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|  | NEWMARKET INVESTMENT PARTNERSHIP |  |
|  | Employer’s Requirements: Specification  |  |
|  |  |  |
|  |   |  |
|  |
|  |  |  |
|  | THE OAKS, BUILDING 2, FORDHAM ROAD, NEWMARKET, SUFFOLK |  |
|  |  |  |
|  | **Prepared by:** | Jonathon Grove BSc(Hons) MRICS | **CS2 Limited** |  |
|  | **Checked by:** | Andrew Mather BSc (Hons) MRICS | Bridgewater House4 QueensbridgeNORTHAMPTONNN4 7BF |  |
|  | **Date:** | July 2022 |  |
|  | **Our reference:** | 1051736/ALM |  |
|  | **Revision:** | Tender RevisionA |  |
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 ENGINEERS FEE PROFILE

**SCHEME REQUIREMENTS**

**1.00 General**

1.01 The Project: Office Building

 The Oaks

Fordham Road

 Newmarket

 Suffolk

1.02 Employer: Newmarket Investment Partnership

1.03 Employer’s Agent: CS2 Limited

 Bridgewater House

 4 Queensbridge

 Northampton

 NN4 7BF

1.04 The Contractor:

 The Company fulfilling the obligations as set out in Section 2 of the JCT Design and Build Contract 2016 incorporating all current amendments.

1.05 The Contractor will appoint a design team of qualified professionals as required to undertake and complete all Design and Construction Phase inspection, monitoring, attendance at site meetings etc., as required to complete the proposed works including Architect, Structural Engineer, Civil Engineer, Mechanical Engineer, Electrical Engineer, BREEAM Assessor and Practitioner, SBEM and Energy Specialist, Building Control Inspector, Fire Engineer, Acoustician, Principal Designer (CDM) etc., (not exhaustive).

1.06 Following appointment to commence design, the contractor will publish a schedule of design review meetings for attendance by the employer and/or Employer’s agent. Design review meetings will be a minimum of every 4-weeks during the design period. These meetings will be minuted by the contractor, minutes will be issued within 5-working days of the meeting with clear actions set out and timescales.

1.07 The contractor may issue design and construction drawings to the Employer for comment only. All such drawings are to be issued in PDF format, with a minimum 5-working day period (10-working days where it concerns building services) for the employer to return any comment. If the contractor receives no comments after these periods it is deemed there are no comments. The contractor is responsible for approving all construction drawings produced by the contractor’s designers, sub-contractors and/or supply chain.

1.08 Should the contractor propose any variation to the Employer’s requirements, the contractor must provide a sufficient level of construction and/or product information in the form of specification and drawings, cost and programme impact, to the employer and Employer’s agent with a 5-working day period (10-working days where it concerns building services) for review. No variation to the Employer’s requirements is to occur without agreement from the employer or Employer’s agent in writing (email format acceptable).

1.09 In the unlikely event that the development project did not proceed or was delayed, the Contractor will provide the Employer with copies of all completed drawings, design and specification files completed to that point in time, in both digital, DWG/REVIT and PDF formats. For avoidance of doubt the Employer’s has full copyright of the design and all design documents.

1.10 Architect: Woods Hardwick

 17 Goldington Road

 Bedford

MK40 3NH

 The Contractor shall appoint the above-named Architect as his Design Architect. It is expressly stated that all works carried out by the Design Architect prior to the appointment of the Contractor and throughout the Contract shall be the entire responsibility of the Contractor. The Contractor will be responsible for the payment of all Architects fees due to them up to and including the preparation of the Employer’s Requirements (RIBA Stage D) as set out in the fee proposal information contained in Appendix X. The Contractor will also be responsible for the payment to the Architect of all subsequent fees due to them, as part of this project, as set out in Appendix X.

1.11 Civil and Structural Engineer: Bailey Johnson Hayes

 Suite 4,

 Phoenix House,

 63 Campfield Rd,

 St Albans

 AL1 5FL

 The Contractor shall appoint the above-named Civil and Structural Engineers. It is expressly stated that all works carried out by the Civil and Structural Engineers prior to the appointment of the Contractor and throughout the Contract shall be the entire responsibility of the Contractor. The Contractor will be responsible for the payment of all Civil and Structural Engineers fees due to them up to and including the preparation of the Employer’s Requirements as set out in the fee proposal information contained in Appendix X. The Contractor will also be responsible for the payment to the Architect of all subsequent fees due to them, as part of this project, as set out in Appendix X.

1.12 CDM Principal Designer:

 The Contractor is to properly fulfil the role of CDM Principal Designer, as envisaged under the Construction (Design and Management) Regulations 2015. The Contractor is to allow for fully complying with this legislation in acting in this role.

1.13 The Principal Contractor:

 The Contractor is to properly fulfil the role of Principal Contractor, as envisaged under the Construction (Design and Management) Regulations 2007. The Contractor is to allow for fully complying with this legislation in acting in this role.

**2.00** **Drawings**

2.01 The Contractor’s attention is drawn to Clauses 2 and 5 of the Conditions of Contract in that it is his responsibility to produce all drawings and other necessary documents for the construction of the proposed buildings and ancillary works and provide the necessary copies to the Employer and his Agent.

2.02 The drawings which form part of these Employer’s Requirements are contained within Appendix VI of the Employer’s Requirements:

|  |  |  |
| --- | --- | --- |
| **#** | **Rev.** | **Description** |
| 1702 |  | Myhill Consulting; Building 2 Presentation Sheet 1 |
| 1702 |  | Myhill Consulting; Building 2 Presentation Sheet 2 |
| 1702/01 | C | Myhill Consulting; Location Plan  |
| 1702/02 | D | Myhill Consulting; Site Plan |
| 1702/03 | A | Myhill Consulting; Floor Plan  |
| 1702/04 | A | Myhill Consulting; Section & Elevations |
| 1702/06 | A | Myhill Consulting; Boundary Treatments  |
| 1702/07 | A | Myhill Consulting; Refuse Bin, Condenser Compound and Cycle Storage Details  |
| 1702 | B | Myhill Consulting; Schedule of Materials  |
| 1702 |  | Myhill Consulting; Design and Access Statement  |
| S142401 |  | Bailey Johnson Hayes; Carpark Access Details  |
| S142402 | B | Bailey Johnson Hayes; Carpark Details  |
| S142403 | B | Bailey Johnson Hayes; Drainage Layout  |
| S142404 | B | Bailey Johnson Hayes; Carpark Section  |
| S1424D1 | B | Bailey Johnson Hayes; Surface Water Drainage Design (Calcs) |
| S1424 | 1 | Scehdule of Maintenance Works Required for Site Drainage & SuDS Features |
| B17073.101 | A | The Landscape Partnership; Detailed Landscape Proposals |
|  |  |  |

**3.00** **The Site**

3.01 The Site: The site is situated to the south of Oaks Drive, Newmarket, Suffolk, as indicated on Woods Hardwick’s drawings as listed in Section 2.02.

3.02 Boundaries: The boundaries are as indicated on Myhill Consulting’s Location Plan 102/02 D.

3.03 Adjacent Sites: The Contractor shall take all reasonable precautions to prevent workers, including those employed by Sub-Contractors, from trespassing on adjoining owner’s property.

3.04 Existing Mains/Services: It is the Contractor’s responsibility to ascertain the availability, suitability of capacities for his proposals, positions and routes of all services to the site in order to accord with his proposals.

3.05 Existing Mains/Services: It is the Contractor’s responsibility to liaise with all Local Authority departments and service providers who have any jurisdiction with regard to theWorks. The Contractor shall obtain from them details of the location of all existing services and their requirements in relation to the services and the Works.

3.06 Mains Utility Services and Connections: It is the Contractor’s responsibility to provide all mains utility and building services connections including sub stations, electricity, water supplies, diverse fibre and copper telecommunications and data, drainage and fire hydrants between plot boundary entry locations and final connections to all buildings and external works, as required to provide a fully operational and functioning completed development for occupation.

3.07 The contractor shall co-ordinate the various appropriate services suppliers/statutory bodies responsible for such services with each other and with the remainder of the works, provide all necessary attendance, setting out and the like and shall pay all fees and charges. The costs levied by the electricity and water supply companies may be expressed as a provisional sum. However, these provisional sums relate only to the actual invoiced costs levied by the services suppliers. All attendance, profit and builders work is to be included in the main tender sum.

3.08 It is the contractor’s responsibility to manage the ordering and installation of all utility meters, sufficient for the declared supply capacities and required for the site and buildings to operate, liaising with the Employer as necessary.

3.09 Any work carried out to or which affects new or existing utilities and services must be in accordance with the Byelaws or Regulations of the relevant Statutory Authority.

3.10 It is the contractor’s responsibility to make adequate provision for utilities and services, including unobstructed routes and fixings. Wherever possible, ducts, chases and holes are to be formed during construction rather than cut.

3.11 It is the contractor’s responsibility to organise, manage and provide all temporary services in the form of electrical power, lighting, water, telecoms and data that the contractor deems necessary in order to complete the proposed works

3.12 Site Investigation: It is the Contractor’s responsibility to carry out all site investigations necessary in order to verify the viability of his proposals.

3.13 Contamination Report: It is the Contractor’s responsibility to carry out all site and other investigations necessary in order to verify the presence of any contamination of the site which will affect his proposals and to ascertain the extent of all remedial works required.

3.14 Reports provided: A copy of the following document is attached in Appendix IV. It should be noted that neither the Employer nor Employers Agent take any responsibility whatsoever for the accuracy of the information contained within this document:

* Enverity’s Contaminated Land Site Investigation Report Ref: E04024/1
* Enverity’s Geotechnical Site Investigation Report Ref: C9564

3.15 Access to the Site: Access to the site is to be agreed, by the Contractor, with C S 2 Limited. The Contractor is to provide all necessary works of temporary access to the site in order to properly carry out the works and shall allow for the removal of such temporary access upon completion.

3.16 Keep Clean: The Contractor will be responsible for keeping the public highway and pavements free from obstruction by vehicles or droppings there from and from rubbish, dust and mud. Any damage caused must be made good promptly, to the satisfaction of the Highway Authorities and the reasonable satisfaction of the Employer’s Agent, and at the Contractor’s expense.

3.17 Parking: Parking of the Contractor’s and employees’ vehicles will be restricted to the site.

3.18 Use of the Site: Do not use the site for any purpose other than carrying out the Works.

3.19 Risks to Health and Safety: The nature and condition of the site is to be ascertained by the Contractor.

3.20 Site Visit: Before tendering, ascertain the nature of the site, access thereto and all local conditions and restrictions likely to affect the execution of the works. No claim will be entertained for lack of investigation or knowledge in respect of the above factors.

3.21 Site Visit: Appointments to visit site are to be arranged through the Employer’s Agent.

3.22 Unauthorised Access: The Contractor is to take all reasonable measures to prevent access to the Works by any unauthorised person or persons and shall indemnify the Employer against all damage, theft or other expense resulting from such trespass.

**4.00 Description of the Work**

4.01 The works firstly comprise the obtaining of all necessary statutory consents for the satisfactory completion of the scheme.

4.02 Secondly, the project involves the preparation of the site and the construction of the development, all as indicated on the drawings as listed in Section 2.02 of this document. The building is to be provided ‘shell and core’ and designed to comply in all respects with the requirements of the various statutory authorities.

4.03 Thirdly, the project is to incorporate external landscaping and the provision of access roads, car-parking areas etc, together with the provision of all necessary services.

4.04 Within the limits of the brief, the Designers working for the Contractor are encouraged to be innovative in their architectural treatment of the building and in the consideration of accommodating a future occupier’s environmental services. In this they should have due regard to the potential installation of energy efficient technology such as solar PV, where it is appropriate and economic. For example, to enhance the base build (structural design) in order to allow the roof structure to support the future installation of solar PV, and to provide suitable risers etc.

4.05 The Contractor is to pay particular attention to the future maintenance and cleaning of the building. It is essential that maintenance and cleaning can be carried out in a simple, efficient and economical manner.

4.06 The Contractor will design an “environment friendly” building. All insulation materials etc, are required to be “ozone friendly” and tropical hardwoods are not to be used.

4.07 The Contractors and Designers are to note that the building must comply in all respects with the Equality Act 2010.

**5.00 The Contract**

5.01 Contract Form: The form of Contract will be the JCT Design and Build Contract 2016 incorporating all current amendments.

5.02 The following amendments will be made to the standard form:

5.03 Construction Industry Scheme (CIS): Fourth Recital and clause 4.5 – Employer at Base Date is not ‘Contractor’ for the purposes of the Act and Regulations.

5.04 Description of Sections: Fifth Recital – not applicable.

5.05 Framework Agreement: Sixth Recital – not applicable.

5.06 Supplemental Provisions – Part 1: Seventh Recital and Part 1 of Schedule 2 – paragraphs 1, 4 and 5 apply. Paragraphs 2 and 3 do not apply.

5.07 Supplemental Provisions – Part 2: Seventh Recital and Part 2 of Schedule 2 – paragraphs 6, 8, 9, 10, and 11 apply. Paragraphs 7 to 12 do not apply.

5.08 Employer’s Requirements; Contractor’s Proposals and Contract Sum Analysis: Article 4 – tba.

5.09 Arbitration: Article 8 – apply.

5.10 Base Date: 1.1 – Date of Tender Return.

5.11 CDM Planning Period: 1.1 – 2 weeks ending on the Date of Possession.

5.12 Date for the Completion of the Works: 1.1 – tba.

5.13 Addresses for the service of notices etc by the parties: 1.7 – Employer – tba.

 Contractor – tba.

5.14 Date of Possession of the Site: 2.3 – tba.

5.15 Deferment of possession of the site: 2.4 – 6 weeks.

5.16 Limit of Contractor’s liability for loss of use etc: 2.17.3 – not applicable.

5.17 Liquidated damages: 2.29.2 – at the rate of £6,000 per week or part thereof.

5.18 Rectification Period: 2.35 – twelve months.

5.19 Advance Payment: 4.6 – does not apply.

5.20 Advance Payment Bond: 4.6 – not applicable.

5.21 Method of Payment – alternatives: 4.7 – Alternative B to apply; first date tba.

5.22 Listed items – uniquely identified: 4.15.4 – not applicable.

5.23 Listed items – not uniquely identified: 4.15.5 – not applicable.

5.24 Contractor’s Retention Bond: 4.17 – not applicable.

5.25 Retention Percentage: 4.18.1 – 5%.

5.26 Fluctuations Options: 4.19 and Schedule 7 – this Contract will not be subject to fluctuations.

5.27 Daywork: 5.5 – not applicable.

5.28 Contractor’s insurance – injury to persons or property: 6.4.1.2 - £2,000,000.

5.29 Insurance – liability of Employer: 6.5.1 – not applicable.

5.30 Insurance of the Works – insurance options: 6.7 and Schedule 3 – insurance option A applies.

5.31 Percentage to cover professional fees: 6.7 and Schedule 3 Insurance Option A – 10%.

5.32 Annual renewal date of insurance as supplied by Contractor: 6.7 and Schedule 3 Insurance Option A – tba.

5.33 Professional Indemnity Insurance: 6.12 - £2,000,000 for any one occurrence or serious of occurrences: expiry date to be 12 years from date of practical completion of the Works.

5.34 Joint Fire Code: 6.14 – the Joint Fire Code does not apply.

5.35 Joint Fire Code – amendments/revisions: 6.17 – not applicable.

5.36 Assignment/grant by Employer of rights under clause 7.2: 7.2 – applies.

5.37 Period of suspension: 8.9.2 – two months.

5.38 Period of suspension: 8.11.1.1 o 8.11.1.6 – two months.

5.39 Adjudication: 9.2.1 – President or a Vice-President or Chairman or a Vice-Chairman of the Royal Institution of Chartered Surveyors.

5.40 Arbitration: 9.4.1 – not applicable.

**6.00** **Contractor Guarantee Bond**

6.01 The Contractor shall furnish security for the due execution of this contract by obtaining an insurance backed bond to the value of 10% of the contract sum with an approved insurance company or bank. The bond shall be released when the certificate of practical completion is issued. The bond shall be in a form substantially similar to that contained in ‘Appendix IV’.

6.02 The Contractor shall, as a condition precedent to any payment, obtain the required bond.

**7.00** **Parent Company Guarantee**

7.01 The Contractor shall provide a parent company guarantee to the Employer in a form substantially similar to that contained in ‘Appendix III’. The Contractor shall, as a condition precedent to any payment, provide and execute an approved parent company guarantee.

**8.00** **Collateral Warranties**

8.01 The Contractor acknowledges that collateral warranties in the appropriate form set out at ‘Appendix I’ may be required from the Contractor in favour of any party providing finance in connection with the Works and/or the owners of the Site (if not the Employer) and/or any purchaser or lessee (and if so requested their mortgagee or other financier) with an interest in the Works and/or the Site.  The Contractor shall execute and deliver to the Employer the appropriate form of warranty within four weeks of the Employer's written request for it giving details of the name and address of the Beneficiary in question.

8.02 The Contractor will be required to notify the Employer and Employer’s Agent of the names of the professional consultants in addition to those noted in Section 1.00, used in the design of the project. The Contractor will procure that the named consultants (“The Consultants”), who will include those noted in Section 1.00, will execute agreements for collateral warranty in a substantially similar form to that attached in Appendix 12. The Contractors are to use their best endeavours to ensure that the collateral warranty agreements are executed by the Consultants within four weeks of commencement of Work on site.

8.03 All sub-contractors with design input shall also be considered as “Consultants”. The Contractor will procure that all sub-contractors with a design input will execute agreements for collateral warranty in a substantially similar form to that attached in Appendix 13. The Contractors are to use their best endeavours to ensure that the collateral warranty agreements are executed by the Sub-contractors with design input within four weeks of commencement of Work on site.

8.04 In connection with the warranties the Contractor will also use their best endeavours to procure that the following documents are provided within four weeks of commencement of Works: -

* A copy of the appointment document for the Consultants/Sub-contractors with design input.
* Verification of the Contractors/Consultants/Sub-contractor with design inputs professional indemnity insurance.

**9.00** **Professional Indemnity Insurance**

9.01 The Contractor shall effect and maintain, with a reputable EU insurance office, for the duration of the Works and thereafter for a period of twelve years from the date of practical completion of the works, professional indemnity insurance with a limit of indemnity of not less than £2,000,000.00 in respect of each and every claim, provided that such insurance is generally available in the market at commercially reasonable rates and the Contractor shall produce to the Employer/Employers Agent, on demand, from time to time, such evidence as the Employer/Employers Agent may require to satisfy themselves that the terms of this clause are being complied with.

9.02 The Consultants shall effect and maintain, with a reputable EU insurance office, for the duration of the Works and thereafter for a period of twelve years from the date of practical completion of the works, professional indemnity insurance with a limit of indemnity of not less than £2,000,000.00 in respect of each and every claim, provided that such insurance is generally available in the market at commercially reasonable rates and the Consultants shall produce to the Employer/Employers Agent, on demand, from time to time, such evidence as the Employer/Employers Agent may require to satisfy themselves that the terms of this clause are being complied with.

9.03 The Sub-contractors with design input shall effect and maintain, with a reputable EU insurance office, for the duration of the Works and thereafter for a period of twelve years from the date of practical completion of the works, professional indemnity insurance with a limit of indemnity of not less than £2,000,000.00 in respect of each and every claim, provided that such insurance is generally available in the market at commercially reasonable rates and the Sub-contractors with design input shall produce to the Employer/Employers Agent, on demand, from time to time, such evidence as the Employer/Employers Agent may require to satisfy themselves that the terms of this clause are being complied with.

9.04 The Contractors, Consultants and Sub-contractors with design input shall immediately inform the Employer/Employers Agent if such an insurance ceases to be available at commercially reasonable rates in order that the Contractors, Consultants and Sub-contractors with a design input and the Employer can discuss means of best protecting their respective positions in relation to this project and the Contractors, Consultants and Sub-contractors with design input shall, in any event, take out and maintain insurances pursuant to Clause 9.01 for the next highest amount which is available, at commercially reasonable rates.

**10.00** **Tendering/Sub-Letting/Supply**

10.01 Scope: These conditions are supplementary to those stated in the invitation to tender and on the Form of Tender.

10.02 Acceptance of Tender: The Employer and his representatives offer no guarantee that the lowest or any tender will be recommended for acceptance or accepted and will not be responsible for any cost incurred in the preparation of any tender.

10.03 Period of Validity: Tenders must remain open for consideration (unless previously withdrawn) for not less than 13 weeks from the date fixed for the submission or lodgement of tenders.

10.04 Check Documents: The pages of the Employer’s Requirements Document are in section and numerical order. The Contractor is to check the page numbers and notify the Employer’s Agent should any of the pages be duplicated or missing. No claim for loss will be allowed, should the Contractor fail to check the pages.

10.05 Pricing of Employer’s Requirements Document: Alterations and qualifications to the Employer’s Requirements Document must not be made without written consent of the Employer’s Agent. Tenders containing unauthorised alterations or qualifications may be rejected. Costs relating to items in the Employer’s Requirements Document which are not priced will be deemed to have been included elsewhere in the tender.

10.06 Contract Sum Analysis: The Contract Sum Analysis submitted with the Contractor’s Proposals must comprise a breakdown of the Contract Sum into at least the BCIS Elemental Format.

10.07 Programme: The Contractor’s proposed programme, or a summary thereof, showing the sequence and timing of the principal parts of the Works, periods for planning and design and itemising any work which is excluded must be submitted with the tender.

10.08 Tender Stage Method Statement: Tender Stage Method Statements must be submitted prior to Contract commencement describing how and when the Contractor proposes and undertakes to carry out all elements of work.

10.09 Alternative Method Tenders: In addition to and at the same time as his tender for the Works as defined in the tender documents, the Contractor may, at his discretion, submit alternative method(s) of construction for consideration. Alternatives which would involve significant changes to other work will not be considered. Such alternative(s) will be deemed to be alternative tender(s) and each must include a complete and precise statement of the effects on cost and programme. Carry out a health and safety risk assessment for each such alternative and, where appropriate, provide a safety method statement suitable for incorporation in the Health and Safety Plan. Full technical data for each such alternative must be submitted within one week of request, together with details of any consequential amendments to the design and/or construction of other parts of the Works.

10.10 Quality Control Resources: A statement must be submitted within one week of request describing the organisation and resources which the Contractor proposes and undertakes to provide to control the quality of the Works, including the work of Sub-Contractors. The statement must include the number and type of staff responsible for quality control, with details of their qualifications and duties.

10.11 Health and Safety Information: A statement must be submitted with the tender describing the organisation and resources which the Contractor proposes and undertake to provide to safeguard the health and safety of operatives, including those of Sub-Contractors and of any person who may be affected by the Works, including: -

10.11.1 A copy of the Contractors health and safety policy document, including risk assessment procedures.

* + 1. Accident and illness records for the past five years.
		2. Records of previous Health and Safety Executive enforcement action.
		3. Records of training and training policy.

10.11.5 The number and type of staff responsible for health and safety on this project, with details of their qualifications and duties.

10.12 An Outline Construction Phase Plan must be developed and submitted with the tender and is to include the following:

10.12.1 Method statements related to the hazards identified in the pre-tender health and safety plan and/or statements on how the hazards will be addressed and other significant hazards identified by the Contractor.

10.12.2 Details of the management structure and responsibilities.

10.12.3 Arrangements for issuing health and safety directions.

10.12.4 Standards of health and safety to be applied.

* + 1. Procedures for informing other Contractors and Employees of health and safety hazards.
		2. Selection procedures for ensuring competency of other Contractors, the self-employed and designers.
		3. Procedures for communications between the project team, other Contractors and site operatives.
		4. Arrangements for co-operation and co-ordination between Contractors.
		5. Procedures for managing design work carried out during the construction phase.
		6. Procedures for carrying out risk assessment and for managing and controlling the risk.
		7. Emergency procedures, including fire escape.
		8. Arrangements for ensuring that all accidents, illness and dangerous occurrences are recorded.
		9. Arrangements for welfare facilities.
		10. Procedures for ensuring that all persons on site have received relevant health and safety information and any training.
		11. Arrangements for consulting with and taking the views of people on site.
		12. Arrangements for preparing site rules and drawing them to the attention of those affected and ensuring their compliance.
		13. Arrangements for collecting and collating information for the health and safety file.
		14. Monitoring procedures to ensure compliance with site rules, selection and management procedures, health and safety standards and statutory requirements.
		15. Review procedures to obtain feedback.

10.13 Domestic Sub-Contracts: Where these do not involve design, comply with the NJCC “Code of Procedure for the Letting and Management of Domestic Sub-Contract Works”. Where these involve design, follow in principle the NJCC “Code of Procedure for Selective Tendering for Design and Build” and use the current edition of Domestic Sub-Contract DOM/2.

10.14 The tendering Contractors will be expected to submit, as part of their tender, the following information: -

10.14.1 Visual presentation of the scheme, showing the appearance of all elevations, together with internal floor layouts, site plans and coloured elevations/prospective drawings.

10.14.2 A detailed Specification for the Works, giving full information on the methods and materials used throughout the project.

10.14.3 Those items noted above.

**11.00** **Provision, Content and Use of Documents**

11.01 Definitions: The meaning and terms, derived terms and synonyms used in the preliminaries/general conditions and specification is as defined below, or in the appropriate British Standard or British Standard glossary.

11.02 Employer’s Agent: Employer’s Agent means the person nominated in the Contract as Employer’s Agent or his authorised representative.

11.03 In Writing: When required to notify, inform, instruct, agree, confirm, obtain information, obtain approval or obtain instructions, do so in writing.

11.04 Products: Means materials (including naturally occurring materials) and goods (including components, equipment and accessories) intended for permanent incorporation in the Works.

11.05 Cross-References to the Employer’s Requirements: Where a numerical cross-reference to a Employer’s Requirements section or clause is given on drawings or in any other document, the Contractor must verify its accuracy by checking the remainder of the annotation or item description against the terminology used in the referred to section or clause. Where a numerical cross-reference is not given, the relevant section(s) and clause(s) of the Employer’s Requirements will apply, cross-reference thereto being by means of related terminology. Where a cross-reference for a particular type of work, feature, material or product is given, relevant clause(s) elsewhere in the referred to Employer’s Requirements section dealing with general matters, ancillary products and workmanship also apply. The Contractor must, before proceeding, obtain clarification or instructions in relation to any discrepancy or ambiguity which he may discover.

11.06 Equivalent Products: Where the Employer’s Requirements permits substitution of a product of different manufacture to that specified and such substitution is desired, before ordering the product notify the Employer’s Agent and, when requested, submit for verification documentary evidence that the alternative product is equivalent in respect of material, safety, reliability, function, compatibility with adjacent construction, availability of compatible accessories and, where relevant, appearance. Submit certified English translations of any foreign language documents. Any proposal for use of an alternative product must also include proposals for substitution of compatible accessory products and variation of details as necessary, with evidence of equivalent durability, function and appearance of the construction as a whole. If such substitution is sanctioned, and before ordering products, provide revised drawings, specification and manufacturer’s guarantees as required by the Employer’s Agent.

11.07 Equivalent Products: Wherever products are specified by proprietary name and the phrase “or equivalent” is not included, it is to be deemed included.

11.08 References to BSI Documents are to the versions and amendments listed in the current BSI Standards Catalogue and in subsequent issues of BSI News up to and including 10 days before day of tender.

11.09 Condition Schedule: The Works and adjacent works, together with all boundaries and features on the site which are to be retained, are to be inspected by the Contractor. The Contractor shall provide a Schedule of Condition following the inspection which sets out all defects. The Schedule shall incorporate plans and colour photographs sufficiently notated to locate the defects. Two copies of the Schedule shall be delivered to the office of the Employer’s Agent prior to commencement of the Works.

11.10 Contractor’s Design: Design and Production Information:

11.10.1 When preparing the master programme make reasonable allowance for completing design/production information, including submission to the CDM Co-ordinator for comment, inspection by the Employer’s Agent and any subsequent amendment(s), re-submission(s) and re-inspection(s).

11.10.2 During the Contract submit to Employer’s Agent the required number of copies of design/production information. The Employer’s Agent may note his comments on one copy, then return to the Contractor.

11.10.3 Ensure that any necessary amendments are made without delay. Unless and until the Employer’s Agent confirms that re-submission is not required, submit copies of amended drawings etc, to Employer’s Agent and ensure incorporation of necessary amendments all as before.

11.10.4 If submitted design/production information differs from the Employer’s Requirements, each such difference must be the subject of a request for substitution or change, supported by all relevant information.

11.10.5 Should any amendment required by the Employer’s Agent be considered to involve a change which has not already been acknowledged as a change by the Employer’s Agent, notify the Employer’s Agent without delay and in any case within 7 days, and do not proceed with ordering, fabrication, erection or installation until subsequently instructed. Claims for the extra cost of such work, if made after it has been carried out, may not be allowed.

11.10.6 Complete final version of all design/production information and submit to Employer’s Agent the number of copies required by him.

11.11 Production information for the Contractor’s designed work must include:

11.11.1 All drawings, specifications and calculations to adequately inform the Employer’s Agent of the Contractor’s intentions.

11.11.2 Submit three copies to Employer’s Agent for comment and make any necessary amendments.

11.11.3 Submit three copies of final version to Employer’s Agent for distribution to all affected parties.

11.12 “As built” drawings and information must be provided to the Employer’s Agent at, or prior to the date for completion. The Contractor must provide four copies.

11.13 Technical Literature: The Contractor is required to keep copies of the following on site, readily accessible for reference by all supervisory personnel:

11.13.1 Manufacturers’ current literature relating to all products to be used in the Works.

11.13.2 BSI Handbook, with all current revision sheets included and superseded sheets removed.

11.13.3 Relevant BS Codes of Practice.

11.13.4 Those parts of BS 8000 “Workmanship on Building Sites” which are invoked in the specification.

11.14 Maintenance Instructions and Guarantees: Retain copies delivered with components and equipment (failing which, obtain), register with manufacturer as necessary and hand over to Employer’s Agent on or before Practical Completion. Notify Employer’s Agent of telephone numbers for emergency services by Sub-Contractors after Practical Completion.

**12.00** **Supervision**

12.01 Accept responsibility for co-ordination, supervision and administration of the Works, including all Sub-Contracts. Arrange and monitor a programme with each Sub-Contractor, supplier, local authority and statutory undertaker and obtain and supply information as necessary for co-ordination of the Work.

12.02 Undertake a full inspection of the Works prior to presenting the Works to the Employer’s Agent in relation to the issue of the certificate of practical completion. The responsibility for the preparation of a full and detailed schedule of defects and omissions prior to the above stage rests with the contractor. Allow for forwarding three copies of the schedule of defects and omissions to the Employer’s Agent.

12.03 Practical Completion is a state in which the works are free from apparent deficiencies or defects and there are no incomplete works, the condition or completion of which would prevent normal, reasonable and beneficial occupation and use and the Site has been cleared of all temporary buildings, builders’ plant and equipment, unused materials and rubbish, and the works and the Site have been left in a clean and tidy condition.

There shall be a pre-handover inspection between the contractor and Employer’s Agent 4-weeks prior to Practical Completion, the contractor will produce and publish a schedule of defects and omissions and provide a copy to the Employer’s Agent.

 For Practical Completion all relevant items listed on the below checklist will be provided to the Employer’s Agent. The checklist is not exhaustive, but reflects the information anticipated to be required at the time of writing:

12.04 Practical Completion Checklist

|  |  |
| --- | --- |
| **Project:** |  THE OAKS, BUILDING 2, FORDHAM ROAD, NEWMARKET, SUFFOLK |
| **Employer:** |  The Newmarket Investment Partnership |
| **Occupier:** |  TBC |
| **Fund Purchaser:** |  TBC |
| **Architect:** |  WOODS HARDWICK |  **M&E Engineer:** |  TBC |
| **Main Contractor:** |  TBC |  **CDM Principle Designer:** |  TBC |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item:** | **Who:** | **Deadline:** | **Completed:** |  |
| Notice of PC |  | PC date less 4wks |  |  |
| Measurement of Gross Internal Area |  | TBC |  |  |
| Confirmation of Measured Area (GIA) |  | TBC |  |  |
| Measurement Letter of Reliance |  | TBC |  |  |
| Evidence of Planning Conditions Discharge  |  | PC |  |  |
| H&S File (In accordance with contract, contract special conditions and preliminaries). |  | PC date less 2wks  |  |  |
| O&M Manual and As-Built Drawings (In accordance with contract, contract special conditions and preliminaries). |  | PC date less 2wks  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item:** | **Who:** | **Deadline:** | **Completed:** |  |
| Building Regulations Application / Log Book etc to hand over |  | PC |  |  |
| EPC |  | PC |  |  |
| Air Test Certificate |  | PC |  |  |
| BREEAM Certification/Confirmations |  | PC |  |  |
| Cladding Guarantee |  | PC |  |  |
| Roofing and Cladding Completion Report |  | PC |  |  |
| Mansafe Certificate |  | PC |  |  |
| Drainage CCTV Video  |  | PC |  |  |
| Floor Slab Report Including Load & Level Testing |  | PC |  |  |
| Cold-Water Commissioning Certificate |  | PC |  |  |
| Electrical Test Certificates |  | PC |  |  |
| Emergency Lighting Test Certificates |  | PC |  |  |
| Fire Alarm Test and Commissioning Certificates |  | PC |  |  |
| Fire Hydrant Pressure Test and Commissioning  |  | PC |  |  |
| Fire Compartment Doors Certificates |  | PC |  |  |
| Lightning Protection System Test / Earth Test Certificate |  | PC |  |  |
| Intruder Alarm Commissioning Certificates |  | PC |  |  |
| Schedule of meter readings |  | PC |  |  |
| Key Schedule |  | PC |  |  |
| Emergency Telephone Numbers |  | PC |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item:** | **Who:** | **Deadline:** | **Completed:** |  |
| Completed Warranties - Consultants: |  |  |  |  |
| * Employers Agent
 |  | PC |  |  |
| * Architect
 |  | PC |  |  |
| * Structural & Civil Engineer
 |  | PC |  |  |
| * Mechanical and Electrical Engineer
 |  | PC |  |  |
| * Other TBC
 |  | PC |  |  |
| Completed Warranties - Sub-Contractors: |  |  |  |  |
| * Piling
 |  | PC |  |  |
| * Steel Frame
 |  | PC |  |  |
| * Roofing & Cladding
 |  | PC |  |  |
| * Floor Slab
 |  | PC |  |  |
| * Pre-Cast Concrete Stairs, Shafts & Walls
 |  | PC |  |  |
| * Windows & Doors
 |  | PC |  |  |
| * Mechanical Services
 |  | PC |  |  |
| * Electrical Services
 |  | PC |  |  |
| * Drainage
 |  | PC |  |  |
| * Other TBC
 |  | PC |  |  |

**13.00** **Insurances**

13.01 Before starting work on site, submit documentary evidence and/or policies and receipts for the insurances required by the Conditions of Contract.

13.02 The Contractors are to ensure that all insurances, including Contractor’s All Risk Insurance, Third Party and Public Liability Insurances, are held in joint names. The Employer’s interest is to be noted on all such policies.

13.03 Insurance Claims: If any event occurs which may give rise to any claim or proceeding in respect of loss or damage to the Works, or injury or damage to persons or property arising out of the Works, forthwith give notice in writing to the Employer, the Employer’s Agent and the Insurers. Indemnify the Employer against any loss which may be caused by failure to give such notice.

**14.00 Climatic Conditions**

14.01 Keep an accurate record of daily maximum and minimum air temperatures (including overnight), together with delays due to adverse weather, including a description of the weather, type(s) of work affected and number of hours lost.

**15.00** **Programme and Progress**

15.01 As soon as possible and before starting work on site, prepare in an approved form a master programme for the Works, which must make allowance for all: -

* + 1. Design and production information provided by the Contractor/Sub-Contractors/Suppliers, including inspection and checking.
		2. Planning and mobilisation by the Contractor.
		3. Running in, adjustment, commissioning and testing of all engineering services and installations.
		4. Work resulting from instructions issued in regard to the expenditure of provisional sums.
		5. Work by or on behalf of the Employer and concurrent with the Contract.
		6. The nature and scope of which, the relationship with preceding and following work and any relevant limitations are suitably defined in the Contract Documents.
		7. Where and to the extent that the programme implications for work which is not so defined are impossible to assess, the Contractor should exclude it from his programme and confirm this when submitting the programme.
		8. Submit three copies to Employer’s Agent.

15.02 The Programme must show earliest and latest start and finish dates for each activity and identify all critical activities. It must be of the bar chart type, unless agreed otherwise.

15.03 Submission of programme will not relieve the Contractor of his responsibility to apply in writing for instructions, in accordance with the Conditions of Contract.

15.04 Monitoring: Record progress on a copy of the programme kept on site. If any circumstances arise which may affect the progress of he Works, put forward proposals or take other action, as appropriate, to minimise any delay and to recover any lost time.

15.05 Employer’s Agent’s Site Meetings: The Employer’s Agent will hold regular site meetings to review progress and other matters arising from the administration of the Contract. Meetings will normally be held fortnightly. The Contractor must ensure availability of accommodation at the time of such meetings, attend all meetings and inform Sub-Contractors and Suppliers when their presence is required. The Employer’s Agent will chair the meetings and take and distribute minutes. The Contractor shall prepare a full typewritten report to table at each site meeting, giving details of progress in comparison with the Progress Schedule, labour, including Sub-Contract labour on site, highlighting any current or future problems which may affect critical dates on the overall Progress Schedule.

15.06 Contractor’s Site Meetings: Hold meetings with appropriate Sub-Contractors and Suppliers shortly before main site meetings to facilitate accurate reporting of progress. The Contractor shall send two copies of the minutes of all meetings with Sub-Contractors and Suppliers to the Employer’s Agent. The Employer’s Agent reserves the right to attend all meetings.

15.07 Contractor’s Meetings with Statutory and Other Authorities: Hold meetings with appropriate authorities as necessary. The Contractor is to send two copies of the minutes of all meetings to the Employer’s Agent. The Employer’s Agent reserves the right to attend all meetings.

15.08 Photographs: Provide colour progress photographs from agreed points at fortnightly intervals and submit print size of minimum 100 x 150mm, which will be at least two off each negative.

15.09 Notice of Completion: Give Employer’s Agent at least four weeks notice of the anticipated dates of Practical Completion of the whole or parts of the Works.

15.10 Adverse Weather: Use all reasonable and suitable building aids and methods to prevent or minimise delays during adverse weather conditions.

**16.00** **Control of Cost**

16.01 Cash Flow Forecast: As soon as possible and before starting work on site, submit to the Employer’s Agent a forecast showing the gross valuation of the Works at the date of each Interim Certificate throughout the Contract period, based upon the programme for the Works.

16.02 VAT Invoice: The Contractor shall raise a VAT invoice on receipt of each of the Employer’s Agent’s Certificates for Payment. The invoice shall be sent directly to the Employer and a copy shall be sent to the Employer’s Agent.

16.03 Labour and Plant Returns: At the discretion of the Employer’s Agent, at the beginning of each week provide for verification by the Employer’s Agent records showing, for each day of the previous week, the number and description of craftsmen, labourers and other persons employed on or in connection with the Works, including those employed by Sub-Contractors, together with the number, type and capacity of all mechanical and power operated plant employed on the Works.

**17.00** **Quality Standards/Control**

17.01 Materials: The materials described herein are selected to indicate the standard of finish required. In the majority of cases, equal or other approved materials will be considered and the Contractor is encouraged to put forward alternatives, both for aesthetic reasons and cost effectiveness.

17.02 Availability of Materials: All materials selected must suit their respective functions and their future sustained availability. Where possible, they should be readily available in the UK.

17.03 Life of Materials: Materials generally shall be of UK manufacture, or supply, unless otherwise agreed and will be designed to meet the life expectancy of 30 years for the building, except for wear and tear and normal maintenance and accepting the following items:

 17.03.1 Decorations.

 17.03.2 Floor Covering.

 17.03.3 Mechanical and electrical equipment which has been designed in accordance with the suggested life in use periods detailed in the latest version of the CIBSE Guide.

17.04 Good Practice: Where and to the extent that materials, products and workmanship are not fully detailed or specified, they are to be of a standard appropriate to the Works and suitable for the purposes stated in or reasonably to be inferred from the project documents and in accordance with good building practice.

17.05 Compatibility of Materials: The Contractor shall check the compatibility of all materials used on the Contract. The Contractor shall also ascertain that all materials are compatible and suitable in the conditions and in the positions in which they are used in the Contract.

17.06 General Quality of Products: Products to be new unless otherwise specified. For products specified to a British or European Standard, obtain certificates of compliance from manufacturers when requested by Employer’s Agent. Where a choice of manufacturer or source of supply is allowed for any particular product, the whole quantity required to complete the work must be of the same type, manufacture and/or source unless otherwise approved. Produce written evidence of sources of supply when requested by Employer’s Agent. Ensure that the whole quantity of the work is of consistent kind, size, quality and overall appearance. Where consistency of appearance is desirable, ensure consistency of supply from the same source. Unless otherwise approved, do not use different colour batches where they can be seen together. If products are prone to deterioration or have a limited shelf life, order in suitable quantities to a programme and use in appropriate sequence. Do not use if there are any signs of deterioration, setting or other unsatisfactory condition.

17.07 Proprietary Products: Handle, store, prepare and use or fix each product in accordance with its manufacturer’s current printed or written recommendations/instructions. Inform Employer’s Agent if these conflicts with any other specified requirement. Submit copies to Employer’s Agent when requested. The tender will be deemed to be based on the products as marketed and recommendations on their use current at the time of fixing. Obtain confirmation from manufacturers that the products specified and recommendations on their use have not been changed since that time. Where such change has occurred, inform Employer’s Agent and do not place orders for or use the affected products without further instructions. Where British Board of Agreement certified products are used, comply with the limitations, recommendations and requirements of the relevant valid certificates.

17.08 Checking Compliance of Products: Check all delivery tickets, labels, identification marks and, where appropriate, the products themselves to ensure that all products comply with the project documents. Where different types of any product are specified, check to ensure that the correct type is being used in each location. In particular, check that:

17.08.1 The sources, types, qualities, finishes and colours are correct and match any approved samples.

17.08.2 All accessories and fixings which should be supplied with the goods have been supplied.

17.08.3 Sizes and dimensions are correct. Where tolerances of components are critical, measure a sufficient quantity to ensure compliance.

17.08.4 The delivered quantities are correct, to ensure that shortages do not cause delays in the work.

17.08.5 The products are clean, undamaged and otherwise in good condition.

17.08.6 Products which have a limited shelf life are not out of date.

17.09 Protection of Products: Prevent over-stressing, distortion and any other type of physical damage. Keep clean and free from contamination. Prevent staining, chipping, scratching or other disfigurement, particularly of products exposed to view in the finished work. Keep dry and in a suitably low humidity atmosphere to prevent premature setting, moisture movement and similar defects. Where appropriate, store off the ground and allow free air movement around and between stored products. Prevent excessively high or low temperatures and rapid changes of temperature in the products. Protect adequately from rain, damp, frost, sun and other elements as appropriate. Ensure that products are at a suitable temperature and moisture content at time of use. Ensure that sheds and covers are of ample size, in good weatherproof condition and well secured. Keep different types and grades of products separately and adequately identified. So far as possible, keep products in their original wrappings, packing or containers, with unbroken seals, until immediately before they are used. Wherever possible, retain protective wrappings after fixing and until shortly before Practical Completion. Ensure that protective measures are fully compatible with and not prejudicial to the products/materials.

17.10 Suitability of Related Work and Conditions: Ensure that all trades are provided with necessary details of related types of work. Before starting each new type or section of work, ensure that:

17.10.1 Previous, related work is appropriately complete, in accordance with the project documents, to a suitable standard and in a suitable condition to receive new work.

17.10.2 All necessary preparatory work has been carried out, including provision for services, openings, supports, fixings, damp proofing, priming and sealing.

17.10.3 The environmental conditions are suitable, particularly that the building is suitably weather tight where internal components, services and finishes are installed.

17.11 General Quality of Workmanship: Operatives must be appropriately skilled and experienced for the type and quality of work. Take all necessary precautions to prevent damage to the work from frost, rain and other hazards. Inspect components and products carefully before fixing or using and reject any which are defective. Fix or lay securely, accurately and in alignment. All fastenings are to comply with relevant British Standards. Provide suitable, tight packing at screwed and bolted fixing points to take up tolerances and prevent distortion. Do not over tighten fixings. Adjust location and fixing of components and products so that joints which are to be finished with mortar or sealant or otherwise left open to view are even and regular. Ensure that all moving parts operate properly and freely. Do not cut, grind or plane pre-finished components and products to remedy binding or poor fit without approval.

17.12 BS8000: Basic Workmanship: Where compliance with BS 8000 is specified, this is only to the extent that the recommendations therein define the quality of the finished work. Where BS 8000 gives recommendations on particular working methods or other matters which are properly within the province and responsibility of the Contractor, compliance therewith will be deemed to be a matter of general industry good practice and not a specific requirement of the Employer’s Agent under the Contract. If there is any conflict or discrepancy between the recommendations of BS 8000 on the one hand and the project documents on the other, the latter will prevail.

17.13 Water for the Works: Clean and uncontaminated. If other than mains supply is proposed, provide evidence of suitability. Test to [BS EN 1008:2002](http://shop.bsigroup.com/en/ProductDetail/?pid=000000000019990036) if instructed.

17.14 The Contractor will ensure that the materials listed below will not be specified for use in the Works and that they are not used in the construction of the whole or any part of the Works:

17.14.1 High alumina cement in structural elements.

17.14.2 Wood wool slabs in permanent formwork to concrete or structural elements.

17.14.3 Calcium chloride in admixtures for use in reinforced concrete.

17.14.4 Aggregates in concrete mixes of such proportion as is likely to give adverse alkali silica reaction.

17.14.5 Aggregates for use in reinforced concrete which do not comply with British Standard Specification 882:1992 and aggregates for use in concrete which do not comply with British Standard Specification 8110:1985.

17.14.6 Concrete which does not comply with the provisions of British Standard Specification 8110:1985.

17.14.7 White asbestos (chrysolite), brown asbestos (amosite otherwise know as asbestiform cummingtonite - grunertie) or blue asbestos (crocidolite) or any asbestos or asbestos containing products, as defined in the Control of Asbestos Regulations 2012 or any statutory modification or re-enactment thereof.

17.14.8 Urea formaldehyde foam or materials which may release formaldehyde in quantities which may be hazardous, with reference to the limits set from time to time by the Health and Safety Executive.

17.14.9 Calcium silicate bricks or tiles.

17.14.10 Cavity wall insulation which entirely fills the cavity or which is installed after construction.

17.14.11 Any materials containing lead which may be ingested, inhaled or absorbed, except where copper alloy fittings containing lead are specifically required in drinking water pipework by any relevant statutory requirements.

17.14.12 Materials which are generally comprised of mineral fibres, either man made or naturally occurring, which have a diameter of 3 microns or less and a length of 200 microns or less or which contain any fibres not sealed or otherwise stabilised to ensure that fibre migration is prevented.

17.14.13 Slip bricks.

17.14.14 Vermiculite plaster.

17.14.15 Lightweight or air entrained concrete blocks.

17.14.16 Other substances not approved by the British Standards and Codes of Practice and not in accordance with good building practice as defined by the Building Research Establishment and any materials which are controlled or transitional substances in terms of EC Regulation 594/91 as amended from time to time or generally known to be deleterious at time of specification or use.

**18.00 Conformity with Regulations**

18.01 The current requirements and recommendations of all relevant codes of practice, statutory regulations, byelaws, commissioning codes and installation instructions shall be complied with during the execution of the works, including, but not limited to, the following:

18.02 The whole of the work shall be executed in accordance with the eighteenth edition of the Regulations for the Electrical Equipment of Buildings BS 7671: 1992 and any amendments issued by the Institution of Electrical Engineers. The following regulations shall also apply where relevant, for all materials to be supplied and all work carried out:

 a) British Standards and British Standard Code of Practice issued by the British Standards Institution.

 b) The Electricity Supply Regulations.

 c) CIBSE Code of Practice for Interior and Exterior Lighting

 d) Electricity at Works Act.

 e) Construction Design Management Regulations

 f) The requirements of the Local Fire Prevention Officer and Building Control.

 g) The requirements of the Regional Electricity Company.

 h) The requirements of any insurance companies concerned

 i) Building Regulations.

 j) Health and Safety at Work Act, 1974 (1989).

 k) National Inspection Council for Installation Contractors Standards for Installation.

 l) The Electromagnetic Compatibility Regulations.

 m) All European Commission Directives and Acts of Parliament

 n) The COSSH Regulations

 o) The Environmental Protection Act

 p) The Clean Air Act

 q) The Public Health Act

 r) The Offices, Shops and Railway Premises Act

 s) British Standards Institution Publications and appropriate ISO or

 CEN/CENELEC Standard

 t) Requirements and recommendations of the local fire officer

**19.00 Energy and Sustainability**

19.01 Building Energy Efficiency

19.01.1 Low Zero Carbon feasibility study will be provided by the principal contractor along with thermal Modelling using a computational model for the development using approved IES-VE dynamic simulation software.

19.01.2   The principal contractor will populate the model with the proposed thermal envelope performance and building services strategy.

19.01.3   The principal contractor will carry out a simulation using regional weather data in accordance with the TM54 methodology to establish the EUI and EPC baselines.

19.01.4 The aim is to establish the predicted baseline Energy Use Intensity (EUI) and EPC for the property, based on the agreed Shell and Core construction and example occupier fit out.

19.01.5 The principal contractor will create a dynamic thermal model using IES software. The energy consumption will be estimated using CIBSE TM54: Evaluating Operational Energy Performance of Buildings. Enhancements to the shell and core build will then be provided as costed options in order to achieve a Net Zero Carbon in operation target based on the example fit out.

19.01.6      The Shell and Core design should be carried out in order to achieve a target for Non-Domestic Energy Performance of A or A+ (Net Carbon Zero) standards based on the shell and core design with along with the example occupier fit out.

19.01.7 The contractor should consider enhancements to the efficient fabric and shading design to reduce heating and cooling demand, natural daylighting to reduce artificial lighting demand, natural ventilation to reduce HVAC demand, thermal envelope upgrades, air tightness improvement.

19.01.8     The O&M information provided would include the example fit out including appropriate sizing of building systems to limit over-engineering. Highly energy efficient building systems – HVAC heat recovery systems, LED lighting and daylight dimming controls, implementing smart energy/building management systems and sourcing energy from 100% renewable provider.

19.01.9   A summary report will be produced to show the energy and EPC potential of the asset with the example fit out to meet the agreed target energy intensity and EPC rating.

 This report will form the ‘Energy Statement’.

**20.00** **Samples and Approvals**

20.01 Samples: Where samples of finished work are required, obtain approval of stated characteristic(s) before proceeding with the Works. Retain approved samples in good, clean condition on site for comparison with the Works. Remove samples which are not part of the finished Works when no longer required.

**21.00** **Accuracy/Setting out Generally**

21.01 Setting Out: Inform Employer’s Agent when overall setting out is complete and before commencing construction.

21.02 Boundaries: The Contractor will be responsible for physically defining the boundaries on site and for agreeing the same with a representative of adjoining owners.

21.03 Appearance and Fit: Arrange the setting out, erection, juxtaposition of components and application of finishes (working within the practical limits of the design and the specification) to ensure that there is satisfactory fit at junctions, that there are no practically or visually unacceptable changes in plane, line or level and that the finished work has a true and regular appearance. Wherever satisfactory accuracy, fit and/or appearance of the work are likely to be critical or difficult to achieve, obtain approval of proposals or of the appearance of the relevant finished work as early as possible. Without prejudice to the above and unless specified otherwise, tolerances will (where applicable) be not greater than those given in BS 5606, Tables 1 and 2.

21.04 Record Drawings: Record details of all grid lines, setting out stations, bench marks and profiles on the site setting out drawing. Retain on site throughout the Contract and hand to Employer’s Agent on Completion.

**22.00** **Services Generally**

22.01 Services Regulations: Any work carried out to or which affects new or existing services must be in accordance with the Byelaws or Regulations of the relevant Statutory Authority.

22.02 Service Runs: Make adequate provision for services, including unobstructed routes and fixings. Wherever possible, ducts, chases and holes are to be formed during construction rather than cut.

22.03 Mechanical and Electrical Services: These must have final tests and commissioning carried out so that they are in full working order at Practical Completion.

**23.00** **Supervision/Inspection/Defective Work**

23.01 Supervision: In addition to the constant management and supervision of the works provided by the Contractor’s person in charge, all significant types of work must be under the close control of competent trade supervisors to ensure maintenance of satisfactory quality and progress.

23.02 Co-ordination of Engineering Services: The site organisation staff must include one or more persons with appropriate knowledge and experience of mechanical and electrical engineering services to ensure compatibility between engineering services, one with another and each in relation to the Works generally. Submit to the Employer’s Agent when requested, CV’s or other documentary evidence relating to the staff concerned.

23.03 Persons-In-Charge: The person-in-charge may not be changed without the Employer’s Agents written permission.

23.04 Overtime Working: No additional payment will be made for overtime unless such payment is authorised in writing by the Employer’s Agent.

23.05 Defects in Existing Construction: To be reported to Employer’s Agent without delay. Obtain instructions before proceeding with work which may cover up or otherwise hinder access to the defective construction, or be rendered abortive by the carrying out of remedial work.

23.06 Access for Inspection: Give Employer’s Agent not less than five working days notice before removing scaffolding or other facilities for access.

23.07 Timing of Tests and Inspections: Agree dates and times of tests and inspections with Employer’s Agent several days in advance to enable the Employer’s Agent and other affected parties to be present. On the previous working day to each such test or inspection, confirm that the work or sample in question will be ready or, if not ready, agree a new date and time.

23.08 Test Certificates: Submit a copy of each certificate to Employer’s Agent as soon as practicable and keep copies of all certificates on site.

23.09 Proposals for Rectification of Defective Work/Products: As soon as possible after any part(s) of the work or any products are known to be not in accordance with the Contract, or appear that they may not be in accordance, submit to Employer’s Agent for opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution. Such proposals may be unacceptable to the Employer’s Agent and he may issue contrary instructions.

23.10 Measures to Establish Acceptability: Wherever inspection or testing shows that the work, materials or goods are not in accordance with the Contract and measures (e.g. testing, opening up, experimental making good) are taken to help in establishing whether or not the work is acceptable, such measures will be at the expense of the Contractor and will not be considered as grounds for extension of time.

23.11 Quality of Control: Establish and maintain procedures to ensure that the Works, including the work of all Sub-Contractors, comply with specified requirements. Maintain full records, keep copies on site for inspection by Employer’s Agent and submit copies of particular parts of the records on request. The records must include:

23.11.1 Identification of the element, item, batch or lot including location in the Works.

23.11.2 The nature and dates of inspections by the Contractor or Employer’s Agent, tests and approvals.

23.11.3 The nature and extent of any non-conforming work found.

23.11.4 Details of any corrective action.

**24.00** **Work at or after Completion**

24.01 Generally: Make good all damage consequent upon the work. Remove all temporary marks, coverings and protective wrappings unless otherwise instructed. Clean the works thoroughly inside and out, including all accessible ducts and voids, remove all splashes, deposits, efflorescence, rubbish and surplus materials consequent upon the execution of the work. Cleaning materials and methods to be as recommended by manufacturers of products being cleaned, and to be such that there is no damage or disfigurement to other materials or construction. Obtain COSHH dated data sheets for all materials used for cleaning and ensure they are used only as recommended by their manufacturers. Touch up minor faults as newly painted/re-painted work, carefully matching colour and brushing out edges. Re-paint badly marked areas back to suitable breaks or junctions. Adjust, ease and lubricate moving parts of new work as necessary to ensure easy and efficient operation, including doors, windows, drawers ironmongery, appliances, valves and controls. Enter into maintenance contracts for the defects liability period for all elements of the building that require routine maintenance.

24.02 Security at Completion: Leave the works secure with all accesses locked. Account for and adequately label all keys and hand over to Employer’s Agent with itemised schedule, retaining duplicate schedule signed by Employer as a receipt.

24.03 Making Good Defects: Make arrangements with the Employer’s Agent and give reasonable notice of the precise dates for access to the various parts of the Works for purposes of making good defects. Inform Employer’s Agent when remedial works to the various parts of the Works are completed.

24.04 Emergency Repairs: Notwithstanding the provisions of Clause 16 of the Conditions of Contract, the Contractor shall, upon receipt of notification of defects during the Defects Liability Period, carry out Emergency Repairs within 24 hours. Non-Emergency Repairs shall be carried out within 14 days. Defects notices will carry details of the urgency of the action required. The Contractor shall immediately inform the Employer’s Agent in writing of the Completion of the remedial works.

**25.00 Security/Safety/Protection**

25.01 The Construction Phase Plan: Developed from the Outline Construction Phase Plan must be submitted to the Employer’s Agent not less than two weeks before the proposed date for start of construction work. Do not start construction work until the Employer has confirmed in writing that, in his view, the Construction Phase Plan includes the procedures and arrangements required by the CDM Regulations.

25.02 HSE Approved Codes of Practice: Comply with the following:

25.02.1 Management of health and safety at work.

25.02.2 Managing construction for health and safety.

25.03 Security: Adequately safeguard the site, the Works, products, materials, plant and any existing buildings affected by the Works from damage and theft. Take all reasonable precautions to prevent unauthorised access to the site, the Works and adjoining property.

25.04 Stability: Accept responsibility for the stability and structural integrity of the Works during the Contract and support as necessary. Prevent overloading.

25.05 Employer’s Representatives Site Visits: Inform the Employer’s Agent in advance of all safety provisions and procedures (including those relating to materials which may be deleterious) which will require the compliance of the Employer or his representatives when visiting the site. Provide protective clothing and/or equipment for the Employer and his representatives as appropriate.

25.06 Work in Hazardous Areas: Operatives must take the following precautions when working in the area(s) listed below:

25.06.1 Work Area: As designated by the Contractor.

25.06.2 Precautions: As designated by the Contractor.

25.07 Protect against the following:

25.08 Explosives: Do not use.

25.09 Noise: Comply generally with BS 5228. Fit all compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles. Do not use or permit employees to use radios or other audio equipment in ways or at times which may cause nuisance.

25.10 Before submitting his tender the Contractor is to ascertain the noise level and other restrictions which may be set by the Local Chief Environmental Health Officer.

25.11 Pollution: Take all reasonable precautions to prevent pollution of the site, the Works and the general environment, including streams and waterways. If pollution occurs, inform the appropriate Authorities and the Employer’s Agent without delay and provide them with all relevant information.

25.12 Nuisance: Take all necessary precautions to prevent nuisance from smoke, dust, rubbish, vermin and other causes.

25.13 Fire: Take all necessary precautions to prevent personal injury, death and damage due to the works or other property from fire. Comply with Joint Code of Practice “Fire Prevention on Construction Sites” 2009 published by the Fire Protection Association and the Contractors’ Legal Group.

25.14 Fire: Smoking will not be permitted on site, except in mess rooms which must be carefully controlled and inspected to guard against risk of fire.

25.15 Burning Waste: Burning on site of materials arising from the work will not be permitted.

25.16 Water: Prevent damage from storm and surface water.

25.17 Moisture: Prevent the work from becoming wet or damp where this may cause damage. Dry out the Works thoroughly. Control the drying out and humidity of the Works and the application of heat to prevent blistering and failure of adhesion, damage due to trapped moisture and excessive movement.

25.18 Waste: Remove rubbish, debris, surplus material and spoil regularly and keep the site and works clean and tidy. Remove all rubbish, dirt and residues from voids and cavities in the construction before closing in. Ensure that non-hazardous material is disposed of at a tip approved by a Waste Regulation Authority. Remove all surplus hazardous materials and their containers regularly and disposal off site in a safe and competent manner, as approved by a Waste Regulation Authority and in accordance with relevant regulations. Retain waste transfer documentation on site.

25.19 Electromagnetic Interference: Take all necessary precautions to avoid excessive electromagnet disturbance of apparatus outside the site.

25.20 Protect Work in All Sections: Adequately protect all types of work and all parts of the Works, including work carried out by others, throughout the Contract. Wherever work is of an especially vulnerable nature or is exposed to abnormal risks, provide special protection to ensure that damage does not occur. The Contractor shall take care to avoid setting up any vibrations which could disrupt or damage any computer, security or similar installation in adjoining owner’s premises. The Contractor shall assess the nature of all such installations in consultation with adjoining owners and their Tenants before starting work on site.

25.21 Protect Existing Services: Notify all service authorities and/or adjacent owners of the proposed works not less than one week before commencing site operations. Before starting work, check positions of existing services. Where positions are not shown on drawings, obtain relevant details from service authorities or other owners. Observe service authority’s recommendations for work adjacent to existing services. Adequately protect and prevent damage to all services. Do not interfere with their operation without consent of the service authorities and other owners. Allow for any necessary diversions or protection, both permanent and temporary, to any services running on or over the site. If any damage to services results from the execution of the Works, notify Employer’s Agent and appropriate service authority without delay. Make arrangements for the work to be made good without delay to the satisfaction of the service authority and other owner as appropriate. Any measures taken by the Employer’s Agent to deal with an emergency will not affect the extent of the Contractor’s liability. Replace any marker tapes or protective covers disturbed during site operations to the service authority’s recommendations.

25.22 Protect Roads and Footpaths: Adequately maintain roads and footpaths within and adjacent to the site and keep clear of mud and debris. Any damage to roads and footpaths caused by site traffic or otherwise consequent upon the Works must be made good to the satisfaction of the Local Authority or other owner. Bear any costs arising.

25.23 Protect Trees/Hedges/Shrubs/Lawns: Adequately protect and preserve, except those which are to be removed. Replace to approval or treat as instructed any species or areas damaged or removed without approval.

25.24 Protect Trees to be Retained: Unless specified otherwise, do not dump soil, rubbish or materials within the branch spread, excavate or disturb the top soil within the branch spread or change level of ground within an area 3m beyond the branch spread.

25.25 Protect Existing Features: Prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features which are to remain in position during the execution of the Works.

25.26 Protect Adjoining Property: Prevent trespass of work people. Take all reasonable precautions to prevent damage to adjoining property. Obtain permission as necessary from the owners if requiring erecting scaffolding on or otherwise using adjoining property and paying all charges. Remove and make good on completion or when directed. Bear the cost of repairing any damage arising from execution of the Works.

25.27 Protect Existing Structures: Provide and maintain during the execution of the Works all incidental shoring, strutting, needling and other supports as may be necessary to preserve the stability of existing structures on the site or adjoining, which may be endangered or affected by the Works. Support existing structure as necessary during cutting of new openings or replacement of structural parts. Do not remove supports until new work is strong enough to support the existing structure. Prevent over-stressing of completed work when removing supports.

**26.00** **Facilities/Temporary Work/Services**

26.01 Locations: Inform Employer’s Agent of the intended siting of all spoil heaps, temporary works and services.

26.02 Maintain, alter, adapt and move temporary works and services as necessary. Remove when no longer required and make good.

26.03 Room for Meetings: Provide suitable temporary accommodation for site meetings, adequately heated and lit, with table and chairs for 10 people. The room may be part of the Contractor’s own site offices.

26.04 Sanitary Accommodation: Provide and maintain in a clean condition sanitary accommodation for the Employer’s Representatives, either separate or shared with the Contractor’s supervisory staff. The accommodation must include an adequate number of appliances, wash hand basin(s) with hot and cold water supply, with adequate heating, lighting and ventilation.

26.05 Employer’s Development Board: Not required.

26.06 Name Boards/Advertisements: Contractor’s/Sub-Contractors’ name boards or advertising will not be permitted without prior written permission of the Employer’s Agent.

26.07 Lighting: During finishing work and inspection provide temporary lighting, the intensity and direction of which closely resembles that provided by the permanent installation.

26.08 Telephones: Provide as soon as practicable after the Date of Possession an on-site telephone installation or details of the site management team’s mobile telephone numbers.

26.09 Photocopier: Provide reasonably unrestricted access to and reasonably unlimited free use of an on site photocopier, which may be located in the Contractor’s own site offices.

26.10 Use of Permanent Installations: Unless specific permission is given, the permanent supply, disposal, mechanical, electrical, communications and transport installations may not be used for any purpose other than running in, testing and commissioning.

26.11 Thermometers: Provide on site and maintain in accurate condition a maximum and minimum thermometer for measuring atmospheric shade temperature, in an approved location, together with a thermometer for measuring concrete and ground temperature.

26.12 Protective Clothing: Provide for the sole use of those acting on behalf of the Employer, in sizes to be specified, ten sets of personal protective equipment which is neither damaged or time expired as deemed necessary by the Contractor to enter the site/works.

26.13 Protection of the Works: The Contractor shall, from the time of being in possession of the site, protect the works, premises and site belonging to the Employer at all times and in all respects and shall be fully responsible for failure to comply with this item. Any damage caused to the Works during the Contract is to be made good at the Contractor’s expense.

26.14 Temporary Services: The Contractor is to arrange for a temporary supply of water and electricity in order to undertake the Works, including any necessary wiring, plumbing etc, and remove same on completion, at this own expense and pay all fees and charges in connection therewith.

**27.00** **Operation/Maintenance of the Finished Building**

27.01 The Building Manual (incorporating the Health and Safety File and subtitled accordingly) is to be a comprehensive information source and guide for the Employer and end users providing a complete understanding of the building and its systems and enabling it to be operated and maintained efficiently and safely. The Contractor, as the Principal Designer, is required to obtain or prepare all the information to be included in the Manual, produce the required number of copies of the Manual and submit them to the Employer’s Agent for delivery to the Employer.

27.02 The Manual is to consist of the following three parts, sub-sectioned as appropriate:

 25.02.1 Part 1: General.

 25.02.2 Part 2: Building Fabric.

 25.02.3 Part 3: Building Services:

27.03 A complete draft of the Manual must be submitted not less than two weeks before the date for submission of the final copies of the Manual. Amend the draft Manual in the light of any comments and re-submit to the Employer’s Agent.

27.04 Final Copies of the Manual: Provide the Employer’s Agent with three electronic copies on disc prior to Practical Completion.

27.05 The Building Manual Part 1: General: Must include a description of the building, details of all consultants and designers, copies of all consents and approvals obtained and drawings showing emergency escape routes, location of emergency and fire fighting systems, services shut off valves, switches etc.

27.06 The Building Manual Part 2: Building Fabric: Provide such information as is reasonably required by the CDM Co-ordinator, including:

27.06.1 “As built” drawings recording details of construction for all Contractor designed work and performance specified work.

27.06.2 Copies of all manufacturers’ current literature for all products for which the particular proprietary brand has been chosen by the Contractor, including COSHH dated data sheets and manufacturer’s recommendations for cleaning and maintenance.

27.06.3 Names, addresses, telephone and fax numbers of all Sub-Contractors, suppliers and manufacturers.

27.06.4 Copies of all guarantees, warranties and maintenance agreements offered by Sub-Contractors and manufacturers.

27.06.5 Copies of all test certificates and reports required in the Specification.

27.07 The Building Manual Part 3: Building Services: Must include:

27.07.1 A full description of each of the systems installed, written to ensure that the Employer’s staff fully understand the scope and facilities provided.

27.07.2 A description of the mode of operation of all system.

27.07.3 Diagrammatic drawings of each system indicating principal items of plant, equipment, valves etc.

27.07.4 A photo reduction of all record drawings to A3 size, together with an index.

27.07.5 Legend for all colour coded services.

* + 1. Schedules (system by system) of plant, equipment, valves etc, stating their locations, duties and performance figures. Each item must have a unique number, cross-referenced to the record and diagrammatic drawings and schedules.
		2. The name, address and telephone number of the manufacturer of every item of plant and equipment, together with catalogue list numbers.
		3. Manufacturer’s technical literature for all items of plant and equipment, assembled specifically for the project, excluding irrelevant matter and including detailed drawings, electrical circuit details and operating and maintenance instructions.
		4. A copy of all Test Certificates (including but not limited to electrical circuit tests, corrosion tests, type tests, works tests, start and commissioning tests) for the installations and plant, equipment, valves, etc, used in the installations.
		5. A copy of all manufacturer’s guarantees, warranties and maintenance agreements offered by Sub-Contractors and manufacturers.
		6. Starting up, operating and shutting down instructions for all equipment and systems installed.
		7. Control sequences for all systems installed.
		8. Schedules of all fixed and variable equipment settings established during commissioning.
		9. Procedures for seasonable changeovers.
		10. Recommendations as to the preventative maintenance frequency and procedures to be adopted to ensure the most efficient operation of the systems.
		11. Lubrication schedules for all lubricated items.
		12. A list of normal consumable items.
		13. A list of recommended spares to be kept in stock by the Employer, being those items subject to wear or deterioration and which may involve the Employer in extended deliveries when replacements are required at some future date.
		14. Procedures for fault finding.
		15. Emergency procedures, including telephone numbers for emergency services.

27.08 Presentation of Building Manual: The manual is to be presented electronically, on disc/discs.

27.09 Provisional Information on Services: Provide the Employer’s Agent with relevant drawings and preliminary performance data at the commencement of commissioning to enable the Employer’s staff to familiarise themselves with the installation.

27.10 Training of Employer’s Staff: Before Practical Completion explain and demonstrate to the Employer’s maintenance staff the purpose, function and operation of the installations, including all items and procedures listed in the Building Manual. Include for not less than two operating days for this purpose.

27.11 Spare Parts: At least two weeks before Practical Completion submit to the Employer’s Agent a schedule of spare parts that the Contractor recommends should be obtained and kept in stock by the Employer for maintenance of the services installations. State against each item the manufacturer’s current price, including packaging and delivery to site.

27.12 Tools: At Practical Completion provide two complete sets of tools and portable indicating instruments for the operation and maintenance of all services plant and equipment (except any installed under Nominated Sub-Contracts), together with suitable means of identifying, storing and securing same.

**28.00 Local Authorities and Statutory Undertakers**

28.01 Mains Services: The Contractor shall obtain the provision of all services to and from the Works, co-ordinate the various appropriate services suppliers/statutory bodies responsible for such services with each other and with the remainder of the Works, provide all necessary attendance, setting out and the like and shall pay all fees and charges. The costs levied by the electricity and water supply companies may be expressed as a provisional sum. However, these provisional sums relate only to the actual invoiced costs levied by the services suppliers. All attendance, profit and builders work is to be included in the main tender sum.

28.02 Permissions: The Contractor will be required to obtain the consent and approval of the necessary statutory bodies with respect to the Works and to supply the Employer’s Agent with copies of all such approvals when issued, including the following:

28.02.1 Approval to reserved matters stipulated in the planning permission issued.

28.02.2 Building Regulations notices and logbook.

28.02.3 Fire Officer’s Approval.

28.02.4 Any other necessary consents and approvals relating to the Works.

28.03 There is an express obligation on the Contractor to discharge all outstanding conditions attached to the planning permission notice.

28.04 A copy of the planning permission notice for the development is attached in Appendix VII.

 **THE WORKS - SUB-STRUCTURE**

**29.00** **Demolition/Excavation**

29.01 The site is to be cleared of any obstructions in the ground necessary for the construction of the works.

29.02 Where it is necessary to remove shrubs, trees, bushes, hedgerows etc, in order to properly complete the Works, the Contractor is also to allow for all necessary excavation and backfilling to properly deal with the effects of root action of the shrubs, trees, bushes, hedgerows etc, including the removal of desiccated clay or any other resultant ground conditions which are unsuitable for the scheme to be executed.

29.03 Site clearance, where necessary, will be carried out, including removal to a tip, off site. The formation level will be graded, trimmed and compacted prior to laying the sub-base.

**30.00** **Foundations/Piling**

30.01 Suitable foundations are to be designed by a Civil and Structural Engineer. The provision of foundations is to include ground stabilisation and other specialist operations that may be necessary in order to take account of the ground conditions on the site in question.

**31.00** **Sub-base**

31.01 All necessary filling will be carried out from the sub-soil contours to the formation levels of the building, in material approved by the Civil and Structural Engineer.

31.02 The sub-base, beneath the building is to be treated all as specified by the Civil and Structural Engineer.

**32.00** **Ground Floor Slab**

32.01 Finished floor levels are to be clearly indicated on initial drawings. It is pointed out that it is the Contractor’s responsibility to set levels in accordance with the site conditions, economics and other physical factors. It is the Employer’s requirement that all external road paving and path levels are a minimum of 150mm below finished floor level and that these surfaces fall away from the building in all positions. In order to comply with the above, it will be necessary provide ramps, steps etc, at all entrances and exits from the building.

32.02 The ground floor slab is to be constructed in accordance with details provided by the Structural and Civil Engineer to achieve a minimum super imposed universally distributed load of 4.0kN/m2 plus an additional 1.0kN/m2 for partitions.

**THE WORKS - SUPER STRUCTURE**

**33.00** **Frame**

33.01 The frame to the building is to be designed to accord with details provided by the Civil and Structural Engineer

33.02 The frame to the upper floor levels is to be constructed of steel and designed in accordance with BS449 Part 2 or BS5950 Part 1, 1993, CP3, Chapter V, Parts 1 and 2 and all relevant Codes of Practice and to the satisfaction of the Local Authority.

33.03 All steel is to be shot blasted and primed prior to the delivery to site and will have the primer touched up after erection. All steelwork that is to be encased is to be painted with two coats of black bituminous paint, or similar approved paint.

**34.00** **Upper Floors**

34.01 The upper floors are to be of concrete construction designed in accordance with BS8110 and CP3 Chapter V for a superimposed universally distributed load of 4.0kN/m2, plus an additional 1.0kN/m2 for partitions.

**35.00** **Roof Structure**

35.01 The roof structure shall be designed to suit the proposed roof covering as stated within this document and be suitable for the load imposed by the estimated M&E services installation as identified within the energy modelling.

35.02 A composite flat roof deck structure is to be designed and constructed in in-situ concrete on a permanent metal decking or prestressed concrete floor units designed in accordance with BS 8110 and BS 6399: Part 1 to carry roof mounted building services plant including the potential for future occupiers Solar PV.

35.03 The plant area should be designed for a superimposed universally distributed load of 4.0kN/m2.

35.03 Roof deck to comply with fire compartmentation and resistance requirements of the Building Regulations.

36.04 The flat roof structure will be designed and provided with a continuous projecting fascia / soffit detail which will obscure roof mounted building services plant etc.

36.05 Permanent safety eyelets are to be installed to the roof, at a maximum interval of 7.8 m, for the attachment of a safety line for roof works – to be confirmed with the Employer.

**37.00** **Roof Covering**

37.01 A 'warm roof' design flat roof covering is to be provided with 1 degree of fall using an Single Layer PVC membrane designed by IKO. The IKO Armourplan SM 1.20mm thick membrane should be installed by a contractor approved by the chosen manufacturer system.

37.02 The chosen Manufacturer must provide a minimum 25-year Independent Single Point UK Guarantee for both material performance and labour for the roof.

37.03 Suitable falls and outlets must be provided to eliminate the possibility of rainwater ponding on the surface of the roof. All upstand kerb details must have a minimum 150mm upstand height from the finished roof level. If applicable designated/highlighted walkway routes to roof mounted building services plant to be provided (where safe to do so only).

37.05 The waterproofing manufacturer must carry out the necessary site inspections to comply with warranty requirements and associated inspection reports to be included within the H&S file / O&M manual at completion.

37.06 All guarantees issued to the completed project must be given in paper form and attached electronically to the aforementioned protected web database.

37.07 The contractor will design and install a suitable integrated gutter / soffit / fascia overhang detail clad in PPC aluminium, colour Merlin Grey BS18B25.

37.08 The contractor will design a cantilevered steel frame entrance canopy in Merlin Grey BS18B25 with grey tinted glazing.

37.09 The contractor will design and install a permanent safe method of access onto the roof to allow for maintenance access e.g. mechanical plant and equipment, solar panels, gutter outlets etc. The office roof should be provided with a continuous parapet for protection around all perimeters. The preferred method of access is a full-size personnel door accessed via an internal stair.

**38.00** **Roof Drainage**

38.01 The roof drainage system shall be designed and constructed to comply with BS EN 12056-3:2000 and the following criteria:

* The geographical location of the building
* A building design life of 25 years
* A 'Category 3' risk

38.02 The roof is to have an overall minimum slope of 1:40 for drainage so that water does not remain on the roof surface

38.03 The contractor is to design and install all drainage infrastructure to the serve the new flat roof connected to the below ground drainage system.

38.04 Integrated gutter outlets to be designed as part of the roof system and discharged into external aluminium downpipes to below ground discharge points. External downpipes to be PPC Aluminium Merlin Grey BS18B25. Suitable rodding eye access points to be provided at each floor level.

38.05 The junction between the rainwater outlets and downpipes must be fully encapsulated and independent from the rest of the waterproofing system in case of a back-up of rainwater.

**39.00** **Stairs**

39.01 The main staircases in the building are to be constructed using concrete.

39.02 The main staircase to the building is to be provided with a simple, elegant balustrade constructed of stainless steel throughout.

39.03 The fire escape staircases are to be provided with factory finished mild steel wall mounted handrail. All to contractor’s design to meet Building Regulations requirements.

39.03 The staircase will be provided with non-slip nosings. The nosings are to be in a contrasting colour in order to comply with the requirements of the Disability Discrimination Act.

**40.00** **External Walls**

40.01 The walls are to comprise cavity construction comprising of the following:

40.02 The outer skin of the external walls is to comprise 103mm FL quality facing brickwork. The bricks are to comprise Chelwood Nevada Buff main panels with contrasting blue soldier course banding, as indicated on the Architect’s drawings. The bricks and brickwork are to receive the prior approval of the Employer and the Local Authority.

40.03 A 100mm o.a cavity with 50mm partial fill cavity insulation, to give a 50mm residual cavity, including all necessary ties, retaining clips etc.

40.04 A 100mm dense concrete block inner skin with a minimum compressive strength of 7.0N/mm2 to ground floor and 3.5N/mm2 at first floor level.

40.05 The Contractor is to allow for all necessary ties between the inner and outer leaves and ties to the structural frame. All ties to be constructed of stainless steel.

40.06 The Contractor is to allow for all necessary movement joints, which are to be caulked and sealed in two-part polysulphide sealant in a colour to match the brickwork, and to the approval of the Employer.

40.07 All wall cavities are to be closed around openings with proprietary insulated cavity closers such as Thermabate or equivalent approved.

40.08 All damp-proof courses will be a minimum of 150mm above adjacent ground levels and are to comprise Hyload or equivalent approved. Provide cavity trays above all openings as necessary.

40.09 The external skin of facing brickwork is to extend a minimum of four courses below dpc level.

40.10 All facing brickwork is to be neatly pointed with a bucket handle joint. The mortar is to be natural colour.

40.11 The overall ‘U’ value of the cavity wall is to satisfy the Building Regulations and the target energy performance model.

40.12 The Contractor is to allow for constructing a sample panel of brickwork (approximately 1500mm x 1500mm) which is to receive the prior approval of the Employer and is to act as a control sample.

40.13 All clay facing bricks are to be in accordance with BS3921, all engineering bricks are to be in accordance with BS3921 Class B, all special bricks in accordance with BS4729 and all concrete blocks in accordance with BS6073 Part 1.

40.14 The external wall cladding must reflect the design appearance shown on the elevation drawing 1702/04 and design principals reflected in the Myhill Consulting presentation sheets 1 and 2.

40.15 A Telling Terracotta rain screen tile system is to be adopted utilising a non-combustible thermal insulation. All external walls must be designed and installed to comply with The Building Regulations including meeting the required ‘U’ value as required by the current version of Approved Document Part L2A of the Building Regulations and for compliance with the overall SBEM target requirements for the building. Wind loadings to be in accordance with BS EN 1991-1-4.

40.16 The entrance area is to be clad in Telling Terracotta rain screen tile, colour: Tuscan Red. Cladding will be installed supported on vertical aluminium sections in accordance with the manufacturer’s ‘rainscreen over CMU’ specification.

40.17 The cavity construction including breather membrane, insulation, glazing systems, seals, closure trims and flashings to be fully designed by the contractor in order to comply with building regulations and the target energy performance model.

40.18 The Contractor is to allow for constructing a sample panel of cladding (approximately 1500mm x 1500mm) which is to receive the prior approval of the Employer and is to act as a control sample.

40.19 The roof top plant area is to be clad with Flat PVF2 coated louver panel cladding in silver supported on \_\_\_\_\_\_\_\_\_. Wind loadings to be in accordance with BS EN 1991-1-4.

**41.00** **Air-Tightness**

41.01 An air-tightness test is to be carried out by the main contractor prior to the employer obtaining access. This test is to be carried out by a UKAS-accredited specialist company who are a member of the Air Tightness Testing and Measurement Association (ATTMA) and the British Institute of Non-Destructive Testing (BINDT) and must confirm to all current legislative requirements and Building Regulations.

41.02 The main contractor is to allow for all works in association with this test as required by ATTMA Technical Standard L2. The air test should, as a minimum, comply with BS EN 13829:2001 and to the m3/hr/m2 @ 50Pa standard required to satisfy the necessary SBEM requirements and the Building Control Officer. A copy of the resultant report is to be provided to the employer’s agent.

41.03 Any defects, etc., highlighted by the test are to be rectified by the main contractor prior to practical completion. When attending site to carry out the air-tightness test, the specialist company are to bring with them all equipment to carry out a smoke test, thus aiding the rectification of any defects. This test, if required, can be carried out on the same day as the air-tightness test, therefore, causing minimum disruption to progress on site. This test is to be carried out whether or not required by the building control officer.

**42.00** **Windows**

42.01 The windows to the elevations will comprise extruded aluminium framing, mechanically jointed and finished in a polyester powder coating Merlin Grey BS18B25. The colour is to be as indicated on the Architect’s drawings. Colour sample to be approved by the Employer.

42.02 All windows are to be fitted with double glazed units which will comprise a 6mm outer pane of silver body tint (grey) solar reflective glass with a 12mm gap and 6mm clear glass, all hermetically sealed. The Contractor is to specify the solar reflective qualities of the glass chosen.

42.03 The windows are to be manufactured by Technal Viking or Kawneer or similar approved.

42.04 The windows must be thermally broken, self-draining and provided with trickle vents.

42.05 All glazed units are to comply with BS5713, hermetically sealed with toughened or laminated glass, where appropriate, in accordance with the Building Regulations and BS Kite Marks where applicable.

42.06 All openable windows are to be top hung, outward opening, fitted with heavy-duty stainless steel friction stays and locking handles.

42.07 The Contractor is to ensure that all windows provide adequate security to the building and are lockable using keys.

42.08 The Contractor is to ensure that adequate provision is made for cleaning the windows both to the exterior and interior, including eyebolts, if deemed appropriate.

42.09 The Contractor is to ensure that provision is made to allow the installation of blinds to the interior of the unit. The blinds are to be supplied and fixed by others.

**43.00** **Entrances/External Doors**

43.01 All external doors are to be constructed of powder coated Merlin Grey BS18B25 aluminium framing and are to be fully glazed using appropriate glass, similar in appearance to the windows.

43.02 The entrance doors are to be provided with a maximum-security hook lock with an opening device suitable for means of escape purposes.

43.03 All external doors and screens are to be designed and constructed with due consideration to wind loading, cleaning, maintenance, and the affect of solar gain.

43.04 The main entrance doors are to comply in all respects with the Part M requirements and the Equality Act.

43.05 Any fire exit doors are to be provided with escape furniture, which provides a high level of security.

43.06 A simple, elegant canopy is to be provided to the main entrance area. The canopy is to be glazed and is to be designed to complement the appearance of the building.

**THE WORKS - INTERIOR**

**44.00** **Internal Walls and Partitions**

44.01 All internal walls are to be constructed of concrete blockwork with a minimum crushing strength of 3.5kN/m2.

44.02 The walls to any plant rooms, riser ducts etc are to be finished in fair-faced blockwork using painting quality blocks.

44.04 All internal walls to areas other than those mentioned above are to be plastered with two coats of gypsum plaster or dry lined.

44.06 All internal window boards are to be constructed of North American white oak veneers and lippings.

**45.00 Passenger Lifts**

45.01 Lift pits are required to serve the two lift shafts and should be formed \_\_\_\_\_\_

45.02 The two lift shafts will be constructed in \_\_\_\_\_\_\_ to accommodate \_\_\_\_\_\_\_

45.03 Shaft design to be fully coordinated with a proposed lift car design/supplier, though the lifts will not be installed as part of the works and will form part of the occupiers fit out.

**46.00** **Internal Doors**

46.01 All internal doors are to be left as apertures as identified on the layout plan.

**47.00** **Ceiling Finishes**

47.01 The ceiling is to be left exposed but is intended to receive a modular suspended ceiling system as part of any occupier fit out.

47.02 The clear height between finished floor level and the underside of the suspended ceiling is to be 2700mm. Down stand beams and bulkheads within the suspended ceiling area are not acceptable.

47.02 The building should be designed so that there is sufficient space to allow services, including crossovers, to run between the underside of the structure and the top surface of the ceiling finish.

**48.00** **Wall Finishes**

48.01 Wall areas throughout the building are to be left as blockwork throughout.

**49.00** **Floor Finishes**

49.01 Raised Access Floors: The structural floors in all office areas are to be designed to accommodate a proprietary, non-encapsulated, raised access floor system based on 600 x 600mm panels on adjustable metal pedestals.

49.02 The raised access floor system is to be installed by the future occupier to provide a minimum clear void between the top surface of the structural floor slab and the underside of the raised access floor panels of 115mm.

49.03 Concrete floors beneath raised access floor areas are to be treated with a coloured dust sealant.

49.04 Floor Screeds: In areas where a raised access floor is not to be provided the Contractor is to allow for suitable sand and cement screed. Sudden irregularities in the surface of the screed will not be permitted. When measured with a slip gauge to BS 8204: Part 1, Figure 3 or equivalent, the variation in gap under a straight edge (with feet) placed anywhere on the surface shall be not more than 5mm under a 3m straight edge and 2mm under a 1mm straight edge. Permissible deviation in the level of the surface is to be no more than +/- 5mm.

49.05 Exposed floor screed to be treated with a clear dust sealant.

49.08 Entrance mat: The Contractor is to allow for a Nuway Tuftiguard entrance mat, or similar approved, set into a suitable mat well. Mat to extend a minimum of 2000mm from the entrance door.

**50.00** **Fittings and Furnishings**

50.01 Toilet Fittings: Toilets are to be left shell and core, with services and drainage capped in the appropriate locations for future use.

**51.00** **Sanitary Fittings**

51.01 Sanitary Fittings: No fittings are to be provided.

**THE WORKS - EXTERNAL WORKS**

**52.00** **Paving**

52.01 The car park should be designed for ease of use, with adequate turning and manoeuvring areas.

52.03 All access roads within the site are to be finished in concrete block paving and are to be constructed to a standard to accommodate refuse disposal vehicles.

52.04 All car-parking areas are to be finished in concrete block paving. The paviors are to be installed fully in accordance with the manufacturer’s instructions and in accordance with details provided by the Structural and Civil Engineer.

52.04 Car parking spaces are to be defined by specialist painted demarcation blocks of a significantly different colour to the main colour of block for the car parking area.

52.05 The car park surface should have a general gradient of 1:80 with a maximum of 1:40 at the extreme. Careful detailing of the levels of the car parking areas generally should be considered with particular emphasis being given to the area in front of the main entrance together with any pedestrian areas thereto.

52.06 Provide at least the minimum number of car parking bays indicated on the drawings approved by the Planning Authority.

52.07 Car parking spaces for disabled persons shall be marked with the appropriate logo and provided to the standard required by the Local Authority.

52.08 Pedestrian footpaths are to be provided, as shown on the drawings approved by the Planning Officer. These will be constructed in 65mm concrete block paviors.

52.09 All gradients, ramps etc shall be designed to provide full disabled person’s access.

52.10 Kerbs and Edgings: All paved areas will be suitably bounded by precast concrete kerbs and edgings bedded in a suitable concrete base and haunched with concrete.

52.11 All car parking bays are to be a minimum of 4.8m long x 2.4m wide.

**53.00 Cycle Storage**

53.01 The Contractor is to allow for providing suitable cycle storage facilities. The design of the facility is to be discussed and agreed with the Local Authority and is to receive the prior approval of the Employer/Employers Agent.

**54.00** **Bin Stores**

54.01 The Contractor is to allow for providing a bin store, as indicated on the Architects drawings. The bin store is to be in 1.8m high hit and miss boarded fence with lockable double gates. Dropped kerbs are to be provided in front of the bin store to allow easy access.

**55.00** **Condenser Compound**

55.01 The Contractor is to allow for constructing a condenser compound comprising a concrete base surrounded by a lockable enclosure constructed in 1.8m high hit and miss boarded fence with double gates. The paving to the chiller compound is to be laid to proper falls to prevent ponding and, if appropriate, is to discharge into the drainage system.

**56.00 Boundary Treatments**

56.01 Existing 1.8m high galvanised palisade fence is to be retained and provided with pedestrian and vehicular gates of a matching profile in accordance with drawing 1702/06.

56.02 A new 1.8m high chain link fence is to be installed to match the existing in accordance with drawing 1702/06

**57.00** **Landscaping**

57.01 The Contractors are to allow for undertaking a full landscaping scheme in accordance with the landscape architects detailed drawing 101A.

57.02 The Contractor is to allow for undertaking maintenance of the entire landscaping scheme, including all necessary watering etc, during the twelve months defects liability period. At the ends of the twelve months defects liability period the Contractor is to allow for the replacement of all dead, dying or diseased plants, shrubs and trees etc.

**58.00** **Main Services**

58.01 The Contractor is to allow for all costs in providing adequately sized water and electricity main supplies to the building. If the Contractor is unable to obtain details of cost from the electricity and water suppliers prior to the date of tender, it will be acceptable for a provisional sum to be included to cover these costs. However, the provisional sum is only to make allowance for the invoiced costs of the electricity and water suppliers. All associated costs including builders work, attendance and profit are to be included in the fixed price tender.

58.02 The Contractor is to allow for providing two telephone ducts to the building. All telephone ducts are to link to the existing British Telecom system within the adjacent road and are to terminate in the service risers within the building.

**59.00** **Drainage**

59.01 The Contractor is to allow for designing and constructing separate foul and storm water drainage installations, which are to discharge in a suitable manner to the approval of the Local Authority in accordance with the surface water drainage and infiltration calculations provided S1424 D1.

59.02 In designing the drainage installation the Contractors are to ensure that there are no inspection covers, rodding eyes etc in the paved areas immediately in front of the main entrance doors.

59.03 Where required by the Local Authority the Contractors are to allow for providing an installing oil and petrol by-pass interceptors of appropriate capacity on the storm drainage system to the external paved areas.

59.04 Upon completion of the drainage works the Contractor is to allow for undertaking a CCTV survey of the entire underground drainage system. A copy of the video of the system will be handed to the Employer at Practical Completion.

**THE WORKS - MECHANICAL AND ELECTRICAL**

**60.00 General**

60.01 The mechanical and electrical installation comprises a shell and core fit out only, including capped water and drainage connections, sub mains distribution, a fire alarm panel, a basic layout of lighting and emergency lighting, extract ventilation to the WC areas, external lighting and vehicle charging points.

60.02 It is an implicit requirement that the workmanship carried out on the mechanical and Electrical services installation shall be of the highest standard and at the time of handover the condition of the installation shall beas new. All equipment must be new when delivered to site. Re-conditioned or re-manufactured equipment will not be acceptable.

60.03 The Employer’s Representatives reserve the right to reject any part of the installation not complying with this requirement. The Contractor shall carry out any necessary remedial work or replacement without delay to the completion date, at no cost to the contract.

60.04 No part of the installation is to be used before handover under conditions likely to cause deterioration.

**61.00** **Inspection Of The Work**

61.01 During the installation the works shall be inspected by the employer/employer’s representative to ensure the installation is in accordance with the design criteria and Performance Specification. Any works not in accordance shall be rectified and made good at the Contractor’s expense.

61.02 The Contractor shall inform the employer and the relevant inspection authority when sections of the installation are ready for inspection and approval and make necessary arrangements for the witnessing of tests.

61.03 Certificates confirming acceptance of tests shall be issued by the Contractor with a copy to the employer.

**62.00 Defects**

62.02 The Contractor shall include for rectifying, at no cost to the Employer, correctly reported defects identified during the first 12 months period following Practical Completion.

**63.00 Attendance**

63.01 The Mechanical and Electrical Contractor shall include for attending site meetings throughout the Contract duration as deemed necessary by the Main Contractor.

63.02 This should also include meetings relating to progress, site queries, testing and commissioning, practical completion, snagging/back snagging and Employer/End User demonstrations of equipment/plant.

**64.00 Practical Completion**

64.01 At practical completion the mechanical and electrical services installations shall be ‘snag free’.

64.02 The Engineer will re-inspect previously recorded ‘snag items’ in conjunction with the Contractor, the aim being to record the project as being complete in its entirety at Practical Completion.

64.03 Just prior to Practical Completion the Contractor shall demonstrate to the Employer the correct system/operation. Full running and operation for a period of at least 48 hours shall be considered reasonable for this demonstration and this period shall be allowed in the programme. During this period the Contractor shall be responsible for recording of results and the operation and maintenance of the plant. If appropriate, use this time to instruct the Occupier’s staff in the operation and the maintenance of the system. Provide an operational report of the demonstration and print out the conditions maintained within the space for a period of 48 hours.

64.04 At Practical Completion the Contractor shall issue to the Engineer three final copies of the Operating and Maintenance Manuals. One set will be handed to the Employer and one set of the manual handed to the Planning Supervisor for inclusion with the Health and Safety document.

**65.00 Submission of Design Calculations and Working Drawings**

65.01 Design outlet drawings, calculations and specifications shall be submitted to the employer’s representative for comment prior to the completion of the working drawings to a programme to be agreed. Approval of calculations and drawings does not relieve the Contractor of his obligations, i.e., design responsibility, programming, checking dimensions, co-ordination, affects of other trade’s works etc.

65.02 Working drawings and detailed specifications shall be submitted for approval prior to issue for construction.

65.03 All approved drawings shall be issued for construction at least three weeks prior to commencement of work on site.

65.04 The employer’s representative and Project Architect/Client will consider the information submitted and comment where necessary within eight to ten working days.

65.05 It may be necessary, during the course of the contract, for the Contractor to produce additional drawings and information to enhance that already included as part of the design drawings. The Contractor shall be deemed to have made full allowance for these in his contract.

65.06 All design calculations associated with the mechanical and electrical services installation shall be submitted to the employer’s representative in accordance with the computerised ‘Hevacomp’ design software programmes or equal.

65.07 Any manual calculations submitted shall be presented in a clear and logical form fully in accordance with the CIBSE / IEE recommendations.

65.08 Comment or approval of the calculations and drawings does not relieve the Contractor of his design responsibilities or liabilities under this contract.

**66.00** **Co-Ordination with Other Trades**

66.01The Contractor shall be responsible for issuing information and co-ordinating their services with all other disciplines to ensure that the overall mechanical and electrical service installations are fully co-ordinated with each other and the building structure. Any costs arising from failure to comply with this requirement shall be borne by the Contractor.

**67.00 Setting Out**

67.01 The Contractor shall allow for setting out pipework and trunking, around columns, beams and other obstructions and for co-ordinating with other services. Services in visually exposed conditions shall be installed to have the neatest practicable finish. Services generally shall follow the contour of the structure and vertical drops shall be plumb.

67.02 All services shall be so fixed as to allow proper installation and maintenance.

**68.00** **Quality Assurance And Certification**

68.01 The use of Quality Assured sub-contractors and suppliers shall be undertaken at all times. Products and materials should have Product Conformity Certification (e.g. BSI kitemark, BFI Safety Mark), or EU mark or Product Approval (e.g. British Board of Agreement Certificate).

**69.00 Related Standards**

69.01 The Contractor shall note in addition to the requirements in respect of compliance to the regulations that design standards, calculations, methods of construction, standards of workmanship, materials, components and the testing and commissioning of components and systems should, as a minimum, be in accordance with the recommendations set out in the latest edition of the following:

 a) British Standard Specification and Codes of Practice

 b) The CIBSE Guides, Codes and Technical Memoranda

 c) Construction, Design and Management Regulations (CDM).

 d) Building Regulations

 e) The Water Regulations

 f) Institute of Plumbers Design Guide

 g) All BSRIA Application Guide AG2/93

 h) HVCA DW144 and TR17

69.02 The detailed requirements identified in subsequent sections do not generally refer specifically to the above documents but there are exceptions where either a choice of standards exists, and Health & Safety requirements need to be emphasised or where mention of a specific standard avoids the need for detailed description.

69.03 The detailed requirements identified in subsequent sections are, in all cases, additional to the minimum requirements of the above standards.

**70.00** **Domestic Water Services Installation**

70.01 The Contractor shall design, supply, install the complete cold water services, capped at the appropriate locations as described in this Specification to serve all sanitary appliances/outlets indicated on the Architectural drawings.

**71.00** **Pipework**

71.01 The internal cold-water services installation shall be carried out in copper tube to BS EN 1057-R250, as detailed within the standard pipework specification. Soldering to all fittings used shall be lead free to BS EN 1245-1-1998. End feed fittings will not be accepted. The Contractor shall give care and attention to the routing and location of all pipework drops throughout the building.

71.02 Only metal pipe clips will be accepted and under no circumstances shall plastic clips be used. Drain cocks will be fitted to all system low points.

**72.00 Valves**

72.01 Valves shall be fitted in pipework lines, within main runs and branches from mains. The valves shall be fully in accordance with the Standard Specification, be WRC approved and installed in accordance with the local water bylaws.

**73.00 Insulation**

73.01 All cold-water services pipework shall be thermally insulated using Rockwool Rocklap 800 H & V pipe sections, having a nominal density not less than 120 kg/m3 with a factory applied facing which is a laminate of close mesh reinforcement between two layers of foil including integral lap for fixing. The whole to comply with BS5422 (Table 1) and BS5970 water vapour permenance and Building Regulations Class O definition.

73.02 Thermal conductivity at 50°C mean temperature shall be at least 0.037w/mK.

73.03 Thermal insulation shall be installed in strict accordance with the manufacturer’s recommendations, thickness of insulation being in accordance with Section 3 of this Specification.

**74.00** **Mains Cold Water Supply**

74.01 A mains cold-water service shall be extended from the external meter position at the site boundary and routed underground in Blue MDPE, if suitable for use in the ground conditions, to the intake point of the building currently proposed within the central core area of the offices. Marker tape to be installed above all services. All fittings, valves, plant/equipment utilised on the water services system shall be WRC Approved.

74.02 The copper pipework shall be connected to the MDPE internally and routed to WC locations and via risers to provide one point of connection to office floor plates each side of the core.

74.03 Cold water storage shall only be provided if dictated by the local water authority inspector. If deemed necessary, then the tank shall be installed fully in accordance with the Water Regulations 1999.

74.04 At the point of entry to the building, the Contractor shall install a stopcock and double check valve/drain facility.

74.05 The Contractor shall allow for all attendance and liaison with the Main Contractor and statutory authority as required ensuring a co-ordinated installation is carried out to the satisfaction of the employer’s representative.

74.06 The Contractor is to allow for a suitable watering point to be provided at a convenient location for watering the external landscaped areas.

**75.00** **Chlorination**

75.01 Due to the limited shell and core fit out, the chlorination of the domestic water systems shall be carried out by the future occupier as part of their fit out works in accordance with HS G (70) and BS6700.

75.02 Operation and maintenance information should detail the requirement for future sterilisation and a ‘clean water’ certificate to be obtained by the occupier as part of their fit out works.

**76.00** **Testing and Commissioning**

76.01 The Contractor shall allow for the testing and commissioning of the whole domestic water services installation fully in accordance with the CIBSE Commissioning Code W for Water Distribution Systems and the standard parts of this specification.

**77.00 Electrical Services Installation**

77.01 The electrical services installation will be designed and installed in compliance with the recommendations of the eighteenth edition of the IEE Wiring Regulations BS 7671 incorporating all latest amendments, current and relevant British Standards, Building regulations, CIBSE Guides, Local Fire Officer’s Requirements, the Electricity Supply Act, the offices shops and railway premises act, the factories act, the Health and safety at Work act and the construction ( design and management ) regulations 2015.

**78.00** **Contractor Supplied Information**

78.01 The Contractor shall supply the following information at the design stage of the project :

a) List of all Equipment proposed including manufacturers.

b) Typical Services Layout drawings of the following as a minimum:

* Full electrical services design calculations, as detailed
* Schematic Mains Distribution diagram
* External Cable Routes
* External Lighting
* Lighting including emergency lighting
* Power and ancillary services
* Ceiling located cable trunking and cable tray routes
* Fire alarm and Intruder alarm system layouts

78.02 Electrical supplies to Mechanical Services and control wiring including any appropriate wiring diagrams.

**79.00 Labels, Charts and Notices**

79.01 All labels charts and notices shall be provided in accordance with this Specification and all Health and Safety requirements. They shall be submitted to the Engineer for approval prior to their installation. Labels on the outside of switchgear shall be laminated plastic with black characters on a white background. Character for labels fitted to isolators and at the origins of installation shall be 10mm high and 1.5mm thick. All other labels shall be 4mm high and 0.5mm thick.

79.02 Labels on single-phase equipment as part of a three-phase installation shall be indicated to which phase they are connected.

79.03 Labels shall be fixed using self-tapping screws, not adhesive.

**80.00 Earthing and Bonding**

80.01 The Contractor shall design, supply, install and test the earthing of the complete electrical installation in accordance with BS7671 (the IEE Regulations eighteenth Edition with all amendments).

80.02 The contractor shall include for new main equipotential bonding conductors to the incoming water, structural steel and lightning protection all derived from a new earth bar which shall be located adjacent to new main Distribution board position.

80.03 The Contractor shall be responsible for ensuring that the complete system of exposed conducting parts, including conduit, trunking, etc, together with all accessories shall have sufficient metallic connection to ensure earth continuity of negligible impedance’s throughout the entire installation. All final sub-circuits shall be provided with separate circuit protective conductors.

80.04 The new earth bar shall be designated as “equipotential earthing conductors”.

80.05 The earth bar shall be 50mm x 6mm hard drawn copper bar 600 mm in length and mounted on 3 post insulators. The earth bar shall be provided with 5mm dia holes drilled at 50mm centres and each cable termination shall be suitably labelled with its purpose i.e. WATER and its size i.e. 10mm2.

80.06 The minimum size of cable to be connected to the earth bar shall be as follows:

a) Main Equipotential Bonding Conductors - 25mm² PVC/Copper

b) Supplementary Bonding - 4 mm² PVC/Copper

80.07 A link shall be provided on the main earth bar for disconnecting the earthing conductor, to permit measurement of the resistance of the means of earth when it is part of the installation. This joint shall be such that it can be disconnected only by means of a tool, is mechanically strong and will reliably maintain electric continuity.

80.08 The Contractor shall bond all extraneous metal work including structural steelwork and steelwork benches as required by the IEE Regulations. Where metallic service pipes enter the building a 50 mm section, within 600 mm of the point of entry and before any service tees, shall be cleaned and made smooth.

**81.00** **Main Circuit Protective Conductors**

81.01 The Contractor shall supply, install and connect between the main earthing bar and the main earthing terminal a yellow/green LSF insulated main circuit protective conductor of adequate size.

81.02 At the main earthing terminal shall be provided a standard label bearing the words ‘SAFETY ELECTRICAL CONNECTION - DO NOT REMOVE’

**82.00** **Main Equipotential Bonding Conductors**

82.01 Main equipotential bonding conductors, comprising green/yellow LSF (6491B) insulated cables of adequate size shall be provided and connected between the main earthing bar and the incoming water service, main mechanical services pipework (e.g. Mains and Domestic hot water systems) and ducting, all structural steelwork and lightning protection system.

82.02 Connections shall be made as close as possible to the point of entry of the service into the building, by means of clamps complying with BS 951. Each of these bonding conductors shall be numbered and recorded on the label adjacent the main earthing bar and a standard warning label shall be fixed to each connection.

**83.00** **Circuit Protective Conductors**

83.01 An efficient protective conductor shall be provided throughout every part of every circuit of the installation. The size of the protective conductors shall be at least in accordance with the minimum requirements of the IEE Regulations but where the protective conductor comprises a cable not forming part of a composite cable no conductor smaller that 2.5mm² if mechanical protection is provided, or 4.0mm² where mechanical protection is not provided, shall be used. Such cables shall have copper conductors with green/yellow insulation of the same type as specified for the sub-circuit cables for that part of the installation (e.g. LSF, EPR etc).

83.02 Where a protective conductor is used at the termination of a mineral insulated copper sheathed cable, its cross-sectional area shall be not less than one half that of the largest current-carrying conductor in the cable and shall not be smaller than 2.5mm².

83.03 The earthing terminal of every socket outlet and minor power accessory shall be connected to the protective conductor. Where the protective conductor is formed by a conductor and auxiliary i.e. metal conduit, trunking, duct or metal sheaths of cables, the earthing terminal shall be connected by means of a green/yellow LSF insulated copper earthing tail as manufactured by Fitter and Poulton Limited, their reference 4BA, Series 4980 to an earthing terminal incorporated in the associated box or enclosure.

83.04 An earthing terminal shall be provided at every lighting point and connected to the protective conductor.

83.05 All metal luminaires shall be connected to the protective conductor.

83.06 An earthing terminal shall be provided at every lighting switch position.

83.07 Where a bar protective conductor forming part of a composite cable is terminated at any lighting point, junction or accessory, a protective sleeve of green/yellow insulating material shall be used to cover the conductor. The sleeve shall be of the same material as the insulation for the live conductors.

**84.00** **Supplementary Equipotential Bonding**

84.01 Supplementary bonding conductors shall be provided to ensure effectual equipotential earthing throughout the building.

84.02 Extraneous conductive parts in any room, which contain an electrical accessory, shall be bonded.

84.03 All hot and cold pipework, sinks and wastes shall be directly and independently bonded to the protective conductor.

84.04 All structural steelwork, which will remain accessible when the building is complete, together with fixed metal framework on which equipment or apparatus is mounted, shall be bonded to the protective conductor.

84.05 Exposed metal pipes shall be bonded to the protective conductor but where metal to metal joints exist and form a continuous electrical circuit of negligible impedance when tested.

84.06 Supplementary bonding conductors shall be copper cables, insulated with green/yellow LSF. Where sizes are not indicated, bonding conductors shall have a cross-sectional area not less than the smallest circuit protective conductor, associated with the metalwork being bonded, subject to a minimum of 2.5mm² if mechanical protection is provided or 4mm² if it is not.

84.07 All bonding connections shall be made with lug connector and brass nut, bolt and washer, minimum size M6 or with earth clamps complying with BS 951. At every bonding connection shall be provided a standard warning label.

**85.00** **Incoming Electricity Supply**

85.01 The Low Voltage electricity supply to the building will be derived from the local Electricity supply authorities ground mounted sub-station and associated network and will be metered with a capacity to be determined to suit the building needs with a 25% spare capacity. The main intake fuse cut-outs and associated metering equipment will be located adjacent to the reception area at ground floor level in a dedicated switch cupboard.

85.02 The main LV MCCB panel board will also be sited adjacent to the main incomer within the same switch cupboard as indicated on the Architects drawings.

85.03 The contractor shall be responsible to establish the loading requirements for the total building, external areas and vehicle charging including the 25% spare capacity and all necessary liaison and attendance with the REC ensuring a fully co-ordinated supply installation takes place to suit the contract programme.

**86.00** **Main LV MCCB Panel Board**

86.01 The contractor shall design, supply, install, test and connect a new LV MCCB panel board to be located at ground floor level adjacent to the main incomer position.

86.02 The incoming supply tails shall be sized, installed and terminated by the contractor and shall be derived from the REC metering / fused cut-out position, terminating within the MCCB panel Board.

86.03 The final location of the MCCB panel board should take all allowances for adequate space for future maintenance operations.

86.04 The main LV MCCB panel board shall comprise the following equipment:

86.05 Suitably rated 4 pole switch disconnector (main incomer)

 Voltmeter, selector switch and voltage transformer

 Ammeter, selector switch and current transformer

 Sub metering as required to meet L2 Building regulations

 Suitably rated 3 and 1 PHASE spare ways only at 25%

86.06 The contractor shall also include for the following:

1. Terminate all incoming/outgoing cables and label as to their function.

2. Provide engraved labels to all switches and safety labelling

3. Include to provide and fit crimped pins as necessary for the installation of cables into terminals

86.07 The panel board shall be securely bolted to the wall/floor of the switch room as appropriate.

86.08 The panel board shall come complete with all necessary factory testing certificates. The form of separation is to be 3b and the short circuit rating is to be 25kA.

**87.00** **Protective Floor Mat**

87.01 The Contractor shall provide a heavy-duty continuous floor mat immediately in front of and along the full length of the switch panel.

87.02 The mat shall be of ‘ribbed’ rubber construction 1 metre in width and not less than 12mm in thickness.

**88.00** **Designation Labels / Record Drawing**

88.01 Each item on the panel board assembly shall be fitted with a Traffolyte label to clearly identify the specific function of the equipment.

88.02 The designation label shall be white Traffolyte with black characters of not less than 10mm in height, with 6mm lettering for ancillary items such as meters, controllers etc.

88.03 Each label shall detail the equipment or area served, together with the outgoing cable type, size and MCCB rating.

88.04 The Contractor shall include for the supply and installation of a record main electrical distribution drawing mounted in the switch room in a glazed hardwood frame.

**89.00 Surge Protection**

89.01 The LV distribution system shall be protected against transient overvoltages. The contractor shall design, supply, install, test and connect an electronic system protection unit as manufactured by Furse or equal and approved.

89.02 The unit shall be installed complete within a steel enclosure immediately adjacent to the associated MCCB board in accordance with the manufacturer’s instructions detailed as follows:

a) Main MCCB Panel Board - 1 No. TPN unit connected to a 63 Ampere

MCCB using 4 No. 10mm² LSF/copper single core cables.

Note: The connecting leads shall not exceed 250mm in length.

89.03 The protector can be installed either on the load side of the incoming isolator or on the closest outgoing way.

**90.00** **MCB Sub-Distribution Boards**

90.01The Contractor shall design, supply, install, test and commission sub-distribution boards to each floor of numbers to suit the building requirements positioned local to the central core area where feasible / practical.

90.02 The boards shall be of an MCB type manufactured to BS EN 60898 with suitably rated busbars and integral main switch disconnectors.

90.03 The final locations of all distribution equipment shall be such that adequate maintenance space is provided and in positions agreed with the Architect prior to commencement of the works.

90.04 Sub distribution boards shall utilise MCB protective outgoing ways and shall comply with BS EN 60439-3 and BS 5486 and other relevant sections of this Specification. They shall have fault withstand classification of Class 1. All distribution boards shall be fitted with an integral isolating switching unit rated at a minimum of 125 Amps all contained within the one composite unit.

90.05 All distribution boards shall have multi-terminal busbars for neutral and protective conductors with one terminal for each outgoing circuit. Earth bars shall be fitted to both insulated and metal-cased boards and shall be directly connected to the earth terminal without dependence on the metal casing of the enclosure

90.06 Distribution boards shall be complete with locks on the distribution board cover and all such locks shall have a common key, 2 keys per unit. The keys shall be handed over to the Client on practical completion of the project.

90.07 Numbers shall identify MCB ways and each terminal on the neutral and protective conductor bar shall clearly relate to its respective MCB way.

90.08 Where the passage of cabling enters/leaves the distribution board through trunking and where cabling is not directly terminated on the distribution board, grommets shall be installed to protect the appropriate cabling.

90.09 The exact positions of all distribution boards shall be agreed with the Architect/Engineer before the installation commences.

90.10 All distribution boards shall be sized to provide at least 25% of the ways as spares. The spare ways shall be fitted with MCBs at various ratings (these ratings shall be agreed with the Engineer prior to purchase).

90.11 The MCBs shall be manufactured to BS EN 60898 with Type A/B characteristics for small power circuits and type C/D for lighting circuits.

90.12 MCBs for circuits in wet or damp areas such as plantrooms shall be of the combined MCB/RCD type.

90.13 The colour of all items of gear shall be the same throughout and unless otherwise stated, shall be manufacturer’s standard colour. When supplying switchgear the Contractor shall ensure that all items of equipment are compatible and that where necessary cable sockets within switchgear are sized to accommodate the cables being connected, without reducing the overall size of the conductor.

90.14 All distribution boards shall be provided with a circuit chart permanently fitted on the inside of the cover, and contained in a transparent plastic envelope. The chart shall indicate clearly:

1. Source of incoming feed
2. Circuit designation
3. Cable size
4. Circuit rating
5. Fuse or breaker rating

90.15 The Contractor shall ensure that the equipment supplied will fit into the available space. The equipment and all its associated accessories shall be fixed independently of the wiring system. All nuts, bolts, washers, screws, etc, shall be cadmium or zinc electro-plated.

90.16 MCBs shall be of the current rating and category type required to meet the disconnection time and loading requirements of the designed load.

**100.00 Methods of Wiring**

100.01 The internal wiring shall generally be carried out as follows:

1. Lighting & general flush mounted small power and all flush fixed wall mounted electrical accessories - PVC/PVC sheathed cables (twin and earth) 6242YH installed on cable tray containment systems on main runs for general lighting and small power circuits tywrapped to the tray where the tray directly supports the weight of the cable. Steel cored ties to be used where the weight of the cable is taken by the ties. Where more than two cables are routed together to luminaire locations they shall be routed within adjustable tie wraps fixed using screw fixings to the slab/soffit at regular intervals. Single cables may be clipped direct.

 Where cables drop to accessory positions they shall be enclosed within PVC high impact conduits buried within wall chases to offer a form of a rewireable system.

 Plug-in roses will be installed at termination points for final connection to light fittings.

 External lighting supplies will be extended in XLPE/SWA/PVC cables run in ducts as necessary with draw wires and suitable draw pits provided throughout its route for future rewiring.

2. Sub Main Cables – XLPE/SWA/PVC/LSF armoured cables installed tie wrapped to cable tray within ceiling / floor voids and/or clipped direct (where a single cable is routed) tie wrapped to the tray where the tray directly supports the weight of the cable. Metal cleats to be used where the weight of the cable is not supported directly by the tray.

 Sub-Main cables are to be supported on proprietary hot dipped galvanised steel medium turn flange trays all secured on purpose made unistrut metal brackets at intervals of not more than 2m. All cables will be evenly spaced and securely clipped to the cable tray and identified where necessary with cable markers.

3. Fire Alarm wiring shall be carried out using “Firetuff” cable coloured red installed on a cable basket system where more than two cables are routed together and/or clipped direct (single cables) tie wrapped to the tray where the tray directly supports the weight of the cable. Steel cored ties to be used where the weight of the cable is taken by the ties.

 Concealed within conduits buried within chases cut into the building fabric for all drops to manual break glass call points and sounders etc.

**101.00 Wiring Details**

101.01 General Small power wiring to flush accessories etc shall be carried out from the local MCB distribution boards in the form of ring mains and radials, as applicable. Spurs will not be permitted from the ring main circuits.

101.04 All wiring shall be correctly colour-coded and installed as to comply with the 18th Edition of the IEE Wiring Regulations BS 7671.

**102.00 Electrical Shock Treatment Signage**

102.01The contractor shall supply and install 1 no. Electric Shock Emergency Action signs located adjacent to main MCCB panel board

102.02 Each sign shall be wall fixed, signs shall be supplied by;

 Stocksigns Ltd

 Ormside Way

 Redhill

 Surrey

 RH1 2LG

 (01737 764764)

102.03 Each sign shall be stoved aluminium 450 x 600mm

 Stocksigns ref: 1/2161/NR.

**103.00** **Lighting Installation**

103.01 Lighting internally will comprise a basic layout of LED batten fittings fixed to the structural ceilings to provide low level lighting (15 Lux) for inspection and security purposes. Fittings should be emergency and remain illuminated for a minimum of 3 hours upon failure of the power supply to the luminaire.

103.02 Self contained non maintained 3 hour emergency luminaries to all fire exits, corridors, toilets, staircase, reception and to the office areas all in accordance with the Fire Officer’s requirements and BS.5266: Part 1: 1988 and European Standard EN60: 598.1 and 2.22. Emergency lighting will be integrated within the luminaires. All emergency lighting will be provided with ‘secret key’ test switches within the local light switch plate positions.

103.03 Switches shall be fitted at 1200mm above floor level to centre of switch plate, by MK, Crabtree or equal.

103.04 The Contractor shall be responsible for the complete lighting design, supply, installation and testing of the entire lighting installations both internally within the offices / ancillary areas and externally.

103.05 All luminaires specified by the Contractor, shall be selected such that they are robust, do not create a hazard to occupants and in any event be fit for purpose. They should be easily maintainable and complement the environment in which they are to be installed.

103.06 The exact final position of luminaires shall be agreed with the Architect prior to installation.

103.07 The Contractor shall co-ordinate external lighting layouts in order to ensure lighting performance is not compromised to suit other service or aesthetic concepts.

103.08 The Contractor shall note that all proposed luminaires specified for this project shall be issued for approval by the contractor in a composite luminaire schedule, detailing the proposed manufacturer, catalogue numbers and detailed description of each luminaire including selected lamp types.

103.09 All luminaires shall incorporate high frequency control gear.

**104.00 Luminaires**

104.01 Luminaires shall comply with BS 4533/EN 60 598 and the following:

* All luminaires shall have a fused terminal block. Luminaires with separately fed lamps or integral emergency lighting packs shall have a separate fuse for each circuit entering the luminaire. Terminals shall accept 3 x 2.5mm cables
* All luminaires shall have Power Factor Correction to a minimum value of 0.97.
* All luminaires shall be silent in operation and shall comply with the EC EMC Directive.
* All luminaires shall have high frequency control gear.

104.02 The Client’s Representative reserves the right to reject fluorescent control gear that is considered insufficiently quiet in operation.

104.03 All luminaires shall have their metalwork positively earthed.

104.04 The Contractor shall be responsible for the condition and cleanliness of all luminaires until handover. Where, by instruction, luminaires are erected in advance of completion by other building trades, responsibility for the cleanliness or for any damage to the luminaires shall be made by the Contractor.

104.05 Lamps and diffusers should not be fitted to luminaires until the building is practically complete and free from dust.

104.06 All luminaires shall be complete with all necessary suspensions, accessories, lamp holders, lamps, tubes, diffusers etc.

**105.00 Lamps and Tubes**

105.01 All luminaires shall be supplied and installed complete with first lamps.

**106.00 Wiring**

106.01 LV final circuit wiring for the lighting installations, shall be carried out using PVC / PVC sheathed cables (twin & earth) 6242Y contained in ceiling mounted PVC trunking.

106.02 All wiring shall be carried out in the form of radial circuits from the respective distribution boards, minimum cable size to be 1.5mm.

106.03 No looped live wires shall be allowed at any luminaire.

**107.00** **Samples of Luminaires**

107.01 The contractor shall arrange for samples of luminaires to be presented for final approval by the Client/Architect before an order is placed for the luminaires.

**108.00 Lighting Control**

108.01 Lighting control shall be provided in the form of conventional flush mounted grid switching assemblies with moulded white plastic cover plates with surface mounted metal clad switches within plant rooms etc. all switching arrangements fully in accordance with the requirements of local building control.

**109.00 External Illumination Levels**

109.01 The contractor shall design the lighting systems in accordance with the following information. All scheme designs shall be supported with colour photometric plots detailing lighting layouts and illumination levels. These shall be prepared either by the Contractor using computerised systems such as “Hevacomp” or equal or by the software used by the luminaire manufacturers.

**110.00 External Lighting**

 Car Park : 20 Lux

 Building perimeter and disabled

 parking area / route into building : 50 Lux

 Bin Store : 100 Lux

 Please note that the specified lighting levels are to be as a maintained average illuminance level and not a measurable level at handover.

110.01 High pressure sodium flood lighting will be provided to the building periphery by means of wall mounted luminaires. Car parking will be lit generally from a combination of building mounted luminaries and column mounted luminaries. The contractor shall ensure that his design takes into account the need to reduce glare and prevent nuisance light spillage to adjoining buildings and beyond the site boundary to adjacent buildings. All of the external lighting including approval of luminaire samples shall be approved by building control / local planning officer.

110.02 External lighting local to emergency escape routes shall incorporate emergency packs in accordance with BS5266: Part 1: 1988.

110.03 Control of the external lighting will be provided by the installation of a daylight sensor (photo cell) and overridden by means of a 7 day 24 hour programmer.

**111.00 EV Charging**

111.01 In satisfaction of planning requirements the contractor is to supply and install EV charging points to \_\_\_% of the parking provision.

111.02 \_\_\_\_\_

**112.00 Power Installation**

112.01 Electrical small power supplies will be provided to each landing with flush wall mounted switched socket outlets.

112.02 Main Office

 Areas - Fused spur outlet to be provided serving fire alarm panel. To be wired in black Draka Firetuf from a suitably labelled, coloured red, MCCB, provided with means of locking the device in the ‘on’ position, within the main switchboard.

 Main Entrance

 Area - Power supply to main entrance doors.

1 no single switched socket outlet for general cleaning purposes.

 First Floor Landing/

 Lift Lobby - 1 no single switched socket outlet for general cleaning purposes.

 BT - 1 no. 13 amp SP spur for incoming BT supply. This supply together with earth to a dedicated feeder from main LV MCCB distribution panel.

 Lift - 63 amp 3 phase supply terminating in an isolator adjacent to the lift motor position.

112.07 Upon final approval of the contractor’s design / working drawings, the Contractor shall make due allowance for outlets to move from the agreed locations specifically to suit revised room layouts and finalised equipment / furniture layouts / positions / heights etc.

**113.00** **Fire Alarm System**

113.01 The Contractor shall design, supply, install, connect, test and commission a new automatic fully addressable fire alarm system to provide full L1 life protection coverage for the offices / ancillary areas including roof voids. The system shall comply fully in accordance with the requirements of the Local Fire Officer / building control and meet the following British Standards:

1. BS 5445 - Components of Automatic Detection Systems
2. BS 5839 : Part 1 : 2002 - Fire Detection and Alarm Systems in Buildings
3. BS 5839 : Part 4 : 2002 - Specification for Control and Indicating Equipment.

113.02 The system shall generally comprise a semi recessed control panel sited within the main office area local to the main entrance doors (the final position shall be agreed with the Project )

113.03 The system shall comprise an open plan layout of smoke/heat detectors, manual call points and sounders.

113.04 The equipment manufacturers only shall supply, test and commission the completed system.

**114.00 Heat Detectors**

114.01 The detectors shall be rate-of-rise heat detectors in lieu of smoke detectors in potentially dusty atmospheres. Each detector shall not cover more than 50m2 floor area and the maximum spacing between adjacent detectors and walls shall not exceed 9.5m and 5.3m respectively. LED indication of device operated is to be provided.

**115.00** **Smoke Detectors**

115.01 The detectors shall be optical smoke detectors. Each detector shall not cover more than 50m² floor area and the maximum spacing between adjacent detectors and walls shall not exceed 9.5m and 5.3m respectively. LED indication of device operated is to be provided.

**116.00** **Manual Call Points**

116.01 Surface mounted manual break glass call points shall be used in all areas, and provided at all external escape doors, staircases and throughout buildings so that travel distance to any call point shall be a maximum of 30m.

116.02 All manual call points shall be fixed at a height of 1.4m above finished floor level.

116..03 Manual call points shall comply with the requirements of BS 5839 Part 2. Breaking a glass pane shall operate the alarm.

116.04 Call points must bear the legend ‘FIRE - BREAK GLASS’ and must be moulded in red plastic. They must be 115 x 115 mm and are to be suitable for surface mounting with a keyswitch facility for testing.

116.05 A light emitting diode (LED) must illuminate when a call point is in alarm.

116.06 Removal of a call point shall not cause disconnection of the wiring and shall not interfere with the remaining devices on the line.

116.07The contractor shall carry out the fire alarm system design with future maintenance in mind. The roof void detectors shall be of the type suitable for removal via a pole without the need for maintenance personnel to physically reach the detector head.

**117.00 Sounders**

117.01 These shall be so positioned that a minimum sound level of 65 dBa shall be achieved at any location in the building, or 5 dBa above ambient noise levels, whichever is the greater. Sounders in each area should be connected to a minimum of two different circuits.

117.02 The sounders shall be of the electronic type with means of adjusting sound level output and capable of producing alert or evacuations signals, which shall be:

 Alert - intermittent single frequency tone between 500 and 100 Hz.

 Evacuate - continuous yodel tone to be 800 and 100 Hz cycling every 0.5sec.

117.03 Other systems, such as interfaces to stop vent plant, unlock doors or ground the lift are to be provided in accordance with advice from the Fire Officer and Building Control.

**117.00** **Wiring**

117.01 All wiring within the system shall be carried out, utilising Draka ‘Firetuff’ cable coloured red, or approved equivalent. All wiring shall be installed concealed in the fabric of the building.

117.02 All loop connected devices shall follow a simple pair in, pair out procedure. The loop circuit may only branch at a sensor or another active peripheral device. The correct sensor base or peripheral device (with provision for a third pair of wires to be connected) must be used.

117.03 All cabling shall be continuous. No intermediate terminations or connection between apparatus, i.e. call points, sounders, panels, detectors will be permitted, unless expressly authorised by the clients representative in writing.

117.04 Cable cores shall be identified by appropriately coloured or numbered sleeves.

117.05 All cables, where rising from or through the floor slab, shall be mechanically protected to a height of 1500 mm above ffl, or to underside of equipment/appliance by heavy duty galvanised conduit.

117.06 The Contractor shall be responsible for the entire installation including the provision of mechanical protection where required.

**118.00** **Log Books**

118.01 The log book provided by the Contractor shall be handed to the Client as part of the handover package, it shall be in three parts to record events, maintenance and replacement parts.

i) Event Log

 To be completed by Management, to have provision for recording any event affecting the system, i.e. Fire Alarm, false alarm, regular test, temporary disconnections, etc, by date and time.

ii) Maintenance Log

 To be completed by the duly appointed Maintenance Engineer after each maintenance action.

iii) Replacement Part Log

 To be completed upon replacement of any part of equipment by the actioning party.

 All as BS 5839 Part 1 2002 Appendix D.

**119.00** **Operating Instructions**

119.01 A permanised instruction sheet detailing the operation of the system shall be prepared and mounted at each internal main and repeater panel, it shall be written in simple English, be concise and give step by step instructions of the course of action to be followed for any alarm/fault in the occupied mode.

**120.00** **Test Certificates**

120.01 A commissioning certificate as BS 5839 Appendix B attached shall be signed by the installer and handed to the services engineer at practical completion. The Contractors are to arrange for a fully documented audibility test to be carried out to verify the required sound levels are achieved in all areas.

**121.00** **Detector Locations**

121.01 Setting out dimensions for ceiling mounted detectors shall be included on all Fire Alarm drawings in order that certain co-ordinating exercises can be instigated.

**122.00** **System Demonstrations**

122.01 The Contractor shall allow within his tender to provide, on each of the following separate occasions, a competent person who is totally familiar with the whole of the fire alarm system, to demonstrate, as required, all aspects of the system. Exact dates and times will be notified by the services engineer to the Contractor.

122.02 Allowance shall be made for demonstrating the system twice:

i Demonstration to Services Engineers and Local Authority Fire Officer.

ii Demonstration to the Client.

**123.00 Fire Alarm Interfaces**

123.01The fire alarm shall have a facility for all necessary interfaces required to suit the example fit out. E.g between the fire alarm system and door access systems, lift, HVAC control panel and arrange for the system to be connected to a BT Redcare line.

**124.00** **Zonal Display Chart**

124.01 The Contractor shall prepare and mount within a hardwood frame a zonal display chart detailing the fire alarm zones. The chart shall be fixed adjacent to the new fire alarm panel located within the main office entrance area.

**125.00** **Security and Disabled Assistance Alarm System**

125.01 A security alarm system will be provided based on PIR and door contacts, including a Redcare link.

**126.00 Lightning Protection System**

126.01 The Contractor shall design, supply, install, test and commission a lightning protection system to cover all areas and to fully comply with the requirements of BS 6651 and the requirements of this Specification.

126.02 The down conductors shall comprise coloured (to RAL colour) PVC sheathed down conductors provided in locations agreed with the Architect prior to commencement of the works.

126.03 The Lightning Protection System shall consist of the installation of all necessary roof conductors, down conductors, air terminals, test points, earth pits, earth rods etc. to ensure a complete installation.

**127.00** **Air Termination Network**

127.01 Roof Conductors shall be high conductivity annealed copper tape connecting the steel roof and cladding panels with appropriate cross-section area to ensure adequate protection (minimum 25mm x 3mm).

127.02 The copper tape shall have an overall PVC sheath.

127.03 Steel roof structures may be utilised to form the roof conductors for the air termination network provided that the criteria of the steel structure is in accordance with the requirements of BS 6651 and that the tests carried out on the steel comply with BS 6651.

127.04 Where possible all roof conductors shall be installed internally within the roof spaces. Conductors shall be fixed to the underside of the roof apex. Other roof conductors shall be fixed at the eaves position and follow the route of the eaves.

127.05 No part of the roof within the air termination network shall be more than 5 metres from a conductor.

127.06 The whole of the air termination network should be formed by a mesh of no more than 20m x 10m.

127.07 The roof conductors shall be fixed at 600mm centres using black PVC knock-on type holdfasts supplied by the lightning conductor installer.

**128.00** **Down Conductors**

128.01 The structural steel work may be utilised as the down conducting element. Where separate down conductors are used this shall be high conductivity annealed copper tape with the appropriate cross sectional area to ensure adequate protection (minimum 25mm x 3mm).

128.02 The copper tape shall have an overall PVC sheath.

128.03 The down conductors shall be fixed using PVC knock-on type holdfasts, screw-fixed to the wall at 600mm centres.

128.04 At low level the tape shall be terminated at a combined heavy duty gun metal bolted connector block/test clamp, suitable for jointing the copper tape, at 450mm above finished ground level.

128.05 The block test clamp shall be completed with a protective weatherproof cover.

128.06 Separate bolted connector block and test clamp may be considered as an alternative to the combined component, providing they are included on the Schedule of Alternatives.

**129.00 Earth Leads and Electrodes**

129.01 Earth leads shall be high conductivity annealed copper tape with the appropriate cross-sectional area to ensure adequate protection (minimum 25mm x 3mm).

129.02 The copper tape shall have an overall LSF sheath. The earth lead shall be fixed below the test clamp with 1 No. 1 metallic, double-screw fixing clip at 300mm above finished ground level.

129.03 The remainder of the tape shall run clear of the building footings, at a suitable depth to the earth electrode position (minimum depth of 600mm).

129.04 Final connection onto the earth electrode shall be carried out using a bolted, heavy duty gunmetal tape to rod clamp.

129.05 Earth electrodes shall be of the rod type and/or the earth plate electrode as applicable. Both systems shall be made from pure electrolytic copper.

**130.00** **Joints**

130.01 Any straight through, cross, or tee joints on the roof conductors shall be carried out using copper square tape clamps.

130.02 The top and bottom parts of the clamp shall be held together using 4 No. bolts.

**131.00** **Bonds onto Extraneous Items**

131.01 These shall be carried out using high conductivity annealed copper tape with a cross-sectional area no less than that of the roof and down conductors.

131.02 Joints to the roof conductors and down conductors shall be as detailed above. Final connections onto extraneous conduct parts shall be carried out by suitable proprietary metal to metal clamps.

**132.00** **Testing**

132.01 The installation shall be fully tested and commissioned on completion.

132.02 The installer to supply all necessary tests equipment.

132.03 The complete installation shall meet the test requirements of BS 6651: 1992.

**133.00** **Testing and Commissioning**

133.01 The complete electrical installation will be tested and commissioned to give correct working. A complete set of electrical systems certification in conformance with standard NICEIC testing procedures carried out by an approved and registered NICEIC contractor shall be provided. As-fitted record drawings, DB circuit charts, details / literature of installed plant and equipment, maintenance schedules, details of spare parts and emergency telephone numbers will be incorporated into a services O & M manual.

**134.00 Hand Over Documentation/Defects Period**

134.01 The Contractor is to provide the following information as a minimum at formal handover to the client.

134.02 Two sets of mechanical and electrical ‘as installed’ drawings in CAD format on AutoCAD & PDF or similar, including a CD, and operating and maintenance manuals including all commissioning data, to be provided two weeks prior to hand over.

134.03 Instructions to Client’s Representatives on operation and maintenance procedures are to be provided on or before handover at a mutually acceptable date.

134.04 Documentation shall include:

* Copies of all relevant projects specifications
* Notices relating to Building Regulations which will be picked up and completed by the occupiers as part of their CAT A/B fit out works
* Electrical Test Certificates
* Emergency lighting certificates
* Fire alarm commissioning certificates
* Fire alarm audibility test results
* Lightning protection test certificate
* Results of CCTV drainage survey

134.05 Commissioning shall be carried out by the Contractor to certify correct operation of the whole installation in the presence of the Employers Representative.

134.06 The Defects liability period will be 12 months from the date of formal hand over to the Client.

134.07 Working Drawings shall be submitted to the Employer’s Representative within a reasonable time to allow comment to be made to meet the required date in the agreed programme of work. In the event of additional details, drawings or other information being required to enable the Working Drawings to be completed, these shall be requested from the Employer’s Representative at a time which is neither unreasonably distant from nor unreasonably close to the date required.

134.08 The Working Drawings shall include details of all builder’s work, together with any additional information required for the preparation of final architectural details, e.g. of services shafts, floor ducts, brickwork surrounds for louvers, building-in of fire dampers, sleeves or cable transits, etc.

134.09 Duplicate copies shall be provided to the Employer’s Agent of all Working Drawings. This requirement applies to issues for approval and, where appropriate, final issues.

134.10 ‘As-fitted’ drawings shall be provided as described under Record Documents.

**135.00 Documentation: Record Documents**

135.01 Record documents shall comprise:

- drawings recorded on computer disk in AutoCAD & PDF format or equal and approved

* drawings and schedules giving details of all installations ‘as
* installed’;

- all test certificates;

- all commissioning records/certificates;

- all guarantees and warranties;

- all insurance inspection reports and certificates;

- project completion records.

135.02 Record documents shall be available at least in draft form at the time of user tuition during the commissioning period. They shall be issued in their final, approved form before the Works are offered to the Employer’s Representative as being practically complete.

135.03 The Employer’s Representative shall approve record documents before being finally issued to the Employer.

135.04 Record documents shall conform to all relevant requirements specified for Working Drawings.

135.05 The final issue of approved record documents shall be delivered to the Employer on site or other such locations as may be required by the Employer’s Representative. A receipt including a detailed list of all record documents delivered shall be obtained and copied to the recipient and the Employer’s Representative.

135.06 Each set of record documents shall comprise:

- one set of prints of each record drawing;

- ring binders of appropriate size containing the drawings and all other documents as detailed herein.

135.07 Record drawings shall provide at least as much detail as the Drawings in respect of the locations of all plant, equipment, valves, isolators, switches, dampers, control panels, distribution boards, access panels, etc, and the routes of pipes, trays, conduits, ducts, etc and any other components of the Works.

135.08 Record drawings shall include schematic and diagrammatic details giving at least as much detail as the Drawings, together with all additional details included in the Working Drawings in respect of wiring diagrams, control panels, control systems, distribution boards, other specialist systems/equipment and instrumentation. They shall include any other details necessary for the operation, maintenance, dismantling, re-assembly and possible future modification of all components of the installations included in the Works.

135.09 Record drawings shall include all details necessary for the identification, location, size, rating, capacity or other detail necessary for the maintenance, operation, replacement or any other relevant activity of all plant, equipment, apparatus or other materials.

135.10 Record drawings may include appropriate details in schedule form.

135.11 Record drawings shall include all relevant details of builder’s work essential to the Works. This shall include services shafts, cable containers, air ducts or water-ways, structural supports and any other relevant items.

135.12 Record drawings shall include comprehensive details of all power wiring, control wiring, pneumatic or other controls system piping. Such details shall include sizes and types of conductors and piping and identify the terminal points of each.

135.13 The scales used on Record drawings shall conform to those used on the Drawings except where a more detailed scale is required by the following list:

 Details Scale

 External Services 1:200

 General Layouts 1:100

 Plant/Equipment Room Layouts 1:50

 Manufacturers’ Details of

 Equipment Requiring Servicing 1:20

135.14 The size and scale of all record drawings shall be adequate to meet the approval of the Employer’s Representative.

135.15 In the event of any record documents being unavailable at the time necessary for acceptance of the Works as being practically complete, the Employer’s Representative shall be empowered to employ any measures necessary for their production and to deduct the cost of such measures from payments applicable for completion of the Works.

**136.00 Documentation: Operating and Maintenance Manuals**

136.01 Two sets of Comprehensive manuals shall be provided to assist the user in the safe and efficient operation and maintenance of all systems and equipment incorporated in the Works. The manuals shall include:

* a general description of the scope and manner of working of each system and any items of plant or equipment;
* control/monitoring system, including wiring diagrams and schematics showing the inter-connections between any/all plant and equipment;
* clear and comprehensive instructions for the method of starting up, running

and shutting down of all systems, plant and equipment;

* detailed instructions on actions to be taken in the event of an emergency including, for example, how to isolate power and fuel supplies, water supply, etc;
* instructions in respect of any necessary precautions against damage to the installed works, e.g. from frost, corrosion, etc;

* instructions and schedules listing all items requiring periodic servicing and/or inspection, together with details of the necessary activities and recommended frequency thereof;
* a detailed list of recommended spare and replacement parts, lubricants and any other expandable items, including catalogue references, part numbers, etc as necessary for the identification of each item.

136.02 Manufacturers’ leaflets, booklets or other documentation that does not conform with A4 size shall be indexed and cross-referenced in the manuals. Such documentation shall be presented in suitable box files or folders.

136.03 Operating and maintenance manuals shall be available at least in draft form at the time of user tuition during the commissioning period. The final, approved issue shall be made before the Works are offered to the Employer’s Representative as being practically complete.

136.04 Operating and maintenance manuals shall be approved by the Employer’s Representative before being finally issued to the Employer.

136.05 The final issue of approved operating and maintenance manuals shall be delivered to the Employer on site or other such location as may be required by the Employer’s Representative. A receipt including a detailed list of all documents delivered shall be obtained and copied to the recipient and the Employer’s Representative.

136.06 Two complete sets of operating and maintenance manuals shall be provided. The manuals shall be presented in the form of loose leaves contained in appropriate ring binders, lever arch files, etc. The binders shall contain cardboard divisions between each section. A ready means of reference and a detailed index shall be included.

136.07 In the event of operating and maintenance instructions being unavailable at the time necessary for acceptance of the Works as being practically complete, the Employer’s Representative shall be empowered to employ any measures necessary for their production and to deduct the cost of such measures from payments applicable for completion of the Works.

136.08 Two copies of the O & M Manuals shall be provided.

136.09 The O & M Manuals shall be sectioned to include:

1. Description of works.

2. List of manufacturer’s names and addresses.

3. Maintenance procedures.

4. Manufacturer’s operating and maintenance instructions.

5. Test certificates.

6. As installed drawings, including a computer disk with the drawings recorded in AutoCAD & PDF format.

###### APPENDIX I

**DRAFT COLLATERAL WARRANTY FORMS**

**COLLATERAL WARRANTIES, IN A SUBSTANTIALLY SIMILAR FORMAT ARE TO BE ENTERED INTO BETWEEN THE FOLLOWING PARTIES:**

* Contractor to third parties as required by the Employer in accordance with paragraph 8.01
* Architect to Employer
* Structural Engineer to Employer
* Sub-Contractor with Design Responsibility to Employer
* Architect to Purchaser
* Structural Engineer to Purchaser
* Sub-Contractor with Design Responsibility to Purchaser
* Architect to any party providing finance in connection with the Works
* Structural Engineer to any party providing finance in connection with the Works
* Sub-Contractor with Design Responsibility to any party providing finance in connection with the Works

###### APPENDIX II

**CONTRACT PRELIMS /**

**SCHEDULE OF CONTRACT AMENDMENS**

###### APPENDIX III

**EXAMPLE PARENT COMPANY GUARANTEE**

###### APPENDIX IV

**EXAMPLE INSURANCE BACKED BOND**

**APPENDIX V**

###### PRE-CONSTRUCTION INFORMATION PACK

###### APPENDIX VI

**SCHEDULES OF DRAWINGS**

**- Please refer to drawing register and issue sheet**

###### APPENDIX VII

**COPY OF THE PLANNING PERMISSION NOTICE**

**FOR THE DEVELOPMENT ISSUED BY FOREST HEATH DISTRICT COUNCIL.**

APPENDIX VIII

**ENVERITY’S CONTAMINATED LAND SITE INVESTIGATION REPORT**

**REF: E04024/1 AND**

**ENVERITY’S GEOTECHNICAL SITE INVESTIGATION REPORT REF: C9564**

**APPENDIX X**

**FEE BASIS OF WOODS HARDWICK**

**FEE BASIS OF BAILEY JOHNSON HAYES**