

**EMPLOYER’S REQUIREMENTS**

**FOR THE CONSTRUCTION OF**

**AN OFFICE BUILDING AT**

**THE OAKS, FORDHAM ROAD,**

**NEWMARKET, SUFFOLK**

Contact: Michael Gregory **CS2 Limited**

 Bridgewater House

Our Ref: 1051736/MSG/MB 4 Queensbridge

 NORTHAMPTON

Date: March 2016 NN4 7BF

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 **PRELIMINARIES**

**1.00** **Project Particulars**

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 2011 incorporating all current amendments.

1.05 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 V. 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 V.

1.06 Civil and Structural Engineer: To be appointed by the Contractor.

1.07 CDM Co-ordinator:

 The Contractor is to properly fulfil the role of CDM Co-ordinator, 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.

1.08 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 forming part of the Employer’s Requirements comprise the following:

* Woods Hardwick’s drawings nos. 15475-SK96A and 15475-SK106.

**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 Woods Hardwick’s drawings as listed in Section 2.02.

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

3.07 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.

3.08 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

3.09 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.

3.10 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.

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

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

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

3.14 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.

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

3.16 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 designed with adequate heating and lighting and is 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 application of environmental services. In this they should have due regard to the effective use of energy and new technology, where it is appropriate and economic.

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 refrigerants, 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 2011 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 II.

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 I. 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 I. 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 Consultant/Sub-contractor 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.

**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.

* + - 1. Carpet.
		1. Loose furniture.
		2. 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** **Samples and Approvals**

18.01 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.

**19.00** **Accuracy/Setting out Generally**

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

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

19.03 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.

19.04 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.

**20.00** **Services Generally**

20.01 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.

20.02 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.

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

**21.00** **Supervision/Inspection/Defective Work**

21.01 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.

21.02 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.

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

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

21.05 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.

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

21.07 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.

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

21.09 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.

21.10 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.

21.11 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:

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

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

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

21.11.4 Details of any corrective action.

**22.00** **Work at or after Completion**

22.01 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.

22.02 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.

22.03 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.

22.04 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.

**23.00 Security/Safety/Protection**

23.01 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.

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

23.02.1 Management of health and safety at work.

23.02.2 Managing construction for health and safety.

23.03 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.

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

23.05 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.

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

23.06.1 Work Area: As designated by the Contractor.

23.06.2 Precautions: As designated by the Contractor.

23.07 Protect against the following:

23.08 Explosives: Do not use.

23.09 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.

23.10 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.

23.11 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.

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

23.13 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.

23.14 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.

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

23.16 Water: Prevent damage from storm and surface water.

23.17 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.

23.18 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.

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

23.20 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.

23.21 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.

23.22 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.

23.23 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.

23.24 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.

23.25 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.

23.26 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.

23.27 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.

**24.00** **Facilities/Temporary Work/Services**

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

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

24.03 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.

24.04 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.

24.05 Employer’s Development Board: Not required.

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

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

24.08 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.

24.09 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.

24.10 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.

24.11 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.

24.12 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.

24.13 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.

24.14 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.

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

25.01 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 CDM Co-ordinator, 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.

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

 25.02.1 Part 1: General: Content as Clause 121.

 25.02.2 Part 2: Building Fabric: Content as Clause 133.

 25.02.3 Part 3: Building Services: Content as Clause 143.

25.03 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.

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

25.05 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.

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

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

* + 1. 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.
		2. Names, addresses, telephone and fax numbers of all Sub-Contractors, suppliers and manufacturers.
		3. Copies of all guarantees, warranties and maintenance agreements offered by Sub-Contractors and manufacturers.
		4. Copies of all test certificates and reports required in the Specification.

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

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

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

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

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

25.07.5 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 faultfinding.
		15. Emergency procedures, including telephone numbers for emergency services.

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

25.09 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.

25.10 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.

25.11 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.

25.12 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.

**26.00 Local Authorities and Statutory Undertakers**

26.01 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, gas 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.

26.02 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:

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

26.02.2 Building Regulations Approval.

26.02.3 Fire Officer’s Approval.

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

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

26.04 A copy of the planning permission notice for the development is attached in Appendix V.

**27.00 [Not Used]**

THE WORKS - SUB-STRUCTURE

**28.00** **Demolition/Excavation**

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

28.02 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.

28.03 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.

**29.00** **Foundations/Piling**

29.01 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.

**30.00** **Sub-base**

30.01 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.

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

**31.00** **Ground Floor Slab**

31.01 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.

31.02 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**

**32.00** **Frame**

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

32.02 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.

32.03 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.

**33.00** **Upper Floors**

33.01 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.

**34.00** **Roof Structure**

34.01 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 M&E services installation.

34.02 The roof structure is to comprise trussed rafters, to be designed and specified by the specialist rafter sub-contractor. All timberwork to the roof including battens, counter battens etc is to be impregnated with preservative, all in strict accordance with the manufacturer’s recommendations.

**35.00** **Roof Covering**

35.01 The roof weathering is to comprise grey concrete interlocking concrete tiles fixed in strict accordance with the manufacturer’s recommendations using proprietary dry ridge and hip system. Dry ridge vent and eaves ventilators are to be provided in accordance with the Building Regulations. The colour of the tiles is to be approved by the Employer and Local Authority. The Contractor is to include for all necessary cover flashings, lead work to ridges, eaves, valleys etc, to be fixed in strict accordance with the manufacturer’s recommendations and good building practice. Care should be taken to minimise the visual impact of these items.

35.02 The roof is to be constructed as a vented ‘cold roof’ with insulation at ceiling tie level to achieve a ‘U’ value to satisfy the Building Regulations using vapour permeable underlay to BS5534: Part 1.

35.03 The Contractor is to confirm compliance with all manufacturers’ recommendations and shall confirm the duration of maintenance free life for the roof proposal.

**36.00** **Roof Drainage**

36.01 The building is to be provided with conventional eaves gutters and surface fixed down pipes. These items are to be constructed of aluminium with a factory-applied finish. Such as PPC Alumasc or similar approved.

**37.00** **Stairs**

37.01 The main staircase in the building is to be constructed using concrete.

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

37.03 The staircase will be finished with carpet and 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.

**38.00** **External Walls**

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

38.02 The outer skin of the external walls is to comprise 103mm FL quality facing brickwork. The bricks are to comprise red facing brickwork and buff facing brickwork to band courses etc, as indicated on the Architect’s drawings. The bricks and brickwork are to receive the prior approval of the Employer and the Local Authority.

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

38.04 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.

38.05 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.

38.06 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.

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

38.08 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.

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

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

38.11 The overall ‘U’ value of the cavity wall is to satisfy the Building Regulations.

38.12 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.

38.13 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.

**39.00** **Windows**

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

39.02 All windows are to be fitted with double glazed units which will comprise a 6mm outer pane of silver body tint 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.

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

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

39.05 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.

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

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

39.08 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.

39.09 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.

**40.00** **Entrances/External Doors**

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

40.02 The entrance doors are to be provided with a maximum security hooklock with an opening device suitable for means of escape purposes.

40.03 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.

40.04 The main entrance doors are to comply in all respects with the Disability Discrimination Act.

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

40.06 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**

**41.00** **Internal Walls and Partitions**

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

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

41.03 All walls to be tiled are to be left ready to receive tiling.

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

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

41.07 A vision panel is to be provided into the ground floor entrance hall. The panel is to be a minimum of 1200mm wide and full height. It is to be glazed with clear glass of appropriate fire resistance and with suitable manifestation. The panel is to be located in a position to be agreed with the Purchasers.

**42.00** **Internal Doors**

42.01 All internal doorframes and architraves are to be constructed using North American white oak.

42.02 All internal doors are to be constructed using North American white oak veneers and lippings.

42.03 Where appropriate, doors are to feature overhead closers. The finish of the closers is to match the door furniture. The use of ‘Perko’ type door closers will not be acceptable.

42.04 The doors are to be provided with good quality stainless steel door furniture. The type and manufacturer of the door furniture is to receive the prior approval of the Employer’s Agent.

42.05 Lever furniture is to be sprung and mounted on a plate which will incorporate any key holes, turn snibs etc. The use of roses to lever furniture with separate escutcheons will not be acceptable.

42.06 All doors are to be provided with kicking plates on one side only. The kicking plates are to be from the same suite and material as the door furniture.

42.07 All doors in circulation areas including doors to the toilet areas are to be provided with push plates and pull handles and will not incorporate lever/latch furniture.

42.08 Any doors to office areas, plant rooms, storerooms and cleaners cupboards are to be lockable.

42.09 All doors, other than those where it is inappropriate, are to be provided with vision panel in clear glass.

**43.00** **Ceiling Finishes**

43.01 A smooth plaster finish ceiling is to be provided in the ground floor entrance hall, staircase area and the first floor balcony area.

43.01 A modular suspended ceiling system is to be installed to all other areas comprising Armstrong Dune ceiling tiles with a tegular edge. The tiles will be 600 x 600 x 15mm supported in a Armstrong Trulok 15 white metal grid. 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 are not acceptable.

43.02 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.

**44.00** **Wall Finishes**

44.01 The walls within the toilet areas are to be finished in coloured glazed ceramic tiles to full height with contrasting feature bands. The Contractor is to allow a PC sum of £55.00/m2 for the supply only of the tiles. This PC sum relates only to the invoice supply costs of the walls. The Contractor is to include elsewhere for all labour, overheads and profit etc associated with the supply and installation of the ceramic wall tiles including all necessary sundries.

44.02 All other areas throughout the building are to be finished in one mist coat and two full coats of vinyl matt emulsion.

**45.00** **Floor Finishes**

45.01 Raised Access Floors: The floors in all office areas are to comprise a proprietary, non-encapsulated, raised access floor system, which is to receive the prior approval of the Employer’s Agent. The floor system is to comprise a full access floor based on 600 x 600mm panels on adjustable metal pedestals.

45.02 The raised access floor system is to be installed 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.

45.03 Concrete floors beneath raised access floors are to be treated with a coloured dust sealant, prior to installation of the raised access floors.

45.04 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.

45.05 Carpets: All office areas, corridors, staircases landings and walk-in cupboards are to be provided with a contract type carpet finish. The Contractor is to allow a PC sum £15.00/m2 for the supply only of the carpet tiles. This PC sum relates only to the invoiced supply cost of the carpet tiles. The Contractor is to include elsewhere for all labour, overheads and profits etc associated with the supply and installation of the carpet tiles including all necessary sundries.

45.06 Toilet Area Floors: Toilet area floors are to be finished in ceramic tiles. A tiled skirting is to be provided in the toilet areas. The Contractor is to allow a PC sum of £45.00/m2 for the supply only of the ceramic floor tiles. This PC sum relates only to the invoiced supply cost of the ceramic floor tiles. The Contractor is to include elsewhere for all labour, overheads, profit etc associated with the supply and installation of these ceramic floor tiles and all necessary sundries. The toilet area floors are to include a matching tile upstand to form a skirting.

45.07 Entrance Hall Floor: The floor in the ground floor entrance hall to be finished in limestone tiles. The Contractor is to allow a PC sum of £75.00/m2 for the supply only of the limestone tiles. This PC sum relates only to the invoiced supply cost of the limestone floor tiles. The Contractor is to include elsewhere for all labour, overheads, profit etc associated with the supply and installation of the limestone tiles and all necessary sundries.

45.08 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.

45.09 Skirting: Skirting to all areas, other than toilets and plant rooms are to be constructed of North American white oak.

45.10 Plant Room Floors: All plant room floors are to be finished in a good quality, durable floor paint.

**46.00** **Fittings and Furnishings**

46.01 Toilet Fittings: Mirrors and coat hooks are to be provided in the toilet areas. Suitable grab rails etc are to be provided in the disabled toilet areas.

46.02 Internal signage: The Contractor is to allow for providing internal signage comprising the following:

* Statutory emergency exit signage (both illuminated and non-illuminated).
* Statutory fire signage.
* Door signage to toilets and stores.

46.03 Internal signage is to be designed and installed so that it is suitable for use by the disabled including the visually impaired.

**47.00** **Sanitary Fittings**

47.01 Sanitary Fittings: All the sanitary fittings throughout the building are to be white.

47.02 All WC’s will be close coupled and to be provided with dual flush cisterns.

47.03 All WC’s will have matching white seats and covers.

47.04 All WC’s will feature concealed cisterns set behind laminate faced panelling.

47.05 All wash hand basins will be provided with mixer taps.

47.06 Unisex disabled toilet compartments, constructed to good industry practice, must be provided for persons of restricted mobility.

 **THE WORKS - EXTERNAL WORKS**

**48.00** **Paving**

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

48.03 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.

48.04 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.

48.04 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.

48.05 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.

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

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

48.08 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.

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

48.10 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.

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

**49.00 Cycle Storage**

49.01 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.

**50.00** **Bin Stores**

50.01 The Contractor is to allow for providing a bin store, as indicated on the Architects drawings. The bin store is to be of robust construction and is to be lockable. Dropped kerbs are to be provided in front of the bin store to allow easy access.

**51.00** **Chiller Compounds**

51.01 The Contractor is to allow for constructing a chiller compound comprising concrete a base surrounded by a lockable enclosure. 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.

**52.00** [**Not Used]**

**53.00** **Landscaping**

53.01 The Contractors are to allow for undertaking a full landscaping scheme to meet the requirements of the Planning Authority. The scheme is also to receive the prior approval of the Employer/Employer’s Agent.

53.02 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.

**54.00** **Main Services**

54.01 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.

54.02 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.

**55.00** **Drainage**

55.01 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.

55.02 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.

55.03 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.

55.04 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.

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### THE WORKS - MECHANICAL AND ELECTRICAL SERVICES INSTALLATION

56.00 Standard Workmanship And Conditions

56.01 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.

56.02 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.

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

56.04 The mechanical and electrical system is to be designed and constructed on the basis that the building is partitioned and that the room uses are as indicated on the Architect’s drawings.

### 57.00 Regulations And Standards

57.01 Conformity with Regulations

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

57.03 The Health & Safety at Work Regulations

 Construction (Design & Management) Regulations 1994

The COSSH Regulations

 The Factories Act

 The Clean Air Act

 The Environmental Protection Act

 The Building Regulations

 The Public Health Act

 The Offices, Shops and Railway Premises Act

 British Standards Institution Publications and appropriate ISO or

 CEN/CENELEC Standard

 Requirements and recommendations of the local fire officer

 Requirements of any insurance companies concerned

 IEE Regulations for Electrical Installations

 The Electricity at Work Regulations

**58.00** **Inspection Of The Work**

58.01 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.

58.02 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.

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

### 59.00 Defects

59.02 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.

### 60.00 Attendance

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

60.02 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.

### 61.00 Practical Completion

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

61.02 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.

61.03 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.

61.04 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.

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

62.01 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.

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

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

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

62.05 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.

62.06 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.

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

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

**63.00** **Co-Ordination with Other Trades**

63.02The 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.

**64.00 Setting Out**

64.01 The Contractor shall allow for setting out pipework, trunking. tray and ductwork 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.

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

**65.00** **Quality Assurance And Certification**

65.01 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).

**66.00 Related Standards**

66.01 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

66.02 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.

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

## 67.00 Secondary Support Systems

67.01 The Contractor shall be responsible for providing all necessary secondary support systems associated with the support of pipework / ductwork / trunking / tray / basket, plant/equipment, etc. being provided and installed by himself.

67.02 Secondary support systems shall be proprietary systems such as unistrut (or similar) or by using suitably sized mild steel angle iron, channels etc. All mild steel supports shall be corrosion protected by two coats of red primer paint followed by a finishing coat of black gloss paint.

67.03 The Contractor shall be responsible for sizing/designing all secondary support systems to suit site conditions and the Contractors arrangement of services. All fixings associated with the secondary support systems shall be provided by the Contractor, proposed details of same are to be issued by the Contractor for comment by the Engineer/Structural Engineer.

67.04 Secondary support systems provided by the Main Contractor for suspended ceilings, lighting installations etc. shall not be used by the Contractor for supporting items of mechanical equipment/plant that vibrate.

**68.00** **Mechanical Services Installation**

68.01The basis of the design for the mechanical services is to be as follows:

68.02External design temperatures: -3 deg C DB Saturated (winter)

 28°C DB / 23°C WB (summer)

68.03Internal design temperatures :

 Office Areas : 21 deg C (winter)

 23 deg C (summer)

 Reception Area : 21 deg C (winter)

 23 deg C (summer)

 First floor Landing / lift lobby : 21 deg C (winter)

 23 deg C (summer)

 Toilets : 18 deg C (winter)

 Disabled Toilets/Shower : 21 deg C (winter)

 Stairwells : 18 deg C (winter)

 Corridors : 18 deg C (winter)

 Note :

 All specified temperatures are to be controlled on a ±2°C tolerance.

68.04 Infiltration rates: :

 Office Areas : 1 ac / hr

 Reception Area : 2 ac / hr

 First floor Landing / lift lobby : 2 ac / hr

 Toilets, Disabled Toilets / Shower : 2 ac / hr

 Stairwells : 1 ac / hr

 Corridors : 1 ac / hr

## 68.05 Heat gains:

 Occupants : 105 W Sensible

 85 W Latent

 Lighting : 15 w/m

 Equipment Load : 1 PC per occupant @ 250W

 1 Printer per 8 PC’s @ 450W

 2 Photocopiers per floor

 @ 1000W

 Fresh Air Load : As rates specified and external

 Temperatures stated.

68.06 Heat loss / gain calculations will be carried out by the contractor and submitted in a suitable format i.e. Hevacomp computer design package or equal for comment fully in accordance with the CIBSE Guides.

68.07 Confirmation of Construction U – Values shall be obtained from the project Architect and as the detailed construction shown on his drawings also in accordance with current building regulations.

68.09 Ventilation rates:

 Office Areas : via openable windows

 Toilets, Disabled Toilets/ : 6 air changes / hour extract with balanced

 Shower make up via toilet lobby / corridor. Area

 designed as slightly negative pressure.

68.10 Noise Criteria : Offices NR35

 Toilets NR40

## 69.00 Comfort Cooling/Heat Pump Installation

### 69.01 The Contractor shall design, select, supply, offload, install, test, set to work and commission mechanical cooling / heat pump systems capable of providing heating / cooling to the Office areas and reception / first floor landing / lift lobby.

69.02 The Contractor shall ensure that:

1. All system selections are based upon UK design conditions i.e. 23°C internal (±2°C)/28°C external with systems utilising R407c refrigerant.
2. Design duties shall be based upon low speed selection to minimise noise levels.

### 69.03 The works shall comprise of the following:

1. Installation of externally mounted heat pump condensing units within a designated compound.
2. Installation of indoor units comprising of the 4 way throw cassette type of unit.
3. Installation of all interconnecting refrigeration quality pipework and thermal insulation.
4. Installation of condensate drainage systems including condensate pumps where required.
5. All interconnecting power / controls wiring from condensing units to indoor units/ controllers / centralised controller.
6. All remote room sensors and associated wiring.
7. Installation of manufacturers Centralised Controller to incorporate a frost protection facility for the building and individual full function control of each indoor / outdoor unit at the designated centralised control position.

### 69.04 The installations shall comprise of Daikin equipment or equal and approved and installed only by registered approved manufacturers installers and in full accordance with the manufacturer’s instructions.

### 69.05 The contractor shall also comply in full with the British Standards relevant to the maximum allowable volume of refrigerant allowable within office buildings being directly related to the proposed construction method / details specified by the project Architect.

69.06 The contractor shall submit a statement confirming his compliance with the above prior to commencement of the works.

69.07 In addition, the contractor shall carry out a risk assessment to the satisfaction of the employers representative in relation to the requirements for the provision of an automatic void / space refrigerant gas leak detection system.

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### 70.00 Refrigeration Pipework (direct expansion)

70.01 The refrigerant pipework shall be soft copper to BS2871, Part 2. All refrigerant pipework shall be “dehydrated for refrigerant use” and shall be marked as such. Fittings shall be manufactured from copper or a suitable corrosion resisting alloy for copper.

70.02 All tubing shall be supplied and stored in clean conditions with ends sealed. Cleanliness shall be maintained throughout the installation phases by purpose made plugs, caps and blanking flanges fitted to all open ends.

70.03 Pipework shall be designed and arranged to maintain refrigerant velocities and gradients to prevent trapping oil and sludging and to ensure that oil is returned to the compressor under all conditions, including lowest stage of capacity unloading. All horizontal discharge lines shall be sloped away from the compressor to prevent gravity oil return to the discharge ports.

70.04 Pipework shall be reamed after cutting and shall be free of burrs, scales and other defects and shall be thoroughly cleaned before installation. At all times during installation, the pipework shall have all ends capped except where actual jointing is taking place and all pipework is to be kept sealed prior to installation.

70.05 Dry nitrogen shall be fed through the pipework whenever a brazing operation is being carried out to prevent any formation of oxides within the pipework. When brazing adjacent to valves etc., precautions shall be taken to prevent the heat distorting valve seats or similar by wrapping components with a damp rag to absorb the heat.

70.06 Pipework routes shall be such as to minimise the length of runs and the number of directional changes. Pipework joints shall also be minimised to reduce the risk of leakage and hence refrigerant emissions to atmosphere.

70.07Brackets for refrigeration pipework fixed to walls shall generally be of the “Hydrazord” type. Where direct wall fixings are not practicable, then refrigerant pipework shall be supported on suitably sized cable tray along its entire length provided and fixed by the Contractor. The cable tray shall be hot dipped galvanised, heavy duty with return flanging. All bends, tee sections etc., shall be made using the proprietary manufacturer’s fittings, no site made fittings will be allowed. The cable tray shall be supported at regular intervals in accordance with the manufacturer’s recommendations and the spacing of supports shall be such that no “sag” is apparent when the tray is fully loaded.

70.08 Pipework shall have flexible couplings to prevent vibration transmission where it is connected to compressors and air cooled condensers. Gas pulsation dampers shall be fitted where appropriate to minimise noise and vibration transmission.

70.09 Upon completion of the pipework installation, the system shall be pressure tested. After the pressure testing and dehydration, the system shall be charged with the required amount of refrigerant.

70.10 All pipework upon completion shall be labelled to indicate the system reference installed at 3 metre intervals. In addition, the external condensing units shall be fitted with suitable engraved labels indicating the system reference and details of the area served.

70.11 The refrigerant pipework shall be thermally insulated with Armaflex Class “O” with a minimum wall thickness of 13mm. The insulation shall have a thermal conductivity of 0.037W/m2K to DIN 52613.

70.12 Power to the outdoor condenser units, indoor fan coil units and VRV BS controller boxes shall be provided by others terminating with a suitable electrical IP rated isolator.

70.13 The Contractor’s installation specialist shall install all controls wiring from the aforementioned indoor units, BS control boxes and centralised controller via the external inverter driven condensing units following the cable tray route of the refrigeration pipework to the indoor units.

### 71.00 Condensate Pipework

71.01 The Contractor shall design, supply and install for each fan coil unit a PVC condensate gravity drain pipework or pumped drainage system where deemed necessary, including all necessary running traps, tundish air breaks, disconnection traps etc.

71.02 The Contractor shall install all unit condensate lift pumps as necessary.

71.03 All condensate pipework immediately off the fan coil units (first 2 metres) shall be thermally insulated with 13mm Armaflex with Class O rating.

71.04 All gravity condensate pipework shall be trapped prior to connection to any drain pipework and shall be installed to falls.

71.05 All PVC pipework shall incorporate solvent welded fittings / accessories.

### 72.00 External Heat Pump Condensing Units

72.01 The outdoor condensing units shall be sited within a designated condensing unit compound to be agreed with the project Architect.

72.02 The final condenser unit arrangement shall be determined by the Contractor to suit refrigeration pipework routes, having paid particular attention to the permitted maximum runs for the refrigeration pipework.

72.03 The condensing units shall be sited on purpose made anti-vibration strips on a concrete base. The compound shall be served by means of a pre-formed fully accessible duct with removable covers linking the building with the compound

72.04 The contractor shall be responsible for detailing all associated builderswork including drainage requirements within the designated compound.

### 73.00 Commissioning

73.01 The Contractor shall include for setting to work and commissioning each and every system to the satisfaction of the Employer’s Representative.

73.02 Following completion of the above the Contractor shall demonstrate the system operation to the Employer.

**74.00** **Domestic Water Services Installation**

74.01 The Contractor shall design, supply, install, set to work and commission the complete hot and cold water services installation as described in this Specification, to serve all sanitary appliances/outlets indicated on the Architectural drawings.

**75.00** **Pipework**

75.01 The internal hot and 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.

75.02 The Contractor shall fully co-ordinate all domestic water services pipework with electrical trunking/tray, conduit, light fittings, electrical switchgear, ventilation ductwork and all building fixtures and fittings

75.03 Under no circumstances shall cold-water service pipework be routed within heating or hot water pipework boxing/voids etc. in accordance with recommendations to prevent the growth of Legionella bacteria.

75.04 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.

75.05 Where pipework is exposed within fully tiled toilet areas, it will have a chrome plated finish with matching fittings and brackets.

**76.00 Final Connections**

76.01 The Contractor shall allow for all final hot and cold-water connections to sanitary fittings and appliances as indicated on the Project Architect’s drawings.

76.02 The Contractor shall allow for all necessary co-ordination with the Main Contractor to ensure a complete and satisfactory installation.

**77.00 Valves**

77.01 Valves shall be fitted in pipework lines, within main runs, branches from mains and to each range of fittings to provide suitable isolation and regulation. The valves shall be fully in accordance with the Standard Specification, be WRC approved and installed in accordance with the local water bylaws.

77.02 Service valves to be fitted on all draw-offs.

77.03 The Contractor shall install double regulating valves on each of the secondary return sub-circuits to maintain suitable balancing to meet the circulation temperature specified within the periods recommended.

## 78.00 Insulation

78.01 All domestic hot and 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.

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

78.03 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.

78.04 Hot and cold-water services shall be thermally insulated in the following locations, shall be thermally insulated:

i) Plant rooms

ii) Ceiling / roof voids

ii) Stores rooms

iv) Within sanitary ware IPS system voids (including under vanity units )

v) Where pipework is boxed in.

vi) Generally in all unheated areas of the building.

**79.00** **Mains Cold Water Supply**

79.01 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.

79.02 The copper pipework shall be connected to the MDPE internally and routed to serve all water heaters, sanitary ware / appliances. At the building entry point a stop valve, double check valve and drain facility shall be installed.

79.03 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.

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

79.05 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.

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

**80.00 Hot Water Heaters**

80.01 The Contractor shall design, supply and install localised electric Heatrae Sadia or equal mains fed water heaters of suitable capacity, to serve wash hand basins and sinks as indicated on the Architectural tender drawings.

80.02 The hot water heaters selected from the Heatrae Sadia range shall operate at 60°C. All wash hand basins shall be fed via blending valves fitted to give an outlet temperature of 43°C maximum.

80.03 The water heaters shall be fitted in strict accordance with the manufacturer’s instructions and local building control requirements with particular attention given to the agreement with building control in respect of the safety valve discharge positions. All safety valve discharges shall be piped and connected to the drainage system incorporating tun dishes and suitable traps.

80.04 The heaters shall be complete with the necessary expansion relief valves, expansion vessels, non-return valves, pressure reducing valves isolation valves and line strainers.

80.05 All water heaters to be CE endorsed and WRC approved.

**81.00** **Thermostatic Blending Valves**

81.01 The Contractor shall supply and install thermostatic blending valves to all outlets throughout the building requiring a blended hot water temperature of 43°C as scheduled below:

* All wash hand basins.

81.02 The valves shall be selected to suit the available pressure to provide ‘failsafe’ shut-off to prevent scalding, be tamper proof and fully comply with the TMV3 scheme. The valves shall be WRC approved.

81.03 All valves shall be fitted with isolation valves and in-line strainers. The Contractor shall ensure that balanced pressure supplies are provided to all mixer valves and mixer taps.

81.04 A sample of the thermostatic mixing valves proposed shall be submitted to the Client/Engineer for approval prior to commencement of the works.

**82.00 [Not Used]**

**83.00** **Chlorination**

83.01 The chlorination of the domestic water systems shall be carried in accordance with HS G (70) and BS6700.

83.02 Inhibiting chemicals shall be of proprietary manufacture and used in accordance with the manufacturer’s safety instructions.

83.03 The sterilisation process shall be carried out by specialists in this field of work who shall submit signed certificates to warrant that the systems have been properly disinfected in accordance with the stated standards.

83.04 On completion of sterilisation of the systems all shall be thoroughly and totally flushed out twice with clean water before any water is used for domestic purposes.

83.05 The Contractor shall allow in his tender for the taking of two sets of water samples from the sterilised system, one set immediately after sterilisation and one set immediately prior to handover. The method of obtaining samples, sampling point etc shall be recorded by the Contractor, witnessed, and certified by the Engineer. The Contractor shall allow for the samples to have tests carried out by the Water Authority to confirm that water from the installation is suitable for human consumption and free from harmful bacteria/chemicals. Two copies of the test reports shall be forwarded to the Engineer. The methods used to test the samples shall be in accordance with those laid down in ‘Analysis of raw, potable and waste waters’ published by the Department of the Environment, HMSO 1972 or any method approved and employed by the Environmental Health Department at the time of the tests.

83.06 A ‘clean water’ certificate is to be issued by the Contractor prior to Practical Completion.

**84.00** **Testing and Commissioning**

84.01 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.

**85.00 VENTILATION SYSTEMS**

85.01 The Contractor shall design, select, supply and install extract ventilation to the toilet areas within the building to meet fully with the specified design criteria and all requirements of local building control. Fans to be mounted in positions suitable for ease of servicing and maintenance.

**86.00 Ventilation Systems**

86.01 The Contractor shall size and select all necessary air handling units / fans to achieve the stated design criteria.

86.02 The general principles for the ventilation strategies are as follows.

i) All toilets to have mechanical extract ventilation, comprising common twin duct mounted fan with automatic changeover panel. Panel should also have a duty share facility. The controller should be mounted in an accessible location and suitably labelled. The system should incorporate a remote fan fail indicator mounted in a noticeable area and be clearly labelled indicating its use. To be controlled via PIR’s with run-on timers. If a common system is provided to serve several areas, control should be achieved via a time switch. Ductwork system to include attenuators to satisfy noise design criteria and ensure that cross talk does not occur. Discharge points via roof or external louvre on wall elevation.

ii) The Contractor shall supply all door transfer grilles for air make-up purposes to the toilets and kitchenette, if fitted in fire doors they shall be complete with intumescent fire and smoke blocks /controls as required and approved by building control.

iii) The Contractor shall include for all volume control dampers to enable satisfactory balancing and commissioning of the ventilation ductwork systems.

**87.00** **Ductwork**

87.01 **Galvanised Steel Ductwork**

87.02 All sheet metal ductwork shall be manufactured and installed in accordance with Section 4 of this Specification and HVCA Specification DW144 with exceptions where identified below. All ductwork shall be leakage tested in accordance with DW144 Appendix A.

* Ductwork shall be manufactured using hot dipped galvanised sheeting to BS EN 10142 grade PO2G, 275 mass coating, M finish, B surface with C surface treatment, to the nominal cross sectional sizes shown on the drawings, based on the standard sizes and thicknesses described in DW144 except no gauge less than 0.8mm shall be used for indoors applications or less than 1.0mm for outdoors applications.
* Longitudinal seams shall be made using either the ‘Grooved Seam’ or ‘Pittsburgh Lock’ method with continuous sealant injected during the seam forming process.
* Cross-joints in rectangular ducts shall be by slide-on flanges with bolted corner joints and knock-on clamps. Slip joints may be used for adjustable sections only when they shall be angle reinforced for their full girth, integrally sealed and fixed using mechanical rivets at 50mm centres.
* Rectangular ductwork shall be provided with additional stiffening as necessary to obviate vibration and drumming by either cross bracing or beading or closer spacing of cross-joints.
* Cross-joints in circular ductwork shall be plain socket and spigot, with or without connectors, with integral sealant and mechanical rivet fixings. Flanged joints, with gaskets, shall be used in strategic positions to facilitate future removal.
* Changes in direction in rectangular ductwork shall be by square pattern fittings with integral air turns. Air turning vanes shall be of the correct profile to ensure complete changes of direction of the airflow, with extended leading and trailing edges and with the radius and spacing selected to achieve uniform velocity through the bend. Air turns shall be fixed to the ductwork fitting with mechanical rivets and stiffened to obviate vibration or blade oscillation.
* Bends in circular ductwork shall be 0.5D throat radius on sizes up to 400mm and segmented thereafter.
* Branches off main ducts shall be by 45° shoes.
* Shape changes shall be long taper with the total included angle not exceeding 30°.
* Offsets shall be at a maximum angle of 30°

87.03 Flexible ductwork shall be installed at final connection points to equipment and grilles etc. The maximum length permissible shall be 300mm.

87.04 All ductwork access points shall be provided local to all fire dampers, volume control dampers and for internal cleaning purposes as recommended within DW144.

**88.00** **Grilles / Diffusers / Louvers**

88.01 The Contractor shall design, supply and install sufficient input and extract diffusers / grilles / louvers to meet the design requirements.

88.02 The Contractor shall take into account in the design, the aerodynamic or thermodynamic effects of handling air to do both heating and cooling to avoid draughts or low temperature areas at working level.

88.03 All supply air grilles shall be of the 4-way throw diffuser type with matching diffusers utilised for the extract points within the office areas with the exception of the toilet areas finished in white RAL 9010.

88.04 Extract grilles to toilet areas shall be of the egg crate type or circular air valve type to suit volume flow and noise restriction characteristics all grilles to RAL 9010 complete with plenum boxes (egg crate only).

88.05 Door transfer grilles shall be of the non-vision framed type to a RAL colour approved by the Architect complete with fire / smoke intumescent blocks / controls if installed within fire doors.

88.06 External louvres shall be finished in a RAL colour as agreed with the Architect and incorporate bird guards. Maximum velocities shall be designed in accordance with the noise criteria specified and with attention also to noise generation externally.

### 89.00 Attenuators

89.01 The Contractor shall design, select and install duct mounted attenuators and cross talk attenuators to meet the requirements of the noise design criteria.

89.02 Silencer casings shall be fabricated from Grade Z2 pre-galvanised steel sheet, utilising Pittsburgh lock seam and grooved seam joints as appropriate. Each joint shall be filled with high velocity duct sealant conforming to HVAC DW144 Specification, irrespective of Leakage Class called for.

89.03 The attenuator flanges shall be secured to the casing via mechanically closed, sealed blind rivets having a shear strength of 2260N/m, at maximum pitches of 225mm. Rolled steel flanges shall have the casing end returned over its face regardless of the specified Leakage Class.

89.04 All attenuators are to be manufactured using proprietary flanges, which are to have additional sealant applied between corner pieces irrespective of the specified Leakage Class.

89.05 Attenuators shall have internal sideliner and splitter elements which are to be constructed from Grade Z2 pre-galvanised perforated steel sheet, having a free area of not less than 37% which is to be formed into trays. These trays shall be linked together using pre-fabricated angles to form a self-contained unit.

89.07 The attentuators media utilised shall be 32kg/m3 density “Super Glass”, which shall be additionally faced with a woven glass fibre scrim to prevent fibre erosion into the air stream. “Super Glass” to be completely inert and not harbour bacteriological growth and to be tested in accordance with BS476 parts 4, 6 and 7.

89.08 All silencer sideliner and splitter elements shall be fitted with leading and trailing radius fairings, which are to be formed from Grade Z2, pre-galvanised steel. Splitter elements shall be secured into the silencer casing via two parallel rows of sealed rivets at a maximum pitch of 250mm.

89.09 High pressure sealant shall be universally applied to all joints between internal sideliner and splitter elements and the casing.

**90.00** **Fire Dampers**

90.01The Contractor shall include for the supply and installation of duct mounted fire dampers where ductwork penetrates any fire compartmentation barriers fully in accordance with the requirements of local building control.

90.02 Details of the final fire compartmentation layout shall be obtained from the project Architect prior to the commencement of the works.

90.03 Installation frames shall be provided where appropriate and built in by the main contractor. Dampers to have blades out of the air stream and also include open/closed status indication.

90.04 The fire dampers shall be as manufactured by Actionair Ltd. or equal and approved.

90.05 Ductwork access points shall be installed local to all damper positions for re-setting / maintenance of fuseable links on both sides of the damper. .

**91.00** **Testing and Commissioning**

91.01 The Contractor shall include for the testing and commissioning of the whole of the ventilation systems fully in accordance with the CIBSE Commissioning Code A for Air Distribution Systems and the Standard Specification.

**92.00** **[Not Used]**

**93.00 System Testing and Commissioning**

93.01 Upon completion of all mechanical services, full testing and commissioning will be undertaken fully in accordance with the CIBSE commissioning codes to ensure the services are left in correct working order. At practical completion, four complete sets of operating and maintenance manuals will be provided incorporating “As Installed” drawings, test and commissioning certificates, manufacturers literature maintenance schedules, details of spare parts required and emergency telephone numbers.

**94.00 Electrical Services Installation**

94.01 The electrical services installation will be designed and installed in compliance with the recommendations of the sixteenth edition of the IEE Wiring Regulations BS 7671 incorporating all latest amendments, current and relevant British Standards, Building regulations ( including the latest Part L2 regulations effective from April 2002 ), 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 1994.

**95.00** **Contractor Supplied Information**

95.01 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

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

**96.00 Labels, Charts and Notices**

96.01 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.

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

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

**97.00 Earthing and Bonding**

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

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

97.03 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.

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

97.05 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.

97.06 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

97.07 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.

97.08 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.

**98.00** **Main Circuit Protective Conductors**

98.01 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.

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

**99.00** **Main Equipotential Bonding Conductors**

99.01 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 gas and water services, main mechanical services pipework (e.g.Mains and Domestic hot water systems) and ducting, all structural steelwork and lightning protection system.

99.02 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.

**100.00** **Circuit Protective Conductors**

100.01 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).

100.02 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.

100.03 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.

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

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

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

100.07 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.

**101.00** **Supplementary Equipotential Bonding**

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

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

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

101.04 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.

101.05 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.

101.06 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.

101.07 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.

**102.00** **Incoming Electricity Supply**

102.01 The 415 Volt 3 phase 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.

102.02 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.

102.03 The contractor shall be responsible to establish the loading requirements for the total building 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.

**103.00** **Main LV MCCB Panel Board**

103.01 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.

103.02 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.

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

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

103.05 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%

103.06 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

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

103.08 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.

**104.00** **Protective Floor Mat**

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

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

**105.00** **Designation Labels**

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

105.02 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.

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

**106.00** **Record Drawing**

106.01 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.

## 107.00 Electronic Systems Protection

107.01 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.

107.02 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.

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

**108.00** **MCB Sub-Distribution Boards**

108.01The Contractor shall design, supply, install, test and commission a power and lighting system fed from sub-distribution boards of numbers to suit the building requirements positioned local to the central core area where feasible / practical.

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

108.03 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.

108.04 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.

108.05 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

108.06 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.

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

108.08 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.

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

108.10 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).

108.11 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.

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

108.13 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.

108.14 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

108.15 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.

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

## 109.00 Methods of Wiring

109.01 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.

 Busbar systems serving recessed floor boxes within the office areas shall be served by XLPE/SWA/PVC cables installed on cable tray within ceiling / floor voids.

 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.

**110.00 Wiring Details**

110.01 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.

110.02 Final connections from switched fused connection units to items of equipment shall be carried using heat-resisting flex sized accordingly to the fuse rating of the connection unit, but being a minimum of 1.5mm².

110.03 Final connections from switch disconnectors shall be carried out to the same specification as above, using appropriately sized heat-resisting flex with the applicable number of cores. 6491B single core cables shall be enclosed within UPVC high impact conduits or flexible Kopex as applicable within areas such as plant rooms etc.

110.04 All wiring shall be correctly colour-coded and installed as to comply with the 16th Edition of the IEE Wiring Regulations BS 7671.

110.05 A maximum 10 twin socket outlets shall be provided on any ring main circuit.

## 111.00 Electric Shock Treatment Signage

111.01The contractor shall supply and install 1 no. Electric Shock Emergency Action signs located adjacent to main MCCB panel board

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

 Stocksigns Ltd

 Ormside Way

 Redhill

 Surrey

 RH1 2LG

 (01737 764764)

111.03 Each sign shall be stoved aluminium 450 x 600mm

 Stocksigns ref: 1/2161/NR.

**112.00** **Lighting Installation**

112.01 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.

112.02 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.

112.03 Lighting circuits shall generally be so arranged that their maximum loading does not normally exceed 5 Amperes. Where circuits are designed for high loading, the circuit wiring and MCBs shall be sized accordingly.

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

112.05 The Contractor shall co-ordinate lighting layouts with ceiling grids, ventilation grilles, smoke detectors etc, and shall ensure that lighting performance is not compromised to suit other service or aesthetic concepts.

112.06 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.

112.07 All luminaires shall incorporate high frequency control gear.

**113.00 Luminaires**

113.01 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.

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

113.03 All luminaires shall have their metalwork positively earthed.

113.04 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.

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

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

113.07 Circuit wiring to all luminaires mounted in or on suspended ceilings shall terminate at a plug-in ceiling rose or plug and socket to BS 546, located in the ceiling void, no more than 500mm from the luminaire. Final connections to the luminaire shall be via Klik type plug and socket arrangement with heat-resisting multi-core flexible cable with a minimum conductor CSA of 0.75mm. Normal and emergency luminaires shall be connected via non-interchangeable 3 and 4 pin klik type plugs and sockets respectively.

**114.00 Lamps and Tubes**

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

114.02 Lamps of each type shall be obtained from the same manufacturer and be of the same colour temperature. Colour temperature to be 3500K.

114.03 The colour and type of fluorescent tubes shall be checked with the Engineer before ordering. Except where a particular colour is required for specific areas, all fluorescent tubes throughout the installation shall be of the same colour and to give the lowest energy costs.

114.04 The fluorescent tubes shall have colour correction and where possible shall be of the same length throughout the building. Colour rendering to be Ra90. Lamps to be Triphosphor.

**115.00 Wiring**

115.01 LV final circuit wiring for the lighting installations, shall be carried out using PVC / PVC sheathed cables (twin & earth) 6242Y installed on galvanised cable tray containment systems on main runs. Drops to switches etc are to be concealed within the building fabric enclosed within PVC high impact plastic conduits. All tray/trunking / conduit systems shall be sized with 25% spare capacity

115.02 Cables shall terminate in trunking / conduit mounted three pin 10A plug in ceiling roses to BS7001.

115.03 Final connections to luminaries shall be carried out using white PVC cable ref 3093Y type B.

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

115.06 Switching in general, throughout all areas, shall be designed such that flexibility of switching is achieved and fully in accordance with the building regulations L2 : 2002. Flexible switching levels should be provided so that complete banks of luminaires are not on all the time.

115.07 Final details of the switching arrangements should be submitted to the Engineer for comment/approval prior to commencement of the works.

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

115.09 Installation works in plantrooms, electrical switchrooms etc, shall be carried out using surface fixed, galvanised metal, heavy gauge conduits fixed by suitable conduit saddles. Switches and other accessories shall be surface-mounted metal clad.

**116.00** **Samples of Luminaires**

116.01 The Contractor shall be responsible for preparing and issuing a colour lighting portfolio for the entire lighting installation as proposed by the contractor. This shall form a composite bound document containing luminaire schedule, colour pictures of all the luminaires and reduced sized drawings that cross refer with the schedule.

116.02 In addition to this 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.

**117.00 Lighting Control**

117.01 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.

**118.00** **Illumination Levels**

118.01 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.

118.02 Lighting designs calculations shall be meet the requirements of the latest CIBSE Lighting Guides, with particular reference to uniformity and illumination levels and with close attention to the latest requirements of the CIBSE LG7 2001 document for lighting within areas utilising VDUs.

118.03 Glare indices shall also be designed in accordance with CIBSE Lighting Guides and liaison with the Architect is vital in ensuring the required reflectances from internal surfaces are achieved.

**119.00 Lighting Levels**

 Office Areas : 500 Lux

 Toilets : 200 Lux

 Main Reception : 250 Lux

 First floor landing / lift lobby : 150 Lux

 Cleaners Store : 150 Lux

 Corridors : 150 Lux

 Stairwells : 150 Lux

119.01Uniformity to be 0.85 in all cases

119.02 The lighting to the office areas is to be in accordance with CIBSE LG7.

119.03 The lighting level in the office areas is to be measured at 750mm from finished floor level.

**120.00 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.

**121.00** **Emergency Lighting Installation**

121.01 A complete emergency lighting system including all final emergency exit doors both internally and externally within the whole of the building shall be designed, supplied and installed by the Contractor in accordance with BS 5266 Part 1: 1992, and all requirements of the local building control / fire officer.

121.02 It shall be the responsibility of the Contractor to submit drawings of the emergency lighting layout and to obtain approval of the scheme from building control.

121.03 The emergency lighting installation shall remain operational in the result of the loss of the total electrical power supply, together with individual lighting final circuit failure. The Contractor shall be required to install the emergency lighting installation in strict accordance with the local fire and rescue services requirements.

121.04 The emergency lighting source shall be provided by means of Non-maintained units contained within the general luminaires.

121.05 Integral emergency lighting packs shall be incorporated by the luminaire manufacturer off site using components approved and procured by the manufacturer so that the manufacturer shall have total product liability for the complete luminaire assembly.

121.06 The converted luminaires shall comply with ICEL 1004 and carry the CE mark.

121.07 All luminaries/ inverter units shall be rated with a 3 hour standby duration period in the event of mains failure.

121.08 All final emergency exit luminaires shall be non-maintained and complete with the European Signs Directive format logo.

121.09 All luminaires shall be complete with all necessary suspensions, accessories, lampholders, lamps, tubes, diffusers etc.

121.10 Emergency luminaires shall be installed where required, with the appropriate insignia to complement the fitting location and facilitate exit procedure of the premises during mains failure.

121.11 Emergency luminaires and lighting equipment shall comply with EN60 598-2-22 requirements and luminaires shall comply with the standard specifications.

**122.00** **Batteries**

122.01 Batteries shall be nickel cadmium with sealed cells and they shall be within the luminaire. Batteries shall be maintained in good condition on site with all necessary precautions being taken to prevent deterioration. On completion of the contract, they shall be handed over fully charged. Batteries shall have an expected useful life in excess of 5 years.

**123.00** **Control Gear**

123.01 All equipment used to control the luminaire shall be contained within the luminaire including inverter/charger, changeover sensor, protection fuses, control switches etc. A neon indicator, red in colour, shall be fitted in a position where it can readily show that the battery circuit is charging, either within or adjacent to the fitting. Where this indicator is not fitted within the luminaire, it shall be mounted flush on the ceiling adjacent to the luminaire.

123.02 Battery chargers shall be capable of recharging batteries after they have been discharged within a period of 14 hours to a level where they can be operated again for the full duration period. This function shall not exceed the maximum design charging characteristics of the batteries.

**124.00 Wiring**

124.01 The emergency luminaires/inverter units shall be fed by a permanent supply from the local lighting circuit for the area in which they are installed.

124.02 For testing purposes, a 20 Ampere key switch shall be provided on the same gang (or as applicable) as the local lighting switch to break the live feed to the luminaires/inverter units. The test key switch shall be engraved ‘EM -TEST SWITCH’.

124.03 5 No. test keys shall be handed over at practical completion.

124.04 The installation shall be to the required standard and satisfaction of the Fire Prevention Officer.

124.05 The installation shall comply fully with BS 5266, Part 1: 1992 Code of Practice for emergency lighting of premises.

124.06 The internal lighting will comprise the following:

## 125.00 Offices Areas

125.01 Fluorescent recessed high frequency lay-in modular luminaires 600 x 600 designed fully in accordance with the latest CIBSE LG7: 2002 guidance on lighting within areas utilising VDU’s to include all recommendations in relation to lighting levels and associated glare indices. ie with integral uplighter / downlighter components.

## 126.00 Toilets and Ancillary Areas

126.01 Fluorescent recessed downlighter type high frequency luminaires, to eliminate shadows within cubicles consistent with the CIBSE LG7 guidance to give an average illumination level of 250 Lux at floor level.

## 127.00 Emergency Lighting

127.01 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.

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

## 128.00 External Lighting

128.01 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.

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

128.03 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.

**129.00 Power Installation**

129.01 Electrical small power supplies will be provided to all office areas within recessed 3 compartment floor boxes with general ancillary supplies flush mounted within walls as detailed below.

129.02 Floor boxes shall be served via a below floor busbar system with 3-5 metre plug in flexible leads to each box.

129.03 Particular consideration will be given within the design and installation to the regulation 607 of the wiring regulations BS 7671 sixteenth edition relating to high integrity earthing, where small power outlets within office areas will be serving IT equipment. It should be assumed that all floor boxes will be serving IT equipment.

129.04Socket outlets within the floor boxes serving IT equipment shall also incorporate a dual earth facility.

129.05 Main Office

 Areas - 3 compartment recessed floor boxes as‘ Ackerman ‘ or equal with a provision of one box per ten square metres and containing 1 no. Double switched socket outlet together with 2 no double blanking plates punched for voice / data RJ45 outlets (supplied and installed by others).

Adequate small power is also to be provided by means of flush wall mounted switched socket outlets in the office areas for general cleaning purposes at a rate of 1 no single outlet on a maximum radius of 6 metres throughout the office areas.

Fused spur outlets to be provided serving fire alarm panel and disabled assistance alarms. 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.

##  Stairwells ­- 1 no. single switched socket outlet at ground and first floor level. Designated for general cleaning purposes.

 Toilets - 1 no. Fused spur outlet for hand-dryers (supplied by others) in each toilet area.

Power to disabled assistance alarms within each disabled toilet.

 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.

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

 Mechanical

 Services

 Supplies - All power supplies associated with the mechanical services installation generally.

 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.

129.07 Upon final approval of the contractors 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.

129.08 Where cables drop to wall mounted accessory positions, they shall be enclosed within UPVC high impact conduits buried within wall chases to offer a fully rewireable system.

**130.00** **Fire Alarm System**

130.01 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.

130.02 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 )

130.03 The system shall comprise to smoke/heat detectors, manual call points and sounders.

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

**131.00 Heat Detectors**

131.01 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.

**132.00** **Smoke Detectors**

132.01 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.

**133.00** **Manual Call Points**

133.01 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.

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

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

133.04 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.

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

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

133.07The 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.

**134.00 Sounders**

134.01 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.

134.02 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.

134.03 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.

**135.00** **Wiring**

135.01 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.

135.02 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.

135.03 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.

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

135.05 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.

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

**136.00** **Log Books**

136.01 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.

**137.00** **Operating Instructions**

137.01 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.

**138.00** **Test Certificates**

138.01 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.

**139.00** **Detector Locations**

139.01 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.

**140.00** **System Demonstrations**

140.01 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.

140.02 Allowance shall be made for demonstrating the system twice:

i Demonstration to Services Engineers and Local Authority Fire Officer.

ii Demonstration to the Client.

**141.00 Fire Alarm Interfaces**

141.01The contractor shall allow for all necessary interfaces required 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.

**142.00** **Zonal Display Chart**

142.01 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.

**143.00** **Security and Disabled Assistance Alarm System**

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

143.02 The Contractor shall design, supply and install a disabled assistance alarm system to cover the disabled WC’s detailed on the Architects drawings, including all necessary power supplies, containment, cabling etc to form a complete installation.

143.03 The system shall essentially comprise:

1. 2 orange coloured pull-cord units, one installed adjacent to the entrance door and the other adjacent to the WC.
2. Wall-mounted reset unit, located inside the WC
3. Over-door lamp outside the WC
4. Power supply and control unit fixed wall mounted at high level within the corridor ceiling void.

**144.00** **Power Supplies**

144.01 The 230V supply to the alarm control unit shall be provided via a fused connection unit. The fused connection unit (unswitched) shall be located adjacent to the alarm panel power supply unit and wired from the local Distribution Board in the form of a radial circuit. The wiring shall be carried out from a separate MCB. The MCB shall be provided with a ‘locking in’ facility and a label shall be provided at the distribution board ‘DISABLED ALARM SYSTEM SUPPLY - DO NOT ISOLATE WITHOUT PERMISSION’.

144.02 The fused connection unit shall be complete with a suitably rated fuse fitted.

144.03 The connection unit shall be engraved ‘DISABLED ALARM SYSTEM’.

**145.00** **Testing and Commissioning**

144.01 The system shall be tested on completion and commissioned by the manufacturer in the presence of the Client and appropriate operating instruction for the system shall be demonstrated.

**146.00 Lightning Protection System**

146.01 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.

146.02 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.

146.03 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.

**147.00** **Air Termination Network**

147.01 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).

147.02 The copper tape shall have an overall PVC sheath.

147.03 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.

147.04 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.

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

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

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

**148.00** **Down Conductors**

148.01 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).

148.02 The copper tape shall have an overall PVC sheath.

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

148.04 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.

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

148.06 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.

**149.00 Earth Leads and Electrodes**

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

149.02 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.

149.03 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).

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

149.05 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.

**150.00** **Joints**

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

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

**151.00** **Bonds onto Extraneous Items**

151.01 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.

151.02 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.

**152.00** **Testing**

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

152.02 The installer to supply all necessary tests equipment.

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

**153.00 Electrical Supplies to Mechanical Services**

153.01 The Contractor shall be responsible for the design, supply and installation of all electrical supplies to mechanical services systems / equipment as detailed previously.

153.02 It shall be the Contractor’s responsibility to obtain all necessary information and wiring diagrams from the respective manufacturers of the equipment and mechanical services contractor, prior to commencing works on the installation.

153.03 The exact location of all mechanical equipment shall be agreed with the Architect/Engineer prior to commencing works on the installation.

153.04 The supply and installation of all items of mechanical plant shall be part of the Mechanical Services Specification.

153.05 All power wiring to Mechanical Services plant and controls shall be carried out by the electrical contractor as part of this contract.

153.06 The Electrical contractor shall liaise fully with the Mechanical services contractor and obtain all wiring diagrams and other relevant information necessary to provide a complete and working installation.

**154.00** **Wiring Details**

154.01 The wiring to all items shall generally be carried out using PVC insulated 6491B BASEC approved cables enclosed within trunking/conduits and installed as a surface installation.

154.02 Suitable switch disconnectors of the appropriate current, voltage and IP ratings shall be installed adjacent to each item of mechanical plant to allow local isolation of such plant.

154.03 Final connections from isolators and switched fused connection units etc, shall be carried out using butyl insulated and sheathed flexible cable.

154.04 All switch disconnectors and switch fused connection units shall be clearly labelled indicating which items of equipment they serve.

154.05 All switched fused connection units shall be flush or surface mounted as applicable to suit the method of installation within that area.

154.06 Final locations of all isolators and switched fused connection units shall be agreed with the Engineer before installation work commences.

**155.00** **Voice and Data**

155.01 The contractor shall design, supply and install data containment in the form of cable basket routed within the raised floor void at each floor level linking the server room position (to be designated by the occupier) to each floor box position.

155.02 The basket system shall be connected to galvanised steel common riser tray generally sited within the central core area.

155.03 The cable basket shall be designed and selected to enable the capacity to carry 4 no data cables per floor box installed with a 25% spare capacity for future cables.

155.04 The contractor shall ensure that all manufacturers’ proprietary fittings are utilised and that a flexible conduit is utilised linking the basket with each of the floor boxes.

155.05 A generic voice and data system is proposed which will work from one cabinet to provide 96 voice and data points in positions to be agreed.

**156.00** **Testing and Commissioning**

156.01 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.

### 157.00 Hand Over Documentation/Defects Period

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

157.02 Two sets of mechanical and electrical ‘as installed’ drawings in CAD format on AutoCAD Release 2002 & PDF or similar, including a CD, and operating and maintenance manuals including all commissioning data, to be provided two weeks prior to hand over.

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

157.04 Documentation shall include:

* Copies of all relevant projects specifications
* Certificate of Compliance with Building Regulations
* Certificate of Conformity to LG7:2001
* System Pressure Test Results
* Comfort cooling System Commissioning Results
* Ventilation Test Results
* Chlorination Test Results
* Water Flow Test Results
* Electrical Test Certificates
* Emergency lighting certificates
* Fire alarm commissioning certificates
* Fire alarm audibility test results
* Disabled assistance alarm commissioning certificate.
* Lightning protection test certificate
* Results of CCTV drainage survey

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

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

## 158.00 Documentation: Drawings

158.01 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.

158.02 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.

158.03 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.

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

### 159.00 Documentation: Record Documents

159.01 Record documents shall comprise:

- drawings recorded on computer disk in AutoCAD 2002 & 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.

159.02 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.

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

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

159.05 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.

159.06 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.

159.07 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.

159.08 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.

159.09 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.

159.10 Record drawings may include appropriate details in schedule form.

159.11 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.

159.12 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.

159.13 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

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

159.15 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.

### 160.00 Documentation: Operating and Maintenance Manuals

160.01 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 each item of plant and equipment;
* a detailed description of the scope and manner of working for each automatic
* control/monitoring system, including wiring diagrams and schematics showing the inter-connections between all plant and equipment;
* clear and comprehensive instructions for the method of starting up, running
* and shutting down of all systems, plant and equipment;
* details of all normal operating conditions and control set points;
* 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 in respect of any plant subject to periods of disuse for seasonal or other reasons;
* 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.

160.02 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.

160.03 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.

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

160.05 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.

160.06 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.

160.07 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.

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

160.09 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 2002 & PDF format.

# THE WORKS – LIFT INSTALLATION

**161.00** **Generally**

161.01 A lift is to be provided. The lift is to have a minimum vertical speed of 0.6 metre per second.

161.02 The lift is to be designed for use by the disabled (Building Regulations Part M) and in accordance with PS8300:2001.

161.03 The lift is to comply in all respects with the EU directive on lifts and is to be provided with two way communication between the lift and a permanently manned emergency communication service. The Contractor should note the cost of arranging and providing the required telephone line to facilitate this service, should be included within the cost of the Works.

161.04 The lift is to have variable speed drive.

161.05 The lift is to have the following features:

* Photocell to car doors.
* Position indicator in lift car.
* Overload indicator.
* Half height mirror to rear wall within car.
* Carpet finish to floor of car.
* Car doors and returns to be stainless steel.

###### APPENDIX I

DRAFT COLLATERAL WARRANTY FORM. 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 GUARANTEE BOND**

###### APPENDIX III

**PARENT COMPANY GUARANTEE**

###### APPENDIX IV

###### PRE-CONSTRUCTION INFORMATION PACK

**EMPLOYER’S REQUIREMENTS**

**FOR THE CONSTRUCTION OF**

**AN OFFICE BUILDING AT**

**THE OAKS, FORDHAM ROAD,**

**NEWMARKET, SUFFOLK**

Contact: Michael Gregory **CS2 Limited**

 Bridgewater House

Our Ref: 1051736/MSG/LB 4 Queensbridge

 NORTHAMPTON

Date: March 2013 NN4 7BF

Revision: Tel: (01604) 603030

Fax: (01604) 603039

 E-Mail: mgregory@cs2.co.uk

**PRE-CONSTRUCTION INFORMATION PACK**

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## 1.0 INTRODUCTION

**1.1 Generally**

The current Construction (Design & Management) Regulations came into force on 6th April 2007. The Regulations are concerned with projects. "Project" means a scheme which includes, or is intended to include, construction work. Health and safety management must now be considered at the planning and design stage of all construction work with the exception of the smallest projects. Even these exempted projects are still subject to Health and Safety Legislation. The Regulations provide details of how the various parties to a project are required to contribute to health and safety management.

This Pre-Construction Information Pack consists of:

|  |  |
| --- | --- |
| Section 1 | Introduction |
| Section 2 | Description of the Project |
| Section 3 | Client Considerations and Management Requirements  |
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**1.2 Definitions**

## 1.2.1 The Client

The Client is defined as a person for whom a project is carried out. The Client has an obligation to appoint a CDM Co-ordinator and Principal Contractor. The Client has to be satisfied that the persons appointed are competent and that they have allocated, or will allocate, adequate resources to enable them to perform their function and comply with the requirements of the Regulations.

## 1.2.2 The CDM Co-ordinator

The CDM Co-ordinator is required to ensure that the design of any structure comprised in the project includes design considerations adequate to avoid foreseeable risks in the health and safety of any person carrying out the construction work or cleaning work in or on the structure. He is also required to ensure that the design includes adequate information about any aspect of the project or structure or materials which might affect the health or safety of any persons at work carrying out the construction work or cleaning work of or in the structure. The CDM Co-ordinator is required to give adequate advice to the Client to enable him to comply with the conditions relating to the appointment of a Contractor and to ensure that the construction phase does not start until a Pre-Construction Information Pack has been prepared. The CDM Co-ordinator is also required to give advice to the Client concerning the appointment of a Designer and a Principal Contractor. The CDM Co-ordinator must also prepare, review, amend and maintain a Health and Safety File which is returned to the Client on completion of the construction work. It is the Client’s responsibility to ensure that the role is filled at all times until the end of the construction phase. A CDM Co-ordinator position can be terminated by the Client, but the Client has to ensure that someone is appointed in his place.

## 1.2.3 The Principal Contractor

The Principal Contractor is responsible to ensure co-operation between all Contractors working on the site, to enable all Contractors to comply with the requirements and prohibitions imposed under the relevant statutory provisions relating to construction work. He has to ensure that every Contractor and every employee at work in connection with the project complies with any rules contained in the Health and Safety Plan. He must make sure that only authorised persons are allowed into any area where construction work is being carried out. In practice the Principal Contractor will take over and develop the Health and Safety Plan and co-ordinate the activities of other Sub-Contractors working on the construction site.

## 1.2.4 Other Contractors

Other Contractors or Sub-Contractors are required to co-operate with the Principal Contractor so far as it is necessary to enable each of them to comply with their duties under the relevant statutory provision. This includes complying with directions given by the Principal Contractor to enable the work to be carried out in accordance with Health and Safety Regulations. Contractors and Sub-Contractors must provide information to the Principal Contractor to enable him and the CDM Co-ordinator to comply with the Regulations.

**1.2.5 The Health and Safety File**

On completion of the construction of a project the CDM Co-ordinator is required to deliver the Health and Safety File to the Client. The Health and Safety File will be made available to other Designers, Principal Contractors, Contractors and CDM Co-ordinators who are responsible for later construction work associated with the project or its maintenance, repair, renovation or demolition. The Principal Contractor must pass on all relevant information promptly to the CDM Co-ordinator to compile the Health and Safety file.

## 1.3 Summary of Tasks

* + 1. **Client’s Tasks**
* Provide information for the Pre-construction information pack.
* Ensure Pre-construction information pack forms part of the tender documents.
1. Appoint the CDM Co-ordinator, ensuring competence and provision of adequate resources.
2. Appoint Designers ensuring competence and adequate resourcing, seeking the advice of the CDM Co-ordinator if required.
3. Check that the CDM Co-ordinator has notified the Executive of the project.
4. Appoint the Principal Contractor, ensuring adequate competence and resourcing, seeking advice of the CDM Co-ordinator if required.
5. Check that the Health and Safety Plan is prepared, reviewed, or updated ready for handover at the end of construction work.
6. Upon completion receive the Health and Safety file from CDM Co-ordinator and pass to any future maintenance and/or construction workers.
	* 1. **CDM Co-ordinator’s Tasks**
* Inform client of his duties.
1. Ensure he has received formal written notification from the Client of his appointment.
2. Give notice to Health and Safety Executive of the project.
3. Ensure he has an agreed line of communication with the Client.
4. Allocate adequate time and resources to the project.
5. Advise on competence and resources of Designers and Contractors.
6. Ensure safety considerations are incorporated in the design process.
7. Make sure the Designer considers Health and Safety issues.
8. Ensure that information on hazards and risks is incorporated in a Health and Safety Plan and if appropriate in the Health and Safety File.
9. Prepare Pre-Construction Information Pack and submit to Principal Contractor.
10. Prepare and update Health and Safety File.
11. Deliver Health and Safety File on completion to Client.
12. Ensure that Principal Contractor and Contractors have systems to manage Health and Safety in their works procedures.
13. Advise client of the adequacy of the Principal Contractors Construction Phase Health and Safety Plan.
14. The CDM Co-ordinator does not have any responsibilities to monitor the activities of the Principal Contractor and his Contractors.
15. Ensure that any structure designed for use as a workplace has been designed so as to comply with the provisions of the Workplace (Health, Safety and Welfare) Regulations 1992.

**1.3.3 Designer’s Tasks**

1. Take reasonable steps to ensure that the Client is aware of his duties under the Regulations.
2. Identify hazards and risks inherent in the design and provide information to CDM Co-ordinator and ensure all information relating to the design is promptly provided.
3. Co-operate with the CDM Co-ordinator, Principal Contractor and other Designers.
4. Provide information to CDM Co-ordinator for the Health and Safety file.

**1.3.4 Principal Contractor’s Tasks**

* Be satisfied that the client is aware of his duties.
* Consider any temporary works which may be required and liaise with CDM Co-ordinator and Designer to ensure that such works can be incorporated into the project with due regard to Health and Safety.
* Consider the Pre-Construction Information Pack when compiling tender.
* Do not commence works until satisfied that suitable and adequate welfare facilities are available.
1. Ensure that the CDM Co-ordinator has notified the Executive of his appointment.
2. Ensure he has an agreed line of communication to the Client and CDM Co-ordinator.
3. Take on responsibility for the Health and Safety Plan.
4. Develop Health and Safety Plan to include management of work on site conducting necessary risk assessments.
5. Provide a copy of the Health and Safety Plan to the Client and receive written confirmation that the construction phase can start.
6. Supply a copy of the Health and Safety Plan to every Sub-Contractor.
7. Enlist the co-operation of all Sub-Contractors to ensure they all fulfil the requirements of the Health and Safety Plan.
8. Supply necessary information to the CDM Co-ordinator for the Health and Safety File.
9. Obtain the CDM Co-ordinator’s agreement to any changes made to the Health and Safety Plan due to design changes.
10. Instruct other Sub-Contractors as necessary to ensure compliance with the Health and Safety Plan.
11. Provide information to Sub-Contractors on Health and Safety risks.
12. Ensure employees and Sub-Contractors’ employees are provided with Health and Safety information and training.
13. Prevent unauthorised site access.
14. Ensure that a notice given under Regulation 7 is displayed in a prominent position on the site.
15. Continue to plan, manage and monitor construction work in a way which ensures it is carried out without risks to Health and Safety.

**1.3.5 Sub-Contractor’s Tasks**

1. Co-operate with Principal Contractor to meet the Regulations.
2. Meet the requirements of the Health and Safety Plan.
3. Provide the Principal Contractor with a risk assessment or other information which may affect the Health and Safety Plan.

## 2.0 DESCRIPTION OF THE PROJECT

## 2.1 Names of the Relevant Parties/Consultants

|  |  |
| --- | --- |
| **Client/Employer:**Newmarket Investment Partnership4 DormywoodPark AvenueRuislipMiddlesexHA4 7UWTel: 01223 370108Email: dhopes@hamilton-land.comMobile: 07876 036468Contact: Daniel Hopes | **Employers Agent:** CS2 LimitedBridgewater House4 QueensbridgeNorthamptonNN4 7BFTel: 01604 603030 Email: mgregory@cs2.co.ukMobile: 07747 862843Contact: Michael Gregory |
| **Architect:**Woods Hardwick17 Goldington Road Bedford MK40 3NH Tel: 01234 268862Email: a.thaneja@ woodshardwick.comMobile: 07557 152721Contact: Arun Thaneja | **Mechanical & Electrical Engineer:** TBA[Address]Tel: Email:Mobile:Contact:  |
| Structural/Civil Engineer: TBA[Address]Tel: Email:Mobile:Contact:  | Landscape Consultants: TBA[Address]Tel: Email:Mobile:Contact:  |

|  |  |
| --- | --- |
| **Post Tender CDM Co-ordinator:** TBA[Address]Tel: Email:Mobile:Contact:  | **Building Inspector:** TBA[Address]Tel: Email:Mobile:Contact:  |
| **Planning Department/Development Authority:** Forest Heath District CouncilDistrict OfficesCollege Heath RoadMildenhall.Suffolk IP28 7EYTel: 01638 719000Email: Sarah.Drane@Forest-Heath.gov.ukContact: Sarah Drane | **Regional Office of HSE:**Wren HouseHedgerows Business ParkColchester RoadSpringfieldCHELMSFORDCM2 5PFTel: 01245 706200 Email:Mobile:Contact:  |
| **Water:** TBA[Address]Tel: Email:Mobile:Contact:  | **Telecom:** TBA[Address]Tel: Email:Mobile:Contact:  |
| **Gas:** TBA[Address]Tel: Email:Mobile:Contact:  | **Electricity:** TBA[Address]Tel: Email:Mobile:Contact:  |

## 2.2 Location of the Project

The Oaks

Fordham Road

Newmarket

Suffolk

Refer to the extract of the local map, as contained in Appendix 1 to the rear of the document.

## 2.3 The Work

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

 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 designed with adequate heating and lighting and is to comply in all respects with the requirements of the various statutory authorities.

 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.

## 2.4 Completion Work by Others

###  TBC.

## 2.5 Timescale for Completion of the Work

###  Anticipated Start Date: TBA

Anticipated Completion Date: TBA

## 2.6 Tender Procurement and Form of Contract

 JCT Design and Build Contract 2011 incorporating all current amendments.

## 3.0 CLIENT CONSIDERATIONS AND MANAGEMENT REQUIREMENTS

**3.1 Planning for and Managing Construction Work**

The Contractor is to provide the Employer’s Agent with a method statement prior to construction works commencing.

**3.2 Communications**

Communications between the project team and Contractors is to be through the use of email and where necessary through letters.

See names of the relevant parties/consultants in table 2.1.

**3.3 Security of Site**

The erection of temporary, palisade or Heras fencing around the site will be required.

The palisade gates to the front of the site are to be padlocked when the site is not occupied.

The Contractor is to check for breaches of security within the palisade fence to the external perimeter of the site on a daily basis.

Security and visibility of the site entry point from the Site Agent’s office will provide an opportunity for vigilance in respect of vehicular movement into, out of and around the site.

At completion leave the works secure with all access 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.

**3.4 Welfare Provision**

Provide adequate temporary sanitary and welfare accommodation on site including hot and cold running water, toilets, a separate supply of clean drinking water, drying areas, mess rooms and cooking facilities from the commencement of works on site. Advise all operatives of locations accordingly and keep facilities regularly cleaned.

The Principal Contractor shall locate the temporary site accommodation in a position where it can preferably remain during the life of the construction contract so as to cause least disruption to the on-going health, welfare and sanitary provision for operatives. Also, the location shall take into account the convenient and tidy storage of materials in the site compound.

Temporary sanitary and welfare accommodation shall include the provision of clean hot and cold water for washing and a separate supply of potable water shall be provided for drinking. Also the Principal Contractor shall arrange a temporary foul drainage connection, if possible, from the site to discharge into existing sewers during the period of the construction works, to be agreed by the Drainage Authority, or otherwise shall arrange for the use of approved mobile toilets which shall be regularly cleaned and discharged by a reputable hire company. A minimum of one WC per ten operatives should be provided.

**3.5 Health and Safety**

The Principal Contractor is to provide a comprehensive set of site rules which shall be clearly displayed on site and brought to the attention of all Contractors and operatives. These should include health and safety procedures and emergency arrangements in case of accidents, injuries or sudden illness of workers on site throughout the construction works; also the location and telephone number of the local Hospital, Police and Fire Services should be displayed.

**3.6 Site Hoarding Requirements**

Provide all necessary hoarding required with appropriate safety signage.

Ensure there is sufficient hoarding during the course of the work to protect neighbouring units.

**3.7 Site Transport Arrangements**

Area(s) for unloading, materials storage and temporary parking space(s) for construction vehicles should be positioned where they will cause least disruption to the on-going welfare and safety provision of operatives and existing tenants. These areas should also be made secure so that vehicles, plant and machinery can be safely parked overnight to deter vandals and unwanted interference generally. Details of the Principal Contractor’s proposals in this respect shall be shown on the site layout plans for temporary accommodation and traffic movement.

**3.8 Vehicle Movement Restrictions**

Provide a traffic movement plan for entry and exit from the site and also for circulation around the site to segregate vehicles and pedestrians. Bring this to the attention of all operatives, delivery vehicle drivers and visitors, so as to encourage and ensure the safe movement of vehicles and pedestrians during the construction period. Ensure reversing vehicles are fitted with audible and visible warning devices.

Monitoring of traffic movement about the site and updating the plan as necessary during the progress of the scheme must be undertaken to reflect any changes required and particularly following handover of completed units for trading when members of the public will be admitted to the site.

Public vehicular and pedestrian routes along [road name] adjacent to the site must be kept open and safe to the public at all times. Should the Principal Contractor at any time wish to carry out work in this public highway, such as mains services or sewer connections, he must obtain the permission of the relevant Statutory Authority (and Police if necessary) and erect the necessary safety barriers and temporary lighting, including any traffic lights needed, or manual control if called for. In either case a carefully prepared method statement will be required to be submitted to the CDM Co-ordinator and Employer’s Agent to cover the Principal Contractor/Contractors planned intentions for dealing with such hazards, prior to the commencement of the relevant construction activities.

**3.9 Client Permit to Work Systems**

Should the building be sold/let it may be required to be occupied prior to overall Practical Completion. The Principal Contractor shall make all necessary arrangements to provide safe access and exit to such units, produce any relevant method statements required and pass copies for comment to the Employer’s Agent and CDM Co-ordinator.

The Client will be endeavouring to sell/let part or all of the building prior to construction completion. Should the Client wish to show any prospective customers or other visitors around the site or set up a temporary marketing suite on site, the Principal Contractor shall assist to ensure their safety.

**3.10 Fire Precautions**

The Principal Contractor is to take all necessary precautions to prevent personal injury, death and damage to the works or other property from fire.

Provide First Aid Kits and Fire Extinguishers (water and foam) on site and locate them for access by site managers, operatives or others in case of emergency.

Bonfires to dispose of waste or existing vegetation shall not be permitted on the site.

**3.11 Emergency Procedures and Means of Escape**

Site access and egress is via St Leger Drive. Also refer to Appendix 1 herein for site access and egress details.

The Principal Contractor shall define the precise positions of the temporary site access and egress points to the site (ie for deliveries and emergencies). To be confirmed with the appropriate local statutory authority (ie the highways department) and the Employer’s Agent. In making proposals the Principal Contractor shall take into account the sequence of construction, the area designated for the Principal Contractor’s and his Contractors’ site compound(s), traffic sight lines, pedestrian awareness and safety generally.

A method statement shall be produced by the Principal Contractor to cover all aspects of traffic management into, out of and around the site and the principal proposed routes shall be marked on a site layout plan with a copy passed to the CDM Co-ordinator and the Employer’s Agent for information. Also include the location of temporary site accommodation and loading/unloading and storage areas.

**3.12 Smoking and Parking Restrictions**

Parking of the Contractors and employees’ vehicles will be restricted towithin the confines of the site*.* Adjacent highways must be kept free of Contractor’s and employees vehicles and mud etc.

Smoking is not permitted on site except within designated ‘safe’ areas.

## 4.0 ENVIRONMENTAL RESTRICTIONS AND EXISTING ON-SITE RISKS

**4.1 Safety Hazards**

A clear and consistent procedure for the recording of all accidents, injuries and emergencies must be set out before the commencement of the construction process i.e. a site register set up and maintained specifically for this project. This procedure must comply with the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations Act 1995 (RIDDOR) and be available for inspection by the Health and Safety Executive should such information be required.

**i) Boundaries and Access on deliveries**

See Appendix 1 for Site Location Plan.

**ii) Any restrictions on deliveries or waste collection or storage**

The Contractor is to be aware that the adjacent commercial premises and the houses on the far side of Studlands Park Avenue are occupied and will remain in use at all times, which may, on occasions, restrict access to the site.

All deliveries and waste are to be stored onsite.

**iii) Adjacent land uses**

The commercial properties to the south comprise warehousing and distribution units together with a number of trade warehouse units. The buildings on the north side of Studlands Park Avenue are residential houses.

**iv) Existing storage of hazardous materials**

The Control of Substances Hazardous to Health Regulations 2002 require an employer to ensure that any substance used in the workplace is assessed and control measures implemented to ensure any danger to employees is minimised.

**v) Location of existing services**

Current details of the existing mains services and sewers for this site either on or adjacent to the site are not known. Prior to commencing construction works, the Principal Contractor should consult with the Utilities and then locate the precise position of all mains services by careful hand digging, including low and high voltage underground cables in the vicinity of the site, high pressure water mains, gas mains and telecom cables, whether inside or outside the existing site boundary. If a perceivable risk is present, use remote detection devices (e.g. radar probing equipment) to locate the existing services before any hand or machine excavations are undertaken on site. Clearly mark the location of all mains services above ground when discovered, for the benefit of all operatives and others on site.

 **vi) Existing structures**

The existing structure is a single storey property with pitched roof construction. It is currently utilised for community purposes, including playschool.

**vii) Previous structural modifications**

It is unknown whether any structural modifications have been made to the existing structure, the Contractor should be aware of the construction of the existing building during the both the design and construction period.

**viii) Fire damage, ground shrinkage, movement or poor maintenance which may have adversely affected the structure**

Unknown.

**ix) Any difficulties relating to plant and equipment in the premises, such as overhead gantries whose height restricts access**

Not applicable.

**x) Health and safety information contained in earlier design, construction or ‘as-built’ drawings, such as details of pre-stressed or post-tensioned structures**

Allexisting information is included with the Appendix of this document.

**4.2 Health Hazards, including:**

1. **Asbestos, including results of surveys**

The Contractor is to produce a demolition or refurbishment asbestos survey prior to any opening up of the adjacent building.

1. **Existing storage of hazardous materials,**

There are currently no hazardous materials kept onsite.

1. **Contaminated land, including results of surveys,**

Not applicable.

1. **Existing structures containing hazardous materials,**

If the Contractor finds any suspicious materials during the course of the work, works are to stop and the Contract Administrator is to be alerted to the risk.

1. **Health risks arising from client’s activities**

Not applicable.

## 5.0 SIGNIFICANT DESIGN AND CONSTRICTION HAZARDS

**5.1 Design Assumptions and Suggested Work Methods, Sequences or other Control Measures.**

 Contractor to state.

**5.2 Arrangements for Co-ordinating of ongoing Design Work and Handling Design Changes**

Should significant variations be required during the construction works, risk assessments and method statements are to be issued by the Principal Contractor, his Designers and Contractors in respect of any design changes and any updated or supplementary statements produced shall be followed, and any relevant information copied to the CDM Co-ordinator.

There shall be a regular monitoring and review of health and safety aspects of the works by the Principal Contractor and Contractors during the construction period. Any significant matters affecting health and safety arising during these meetings shall be reported to the Principal Contractor’s Health and Safety Advisor and the CDM Co-ordinator as necessary.

**5.3 Information on significant risks identified during design**

The Principal Contractor’s Design Sub-Contractors must produce appropriate written risk assessments, prior to commencing their construction activities on site, to address any significant hazards that they have identified from their design and specification proposals. Where these risks cannot be significantly reduced, method statements shall be produced by the Principal Contractor or Contractors to indicate the precautions that should be taken for dealing with them.

The Principal Contractor and his Contractors must obtain the relevant COSHH information from manufacturers and/or suppliers for materials prior to their use or incorporation into the works; retain relevant copies on site for reference purposes; and observe/comply with the relevant safety and health precautions required or recommended to be taken in handling and applying such materials.

## 6.0 THE HEALTH AND SAFETY FILE

* 1. **The Health and Safety File to include:**

The Health and Safety File 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 to enable efficient and safe operation and maintenance.

* a brief description of the work carried out;
* any residual hazards which remain and how they have been dealt with (for example surveys or other information concerning asbestos contaminated land, water bearing strata, buried services etc);
* key structural principles (for example, bracing, sources of substantial stored energy – including pre – or post – tensioned members) and safe working loads for floor and roofs, particularly where these may preclude placing scaffolding or heavy machinery there;
* hazardous materials used (for example lead paint, pesticides, special coatings which should not be burnt off, etc);
* information regarding the removal or dismantling of installed plant and equipment (for example any special arrangements for lifting order or other special instructions for dismantling etc);
* health and safety information about equipment provided for cleaning or maintaining the structure;
* the nature, location and markings of significant services, including underground cables, gas supply equipment, fire fighting services, etc;
* information and as-built drawings of the structure, its plant and equipment (for example, the means of safe access to and from service voids, fire doors and compartmentalisation etc).

**APPENDIX 1**

######  SITE LOCATION PLANS

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

**APPENDIX 2**

**NOTIFICATION OF PROJECT TO HSE (FORM 10)**

**APPENDIX 3**

**DESIGNER’S RISK ASSESSMENT**

**APPENDIX 4**

**SCHEDULES OF DRAWINGS**

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

**APPENDIX 5**

**EMERGENCY LOCATION PLAN**

**APPENDIX 6**

**CONTRACTOR’S HEALTH AND SAFETY ENQUIRY FORM**

**CONTRACTOR’S HEALTH AND SAFETY ENQUIRY FORM**

PLEASE COMPLETE THE FOLLOWING FORM. THIS FORM WILL BE USED TO ASSESS YOUR COMPANY’S COMPETENCE TO ACT AS PRINCIPAL CONTRACTOR AS DEFINED BY THE CONSTRUCTION, (DESIGN & MANAGEMENT) REGULATIONS 2007.

Contractor’s Name and Address:

1. Please provide a copy of your Company’s Health and Safety Policy, including details of Health and Safety Management Structure.

2. Provide a list of staff to be involved in the project identifying health and safety training and experience.

3. Do you have external safety consultants? What involvement will they have in this scheme?

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4.0 Who will be preparing the following:

 4.1 Pre-Tender Health and Safety Plan:

 JOB TITLE: ........................................................................................

 NAME: ............................................................................................

 4.2 Post-Tender Health and Safety Plan:

 JOB TITLE: ........................................................................................

 NAME: ............................................................................................

 4.3 End of Contract Health and Safety File:

 JOB TITLE: ........................................................................................

 NAME: ............................................................................................

5.0 Who will be undertaking:

 5.1 Site Management of Health and Safety:

 JOB TITLE: ........................................................................................

 NAME: ............................................................................................

5.2 Management of Sub-Contractor’s Health and Safety:

 JOB TITLE: ........................................................................................

 NAME: ............................................................................................

 5.3 Health and Safety Training for Employees:

 JOB TITLE: ........................................................................................

 NAME: ............................................................................................

 5.4 Revision to the Health and Safety Plan on site:

 JOB TITLE: ........................................................................................

 NAME: ............................................................................................

6.0 What resources do you utilise to promote Health and Safety?

6.1 Technical Literature/Health and Safety Legislation/Reference Books/CD ROM etc:

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6.2 Training Courses (In-House):

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6.3 Training Courses (External):

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7.0. Please give details of your health and safety record:

7.1 Any prohibition or improvement notices received:

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7.2 Details of any specified major injuries or dangerous occurrences in the last year (for definitions please see the Reporting of Injuries and Dangerous Occurrences Regulations 1985):

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8.0 With respect to Health and Safety please provide your own assessment of the type and scale of Building Contracts you are capable of undertaking.

 8.1 Value of Projects:

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8.1 Nature of Construction Works:

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9.0 Please attach details of recent projects undertaken to amplify your stated capabilities.

10.0 Provide two references from Clients/Client’s Agents or CDM Co-ordinators on projects recently undertaken along with contact addresses and telephone numbers.

Company Name: ....................................................................................................

Signature: ....................................................................................................

Name: .............................................................................................…...

Date: ..............…..................................................................................

###### APPENDIX V

COPY OF THE PLANNING PERMISSION NOTICE FOR THE DEVELOPMENT ISSUED BY FOREST HEATH DISTRICT COUNCIL.

###### APPENDIX VI

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

**REF: E04024/1 AND**

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

APPENDIX VII

**FEE BASIS OF WOODS HARDWICK COMPRISING THEIR EMAIL DATED 18 APRIL 2005 AND LETTER DATED 1 MARCH 2005.**