature during the Winter of 23°C.
- 2.8.4 Cooling to office areas (temporary or permanent) shall be by the end user.
- 2.8.5 Warehouse heating/cooling (temporary or permanent) shall be by the end user.

Domestic Hot and Cold Water Service

- 2.8.6 The incoming cold water service shall be mains fed with hot water generated via either localised electric hot water storage heaters or a gas fired boiler.
- 2.8.7 All pipework in the office areas shall be Copper. All of the domestic hot and cold water services shall be insulated. Pipework liable to frost attack shall be provided with trace tape frost protection.
- 2.8.8 The domestic water system shall be designed and installed in accordance with CIBSE TM13 guidance notes and checklist and L8.



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2.8.9 Connections with local isolators shall be provided to the following sanitary ware:-

- WC's
- Wash Hand Basins
- Shower

2.8.10 Warehouse Domestic services (temporary or permanent) shall be by the occupier.

Hygiene/Specialist Cleaning Systems

2.8.11 All Hygiene/Specialist cleaning systems (if required) shall be by the occupier.

Compressed Air

2.8.12 All compressed air services (if required) shall be by the occupier.

Mechanical Ventilation Installation

2.8.13 Ventilation to the office areas shall where possible be by the means of openable windows.

2.8.14 Where internal occupied spaces are configured a fresh air ventilation heat recovery system shall be provided to achieve 10 litres per second of fresh air per occupant in the space.

2.8.15 Toilets shall be provided with a mechanical extract system.

2.8.16 Warehouse ventilation (temporary or permanent) shall be by the occupier.

2.9 EXTERNAL WORKS

2.9 .1 Service Yard & Access Routes:

- i) Service yard and access routes shall be reinforced concrete using C35 air entrained concrete laid to falls, brush finish and trowelled edges in bays on hard core and sub-base construction all to the Structural Engineer's design.
The Contractor will be required to retain concrete test cube results for inspection by the Occupier's Representative.
In-situ concrete slabs to be capable of taking a 44 tonne load over 4 axles and 15 m long articulated vehicles.
- ii) Maximum cross falls of 1 in 40 to the main service road and yard. The fall away from the level entry doors is to be 1:40. The fall away from dock levellers is to 1:80 for a maximum distance of 8.00 m, then rise at a maximum gradient of 1:30. Surface tolerance for the concrete service areas is to +/- 10 mm.
- iii) The service yard to be designed for a design life of not less than 20 years and 10 million standard axles.
- iv) Kerbs to the service yards, access roads and circulation areas shall be designed to adequately direct, control vehicles and particular consideration will be given to the protection of pedestrians on fire paths and other pedestrian access routes. Trieff kerbs or similar shall be provided to protect vulnerable areas.
- v) Vehicular protection shall be provided to all external rainwater pipes and wall cladding to prevent impact damage.



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2.9.2 Car Parking Areas

Provide dense Bitumen wearing course on base course and sub-base to Engineer's detail. Provide kerbs and drop kerbs. Car park's gradient to be 1 in 40 maximum. Spaces to be 2.5 m x 4.8 m minimum with disabled spaces being 3.6 m x 6.0 m, including all white lining.

2.9.3 Lining and Marking to Yard, Site Entrance & Car Park

Directional markings in yard to be in yellow spray applied thermoplastic paint. Differentiation of car parking and vehicle parking bays, directional arrows and traffic marking on roads in thermoplastic paint. The extent of markings as indicated on the site layout plan.

2.9.4 Landscape

Planting to be carried out in accordance with scheme agreed with Planners and approved by the Occupier and will include bark mulching. The landscaping will be maintained for twenty four months after practical completion.

Planted areas to have minimum 300 mm topsoil.

Grassed areas within the site boundary to have minimum 150 mm topsoil.

2.9.5 Footpaths & Pavements

Paving to be laid on 50 mm sand bed on 150 mm type 1 sub base. The area adjacent to the main entrance will be paved with block paviors. Other pedestrian areas will be paved with precast concrete flagging. External paving areas to the building to be ramped without kerbs or steps to allow easy access to the unit.

2.9.6 Fire Access (if required)

Provide fire engine access route to perimeter of building sub-base which shall be capable of taking a typical fire engine. The surface finish shall be gravel or ecoblock/grasscrete type finish.

2.9.7 Drainage

- i) Provide foul drainage from toilet areas and connect via private gravity sewer in site to adopted sewers at a location to be agreed with Local Authority.
- ii) Provide channel drainage with continuous cover in service areas and gully connection to car park area and discharge via interceptor into attenuation tank or soakaway facility. The surface water sewers on the site shall be designed in accordance with the Sewer for Adoption guidelines (latest edition) such that no surcharging of the sewer occurs in an 1 in 2 year storm event and no flooding occurs in an 1 in 30 year event. Surface water from the development shall discharge into an attenuation soakaway system. The drainage system shall be designed so that no surface water flooding occurs from an 1 in 100 year event plus an allowance for climate changes (LPA Standard).
- iii) All above ground external RWP's to be in polyester powder coated aluminium/galvanised steel. Foul shall be in uPVC. Below ground drainage to be

flexible jointed pipework to Structural Engineer's requirements. All below ground drainage shall be surveyed with CCTV on completion of the system and a copy is to be issued to the Occupier's Representative.

- iv) Drains to be encased in 150 mm concrete where passing under buildings or within 1200 mm of finished ground level and provide reinforced concrete lintels over drains when passing through walls.

2.9.8 Manholes

High capacity/heavy duty manhole covers shall be utilised and located as conveniently as possible. Internal manholes shall not be permitted within the building.

2.9.9 Security Fencing/Gates

Security fencing to enclose the yard to be black weld mesh polyester powder coated paladin type fencing to a minimum height of 2.4 m. with security gates to separately access/exit the service yard shall be provided. The service yard gate to include containment for the installation of access control by the Occupier. All fencing and gates to satisfy Planning requirements.

2.9.10 A proprietary bicycle rack to satisfy Planning requirements shall be provided.

2.9.11 A timber fenced bin enclosure with access gate to satisfy Planning requirements shall be provided.

2.9.12 A proprietary smoking shelter shall be provided. Site to be agreed.

3.0 SUSTAINABILITY ISSUES

3.1 The Design Framework Statement for Butterfields Business Park development requires all developments to incorporate a number of sustainable initiatives, including the integration of some on site Low or Zero Carbon technologies, which will enable the development to achieve a BREEAM 2006 "Good" rating, as well as achieving a carbon building emission rate (BER) at a level 10% better than required under the Building Regulations Part L 2006 Target Emissions rating.

3.2 BREEAM 2006 is not the latest BREEAM assessment method therefore a BREEAM 2014 Good shall be achieved.

3.3 With regards to Building Regulations Part L, 2006 is not the latest version; this project will be registered under Building Regulations 2013 (Note complying with Building Regulations 2013 will exceed a 25% reduction in the carbon emission rate when compared to Building Regulations 2006).

3.4 A 2013 Part L calculation will be undertaken and via the proposed introduction of energy efficient air source heat pump heating system and a high efficiency lighting scheme incorporating automated lighting controls it shall be demonstrated that the project will comply with 2013 Building Regulations.

4.0 EXCLUSIONS

The following do not form part of the Developer's Works:-

- sprinkler installations
- racking
- Standby Power supplies
- Warehouse lighting and power (temporary or permanent) unless detailed above.
- Warehouse Ventilation, Heating or Cooling
- Hand driers
- General end user equipment
- IT installation
- Security systems
- PA/Music Systems
- Projection/display equipment and wiring
- Illuminated Signage
- Rain water harvesting
- Fire extinguishing System