|  |
| --- |
| Intended for  UK Research and Innovation - National Oceanography Centre  Document type  Project Scope  Date  November2019  Document reference  BAA4300-RAM-ZZ-SCO-BR-KA-0005 |

|  |
| --- |
| Intended for    Document type    Date |
| Project Scope  NOCS Roof Renewal |

|  |
| --- |
| Project Scope  NOCS Roof Renewal |

|  |  |
| --- | --- |
| Project name | NOCS Roof Renewal |
| Project no. | 1620004524 |
| Recipient | Kate Van Someren |
| Document type | Project Scope |

**Revision History**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Revision | Date | Purpose / Status | | | Document Ref | | | Comments |
| 01 | 11.10.2018 | Draft issue to Client | | | BAA4300-RAM-ZZ-SCO-BR-KA-0001 | | | For review by NOC Estates |
| 01A | 16.10.2018 |  | | | BAA4300-RAM-ZZ-SCO-BR-KA-0001A | | | STL Comments included in Track Changes |
| 01B | 22.11.18 | Second draft issue to Client | | | BAA4300-RAM-ZZ-SCO-BR-KA-0001B | | | Document separated into Site & Scope. |
| 01C |  | Issued to Client | | | BAA4300-RAM-ZZ-SCO-BR-KA-0001C | | | Reviewed and updated. |
| 02 | 07.06.19 | Final | | | BAA4300-RAM-ZZ-SCO-BR-KA-0001C | | | Minor updates. Document renamed to suit NEC4 terminology. |
| 03 | 04.07.19 | Final | | | BAA4300-RAM-ZZ-SCO-BR-KA-0003 | | | Minor updates. Format amended to suit NEC template. |
| 04 | 18.11.19 | Final | | | BAA4300-RAM-ZZ-SCO-BR-KA-0004 | | | Review and updated to reflect WS3a. |
| 05 | 11.12.19 | Final | | | BAA4300-RAM-ZZ-SCO-BR-KA-0005 | | | Preparation for Issue. |
| **Prepared by** | | |  | **Reviewed by** | |  | **Approved by** | | |
|  | | |  |  | |  |  | | |
| **Ben Frampton** | | |  | **Ben Rowe** | |  | **Ben Rowe** | | |
| Graduate Project Manager | | |  | Director | |  | Director | | |

|  |
| --- |
| Contents |

[1. Description of the Works 8](#_Toc26956508)

[1.1 Introduction 8](#_Toc26956509)

[1.2 Project Description 8](#_Toc26956510)

[1.3 Project Objectives 8](#_Toc26956511)

[1.4 Description of the Works 9](#_Toc26956512)

[1.4.1 Contractor’s Responsibilities 9](#_Toc26956513)

[1.4.2 General Summary of Works 9](#_Toc26956514)

[1.4.3 Key Documentation 12](#_Toc26956515)

[1.4.4 Site Accommodation 13](#_Toc26956516)

[2. General Constraints on How The Contractor Provides The Works 15](#_Toc26956517)

[2.1 General constraints 15](#_Toc26956518)

[2.1.1 Working Hours 15](#_Toc26956519)

[2.1.2 Working Outside Normal Hours 15](#_Toc26956520)

[2.1.3 Working in a live environment 15](#_Toc26956521)

[2.1.4 University term time 15](#_Toc26956522)

[2.1.5 Exam periods & library 16](#_Toc26956523)

[2.1.6 Open Days 16](#_Toc26956524)

[2.1.7 Visit Days 16](#_Toc26956525)

[2.1.8 Ocean Business Event 16](#_Toc26956526)

[2.1.9 Other conferences and events 16](#_Toc26956527)

[2.1.10 Level 4: Library, Area beneath roof lights, IT Server Room and other sensitive areas 17](#_Toc26956528)

[2.1.11 Hazardous and harmful materials 17](#_Toc26956529)

[2.1.12 Quayside operations 17](#_Toc26956530)

[2.1.13 Ventilation Grills (Extracts, Exhausts and Inlets). 17](#_Toc26956531)

[2.1.14 Noise 17](#_Toc26956532)

[2.1.15 Smoking 18](#_Toc26956533)

[2.1.16 NOC Policies and Procedures 18](#_Toc26956534)

[2.2 Confidentiality and publicity 19](#_Toc26956535)

[2.3 Security & protection of the Site 19](#_Toc26956536)

[2.4 Security & identification of people 19](#_Toc26956537)

[2.5 Protection of existing structures and services 19](#_Toc26956538)

[2.6 Protection of the Works 19](#_Toc26956539)

[2.7 Cleanliness of roads 20](#_Toc26956540)

[2.8 Traffic Management 20](#_Toc26956541)

[2.9 Condition survey 20](#_Toc26956542)

[2.10 Control of works 20](#_Toc26956543)

[2.11 Site cleanliness 20](#_Toc26956544)

[2.12 Sustainability and Environmental Requirements 20](#_Toc26956545)

[2.12.1 Ecology assessment 21](#_Toc26956546)

[2.12.2 Construction Environment Management Plan (CEMP) 22](#_Toc26956547)

[2.12.3 Waste Management 23](#_Toc26956548)

[2.12.4 Waste Hierarchy and Sustainability 24](#_Toc26956549)

[2.12.5 House Keeping 24](#_Toc26956550)

[2.12.6 Preparation of SWMP 24](#_Toc26956551)

[2.12.7 Contractor staff and sub-contractors 25](#_Toc26956552)

[2.12.8 Protected Species Licenses and Method Statements 25](#_Toc26956553)

[3. Contractor’s Design 27](#_Toc26956554)

[3.1 Design responsibility (re: ECC 21.1) 27](#_Toc26956555)

[3.2 Design submission procedures and acceptance criteria (re: ECC 21.2) 27](#_Toc26956556)

[3.2.1 Client Acceptance 28](#_Toc26956557)

[3.2.2 Independent check 28](#_Toc26956558)

[3.2.3 Design Compliance Certificates 28](#_Toc26956559)

[3.3 Design approvals from Others 29](#_Toc26956560)

[3.3.1 Building Control 29](#_Toc26956561)

[3.3.2 University of Southampton 29](#_Toc26956562)

[3.4 Client’s requirements (re: ECC 21.2, X22.3(3)) 29](#_Toc26956563)

[3.4.1 Ground Conditions 29](#_Toc26956564)

[3.4.2 Design standards 29](#_Toc26956565)

[3.4.3 Architectural design 33](#_Toc26956566)

[3.4.4 Structural design 37](#_Toc26956567)

[3.4.5 Civil engineering design 41](#_Toc26956568)

[3.4.6 Mechanical & electrical design 42](#_Toc26956569)

[3.4.7 External services design 47](#_Toc26956570)

[3.5 Value Engineering Options 47](#_Toc26956571)

[3.6 Requirements of Others 48](#_Toc26956572)

[3.6.1 Local Authorities 48](#_Toc26956573)

[3.6.2 Other Consents 48](#_Toc26956574)

[3.7 Using the Contractor’s design 49](#_Toc26956575)

[3.8 Government soft landings 49](#_Toc26956576)

[4. Completion 51](#_Toc26956577)

[4.1 Completion definition (re: ECC 11.2(2)) 51](#_Toc26956578)

[4.2 Sectional completion definition (re: ECC 11.2(2), X5.1) 51](#_Toc26956579)

[4.3 Operation and Maintenance Manuals 51](#_Toc26956580)

[4.4 Health and Safety File 51](#_Toc26956581)

[4.5 As-Built Drawings 52](#_Toc26956582)

[4.6 Training 52](#_Toc26956583)

[4.7 Final clean 52](#_Toc26956584)

[4.8 Security 52](#_Toc26956585)

[4.9 Correcting defects 52](#_Toc26956586)

[4.10 Pre-completion arrangements 52](#_Toc26956587)

[4.10.1 Notice of completion 53](#_Toc26956588)

[4.10.2 Timing of Tests and Inspections 53](#_Toc26956589)

[4.10.3 Test Certificates 53](#_Toc26956590)

[4.10.4 Proposals for Rectification of Defective Work/Products 53](#_Toc26956591)

[4.10.5 Measures to Establish Acceptability 53](#_Toc26956592)

[4.11 Use of the works (re: ECC 35.2) 53](#_Toc26956593)

[5. Programme 54](#_Toc26956594)

[5.1 Programme requirements (re: ECC 31.2, 31.3) 54](#_Toc26956595)

[5.2 Work of the Client and Others (re: ECC 25.1, 60.1(5)) 55](#_Toc26956596)

[5.3 Information required 55](#_Toc26956597)

[5.4 Revised programme 55](#_Toc26956598)

[6. Quality Management 56](#_Toc26956599)

[6.1 Quality management system (re: ECC 40.1) 56](#_Toc26956600)

[6.2 Quality policy statement & quality plan 56](#_Toc26956601)

[6.2.1 General quality of workmanship 56](#_Toc26956602)

[6.2.2 Quality Control 56](#_Toc26956603)

[6.2.3 Management and communication system 56](#_Toc26956604)

[7. Tests & Inspections 57](#_Toc26956605)

[7.1 Tests and inspections 57](#_Toc26956606)

[8. Management of The Works 58](#_Toc26956607)

[8.1 Project team 58](#_Toc26956608)

[8.1.1 Site Organisation 58](#_Toc26956609)

[8.1.2 Key Personnel 58](#_Toc26956610)

[8.1.3 Changes to proposed management structure 59](#_Toc26956611)

[8.2 Communication system (re: ECC 13.2) 59](#_Toc26956612)

[8.3 Management procedures 59](#_Toc26956613)

[8.3.1 Site progress meetings 59](#_Toc26956614)

[8.3.2 Programme / Progress 60](#_Toc26956615)

[8.3.3 Daily labour returns 60](#_Toc26956616)

[8.3.4 Construction Documents 60](#_Toc26956617)

[8.3.5 Working Drawings 60](#_Toc26956618)

[8.4 Contractor’s application for payment (re: ECC 50.2) 60](#_Toc26956619)

[9. Working with The Client & Others 61](#_Toc26956620)

[10. Services & Other Things to be Provided 62](#_Toc26956621)

[10.1 By the Contractor for the use by the Client, Project Manager or Others 62](#_Toc26956622)

[10.1.1 Supervisor’s Office 62](#_Toc26956623)

[10.2 By the Client (re: ECC 25.2) 62](#_Toc26956624)

[10.2.1 NOC Support & attendance 62](#_Toc26956625)

[10.2.2 Access to NOC Southampton 62](#_Toc26956626)

[10.2.3 Utility connections for site accommodation 62](#_Toc26956627)

[10.2.4 Parking for Contractor Personnel 62](#_Toc26956628)

[10.2.5 Covered Storage for Materials 63](#_Toc26956629)

[11. Health & Safety 64](#_Toc26956630)

[11.1 Health & safety requirements (re: ECC 27.4) 64](#_Toc26956631)

[11.1.1 General 64](#_Toc26956632)

[11.1.2 Fire alarm tests 64](#_Toc26956633)

[11.1.3 Site briefing & tool box talks 64](#_Toc26956634)

[11.2 Method statements 64](#_Toc26956635)

[11.3 Legal requirements 64](#_Toc26956636)

[11.4 Inspections 65](#_Toc26956637)

[11.5 Deleterious & hazardous materials 65](#_Toc26956638)

[11.5.1 Pre-construction Information 65](#_Toc26956639)

[12. Subcontracting 66](#_Toc26956640)

[12.1 Restrictions or requirements for subcontracting 66](#_Toc26956641)

[13. Title 67](#_Toc26956642)

[13.1 Marking 67](#_Toc26956643)

[13.2 Materials from excavation and demolition 67](#_Toc26956644)

[14. Ultimate Holding Company Guarantee (Option X4) 68](#_Toc26956645)

[15. Transfer of Rights (Option X9) 68](#_Toc26956646)

[16. The Contractor’s Design (Option X15) 68](#_Toc26956647)

[17. Client’s Work Specifications & Drawings 69](#_Toc26956648)

[17.1 Architectural Drawings 69](#_Toc26956649)

[Appendices 71](#_Toc26956650)

GLOSSARY

|  |  |
| --- | --- |
| ABP | Associated British Ports |
| BCA | Building Control Advisor |
| BIM | Building Information Modelling |
| BS | British Standard(s) |
| BSI | British Standards Institute |
| CBR | California Bearing Ratio |
| CDM | Construction Design and Management Regulations |
| CEMP | Construction Environmental Management Plan |
| CIBSE | Chartered Institute of Building Service Engineers |
| COSHH | Control of Substances Hazardous to Health |
| CV | Curriculum Vitae |
| EA | Environmental Assessment |
| HRA | Habitat Regulations Assessment |
| HV | High Voltage |
| ISMP | Invasive Species Management Plan |
| LV | Low Voltage |
| M&E | Mechanical & Electrical |
| MEDA | Mechanical Electrical Distribution Areas |
| MEP | Mechanical, Electrical & Plumbing |
| NERC | Natural Environment Research Council |
| NOC | National Oceanography Centre |
| NOCS | National Oceanography Centre Southampton |
| NOC PM | NOC Project Manager |
| SWMP | Site Waste Management Plan |
| UKRI | UK Research and Innovation |
| UoS | University of Southampton |

# Description of the Works

## Introduction

UK SBS wishes to establish a contract for the appointment of a Principal Contractor who will work collaboratively with UK Research and Innovation (UKRI, Natural Environment Research Council (NERC), the Contracting Authority with a view to bringing the Roof Renewal Project at NOC Southampton to a finality.

The first stage will comprise a collaborative Pre-Construction Services Agreement, (PCSA), the second stage will be the award of the main construction contract.

UK SBS is managing this procurement process in accordance with the Public Contracts Regulations 2015 (as may be amended from time to time), (the “Regulations”).

This is a Services and Works Contract being procured under the OJEU Open Procedure Regulations. It is intended to procure the NOC Roof Renewal Project on a two-stage design and build basis. The main construction contract will be an amended NEC Engineering and Construction Contract (NEC4) Option A – Fixed Price with Activity Schedule, which will be the head contract between UKRI NERC and the preferred provider.

Under Stage 1 of the two-stage design and build basis, the intention will be for the Contractor to work with NOC and project stakeholders to complete the PCSA stage. This will include for example logistics and scheduling of works, completion of the design and cost certainty for the main works under the second stage. Under Stage 2, this will focus on the execution of the main works.

If the Contractor is not adhering to the terms of the PCSA, not working collaboratively, or provides an unacceptable price at the end of Stage 1, UKRI NERC will be under no obligation to proceed with that Contractor. As such PCSA award should not be considered as a guarantee of the main contract also being awarded.

This Project Scope has been prepared to inform the Contractor of the Works to be carried out in relation to the Roof Renewal at the National Oceanography Centre in Southampton and should be read in conjunction with the Site Information document reference BAA4300-RAM-ZZ-SCO-BR-KA-0005.

## Project Description

The project encompasses the removal of the existing roof tiles to be then replaced with a VM-zinc covering as well as additional works to clad over the brickwork to the abutting nodes with a similar zinc material.

As part of their Technical Advisor role Ramboll were instructed to carry out an Assessment Study of the Savills report. Their scope was to provide a solution to the issue of water penetration into the NOC building in Southampton alongside their sub-consultants to provide options. Analysis of the options, considerations and conclusions of the Assessment Study were set out at Work Stage 2 and concluded in August 2018. The Work Stage 2 report is appended to the Site Information document. If there are any discrepancies between the WS2 report and the WS3 information and this Project Scope (accompanied by the Site Information) then the latter two will prevail, with the Project Scope taking first precedence.

The Work Stage 2 report outlined a recommendation with a solution to remove only the roof tiles and replace the roof covering with a warm VM Zinc roof, retaining the roof structure without structural alteration.

In August 2018 NOC instructed Ramboll to carry out a Work Stage 3 developed design, cost estimate and submission enabling a planning application which is attached at Appendix A.

Subsequently in October 2019 Ramboll were further instructed to undertake a visual condition survey and structural assessment of the roof which is attached in Appendix H of the Site Information.

## Project Objectives

The NOC is funded by UKRI and needs to meet specific assurances and performance criteria, managing the infrastructure assets on behalf of UKRI. The replacement of the NOCS roof will directly contribute towards the UK Government’s Industrial Strategy aims and objectives by ensuring that NOC has the facilities and infrastructure which will enable it to host research work and deliver technological developments that will maintain its position as a world leader within the oceanographic community. Scientists and engineers at NOC are continuously working on the development of new and innovative technologies to aid in the advancement of scientific research undertaken in the most extreme environments. The investment in the NOCS roof is necessary to ensure that the facility enables this strategically important work continues.

NOCS and UoS require a facility to enable world class research and teaching activity to be undertaken. The development proposal is to replace the existing, defective roof coverings and provide some rainscreen cladding to protect the node walls where they abut the roof, on the NOCS site.

NOC wish to realise the following benefits through this roof renewal programme:

* Reduce maintenance requirements and the associated ‘down times’ of lab and office spaces by preventing water ingress and condensation;
* Reduce deterioration of the building by preventing water ingress and condensation;
* Improve safety by eliminating the risk of dislodging roof tiles;
* Increase the design life of the roof and reduce the maintenance requirements associated with an ageing roof;
* Energy efficiency is significantly improved against existing performance levels;
* Asset value is retained;
* Increased site productivity and morale;
* Support an uplift in the UoS student experience.

## Description of the Works

### Contractor’s Responsibilities

The Contractor shall be responsible for the design, procurement and delivery to site of materials, plant and equipment, procurement of personnel, construction and installation, testing and commissioning, proving compliance with all regulations and handing over in full working order and works completed with due skill and care as detailed in the Tender Documents.

### General Summary of Works

The following is intended to provide a brief overview of the extent and nature of the works but is not exhaustive and the Contractor must allow for all works required and methods of work to be approved by NOC.

#### Roofing

Erect scaffolding to eaves, sequentially as work proceeds to all roof plates. Scaffold to include for stairways and loading platforms. Include for and extend scaffold to form temporary roof over Plate 124 to protect section from water ingress as roof lights are taken out and replaced.

Provide internal crash decks and localised protection internally to maintain circulation routes to Level 4 where there is no additional protection above, and to other specific areas of high risk identified in the ‘heat map’ of occupancies.

Carefully strip all existing Eternit 2000 slates, roof vents, ridge tiles etc as work proceeds and cart away. Inspect and repair any damaged roofing membranes. Carefully remove all tile fixings, to leave battens smooth. Check timber battens for rot and other defects. Remove defective timber and replace as necessary to form safe working grid. Undertake any local structural works required such as bolt replacement highlighted in the WS3a roof Structural Assessment Report or as identified from site inspection and agreed with The Project Manager.

Allow for temporarily making watertight any stripped areas which are not reinstated to prevent or limit internal damage.

Allow for taking off all solar panels and where feasible re-locate on frame to Node 9 open plant area, in preference to reinstating on the new roof upon completion.

Disconnect, undertake an analysis of the extent of cover required under the new roof system, adapt and retest Lightning Protection system as work proceeds.

Carefully remove and replace all existing roof lights above Plate 124 with new units.

Supply and install new vapour control layer (VCL) across all slopes, ensuring membrane is fully lapped and sealed to adjacent sections as work proceeds.

Supply and fix new ‘warm deck’ insulated roof built-up system comprising 18mm plywood substrate, with zinc surfaces complete with VCL base layer, insulation, breather membranes, underlays and sheeting to leave whole installation watertight as works proceed and upon completion. Include for all flashings etc with adjacent materials.

Allow for all works at abutment between extended roof slopes to roof plate 124 where it abuts adjacent plates 186 and 256 etc. installing new stepped cavity trays over cladding to quadrants etc.

Ensure all ventilated voids are sealed with insulation at eaves and ridge to create encapsulated air space above existing insulation. Inspect insulation at eaves to ensure thermal continuity and increase thickness as necessary.

Take down all existing rainwater guttering. Provide and fix new lengths, with extended swan necks and stub sections, to connect into existing down pipes. Inspect downpipes and replace as necessary.

Carefully remove existing eaves fascia as appropriate. Provide and fix new fascia to suit roof build up or to limit future maintenance / decoration as agreed.

Inspect existing eaves soffit prior to commencement of all work to establish if repair and/or replacement is necessary and factor into project scope as work proceeds. Allow for removing existing painted timber and for supply and installing new low maintenance system.

Undertake all masonry works of demolition, adaptation and reconstruction relating to all roof abutment details with node brickwork. Allow for raising any stone sills, building up brickwork as necessary to suit; bringing any recessed feature brickwork sections flush to main profiles to facilitate abutment detail, raise all vents, windows etc to clear roof profile and abutment flashings as required.

Supply and cut in new vertical DPCs and flashings etc at abutments with adjacent brick surfaces.

Inspect existing mechanical ventilation to ensure they remain functional to limit humidity escaping into roof voids and supplement systems as necessary.

In addition to the main roofing work, the following consequential works shall be required:

* Replacement of guttering to eaves
* Renewal of eaves fascia and soffit boards (with low maintenance system).
* Replacement of roof lights
* Replacement or uplift and re-fixing of existing solar panels.
* Detailing to roof penetrations
* Re-provision of Lightning Protection
* Installation of new stepped cavity trays to extended roof slopes abutting external masonry walls to Plates at Level 6

#### Detailing to Nodes

Extend scaffold to create working platforms for full width of Node to facilitate works with supporting beams above ridge level and hung gantries to avoid support being taken from new roof coverings and strip upon completion of the works.

Supply and carefully install new cavity tray for full width of Node brickwork in level bed joint above main roof profiles. Ensure tray is selected to fit cavity dimension, is fully fixed back to internal leaf of cavity and is fully lapped, jointed and sealed with adjacent sections as work proceeds. Cavity trays to be in circa 1m lengths to allow brickwork above to be self-supporting and make good all brickwork where disturbed. Include for and build in weep vents above tray and install new plain flashing, lapped to full width of outer leaf or integral with cavity tray below.

Create new ventilated rain screen / cladding face to all wall profiles between tray and roof abutments. Include for supporting grid, min 18mm exterior grade plywood substrate and surface in standing seam zinc, to include all fixings, insect mesh, flashings trims etc to complete installation.

Allow for further bespoke detailing close to external corners to address complexities caused by feature brickwork detailing.

Provide all materials and form integral rain screen detail around all existing downs, vents and other features falling within the new cladding zone.

In addition to the main roofing work, the following consequential works shall be required:

* Installation of new horizontal cavity trays to top of cladding at Level 8
* Installation of new vertical DPCs at periphery of cladding to outward facing brickwork abutments
* Removal of masonry (including carefully breaking out pcc cill blocks) to existing feature corner details, and reconstructing panels in line with outer leaf to full height.
* Installation of new stepped cavity tray to outward facing masonry at abutment with roof over Plate 124
* Adaptation and new detailing to wall penetrations (windows, vents etc)

### Key Documentation

As part of the Works, the Contractor shall provide the following key documentation:

Table 1: General documentation

|  |
| --- |
| Site Waste Management Plan (SWMP) and ISO14001 compliance |
| Construction Environmental Management Plan (CEMP) |
| Designers CDM Residual Risk Assessments |
| Initial Construction Phase Health & Safety Plan |
| Design Information to update the Pre-Construction Health & Safety Information Pack |
| Priced Schedule and Milestone Payment Schedule |
| Project Programme |
| Risk Register |
| Quality Plan |
| Drawing Index |
| Access & Maintenance Schedule |
| Statement and Details of Deviations from the Design Brief |
| Compliance of Design Certificate |

Table 2: Engineering documentation

|  |
| --- |
| Architectural Drawings (e.g. Plans, elevations, sections, details all fully dimensioned) |
| Architectural Details (e.g. roof, walls, floors and windows junctions) |
| Structural Drawings (e.g. for temporary works and temporary conditions etc.) |
| Structural Calculations (e.g. for temporary works and temporary conditions including checks on the existing roof structure capacity as required.) |
| Full Architectural Schedules |
| Detailed condensation analysis (by a specialist) to validate proposed roof build-up |
| External Services Drawings, including pipework and cable sizes\* |
| Ventilation System Layout and Schematic\* |
| Hot & Cold Water Layout and Schematic\* |
| Fire Alarm Layout and Schematic\* |
| LV Layout and Schematic\* |
| Above Ground Drainage Layout and Schematic\* |
| Incoming connection and ventilation extract / intake details (including analysis) |
| Building sections showing co-ordinated services routes\* |
| Lighting Layout and Schedule\* |
| M&E Schedules for plant and equipment\* |
| M&E Detailed Design calculations\* |
| M&E Load Estimates\* |
| M&E builders work dimensioned drawings and details\* |
| M&E co-ordinated and dimensioned installation drawings\* |
| Temporary Works Design Calculations |
| Drainage Drawings (e.g. G. A’s, Details, Setting Out)\* |
| Full Drainage Design Calculations\* |
| Full Engineering (NBS or equivalent) Specifications for all disciplines |
| Notes:  \* To be provided if this element is altered as part of the roof works. If contractor does not believe this shall be affected then they are to provide a statement confirming this. |

Table 3: Construction documentation

|  |
| --- |
| Method Statements (e.g. scaffolding, stripping roof, new roof installation, cavity installations) |
| Requisition for Construction Subcontractors |
| Subcontracts (unpriced) |
| Inspection and Testing Schedules |
| Quality Control Manuals |
| Technical Queries / RFI Schedule |

Table 4: Vendor Data Documentation

|  |
| --- |
| Literature for key architectural components (e.g. zinc roof, zinc cladding, insulation) |
| Data Sheets & Technical Information for Main M&E Equipment\* |
| Technical Literature for M&E Components\* |
| Technical Literature for Main Drainage Components\* |
| Technical Drawings for Main Components and Equipment\* |
| Installation Instructions\* |
| Notes:  \* To be provided by the Contractor if this element is altered as part of the roof works. If contractor does not believe this shall be affected then they are to provide a statement confirming this. |

### Site Accommodation

#### Site Offices for Supervisory Staff, Storage and Workshop Accommodation

The Contractor shall provide all offices, sanitary and welfare facilities, storage and workshop accommodation for the execution of the works and the designated area for these facilities is to be agreed with NOC. The design drawings indicate the area within the NOCS boundary allocated to the Contractor for their use (including parking, laydown, site cabins etc).

Before commencing erection of these facilities, the Contractor will submit to NOC suitable scaled drawings for approval showing as a minimum;

* A layout of the area showing the location of the buildings, welfare facilities, storage and workshops;
* Connection points to existing services with method statements:
* Proposals for any site boundary fencing;
* Site Signage in accordance with the H&S requirements;
* Firefighting measures for Fire Safety Inspector approval

The site set up will be in accordance with the CDM Regulations appertaining to welfare facilities.

On completion of the main construction works the Contractor will be responsible for the disconnection and pot ending of services and the removal of all buildings/facilities and the reinstatement of the area to the condition in which it was provided.

If required, the Contractor shall request telephone and internet services requirements through British Telecom who will facilitate the service provision. Initial and reoccurring costs will be the responsibility of the Contractor.

The Contractor will provide an indication of the power and water requirements for the project duration.

NOCS will offer an office space suitable for up to four people for use by the Contractor during the PCSA period. The office space, electricity, internet and NOCS welfare facilities will be available to the Contractor for this period during NOCS standard operating hours.

#### Site Offices for Contractors Managerial Staff and Meeting Room

The Contractor shall provide sufficient office accommodation to meet their needs. The office accommodation is to include a meeting room (heated/cooled to 21oC). The Contractor will be responsible for making their own arrangements for telephone and internet connection with British Telecom, but this will need to be co-ordinated through NOC. Large meetings (for example design team meetings, or quarterly contract meetings can be held on the NOC premises, if available at the time. These must be booked through the NOC project management office.

#### Storage of Fuel

Fuel oils stored on site will be subject to strict environmental control measures which will include fuel tanks surrounded by impervious bund walls, these are at the absolute discretion of NOC Estates and H&S teams.

#### Fire Safety Inspector Approval

Before work commences, the complete installation will require Fire Safety Inspector Approval.

Firefighting measures are a key requirement and due to the inherent fire risk, the Contractor will be expected to demonstrate to the Fire Safety Inspector the efficacy of their fire prevention proposals and their firefighting measures.

# General Constraints on How The Contractor Provides The Works

## General constraints

### Working Hours

The Contractor is permitted to work from 08.00hrs to 18.00hrs Monday to Friday. Any out of normal hours working including weekends, shall be agreed with NOC at least 14 days in advance. For any out of hours access, the Associated British Ports (ABP) must also be notified by the Contractor, 14 days in advance.

The Contractor shall ensure that sufficient persons are employed to enable compliance with EU Working Time Regulations.

The base Contract programme shall be based upon normal working hours.

### Working Outside Normal Hours

Working outside normal hours will only be permitted with prior permission from NOC. The Contractor shall bear the costs of overtime, shift and night time allowances.

The Contractor should note that the availability of the NOC Personnel is not guaranteed outside their normal working hours (Monday to Friday 0800 – 1700 hours) and this constraint should be taken into account by the Contractor when developing their programme.

### Working in a live environment

The Works must be carried out in a live environment without a full decant of the NOCS and UoS personnel from the building. The Contractor must detail how they will safely carry out the Works above the occupied spaces, which will contain sensitive equipment, as well as personnel. Some areas will require additional protection measures, and these include the IT server room and heavily trafficked areas such as the library hallway and areas where roof windows are present. The Contractor must detail how they will install protection to these areas. Details of these specific areas are covered in the appended Work Stage 2 report but must be subject to the Contractors assessment and the areas identified must not be considered exhaustive.

If decant is required then this will in no way constitute ‘take over’.

Long Term Maintenance works that may involve using roof voids, and any other NOC works will not at any time constitute ‘take over’.

### University term time

The University of Southampton are a major occupier of the building and whilst a tenant, they have a considerable vested interest in this asset as it attracts new students to the city.

Considerations shall be made to teaching spaces ensuring that noise is limited as outlined in 2.1.14. The UoS Term Time is appended at Appendix B. Work can take place during university term time outside of exam periods however stakeholder engagement is absolutely vital.

### Exam periods & library

Works shall be avoided near to or directly above Teaching Lab 234/15 and Lecture Rooms on Plate 166 during exam periods which are referred to in the UOS Term Time appendix. The library is heavily used during the one month leading up to and including the exams periods and is open at weekends. The library will not be able to be accessed during the one month prior and during the exam periods. The three months following the summer term are the most accessible for the library.

### Open Days

Open days take place during the year where between 1,500 and 4,000 visitors on site are hosted by NOC. These take place at least twice a year. It is unlikely that construction will be able to take place during open days.

### Visit Days

There are visit days for prospective students on Saturdays during February and March, which is subject to change. It is unlikely that construction will be able to take place during visit days.

### Ocean Business Event

Ocean Business is an event held every two years. Attendees are invited from every inhabited continent and the event can have between 5-10,000 people on site. Specific details are in Appendix C. No construction works will be able to take place during the event opening times, however during the event site set up and dismantle construction may be possible however contractual arrangements for access to the whole quayside prioritise the ocean business event over all other access arrangements.

The next Ocean Business event is due to take place during selected weeks from mid-March to the end of April 2021.

### Other conferences and events

The conference schedule changes regularly and an indicative outline of what is currently scheduled for major events is as follows:

* 07 July 2020 – 09 July 2020 – Location: Innovation Centre – ICUA Tours
* 09 July 2020 – Location: 104/13 Seminar Room – EDT Go4Set Graduation
* 03 August 2020 – 22 August 2020 – Location: Quayside – Mayflower 400 event
* 05 October 2020 – 08 October 2020 – Location: Quayside – Harbour Masters event
* 26 October 2020 – 20 November 2020 – Location: Quayside – MATS2020
* 11 December 2020 – Location: Cafeteria – NOC Staff Event
* 14 June 2021 – 18 June 2021 – Location: 104/13 Seminar Room and 104/20 Lecture Hall

NOC has an events team and for alterations to this indicative schedule and for future events the contractor will need to liaise with NOC.

### Level 4: Library, Area beneath roof lights, IT Server Room and other sensitive areas

Protective measures are likely to be required in areas located directly below re-roofing in particularly sensitive areas. Where areas of the roof are to be opened above critical or sensitive areas, suitable additional measures are required to negate any impact. This is likely to include double boarding any crash deck to include a membrane set between the layers to prevent the passage of small items of debris and to avoid any ingress of water or dust. The sensitive areas already identified are the library and corridor area beneath roof lights, IT server room, Pulse Tube Lab and other locations as identified. Access Permits may be required when working in sensitive areas. A heat map was produced as part of the Work Stage 2 Report however this is not exhaustive.

### Hazardous and harmful materials

Considerations shall be made when working above or near to areas where hazardous or harmful materials are stored. The NOC Significant Hazards List is appended to the Site Information and lists the locations where hazardous or harmful materials may be present.

### Quayside operations

Considerations shall be made when working on the south side of the building. Works shall not impact upon Quayside operations; all works need to include liaison with the National Marine Federation logistics teams. A method statement must be produced and approved by NOC prior to starting any works on the Quayside. The Contractor must comply with the requirements of ABP for working within the Port, refer to the NOC policies and procedures appendix in the Site Information.

### Ventilation Grills (Extracts, Exhausts and Inlets).

The MEP Contractor shall complete the alterations to the ventilation within the meda plant rooms on each node to maintain adequate ventilation within. The architect proposes to relocate the current ventilation grills serving medas on the 7th floor where they are currently sited too close to the ridge of adjacent roofs. There are six occasions where this is depicted within the architects plans. These requirements are further detailed in the MEP section below. The asbestos register should be read and understood in relation to all MEDA plant room spaces and an appropriate design and management report considered and submitted for NOC approval before any works start.

### Noise

Disturbance to staff, students, visitors or other users of the building is a major concern. The Contractor shall submit details of the measures necessary to limit or mitigate noise for approval by NOC. This shall include:

* Method, timing and sequence for taking waste materials to ground level.
* Out of hours working or working to recognised constraints.
* Use of screw fixings instead of nails.
* Acoustically damped, plant and equipment.

No radios or sound amplifying equipment shall be permitted on site.

### Smoking

Smoking, including E-Cigarettes, is not permitted anywhere on the NOCS site. This includes all car parks and other outdoor areas. Smoking is only permitted within the designated smoking areas.

### NOC Policies and Procedures

The Contractor shall carry out their works in accordance with the NOC Policies and Procedures outlined within the Site Information document. These include but are not limited to:

#### Control of Contractors

* Guidance for Consultants
* Estates Contractors Health, Safety and Environment Questionnaire
* Contractors Health & Safety Environmental Appraisal
* Procedure for NOC Estates Staff Employing Contractors
* NOC Estates Contractors Insurance Variation Request Form
* Contactor Checklist
* Code of Safe Practice for Estates Contractors
* Waste and Cleaning Standards for Contractors

#### General Procedures

* ABP Working Procedure
* APB Dock Gate Procedure for Mobile Cranes
* APB Mobile Crane Request Form

#### NOC Health & Safety

* NERC Health & Safety Procedure
* NOC Southampton Asbestos Control Statement
* NOC Accident & Incident Report Form
* Control of Asbestos
* NOC Asbestos Register
* Calorifier Services Schematic

#### NOC Permits

* General Meda Access Permit
* Hot Works Permit
* Fume Cupboard Permit
* Fume Hood Permit
* NOC Estates General Meda Permit
* Procedure for NOC Estates Hot Works Permit

#### Operational Policies

* NOC Environmental Policy
* NOC Portable Appliance Testing Policy
* NOC Parking Policy
* NOC Emergency Procedures

## Confidentiality and publicity

No advertisements will be permitted at the Port Gate. A suitable name board identifying the Contractor’s compound and those signs necessary to comply with Health and Safety requirements are acceptable.

## Security & protection of the Site

The Contractor shall provide temporary hoarding, fencing, gates, guardrails and gantries as necessary for the execution of the Works, protection of the public, NOC personnel and others, and protection of the site roads, and hardstanding areas. This must be done without the need to break the ground.

The Contractor shall provide all temporary roads, footpaths, walkways, crossings and hardstandings required for the execution of the Works.

## Security & identification of people

Access to NOCS is controlled and subject to security constraints. As per the NOC Control of Contractors Policy and the NOC Permits policies, outlined within the Site Information document, all contractors visiting or working on site will be required to undertake an induction and hold a security permit in order to access and work on the premises.

It is the Contractor’s responsibility to initiate the above procedures as soon as practicable.

Any breach of security will result in NOC confiscating a person’s pass and thereby refusing further entry.

The Contractor must also complete the NOC Health and Safety Questionnaire, as part of the Tender return package. This Questionnaire is included within the Site Information.

## Protection of existing structures and services

The Contractor shall be responsible for protecting all surfaces, structures and equipment not affected by the Works and will be responsible for reinstatement should any damage occur.

## Protection of the Works

The Contractor shall be responsible for protecting their works.

## Cleanliness of roads

The Contractor is responsible for ensuring that their vehicles do not deposit oil, mud or any other dirt to the roadways or NOC car park. If accumulation of dirt does occur then the Project Manager is at liberty to instruct the Contractor to clean the road/car park at their own expense.

## Traffic Management

The Contractor shall produce a Traffic Management Plan in accordance with the requirements of the CEMP (see 2.12.2)

## Condition survey

Prior to the start of works, the Contractor shall carry out a survey, including photographic records, of the whole site and adjacent features including the access routes and roof voids. The Contractor shall agree survey records with NOC.

## Control of works

All hot works will be controlled under the Contractor’s Permits to Work procedures. These must be reviewed and approved by NOC prior to use. Planning of works must include emergency response.

Prior to undertaking any excavations, the Contractor will be required to obtain a Permit to Dig and submit relevant details to obtain services clearance certificates from the relevant Authorities at least 4 weeks in advance.

The Permit to Dig shall be valid for 28 days, and the Contractor shall be responsible for any delays, or costs associated with the delays, resulting from the Contractor’s failure to submit requests for Permits to Dig, or provide adequate information in sufficient time.

As part of the Permit to Dig, the Contractor shall be required to undertake CAT scans of the works area. These shall be undertaken by competent persons holding certification of suitable training in the use of CAT scans and scanning equipment.

## Site cleanliness

In accordance with NOC Procedures, the Client shall ensure that the site is kept clean and tidy and that materials and rubbish are adequately secured.

## Sustainability and Environmental Requirements

The Contractor shall review and implement actions identified in the Ecology Report and HRA Screening Letter located within the Site Information document and consider further opportunities within the design to reduce through life resource consumption and increase climate resilience and sustainability and consider further opportunities within the design to reduce through life resource consumption and increase climate resilience and sustainability.

Environmental impacts in the construction stage will be managed through the implementation of the CEMP. The Contractor shall produce a CEMP detailing their proposals of the measures he intends to adopt during construction to minimise the impact of the works on the environment based on measures set out in the following:

* Ecology Report;
* HRA Screening Letter;
* The requirements of the Construction Environmental Management Plan (2.12.2)

The mitigation measures are outlined in the above and shall be implemented in full by the Contractor. The CEMP will be approved by NOC.

### Ecology assessment

An Ecology Assessment was carried out during Work Stage 3 and additional information including the Ecology Report and HRA Screening Letter are included within the Site Information. The report outlines the following mitigation and enhancement measures:

The Contractor shall implement a Construction Environmental Management Plan (CEMP). Vegetation clearance and roof strip shall take place outside of the breeding bird season. Where clearance/roof works are required within the March-August breeding bird period, then the vegetation/affected roofs shall be subject to a nesting bird check by a suitably qualified ecologist within 48 hours of the proposed clearance time/works commencing (including scaffold erection). Inspection from the Nodes will give complete coverage of all roof areas enabling a smooth transition from one work area to another and give confidence that the forthcoming works will not impact on breeding birds. Habitat reinstatement shall include native species or of those with known value to wildlife e.g. selected from the RHS Perfect for Pollinators list . This will improve the foraging potential of the application sites for birds. Two bird nest boxes targeting generalist species shall be installed on suitably mature retained trees to improve nesting opportunities for birds on the application site.

At all times the Contractor shall respond in a timely manner to any requests for information or further details from the Client.

The Contractor shall allow for all of the costs of working within the NOCS boundary including but not necessarily limited to:

* Design development and liaison with the Client;
* Providing all of the necessary information to support the ecology process;
* Fencing of the working area;
* On site ecologist during all site clearance works;
* Ecological support during the period of construction;
* Reinstatement and restoration of the working area;
* Removal and treatment of invasive species, if necessary by hand;
* Measures to prevent the spread of invasive species;
* Removal of all invasive species; and
* Measures to prevent and manage recolonization of the site by invasive species during the Contract period.

The Contractor shall allow sufficient time in their programme for the HRA process to be completed.

The Contractor shall include within the key personnel the ecologist that they propose to use to provide advice on the ecology process and undertake any necessary support during the design and construction works. See section 8.1.2.2 for the requirements for the Appointed Ecologist.

### Construction Environment Management Plan (CEMP)

The Contractor shall submit detailed statements for the methods and controls he proposes to employ to satisfy the general requirement to safeguard the environment and mitigate the effects of the scheme and its construction. These statements shall be submitted in the form of the CEMP with the Interim PCSA Stage submission of the design phase.

The CEMP shall follow the principles of ISO 14001: Environmental Management Systems specification with guidance for use, and, ISO 14004: Environmental Management Systems- general guidelines on principles, systems and supporting techniques.

The CEMP shall demonstrate the Contractor’s ability to integrate construction activities with the requirements of environmental legislation and policy and the requirements of environmental regulatory authorities and third parties.

The CEMP shall, as a minimum, include but is not necessarily limited to the following:

* Project specific sustainability, environmental and considerate behaviour policy statements or codes;
* Targets for environmental and social performance during construction and procedure for monitoring against these. This must include, but is not limited to targets for water, fuel and energy consumption and waste;
* Roles and responsibilities for construction environmental management and consultation;
* A register of relevant environmental legislation and standards;
* A list of any non-compliances with UK legislation and standards not considered ‘reasonably practicable’ for application on the project, including reasoned justification;
* Arrangements for two-way communication with any relevant stakeholders and neighbours affected by the works;
* A register and assessment of construction environmental risks and opportunities, including their prioritisation;
* Plans, method statements, procedures and discipline plans for implementing the environmental requirements, minimising environmental risks and disturbance of local communities during the works. These shall include any measures agreed with stakeholders;
* Arrangements for the monitoring of construction environmental impacts and the effectiveness of mitigation measures; A procedure for recording and reporting environmental incidents, including incident response procedure;
* Identification and provision of training on construction environmental issues at an appropriate level for those engaged in the project (e.g. during site induction, toolbox talks);
* Arrangements for assessing and monitoring the environmental performance of sub-contractors, if appointed;
* A review schedule for the monitoring of construction environmental impacts and the implementation of the CEMP;
* Pollution control measures and an emergency and contingency plan;
* Measures to prevent fugitive dust generation and emission;
* Noise and vibration mitigation, in particular for the personnel working inside and around the NOC building;
* Storage protocols for materials;
* Measures to minimise the visual impact of the construction site and the nuisance of construction works on neighbours;
* Measures to protect construction workers and also wider site users from Asbestos, refer to the NOCS Asbestos Register in the appendices of the Site Information document;
* Procedure for dealing with unexpected protected species on site (e.g. plant species and nesting birds) and a procedure for dealing with invasive species on site; and
* Traffic management and logistics.

The CEMP shall include or link to the following discipline specific environmental management plans. The plans shall include any necessary method statements for the implementation of works on site:

* Traffic Management Plan;
* Pollution Control Plan;
* Noise and Vibration Management Plan;
* Air Quality and Dust Management Plan;
* Sustainable Procurement Strategy;
* Ecological Management Plan;
* Invasive Species Management Plan; and
* Site Waste Management Plan.

Reference shall be made to the Ecology Report and HRA Screening Letter contained in the Site Information Document during the preparation of the CEMP.

The CEMP must be complete and approved before construction activities can commence on site.

### Waste Management

The Contractor shall develop a Site Waste Management Plan (SWMP) for the project; including but not necessarily limited to the need to:

* Be responsible for the management of all construction and demolition waste in compliance with relevant legislation and policy;
* Be responsible for the implementation and execution of the requirements of the final agreed SWMP;
* Comply with Duty of Care requirements, including:
  + Ensure that waste is transported by registered waste carriers;
  + Retain records of waste transfer notes and consignment notes until the end of the works contract and pass these to NOC upon the completion of works;
  + Take all waste to licensed, permitted or exempt facilities including any asbestos or asbestos containing materials (ACMs);
  + Check that transfer or disposal sites are licensed to take the material; and
  + Check that waste has been taken to the specified transfer or disposal sites.
* Provide monthly information returns to the Project Manager, setting out the amount (in tonnes) of material broken down by each waste stream as confirmed and required by local waste handling suppliers removed from the site, the amount re-used on or off-site, recycled, recovered of disposed of to a landfill or a similar site and the approximate disposal cost;
* Segregate and clearly distinguish between quantities of inert, non-hazardous and hazardous materials reused, recycled, recovered or disposed of and further segregate waste as required by local waste handling suppliers;
* Robustly cover skips and similar to minimise dust and absolutely prevent any debris from ending up in the sea or in neighbouring land;
* Demonstrate that the target for waste diverted from landfill of 70% by weight has been achieved or include reasoned justification for missing this target; and
* Ensure that no waste arising from the development is burned.

### Waste Hierarchy and Sustainability

The waste hierarchy specifies that waste shall be managed in the following order of priority: Eliminate; Reduce; Reuse; Recycle; Recover (Energy); and Dispose.

Eliminating the generation of waste at source is the preferred option in waste management. This can be achieved by designing out the generation of surplus materials by careful procurement of materials (i.e. avoid over-procurement of materials) and better utilisation of materials already available on site.

The Contractor shall work towards achieving minimum waste from the project by either eliminating or reducing the amount of surplus materials generated at source and reusing any surplus materials on or off site. Any measures taken to eliminate, reduce or reuse materials that would otherwise be classified as waste shall be recorded within the SWMP.

The Contractor shall seek opportunities for the reuse and recycling of materials as close as possible to the source. NOC practice what they teach and are incredibly environmentally aware and take recycling very seriously as a world class leader in environment and climate change scientific research. NOC holds ISO14001 status and the contractor is likely to need to conform to internal audits that relate to NOC maintaining the highest possible standards to uphold this status.

### House Keeping

The Contractors Environmental Manager will conduct once weekly inspections of all waste management facilities at the Site to ensure that waste is properly secured and segregated in line with the requirements of the SWMP and the CEMP.

Waste disposal shall be the responsibility of all site staff and sub-contractors, and proper procedures shall be communicated to all site staff on induction and monitored by the Environmental Manager. Environmental issues or incidents arising from waste shall be reported to the Environmental Manager using the ‘Environmental Incident’ system outlined in the CEMP, a record of which will be kept and reported during weekly Project Management Team meetings.

### Preparation of SWMP

The SWMP shall provide the framework for recording the amount and types of waste produced on a construction site and how the waste streams are subsequently dealt with. The contents of the SWMP shall include the following:

* Roles and responsibilities;
* Waste minimisation measures, including measures taken to eliminate the generation of waste and to reuse or recycle materials, which would require prior approval from NOC;
* Predicted waste streams and quantities, their management options (e.g. recycling, recovery or disposal) and suitable waste Contractors/ treatment facilities;
* Records to
* be kept for duty of care compliance;
* Training and communication of the SWMP;
* Monitoring of waste quantities generated during construction against the predictions;
* Programme for the ongoing review of the implementation of the SWMP.

The SWMP is a live document and shall be updated by the Contractor regularly (minimum monthly) throughout the course of construction. It is recommended that the Contractor should appoint a Waste Management Champion who will take overall responsibility for the SWMP.

### Contractor staff and sub-contractors

The contractor should allow provision for the requirement of security clearance and DBS screening (or alternative) for every member of staff on site.

### Protected Species Licenses and Method Statements

The Contractor shall be responsible for applying for and securing all necessary protected species and tree removal licenses as required in advance of construction works by application to NOC and the relevant authorities. The Contractor shall be responsible for producing all method statements required to secure these licenses and for undertaking all licensable work.

An extended Phase 1 habitat survey of the application site was undertaken by Ramboll Principal Ecologist Chris Hodsman (MCIEEM) and environmental consultant James Fraser on 31st July 2018. The findings are detailed in the Ecology Report located the Site Information document. In summary:

#### Habitats

The construction of the proposed development would result in the temporary loss of a small area of habitat on site (introduced shrub and individual trees) if a temporary construction access was introduced. However, these habitats are collectively typical of urban areas and are only of importance/value at the site scale. No species of animals using the site or plants present are likely to be solely dependent on the habitats in the site in a local context. The habitats lost shall be reinstated following construction shall include native species or of those with known value to wildlife. Plants should for example be selected from the RHS Perfect for Pollinators list . This would improve the value of the application site for invertebrates which would in turn improve the foraging potential of the site for birds and bats.

#### Birds

The works would result in the loss of a small area of existing habitat for nesting birds in vegetation (introduced shrub and individual trees) during the construction phase if a temporary construction access to the site was introduced.

The existing roof structure offers some potential to support nesting birds, notably gulls though this is limited due to netting placed over the roof. The proposed development would result in the phased removal of the roof and potential nesting habitat prior to reinstatement with the new roof. This is not considered to be significant as only a small proportion of the roof will be being worked on at any given time.

Should vegetation clearance or roof removal/replacement coincide with the bird breeding season (March to August) an ecologist must be consulted to devise appropriate mitigation.

This shall include checking the vegetation/affected roofs by a suitably qualified ecologist within 48 hours of the proposed clearance time/works commencing (including scaffold erection). Inspection from the Nodes will give complete coverage of all roof areas enabling a smooth transition from one work area to another and give confidence that the forthcoming works will not impact on breeding birds. Two bird nest boxes targeting generalist species shall be installed on suitably mature retained trees to improve nesting opportunities for birds on the application site.

The following additional recommendations shall be adopted to avoid any significant impact:

* The contractor will develop a Construction Environmental Management Plan (CEMP) to detail proposals of the measures they intend to adopt during construction to minimise the impact of the works.
* The contractor will develop a method statement that will identify how the habitats surrounding the buildings and the buildings and roofs themselves will be protected.
* Trees shall be retained where possible, where it is not possible to retain trees a licence is required to remove protected trees and this must be obtained by the contractor prior to clearance of relevant trees.
* Working areas will be kept to a minimum and will be marked out prior to works commencing.
* The working area will be subject to a detailed inspection for any protected flora. If any protected plant species are found to be affected, these will need to be translocated to a similar habitat within the site, if required by the ecologist.
* An Invasive Species Management Plan (ISMP) shall be developed as part of the CEMP, to ensure effective management of Japanese Knotweed and other key invasive species at the development site. All Japanese Knotweed present on the development site is to be cleared.
* The CEMP and all associated method statements will be approved by NOC prior to the commencement of any works.

# Contractor’s Design

## Design responsibility (re: ECC 21.1)

A set of tender concept drawings are included in Appendix D of this document. These drawings identify a developed design solution that must be reviewed and developed where appropriate by the Contractor to meet the requirements defined within the Project Scope. It is the responsibility of the Contractor to verify any design information given in the drawings that is used as the basis for and developed through the detailed design. No responsibility or liability for the information shown in these drawings is accepted by The Client. The Contractor shall take full responsibility for the final design of the proposed new roof and any temporary works and temporary conditions.

The Client remains responsible for the condition and any permanent works to the existing roof structure, and the Contractor is expected to work collaboratively to facilitate the input of any remedial work required as part of the re-roofing works. Refer to Risk Matrix for identification of Client and Contractor responsibilities located in Appendix G.

## Design submission procedures and acceptance criteria (re: ECC 21.2)

The Contractor shall prepare full working drawings and specifications for all aspects of the work prior to the commencement of the works. All such drawings and specifications are to be submitted to the Project Manager in pdf format and hard copy unless otherwise agreed.

The Contractor shall complete the design and detailing of the Works as specified and provide complete construction drawings, general arrangement drawings, detail drawings, all design calculations, specifications, etc. based on the drawings, the Project Scope, Site Information and other information provided, liaising with NOC and others as necessary to help ensure co-ordination of the work with related construction elements and services.

When preparing the Programme, the Contractor shall make reasonable allowance for completing design/construction information and inspection by BCA and any subsequent amendment(s), and resubmission(s) prior to commencing works on site.

The Contractor shall submit to The Project Manager the required number of copies of design/construction information for review and comment. The Project Manager shall note their comments and return to the Contractor. The Project Manager will require 15 working days to coordinate the review and comments on the Contractor’s design submission. This period supersedes any time stipulations in the NEC4 Contract. It shall be the responsibility of the Contractor to send copies of the documents to the Project Manager.

The Contractor shall ensure that any necessary amendments are made without delay and within 5 working days from receipt of comments. Unless and until The Project Manager confirms their satisfaction, the Contractor shall submit the required number of copies of amended drawings etc. and ensure incorporation of necessary amendments all as before.

All submissions must be fully dimensioned, comprehensive and complete. Single line drawings will only be acceptable for electrical schematic diagrams. The design drawings shall be fully co-ordinated with all disciplines and shall fully detail the design intent of the scheme. All drawings issued shall be signed as checked by the Main Contractor’s Design Co-ordinator and Principal Designer prior to submission to NOC.

The form of the title block for all drawings shall be agreed with NOC.

### Client Acceptance

All temporary works, plant, materials, design and methods of working provided in the Works shall be to the acceptance of NOC.

The Contractor shall gain acceptance from The Client for all equipment he proposes to provide in the Works before placing an order for the equipment.

The Contractor shall gain the acceptance of the CEMP and accompanying documents. The Contractor shall gain approval of The Client for all environmental documents required under the Project Scope.

Acceptance by The Client in no way reduces the full responsibility of the Contractor to provide equipment and materials in the Works in accordance with the requirements of the Contract.

Most of NOC requirements detailed on the tender concept drawings located at Appendix D are highlighted within this document. The tender package indicates The Client’s preference, however, should the Contractor wish to deviate away from the reference design, he must seek prior approval from The Client and in all likelihood their insurers.

All requests for Client acceptance should be made by the Contractor through the Project Manager.

### Independent check

It is the responsibility of the Contractor to arrange for an independent check of the design calculations and drawings by independent persons who have appropriate experience of building design, and to provide NOC with certification that any recommendations have been incorporated. The checking team may be from the same organisation but shall be independent of the Design Team.

### **Design Compliance Certificates**

The Works shall be designed and constructed fully in accordance with the requirements of the Project Scope and current Design Guides, Codes of Practice and Specifications listed but not limited to those advised in other sections.

Any residual non-compliance with the requirements of the Design Standards shall only be as allowed in the Project Scope. A Design Compliance Certificate is required to be supplied to NOC by the Contractor for each Section of the Works, detailing any residual non-compliance with the Design Standards, which shall only be allowed at locations and to the extent as described in the Project Scope.

If required, the Contractor shall also supply the requisite number of copies of drawings, documents, schedules, calculations etc. to The Client NOC for audit purposes.

## Design approvals from Others

### Building Control

The Building Control Advisor (BCA) will be appointed by the Client’s Technical Advisor to carry out an independent third-party inspection and certification process to ensure compliance with the design solutions that support the Building Regulations 2000 or equivalent.

### University of Southampton

Key stakeholders from UoS will be consulted in the Client reviews discussed in Section 3.2, above. These comments shall form part of the feedback provided by the Client following their review.

## Client’s requirements (re: ECC 21.2, X22.3(3))

### Ground Conditions

The Contractor shall consider the ground conditions as outlined in the ground surveys in the Site Information, while undertaking temporary works design and shall allow for any additional surveys that are required. NOC shall have full unrestricted access to all surveys in original format for their own benefit and use outside of the roof renewal project.

### Design standards

The detailed design shall be undertaken in accordance with, but not limited to, the following standards and legislation. The documents referred to in the sections which follow are collectively known as the Design Standards and shall be applied in the Works in accordance with the description within this Scope.

Should the Contractor identify any conflict between the standards, he shall draw it to the attention of NOC to seek guidance or direction.

#### Architectural & structural standards

The architectural and structural design of the roof shall meet the requirements typically adopted in UK design and meet the required standards as outlined in the National Building Specification (NBS) within Appendix E.

All details, materials and workmanship relating to the design and installation of the zinc roof and vertical wall coverings shall be approved by VM Zinc and appointed VM Zinc Contractor.

#### Mechanical services standards

The building services systems shall be designed to meet minimum statutory and good practice requirements typically adopted in UK design.

Valid issued requirements, codes, norms and standards, in most recently released issues/revisions to be used for design and construction will include the following standards and norms:

* British Standard Institute (BSI)
* Chartered Institute of Building Services Engineers (CIBSE) publications.
* British Standards Institution. BS EN 12056: 2000 Gravity drainage systems inside buildings.
* The Water Supply (Water Fittings) Regulations 1999
* ASHRAE 62.1 Ventilation for acceptable indoor air quality (Referenced)
* UK Building Regulations (Specifically guides G, F, L & M for mechanical services)
* Water Supply Bylaws Guide
* BS 1710:1984: Specification for identification of pipelines and services
* BS 5970: Code of Practice for thermal insulation of pipe work and equipment in temperature range from 100°C to 870°C
* BS EN 1057:2006 – Copper and Copper alloys – seamless, round copper tubes for water and gas in sanitary and heating applications
* BS EN 1254 (all parts) – copper and copper alloys – Plumbing fittings
* BS EN1254-2:1998 – copper and copper alloys – Fittings with compression ends for use with copper tubes
* BS 5422:2009 – Method for specifying thermal insulation materials for pipes, tanks, vessels, duct work and equipment operating in the temperature range -40°C to + 700°C
* BS 5970:2001 – Code of Practice for thermal insulation of pipe work and equipment in the temperature range of -100°C to 870°C
* BS 5154:1991- Specification for copper alloy globe, globe stop and check, check and gate valves
* BS 6920-1:2000 – Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water
* BS 1010-2:1973- Specification for draw-off taps and stop valves for water services. Draw-off taps and above ground stop valves
* BS 1212: 1990 – Float operated valves
* BS 6683:1995 – Guide to installation and use of valves
* BS EN 13959:2004 – anti-pollution check valves. DN 6 to DN 250 inclusive Family E, type A, B, C and D

#### Electrical services standards

The building services systems shall be designed to meet minimum statutory and good practice requirements typically adopted in UK design.

Valid issued requirements, codes, norms and standards, in most recently released issues/revisions to be used for design and construction will include the following standards and norms:

* Electricity Supply Regulations 1988
* Electricity at Work Regulations 1989
* Chartered Institute of Building Services Engineers (CIBSE)
* BS 7671:2018 Requirements for Electrical Installations – 18th Edition
* Requirements of the local electricity, telecommunications, gas and water Authorities
* Specification 034, Electrical Installations
* BS EN 50174-2:2014 – Information technology – cabling installation
* BS EN 60728-1-2:2014 - Cables networks for television signals, sound signals and interactive services

#### Civil engineering and external M&E standards

Any external works design (if required) shall be carried out in accordance with, but not limited to, the following design standards:

* Specification for Highway Works (SHW)
* The Manual of Contract Documents for Highway Works (MCHW)
* IAN 73/06 Design guidance for road pavement foundations (Draft HD25)
* Design Manual for Roads and Bridges (DMRB) HD26/06 Pavement Design
* DMRB HD39/16 Footway Design
* TR66 Concrete Society
* BS 1377–4 Methods of test for soils for civil engineering purposes. Compaction-related tests
* BS 7533: Part 3 (Note 1) BS 7533: Parts 1–3 Laying course sand; Jointing sand
* BS 6717: Part 1 BS 6717: Part 3 Concrete blocks
* BS 7263: Part 1 BS 7263: Part 2 Flags; Kerbs; Edging
* Concrete, C30P BS 5328: Parts 2,3 & 4 Concrete, C30P
* Concrete shall conform with the requirements of BS EN 13877-2 and the requirements of this Series. The constituents of the concrete shall conform with BS EN 206-1 and BS 8500-1 and BS 8500-2 and BS EN 13877-1 and the requirements of this Series.
* BS 7671 – 2018 18th Edition
* BS 7430 – Earthing
* BS EN 63205 – Lightning Protection
* BS EN 12464 – Light and Lighting
* BS EN 13201 – Road Lighting
* BS 5489 – Road and External Lighting
* CIBSE Exterior Lighting Guide

#### Drainage standards

The external works design shall be carried out in accordance with, but not limited to, the following design standards:

* BS EN 12056 Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation
* BS EN 752 Drain and sewer systems outside buildings
* BS EN 8500 Concrete. Complementary British Standard to BS EN 206. Method of specifying and guidance for the specifier
* PPG3 Use and design of oil separators in surface water drainage systems
* BS EN 1253 Gullies for buildings. Requirements
* BS EN 124 Gully tops and manhole tops for vehicular and pedestrian areas. Design requirements, type testing, marking, quality control
* BS EN 877:1999+A1:2006 Cast iron pipes and fittings, their joints and accessories for the evacuation of water from buildings. Requirements, test methods and quality assurance
* Sewers for Adoption

#### Sustainability and Environmental Standards

It is NOC policy to minimise and mitigate the adverse environmental effects of its projects and operations. The Contractor shall be responsible for safeguarding the environment and for mitigating the effects of the scheme and its construction throughout the duration of the contract.

The Contractor shall comply with all relevant UK policies on environment and sustainable development and construction including but not necessarily limited to:

* ISO14001:2015 – Environmental Management Systems
* Cabinet Office
* UK Government Timber Procurement Policy Timber Procurement Advice Note (6th edition) 2016

The Contractor shall as a minimum comply with all relevant local, regional, national and international environmental legislation and standards in the design and construction of the NOCS Roof Renewal Project and shall respond accordingly to all changes to legislation that may affect the works.

#### Whole Life Cost

The Contractor is required to take whole life cost into account with particular regard to the robustness of the materials, fixtures and fittings and to minimise maintenance costs through careful selection of materials, M&E and other equipment.

#### Industry Standards

In addition to the above specific standards and guidance, design shall be undertaken in accordance with the following Industry Standards. These shall include, but not be limited to:

* The Health and Safety at Work Act 1974
* ISO45001:2018 – Occupational Health & Safety
* CDM Regulations 2015
* BS 8000
* ISO14001:2015 – Environmental Management Systems
* Cabinet Office Common Minimum Standards for the Procurement of Built Environments

#### Allowable Non-Compliances with the Design Standards

The Contractor must comply with the Design Standards outlined within this document. Any proposed non-compliances against the defined Design Standards must be approved by NOC prior to any design and construction.

#### Asbestos and other hazardous materials

The Contractor must comply with the Control of Asbestos Regulations and others relating to hazardous materials. Any works which involve areas of asbestos or hazardous materials, such as but not limited to, the known mastic possibly containing asbestos on the nodal ventilation penetrations, must be accompanied by an appropriate suggested design and management submission for approval by the NOC. The submission should be made and assessed before any works are carried out in accordance with Health & Safety legislation and other legislation.

#### Audits

The Contractor must comply with the Clients or Project Manager’s request to carry out any audit that is required during the project.

### Architectural design

#### Design Solution: Roof Slopes

##### Appearance

In deciding and implementing the remedial works to the existing roof profiles, the following have been assessed:

* Most appropriate roof covering in view of the exposed location
* Appearance of Surface Materials
* Roof typology and construction details for 'normal' areas
* Identification of abnormal roof areas
* Remedial works to Nodes
* Access requirements
* Provision of temporary protection measures to building fabric, services and personnel
* Extent of staff decant
* Programme and sequencing of work

While all have contributed to the design evaluation, the proposal is now to over clad the existing roof profiles and to the node abutments with zinc. Using a dark grey treatment to represent an oxidised matt finish, rather than a shiny new zinc specification which would not comply with Landlord ABP’s port authority requirements.

Before oxidation occurs, natural zinc has a silver appearance that can create glare. It is proposed to remove this reflective stage by using QUARTZ-ZINC manufactured by VMZinc; offering an appearance and texture that replicates the colour of oxidised zinc. As a consequence, this appearance starts as a darker grey and does not change over time. When QUARTZ-ZINC is scratched, it will self-heal. The grey tones of QUARTZ-ZINC blend well with existing construction materials. QUARTZ-ZINC is produced through phosphatising of mill finish Natural zinc.

VMZinc is not a painted product and therefore natural colour variations may occur. No colour matches are guaranteed therefore zinc to each roof slope shall be specified to be installed from the same roll/batch because of colour variations in the manufacturing process.

The proposal is to remove the existing Eternit products and overlay the new material. To do so, with minimum disturbance to the staff, students and visitors to NOCS, it is intended to lay a new lateral support grid between the battens, so that the existing felt underlay can be retained. This Ashgrid system, set at c.600mm centres, will support a 18mm fire retardant WBP plywood sub-state and new insulation to create a ‘warm roof’ element and prevent interstitial condensation. These new layers effectively raise the outer profile by c. 15cm.

##### Insulation

Existing insulation is supported on galvanised wire mesh between the existing joists in a cold roof form of construction. There is no vapour control layer installed within the existing building construction, creating the risk of condensation forming within the insulation layer where the air flow is obstructed, while the U-values fall significantly below current recommended practice.

The intent is therefore to improve the thermal performance of the roof and minimise the risk of condensation. Early considerations related to the benefits of a warm roof construction over maintaining a ventilated void, with a warm roof being the favoured solution.

A number of alternate insulation products have been considered. The decision is influenced by the following:

* Thickness needed to achieve required U-value
* Weight of insulation
* Compressive strength
* View in the market on use of non-combustible materials (with low surface spread of flame)

Kingspan TR26 is currently being specified on the basis it is the only product capable of being used without the need to undertake intrusive strengthening to the roof.

Confirmation has been sought and obtained from Zurich, NOC current insurers of the building, stating that Kingspan Thermaroof TR26 sheet is an LPCB approved product to LPS 1181, as such it is classed as having “limited combustibility” and therefore acceptable to insurers

SRE have undertaken Interstitial and Surface Condensation Risk analysis, which is appended to the Work Stage 2 Report within the Site Information document. As part of this analysis the following assessment is made with regards new roof build up:

* Zinc roof sheeting
* Nominal ‘well ventilated’ air gap of 0.1mm
* Breather membrane
* Kingspan TR26 (c/w TF27) PIR board
* Vapour control layer
* 18mm Plywood (see NBS specification) formed over the existing modified formation comprising
* Timber joists with 75mm Rockwool and 75mm cavity which is sealed to become unventilated
* Wire mesh / air gap
* Unventilated airspace
* Ceiling tile

##### Consequential works: roofing

In addition to the main roofing work, the following consequential works shall be required:

* Replacement of guttering to eaves
* Renewal of eaves fascia
* Replacement of roof lights
* Replacement or uplift and re-fixing of existing solar panels.
* Detailing to roof penetrations
* Re-provision of Lightning Protection
* Installation of new stepped cavity trays to extended roof slopes abutting external masonry walls to Plates at Level 6

##### Design solution: abutting brickwork

As noted, water ingress is also occurring through the vertical brickwork to the nodes due to their exposed location and poor construction. The intent is to resolve this at source by preventing water from hitting these main faces and allowing for a new plain horizontal tray to be inserted.

VMZinc have developed a Pigmento finish to their zinc sheeting. While available in a range of colours that enhances any building, the natural form enables the texture of the QUARTZ-ZINC to be retained. In its natural colour, this is specified as QUARTZ-ZINC STRAT.

The colouration of the zinc is achieved with a special pigment layer that enhances the qualities of the zinc without presenting a block colour. This product is tested to EN13523-10:2010 for UV-humidity and EN 15523:2001 for colour stability and requires minimum maintenance.

PIGMENTO provides a special resilience in a marine environment and makes the removal of salt deposits easier than on the regular surfaces of other zinc finishes. The use of VMZinc’s Pigmento and Strat range reduces the salt staining and therefore are considered suitable in these locations. Most significantly, the use of VMZinc STRAT is also covered by a 30-year product guarantee in severe coastal locations.

The system is very lightweight as the panels weigh no more than 7kg/m2 and can be fixed back to 18mm plywood, retaining a vented airspace behind the timber of at least 38mm. The plywood must be weather and boil proof. WBP plywood is more precisely described as EN314-3 (glue bond) and EN636-2 (timber performance). The substrate must be flush to within 2mm and all screws and nails must be countersunk. VMZINC PLUS must be used on plywood substrates.

The panels are installed in a sequential order from either left to right or right to left for vertical panels. For panels less than 2m in length fixed clips can be used. For longer panels sliding clips must be used towards the bottom on vertical panels and to the left and right of the centre for horizontal panels. VMZINC clips are made from 304 stainless steel and each clip must resist a pull-out force of 50daN. It is recommended that screws be used to secure the clips with three being used per sliding clip.

The panels must be installed with the protective film in place.

##### Cladding to Nodes

In addition to the main cladding work, the following works shall be required to the Nodes:

* Installation of new horizontal cavity trays to top of cladding at Level 8
* Installation of new vertical DPCs at periphery of cladding to outward facing brickwork abutments, to include brickwork removal and reconstruction
* Removal of masonry (including carefully breaking out pcc cill blocks) to existing feature corner details, and reconstructing panels in line with outer leaf to full height.
* Installation of new stepped cavity tray to outward facing masonry at abutment with roof over Plate 124
* Adaptation and new detailing to wall penetrations (windows, vents etc)

##### Materials

The specification of materials and workmanship is set out within Appendix E. The relevant NBS sections apply:

* F10 Brick/Block Walling
* F30 Accessories/sundry items for brick/block/stone walling
* H10 Patent glazing
* H72 Aluminium strip/sheet coverings/flashings
* H74 Zinc strip/sheet coverings / flashings
* K11 Rigid sheet flooring / sheathing / decking / sarking / linings / casings
* L10 Windows / Rooflights / Screens / Louvres
* R10 Rainwater drainage systems
* Z20 Fixings and adhesives
* Z21 Mortars
* Z22 Sealants
* Z31 Powder coatings

The responsibility for the final design of the proposed new roof, product selection, delivery, installation and completion rests with the Contractor, along with any temporary works and temporary conditions. The Contractor shall be permitted to put forward alternative materials. If expressly stated at the time of submitting the Stage 1 tender, these shall be considered as part of the tender evaluation and award. Alternatives will only be considered where they meet the minimum requirements highlighted in this specification and supporting documentation. Thereafter the decision to accept any proposed changes shall remain solely with the Client and no grounds shall exist for any extension of time, additional cost or need for acceleration, as a consequence of the timing of, refusal or delay in granting approval by the Client.

In submitting any proposal to vary the materials, the Contractor shall provide full information to evidence this, in a timely manner, to allow an informed decision to be made. The Contractor shall allow for sufficient time within the Contract Programme for any such decision to be made and shall be fully liable for the time needed to prevent the information required, for it to be evaluated by the Client and a decision to accept or reject the proposal. No extension of time under the contract shall be awarded as a result of this process.

#### Fire strategy

It is the Contractor’s responsibility to ensure the design and fire strategy shall comply with the relevant UK regulations.

### Structural design

#### Structural Approach

A structural assessment was carried out to investigate the structural capacity of the roof, including the primary steelwork, timber rafters and steel purlins. The assessment was limited to the information on the structural drawings which are generally recognised to be as-built drawings. No intrusive surveys or opening-up works were carried out to verify the information on the drawings. However, an internal visual survey was undertaken in November 2019 and the general structural arrangement was reviewed together with some sampling of structural element sizes against the record drawings. The Works Contractor must ensure the roof is as per the As-built drawings prior to undertaking the roof replacement.

The NOC records show that that the building has not suffered any structural defects, deformations or undergone any structural changes, other than what is shown on the drawings, or highlighted in the structural condition survey report. The Works Contractor must alert the Client if anything is found that is not noted on the As Built drawings or condition report.

The initial approach taken to verify the loadings to the roof was to balance the new proposed loads against the existing loadings. Upon review of the existing structural calculations the following was noted:

* The original structural calculations were carried out to British Standards which were the Codes of Practice at the time of design and construction (1991).
* The original structural calculations allowed for a live load of 0.75 kN/m2 on a pitch roof (BS 6399-1:1988).

The design checks were carried out to the Eurocodes which are the current Codes of Practice. Eurocodes use reduced partial safety factors in comparison to British Standards and a reduced live (imposed) load of 0.6 kN/m2 on a pitch roof. This produces a 0.15 kN/m2 additional allowance for loading the roof.

Following this initial global check on loading allowance a further structural assessment was undertaken to review the capacity of the roof members under the new roof loading to current Eurocodes. This detailed structural assessment together with recommendations for any remedial works is provided in the WS3a Structural Assessment Report.

The Contractor must carry out their own structural checks to ensure the existing roof structure can support any temporary works loadings, and construction staged loading scenarios.

#### Structural components

##### Sub-structure

The building is supported on piles of working load 750kN.

##### Superstructure

The primary structural frame comprises a reinforced in-situ concrete frame with a typical grid of 6.3m x 5.4m. Flat slabs at Level 3 and Level 5, which are 350mm and 300 mm thick respectively, are supported on concrete columns. The institutional floor at Level 2 is hung from Level 3 and the institutional floor at Levels 3 and 6 are propped by concrete columns. The roof is formed of steel trusses.

A structural assessment was carried out to investigate the structural capacity of the existing roof, including the primary steelwork, timber rafters and steel purlins. Details of this are included in the appended Works Stage 2 report. The analysis was repeated at Work Stage 3 and showed there was still sufficient capacity in the existing roof structure to accommodate the suggested new roof make-up.

The Contractor must ensure that their Work Stage 4 Detailed Design does not increase the permanent load case to that proposed in this Work Stage 3 design. Any changes or deviations must be notified to the Client, prior to progressing with that option.

#### Proposed roof build-up

The 40mm Ashgrid lateral support grid will be laid between the battens and will support the 18mm plywood sheathing at 600mm c/c between the battens. The 100mm thick Kingspan TR26 PIR insulation, VM Zinc Membrane and VM Zinc Quartz 600mm standing seam zinc outer sheeting will be laid on top to form the top surface. The existing rafters, insulation, roofing felt & battens will be retained.

The figure below shows the new build-up and roof covering.

The dead load of this new roof build up is 9% higher than the existing build up and this additional load is accounted for by utilising the difference in the live loadings between the original British Standard and the current Eurocodes.

#### Proposed roof build up

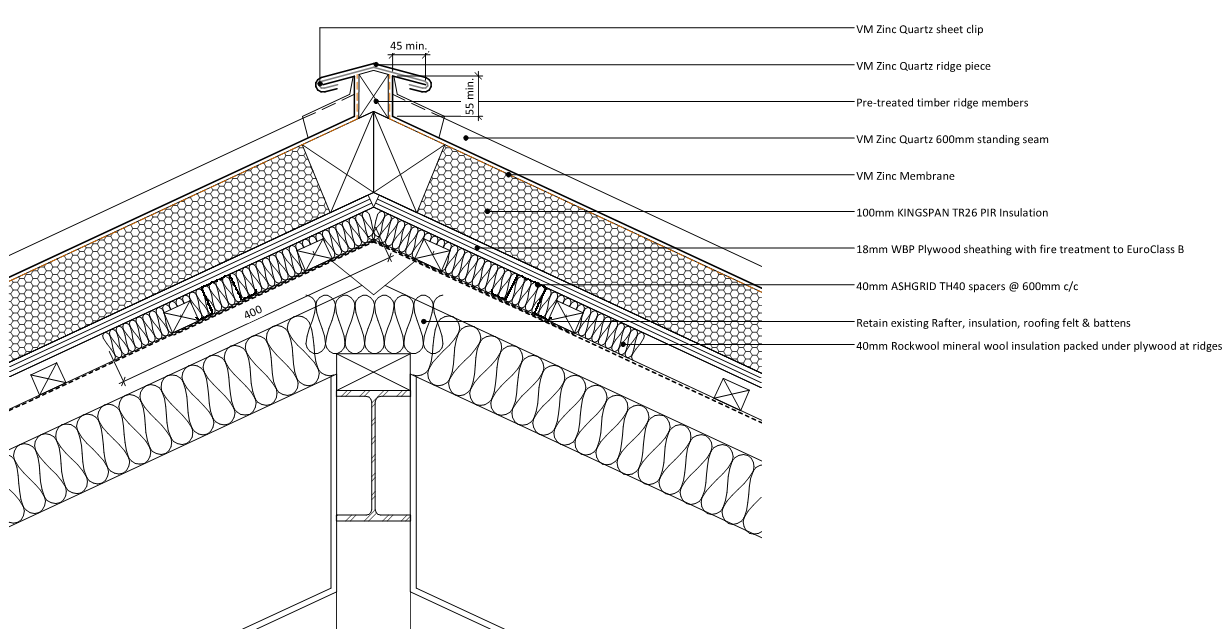


Figure 1. Proposed roof build up from drawing 151742\_STL\_00\_ZZ\_DR\_A\_XXXX\_62001\_P1.

#### Retaining guttering to eaves and renewal of eaves fascia

The existing 1m eaves overhang construction is structurally adequate to support the new roof construction. A continuous arris rail must be provided behind the plywood to support the gutters.

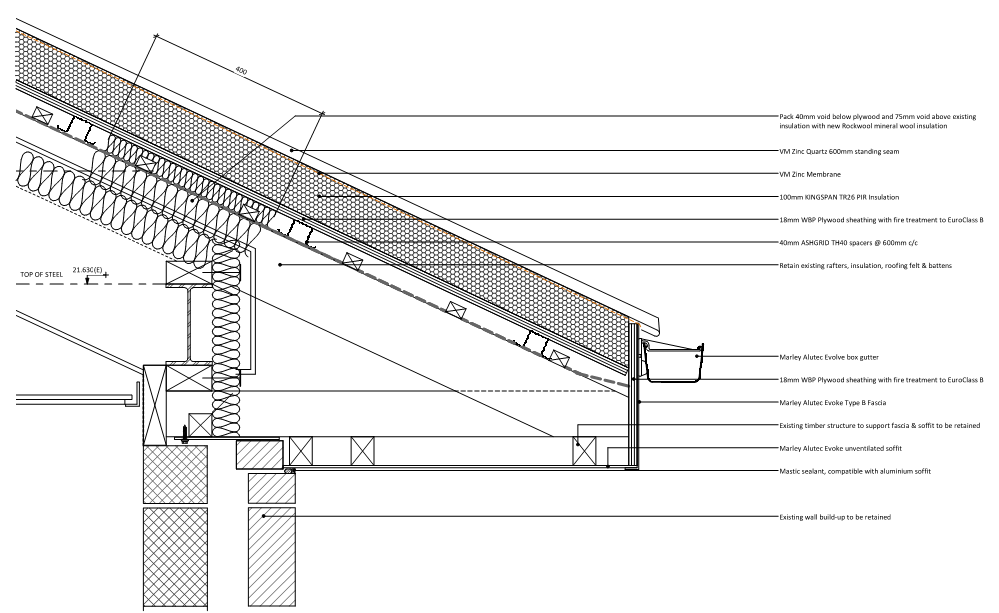


Figure 2. Typical Eaves Detail from drawing 151742\_STL\_00\_ZZ\_DR\_A\_XXXX\_62002\_P1.

#### Replacement or uplift and re-fixing of existing solar panels

The Works Contractor must ensure that the loading from the relocated solar panels can be safely transferred through the new roof system does not exceed through to the existing roof structure.

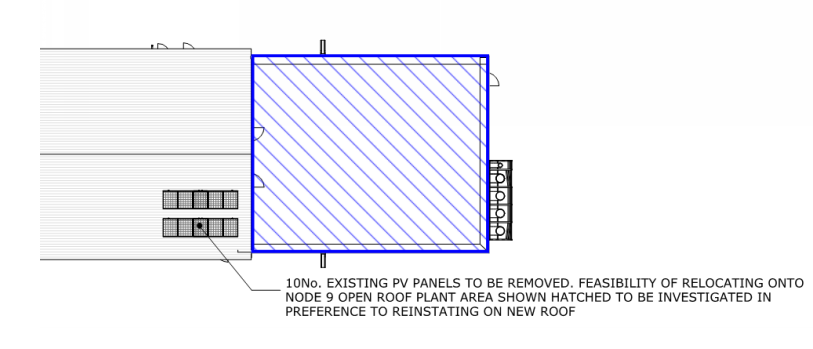


Figure 3. Existing Roof Plan from drawing 151742\_STL\_00\_ZZ\_DR\_A\_XXXX\_E1001\_P1

#### Further Checks

The original roof was designed for a permanent a load of 0.426 kN/m2 (adjusted for slope) and variable loading of 0.75 kN/m2. Replacement of the existing tiled roof with the new standing seam system leads to marginally higher permanent loading by 9% however this has been offset and justified by adopting a lower variable load as allowed in current codes of practice. Consequently, Ramboll are satisfied that the global permanent loading of the new roof system spread as a uniformly distributed load is justifiable on the existing structural frame.

The Works Contractor must satisfy themselves and be responsible for checking the detailed design loadings for the new roof, including all temporary loading conditions, does not exceed the design loadings provided in the detailed Structural Assessment Report. This may require justification of elements of the existing frame or timber roof construction to carry these temporary loading conditions and strengthening as required. The Works Contractor shall submit 15 working days before commencing construction all details of such temporary design through calculations, drawings and construction methodology to the Clients PM.

### Civil engineering design

#### External works

At the time of tender, no new access road or paving is required to service the works as NOC will allow the Contractor to use the existing entrance to site and site establishment.

If this should change and a new access road is required for the construction works and site traffic, then this will be instructed as a variation and the Contractor will be expected to undertake the following as part of their design.

##### Access Roads

The Contractor shall undertake a detailed swept path analysis as part of their detailed design to ensure the access road allows the largest vehicles expected to pass without difficulty. Appropriate details shall be included within the Contractors design for the tie-in required with the existing European Way.

Prior to paving foundation construction, the Contractor shall test the subgrade CBR value to ensure that it is equal to, or greater than, the Design CBR value. If the in-situ CBR is found to be less than the Design CBR, then the subgrade must either be improved to the Design CBR or the foundation redesigned.

The CBR chosen for the design shall be the minimum measured value, not the average; otherwise local failure may occur at soft spots. The Contractor shall carry out CBR testing again once the formation levels of the site are constructed.

The Contractor shall consider road markings and white lining to define edge of Carriageway, give way, and stop lines. Consideration shall also be given to approaches with pedestrian crossing points. All permanent road markings shall be of thermoplastic material complying with BS EN 1871: 2000 Class A. All road markings shall be white or yellow and shall be reflectorized. All traffic signs and road markings shall be in accordance with the Traffic Signs Manual and the Traffic Signs Regulations and General Directions 2016.

##### Design Traffic

The Contractor shall assess the design traffic vehicles and frequencies as part of their design. This shall include for abnormal loads expected during construction or maintenance or the finished facility i.e. for crane access.

##### Footpaths

Any new footpaths shall be arranged to provide safe and easy pedestrian access between around the buildings, to the car park, storage areas, and to the existing European Way. The footpaths shall be designed with sufficient width to allow individuals carrying holdalls/suitcases to pass in opposite directions without difficulty. The footpaths are to have a paving slab surfacing.

Consideration shall be given in the coordination of footpath positions with both existing and proposed services. They shall be positioned to protect existing services where relevant, and where possible proposed services shall be positioned in the verge rather than under the footway construction. Any trenches excavated before construction of the footway shall be backfilled with suitable material and fully compacted.

#### Foul & surface drainage

##### General

The new roof is required to remain operational for at least 50 years following completion. This is the minimum requirement, it is reasonable to expect the main components of the drainage network will achieve a design life of 50 years. The selection of materials shall meet these requirements.

Access for rodding points shall be designed in accordance with Building Regulations Part H. Consideration for ease of maintenance shall be taken into account in the design of the locations of the proposed drainage components.

All materials selected shall meet the required British Standards and be Kitemark or Agreement certified. All components shall be designed and appropriately selected to be suitable for the interface between the associated systems, such as connection to internal floor gullies or drainage stacks.

The design of the drainage system shall take into consideration the local supply chain. The design shall also consider the works programme, and where possible selecting components and materials which reduce labour and plant requirements. Materials which are less susceptible to damage during transport and construction must also be considered during the design.

##### Surface Water Drainage System

The roof and any new surface water drainage system shall be designed to collect runoff and discharge into existing surface water systems. The systems shall be designed in accordance with BS EN 752:2008 and Building Regulations Part H. The pipe work shall be sized based upon peak storm run-off with an allowance for increased capacity for climate change. The peak surface water design flow rates shall be calculated for existing climatic conditions.

### Mechanical & electrical design

#### Requirements

The Contractor shall provide the complete M&E installation for the plant rooms, interim plant floors (known as meda) ventilation alterations and lightning protection for this project. These M&E systems and equipment shall be designed, selected, supplied, installed and commissioned in accordance with the performance requirements detailed within the M&E performance specification.

#### Mechanical Engineering

The MEP Contractor shall complete the alterations to the ventilation within the meda plant rooms on each node as required by the roofing specialist to maintain adequate ventilation within. The contractor shall allow the following works as part of their package.

The architect proposes to relocate the current ventilation grills serving medas on the 7th floor where they are currently sited too close to the ridge of adjacent roofs. There are six occasions where this is depicted within the architects plans, the contractor shall allow to confirm with the Architect of these locations prior to carrying out surveys of the meda plant rooms.

Post survey the contractor shall propose alternative locations within the plant room to maintain the same level of ventilation. They shall allow to design any associated ductwork and fans if required to suit the new location within the existing heavily serviced plant rooms. It is not envisioned that new ventilation plant will be required due to the relocation of ventilation grills, and possible extension of ventilation routes, but the following headings set out the performance and design requirements if any such additional plant is required.

Once approved the Contractor shall set to work, install, test and commission the altered ventilation systems ready for witnessing and sign off from the Client. He shall prove that each of the plant rooms is now served with the same adequate ventilation to that of the existing facilities.

Where existing vents remain in situ and re-clad the contractor shall design and install approved sleeving to ensure the required air path is maintained through the existing grill.

The Contractor shall coordinate and liaise with the cladding specialist to confirm the new louvres placed in front of the existing grills are adequate and meet the minimum free area required.

#### External Design Criteria

The environmental design criteria that will be the basis for all load calculations associated with the mechanical design will be based on the NOC headquarters location, in Southampton, UK, ensuring the adjacent coastal climate is allowed for.

#### Internal Design Criteria

The internal design criteria for the buildings are shown below. This is based on maintaining the design temperatures during both the summer and winter periods. Summertime design temperatures are controlled by air conditioning/comfort cooling.

Table 5: Summary of Internal Design Conditions

|  |  |  |  |
| --- | --- | --- | --- |
| **Area** | **Winter Design Temperature** | **Summer Design Temperature** | **Ventilation Flow Rate** |
| Plant rooms | 5°C (±2°C) | Uncontrolled | To suit plant combustion |

#### Ventilation Rates

The ventilation for the project shall be provided in compliance with the following regulatory documents and in general with the values listed in Table 2 as above:

* Approved Document F: Building Regulation Means of Ventilation (October 2010)
* CIBSE Guide A and B

#### Plant Performance and Efficiency Criteria

Where any extract fans are required to suit the new cladding the Contractor shall note the following when designing the system:

* In compliance with the Approved Document Part L2B all mechanical plant items installed within the building shall be provided to meet a minimum thermal efficiency or performance rating, assuring minimum carbon emissions of the building.
* Table 3 below identifies the minimum performance ratings to be applied to all likely plant installations at the site, in compliance with the UK Building Regulations guidance.

Table 6: Minimum Performance Ratings

|  |  |
| --- | --- |
| Comfort Cooling Systems | Energy Efficiency Ratio (EER) |
| **Air Distribution Systems** | **Specific Fan Power(SFP) Watts per l/s** |
| Zonal extract system where fan is remote from zone | 0.5 |
| Zonal supply & extract ventilation units, such as ceiling void or roof units serving a single room or zone with heating and heat recovery | 1.9 |
| Local balanced supply and extract ventilation system, such as wall/roof unit serving a single area with heating and heat recovery | 1.6 |
| Local supply or extract ventilation units, such as window/wall/roof unit serving a single area (e.g. toilet extract) | 0.3 |
| Other local ventilation supply or extract units | 0.5 |
| Fan assisted terminal VAV | 1.1 |

#### Equipment Design Life

A 50 year design life has been placed against the project as a whole. Whilst many of the construction materials and building aspects of this scheme may achieve this requirement, some elements of the mechanical design, even with a planned preventative maintenance programme, may be subject to replacement during the first 25 years.

The systems in the project comprise of many component parts making it impractical to list out the design life of all, however a number of the primary plant items/components have been identified in Table 4 below which cover a broad aspect of what is to be provided as part of the project and the associated minimum design life requirement for each item.

Table 7: Design Life for Mechanical Equipment

|  |  |
| --- | --- |
| Mechanical Element | Design Life (years) |
| Electric Heaters | 10 |
| Extract Fan(s) | 10 |
| Notes:   1. This information displayed in the table above is taken from CIBSE guide M. 2. The design life expectancies assume a strict and planned preventative maintenance regime being undertaken on the services post installation in accordance with guidance and manufacturers recommendations. | |

#### Suitability of Equipment for the Environment

The proximity of NOCS to the sea must be factored into the plant selection process.

The improper selection of mechanical and electrical plant will lead to poor life expectancies and undue cost to NOC in regard to unscheduled maintenance or replacement of plant items that have been subject to premature degradation at the hands of the environment.

The Contractor shall select plant to be suitable for the environmental conditions and specific attention is drawn to the following items and issues:

* External louvres shall be selected to limit weather ingress and specified for their climate location and application.
* Insulation products and cladding must be robust to the weather and birdlife.
* Any exposed electrical components (isolators, trunking etc.)

#### Testing and Commissioning Generally

The Contractor will be responsible for testing and commissioning new M&E systems on completion of the works.

Testing and Commissioning shall be carried out in strict accordance with the relevant British Standards, BSRIA (Building Services Research and Information Association) and CIBSE (Chartered Institution of Building Services Engineers) documents.

#### Electrical Supplies to Mechanical Plant

Local electrical supplies to mechanical plant and equipment shall be provided as necessary. All installations shall be compliant with the BS7671 current edition.

Single and three phase Isolators shall be provided to items of fixed equipment.

Fused connection units shall be utilised for connection of small items of fixed equipment.

Electrical supplies shall be provided to local extract ventilation fans which may be required to suit the new locations of ventilation grills within the meda plant rooms.

The wiring system for mechanical power supplies shall be provided in multi-core and earth LSZH cable laid in cable baskets internally or multi-core XLPE/SWA/LSZH cables where they run to external plant. All circuits shall be protected by a circuit protection device which incorporates residual current device where required.

#### Lightning Protection System

The building is currently provided with a lightning protection system including protection against direct and indirect strike. The existing air termination system is formed of tapes fixed to the building fabric and several natural components. The air termination system shall be replaced as part of the works, including the connections between the down conductors and air termination system. The replacement works shall include phased removals and replacement to suit the works programme and protection at all stages of the works.

The Contractor shall carry out all works associated with the lightning protection system. All works associated with the system shall be in accordance with the requirements of BS EN 62305 and shall utilise proven methods, components and software where available. The lightening protection system shall be compatible with the building design and new roof and wall cladding material.

A risk assessment shall be carried out by the Contractor for the building as a whole to determine the level of lightning protection system necessary to reduce the associated risks to a tolerable level. The replacement air termination system shall be provided in a manner commensurate with the outcome of that assessment. The roof material is to be changed as part of these works and the assessment shall be cognisant of this. The air termination system, including its detailing and installation shall be fully compatible with the roofing installation and particular attention is drawn to the need to avoid contact (and water run off) between copper materials and the zinc roof. Puncture of the roofing material in the event of a strike is not acceptable. Bimetallic ‘joints’ are likely to be required where connections are formed onto the existing down conductors. Separate sections of the roof structure / finishes shall be bonded together so as to prevent development of excessive potential (and therefore flashover) in the event of a strike. Other components at roof level (or below) requiring bonding so as to prevent flashover shall be bonded as part of these works.

The detailed arrangements of the works shall be co-ordinated with the roofing supplier and installer so as not to invalidate warranties provided by them. The complete lightning protection system shall be certified as compliant with BS EN 62305 at completion of the works. Any variations form the standard necessary on account of incorporating the existing down conductors and earth terminations or limitations imposed by the existing geometry of the building shall be notified at the completion of the design works (and in any case before the commencement of works on site).

#### Public Address System (Tannoy Speakers)

There is an existing Tannoy speaker system installed on the Quay side Nodes. Each of the speakers shall be removed at the face and the brick surface made good. The cables shall be cut and made safe on the internal face of the wall with a termination box, or similar.

#### Solar Photo Voltaic System

A grid connected solar thermal system is currently installed on the roof of Node 8. The contractor shall remove the installation as part of the roof replacement works and relocate the solar thermal system on a grid on top of the Energy Centre building (adjacent to where they are currently located).

If space is not suitable at this location, then the Contractor must relocate the solar thermal system back to its original location (including connections and lightning protection), once the new roof has been installed, with agreement from the roofing specialist.

The Contractor must gain Planning Permission if this is required by Southampton City Council for these relocation works.

The contractor shall allow for the safe storage of the equipment during the works. The connections shall be safely isolated to allow NO UNAUTHORISED connection from third parties, including the Client.

### External services design

The Contractor shall allow for any survey and protection of services to maintain the operation of the site. It is not envisioned that any diversion works will be necessary.

The services known to be present within the works areas comprise of gas, electricity LV and HV, water, sewage and communication / data cables.

The Contractor will be required to identify the services on site and carry out all work in connection with any diverting, altering and maintaining such services as may be necessary for the execution of the works and to allow the erection of the scaffold and any cranage. The Contractor needs to agree any services’ diversions with NOC. The Contractor shall allow for sufficient time in their programme for this work.

Any surveys carried out by the Contractor shall be made available to NOC for NOCS future use and distribution to 3rd parties as they wish.

## Value Engineering Options

The Contractor shall consider value engineering options as part of their design and construction solution. Any proposals must be submitted to NOC in advance for review and approval which includes insurer approval.

The assessment of the value of any proposal shall be at the sole discretion of the Client taking into account only those benefits to the Client (not of those to the Contractor), including the following:

* Additional sums or reduced sums affecting the contract sum;
* Contract duration and programme;
* Life expectancy and guarantees;
* Consequential works;
* Effect upon users within the building.

The Client is under no obligation to accept any alternate proposal as part of the tender process, however bidders are welcome to include innovative methods of working as options within their methodology.

In submitting any proposal to vary the materials, the Contractor shall provide full information in a timely manner to allow an informed decision to be made.

The Contractor shall allow sufficient time within the contract programme for any such decision to be made and shall be fully liable for the time needed to present the information required, for it to be evaluated by the Client and a decision to accept, or reject, the proposal.

No extension of time under the contract shall be awarded as a result of this process.

## Requirements of Others

### Local Authorities

The Client shall be advised on the cost implications of the requirements of local and statutory undertakers and suggesting possible alternative construction solutions.

The Contractor shall liaise local and statutory authorities and statutory undertakers and comply with their requirements in connection with road closures, traffic restrictions, hoardings, services mains diversions and connections and the like and liaising with the local and statutory authorities and statutory undertakers to check that those arrangements comply with their requirements.

With the prior written agreement of the Client on their behalf, the Contractor shall place orders with local and statutory authorities and statutory undertakers.

### Other Consents

The Contractor shall apply for and use all reasonable endeavours to obtain all relevant consents (except for the application of the planning consents) from time to time as may be appropriate before and throughout the course of the Project.

They shall keep the Project Manager fully informed of the progress of the Contractor's applications for those relevant consents and, if and when they are obtained, supply the Client with complete and full details of those applications together with copies of all consents.

Appeal against the refusal or taking such other action as may be appropriate to proceed with the Project if such a relevant consent is refused, subject to the approval of the Client (such approval not to be unreasonably withheld).

Identify the need for any agreements with the owners and occupiers of neighbouring property for oversailing, the release of rights of way, light and air or otherwise or the extinguishment of interests in, over or with respect to the Property to the extent that those rights and interests would be infringed by the Project or would prevent or impede the carrying out or progress of the Project or its use and enjoyment. Liaising with the Client to facilitate entry into those agreements, including as provided for in the Construction Contract.

## Using the Contractor’s design

Requirement as per Clause 22.1 *‘Using the Contractor’s Design’.*

## Government soft landings

Government Soft Landings (GSL) must be adopted and implemented by the Contractor. GSL is about embracing a mind-set and a process to align design and construction with operational asset management and purpose. This alignment means that the needs of the end-user shall be considered and addressed throughout the project lifecycle, from project initiation onwards.

The government objective is “…to champion better outcomes for our built assets during the design and construction stages through Government Soft Landings powered by a Building Information Model (BIM) to ensure that value is achieved in the operational lifecycle of an asset.”

GSL Core Principles

|  |  |
| --- | --- |
|  | Core Principles |
| 1 | Adoption of Government Soft Landings process and embed within appointments |
| 2 | Operational Leadership |
| 3 | Government Soft Landings Roles and Responsibilities established |
| 4 | Commitment to Aftercare process |
| 5 | Use of feedback and Lessons learnt to inform design |
| 6 | Setting of Performance Objectives |
| 7 | Early Involvement of the Facilities Management and Asset Management Team |
| 8 | Early Involvement of the end users |
| 9 | Regular design reviews on maintainability |
| 10 | Communicate and Inform |

More information on GSL can be found at <http://www.bimtaskgroup.org/gsl-department-guidance-documents/>.

The NOC Project Manager or another nominated member of the Estates team, or staff, shall undertake the role of GSL Champion.

The Contractor shall ensure that the needs of key stakeholders [including end-users and facility maintenance] are considered and incorporated in the development of options and design development throughout their involvement in the project.

The Contractor shall work with the NOC to identify targets and to establish the systems and processes through which required outcomes (functionality & effectiveness, cost and environment) shall be measured under the Post Occupancy Evaluation (POE).

The Contractor shall not be required to have active participation in the POE beyond the Defects Period.

# Completion

## Completion definition (re: ECC 11.2(2))

Completion is defined as being the moment at which the Works have been completed; defects that would otherwise prevent the Client from using the Works have been rectified and; the handover documentation has been approved by The Project Manager.

Upon completion and final handover of the Works the Contractor shall demobilise at the earliest practicable opportunity.

The Contractor will be responsible for removing from site all plant and equipment, site offices, welfare facilities, storage facilities, unused materials, all waste and contaminated materials and for making good to all disturbed surfaces. The contactor must ensure the site is left in a clean and tidy state in each area they have worked in, taking consideration that others will be working in plant rooms and internal spaces throughout the works.

## Sectional completion definition (re: ECC 11.2(2), X5.1)

Sectional completion shall be considered, and the Contractor shall propose a schedule of completion within their tender programme.

## Operation and Maintenance Manuals

The Contractor shall produce comprehensive operations, maintenance and inspection manuals for the complete installation/refurbishment. The Operations and Maintenance manual shall be produced in accordance with the agreed Handover Procedure and as per Government Soft Landings.

The Operation and Maintenance Manuals shall include the complete information required for the operation of the NOCS Roof and complete information on the required procedures for the maintenance.

The Operation and Maintenance Manuals shall include, but not be limited to, the following documents as appendices:

* ‘As Built’ architectural, structural, electrical, mechanical, drainage, survey and external works drawings in native format and hard copy;
* As built details of the services;
* Complete manufacturers manuals and certificates for the supplied equipment and main materials;
* Lists of tests with photographic evidence (date and time stamped with annotations for exact locations marked on a suitable plan for easy identification) and signed certificates of completion;
* Maintenance recommendations and procedures.

## Health and Safety File

The H&S File must include as a minimum the following:

* Full contact details of all sub-contractors used to include work performed;
* Full contact details of all suppliers used to include materials supplied;
* As-built record drawings and plans;
* General details of construction methods and materials used;
* Details relating to health and safety that may affect future alteration works;
* Details relating to health and safety which may affect future demolition or dismantling works;
* Details relating to health and safety that may affect cleaning and maintenance works;
* COSHH Statements for materials that may affect health and safety;
* Details of equipment maintenance requirements;
* Maintenance procedures and requirements;
* All O&M manuals (see section 4.3);

## As-Built Drawings

A complete set of As-Built drawings shall be included as part of the Health and Safety File. Drawings shall be provided in hard copy, and also electronically in their native format.

## Training

The Contractor shall provide a training schedule two months ahead of handover to allow client to ensure availability of staff who will be responsible for maintaining and operating the new installation.

## Final clean

The Contractor shall ensure that works areas, including the location used for laydown and staff accommodation, are cleaned ahead of mobilisation. The Contractor shall be responsible for seeking acceptance from the Project Manager that this has been carried out to their complete satisfaction.

## Security

Security passes and keys should be handed back to NOC Security in line with NOC procedures referenced at 2.1.16.

## Correcting defects

Arrangements for defects correction shall be made via the Project Manager.

## Pre-completion arrangements

The Contractor shall ensure that all necessary documentation is complete and available for the handover, the Facilities Management team have been given adequate opportunity to witness testing and commissioning, have had sight and agreed the format of the handover documentation, have had sufficient time to review the documentation and are familiar with the project details.

### Notice of completion

The Contractor shall give NOC at least 2 weeks’ notice of the anticipated dates of completion of the whole or parts of the Works.

### Timing of Tests and Inspections

The Contractor shall agree dates and times of tests and inspections with NOC four weeks in advance, to enable NOC and other affected parties to be present. Three working days prior 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.

### Test Certificates

The Contractor shall submit a copy of each certificate to NOC as soon as practicable and at least within 3 days of the test being completed and keep copies of all certificates on site. All test certificates are to be completed and form part of the maintenance manuals.

### 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 Works Contract or appear that they may not be in accordance, submit proposals to NOC for opening, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution. Such proposals may be unacceptable to NOC and they may issue contrary instructions.

### Measures to Establish Acceptability

Wherever inspection or testing shows that the work, or products 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.

## Use of the works (re: ECC 35.2)

No additional requirements above that described in ECC clause 35.2.

# Programme

## Programme requirements (re: ECC 31.2, 31.3)

The Contractor shall prepare and agree with the Client an integrated master programme using Microsoft Project or a similar software approved by the Client, relating to the completion of the Construction Works by the Date for Completion as set out in the tender documents and requirements. The master programme must include details for the following:

* Dates of design, production information and proposals provided by the Client’s relevant members of the Project Manager, Contractor, Subcontractors and/or Suppliers, including reviews, inspection and checking;
* Procurement dates for long lead items including subcontract procurement items;
* Planning and mobilisation of the Contractor;
* Earliest and latest start and finish dates for each activity and identification of all critical activities;
* Dates for the issue of information the Contractor is required to provide during the Pre-Construction Services Period and selection of Subcontractors;
* Running in, adjustment, commissioning and testing of all engineering services and installations;
* Work resulting from instructions issued in regard to the expenditure of Provisional Sums;
* Work by or on behalf of the Client. The nature and scope of which, the relationship with preceding and following work and any relevant limitations shall be suitably defined in the Contract documents; and
* Date of possession of the Site and completion of the Construction Works.

The Contractor shall provide to the Client a programme identifying the critical path in terms of the successful delivery of the Pre-Construction Services, including highlighting all elements where specific input is required from the Client and the Project Manager so as to ensure their awareness of time critical issues. They shall expand, update and adapt the master programme as may be necessary to reflect further information or changes in circumstances, regularly monitoring progress and, when appropriate, initiating proposals for corrective action to ensure adherence to the master programme.

They shall Prepare and agree with the relevant members of the Project Manager a detailed package procurement programme with details of dates for the production and completion of any working drawings, specifications, bills of quantities, pricing schedules and all other relevant information including dates for preparation and dispatch of sealed-bid tender documents, mid-tender interviews, the tender period, a period for evaluating and reporting on tenders received and target dates for placing each sub-contract order.

The Contractor shall advise on the availability, selection, and relative suitability of alternative materials and components, methods of working, building systems and equipment, preparing material and component flows. They shall identify those materials and components that require advance ordering and processing and providing and monitoring the details for advance ordering and processing for the master programme. They shall manage the timely preparation of the scheme design, detailed design and production information, to ensure the design, procurement and construction is maintained in accordance with the master programme.

The Contractor shall prepare and agree a programme of design information with the relevant members of the Project Manager and sub-contractors who have a design responsibility. Co-ordinating the production of that information in accordance with the programme and ensuring it is provided to all relevant parties to allow them to fulfil their design and design co-ordination responsibilities. Adjusting and revising this programme as agreed with the Client, the relevant members of the Project Manager and sub-contractors as dictated by the requirements of the Construction Works.

They shall liaise with the relevant members of the Project Manager regarding drawing and information schedules advising on dates for the release of information from the Project Manager. Discuss and agree the drawing and information schedules with the Client and the relevant members of the Project Manager. Manage the procurement process in line with the agreed programme.

Finally they shall prepare in conjunction with the Client and the Project Manager, handover programmes which coordinate the receiving and release of areas of the Site with the construction programme.

## Work of the Client and Others (re: ECC 25.1, 60.1(5))

No work by Others is anticipated.

## Information required

If the Contractor’s programmed activities are related to the release of information from the Client or Project Manager then such information shall be clearly listed on an information required schedule which is to be issued alongside the programme.

## Revised programme

When the Contractor submits an updated programme they shall highlight any changes made to tasks, descriptions or durations on the programme. The submissions should be accompanied by brief commentary of the changes and a description as to why they have occurred.

# Quality Management

## Quality management system (re: ECC 40.1)

The Quality Management plan created during the PCSA Stage shall remain extant throughout the project.

## Quality policy statement & quality plan

### General quality of 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 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 NOC 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.

### Quality Control

The Contractor shall establish and maintain procedures to ensure that the Works, including the work of all sub-contractors, comply with specified requirements. The Contractor shall maintain full records, keep copies on site for inspection by NOC, and submit copies of parts of the records on request.

The records must include:

* Identification of the element, item, batch or lot including location in the Works.
* The nature and dates of inspection by the Contractor, tests and approvals.
* The nature and extent of any non-conforming work found.
* Details of corrective action

### Management and communication system

The Contractor shall propose and implement an approved document management system for design information, drawings and specifications, and other control documents and records as may be agreed with the Project Manager.

# Tests & Inspections

## Tests and inspections

The Contractor shall provide to NOC a Testing and Commissioning Plan consisting of a detailed programme and method statement for all testing, pre-commissioning and commissioning works to allow agreement of the plan at least 6 weeks prior to the commencement of commissioning. The timing and method of all commissioning shall be subject to the agreement of NOC.

After the installation or part thereof has been set to work and adjusted, the Contractor shall demonstrate its operation at a time selected by, and to the satisfaction of NOC.

The tests shall demonstrate, amongst other things, that the plant and equipment provided complies with the Specification in all particulars and is of adequate capacity for its full rated duty and; that all electrical circuits are properly fused, graded and protected, and conduit systems are electrically continuous and properly earthed.

Any representative of NOC shall be at liberty to be present and to participate in the tests. This shall not relieve the Contractor of their responsibilities for carrying out the tests satisfactorily.

The Contractor shall make all necessary records during the tests and, on completion thereof, shall provide NOC with a test report and record, both in duplicate.

The Contractor shall provide all necessary equipment and resources, including adequately trained and experienced personnel, for carrying out the testing and commissioning.

If tests fail to demonstrate the satisfactory nature of the installation, or portion thereof, the Contractor shall carry out such alterations or replacements as are required to ensure satisfactory operation of the works. NOC shall be at liberty to call for a further test when such alterations have been made, and NOC’s decision as to what constitutes a satisfactory test shall be final.

Concealed or buried cabling shall be inspected and tested in the presence of NOC before any permanent covering is applied. The Contractor shall give 10 working days’ notice in writing to NOC when the work is ready for inspection, and NOC shall, without unreasonable delay, carry out such inspection and/or witness the tests, unless NOC informs the Contractor that the inspection is considered unnecessary. In no instance shall concealed or buried work be covered without being tested. These general requirements as to the testing shall be read in conjunction with any particular requirements specified elsewhere.

It is important that testing does not disrupt NOC’s existing installation or systems, and the Contractor shall be fully responsible for any costs or consequential losses arising from any failure to ensure this.

# Management of The Works

## Project team

### Site Organisation

The Contractor shall maintain a site organisation under the full-time control of the Contractor’s Project Director who is expected to be fully experienced in this type of work, conversant with all relevant standards and capable of assuming complete responsibility for a contract of this nature.

They will have the back-up of a complete team of Engineers and Technicians including for example a Contracts Manager/Project Manager, a Site Agent, a QA Manager, a H&S Officer, a Logistics Manager and a full Design Team.

### Key Personnel

The following are considered to be key personnel for this project:

* + Project Director
  + Commercial Director/Manager
  + Contracts Manager/Project Manager
  + Site Agent
  + H&S Officer
  + QA Manager
  + Design Co-ordinator
  + Principal Designer
  + Environment Manager
  + Appointed Ecologist

#### Environmental Manager

The Contractor shall appoint a suitably qualified and experienced Environmental Manager within the Project Team who will be responsible for the monitoring and implementation of the CEMP. Suitably qualified and experienced shall be defined as a minimum of five years relevant experience and a degree qualification (or equivalent) in a relevant subject. The CV of the Environmental Manager shall be reviewed and agreed by The Client prior to the start of construction.

#### Appointed Ecologist

The Contractor shall appoint a suitably qualified and experienced Ecologist within the Project Team who will be responsible for the specific ecological issues, to include but not necessarily limited to advise on the HRA process, input to method statements, ecological survey/inspection, application for protected species and tree licences. Suitably qualified and experienced shall be defined as a minimum of three years relevant experience and a degree qualification (or equivalent) in a relevant subject. The CV of the Ecologist is to be reviewed and agreed by NOC prior to the start of construction.

### Changes to proposed management structure

Any alternative staffing proposals made by the Contractor shall be at least equal in standard to the original proposals and are subject to the approval of NOC.

## Communication system (re: ECC 13.2)

Electronic mail shall be used for project related correspondence. Such communications have effect as of the time of being sent providing this is within the working hours specified in S205. Where electronic mail is sent outside of these hours it shall be deemed to have been received at 0800hrs on the next working day.

## Management procedures

### Site progress meetings

Progress meetings will normally be held monthly. The contractor shall attend all meetings and inform sub-contractors and Suppliers when their presence is required.

The Contractor shall provide a progress report (both soft and hard copies) 5 days before each meeting, which includes, as a minimum, the following:

* Progress versus programme;
* Delays;
* Review of the programme for the following month;
* Planned disruptions to services;
* Requirements for external support or assistance;
* Schedule of milestones showing those achieved and dates for future milestones;
* Change Schedule with value of change to date (Configuration Control);
* Schedule of early warnings and compensation events;
* Issues Log;
* Schedule of Requests for Information showing outstanding items;
* Quality assurance report and validation of works against Proof of Compliance Plan;
* Site Waste Management Report including details of what waste has been disposed off-site and what has been recycled;
* Health and Safety Report including, accident frequency rates (AFR) for the preceding month and the cumulative AFR for the project since commencement on site. The Contractor must use the NOC accident form. See NOC Policies and Procedures within the Site Information document for details;
* Environmental report including, but not limited to:
  + Summary of environmental inspections/surveys undertaken
  + CEMP implementation;
  + Environmental incidents;
  + Monitoring against water, fuel and energy consumption;
  + Waste returns and monitoring against waste targets as part of the SWMP; and
  + Asbestos and hazardous materials.
* Resources on site & key named persons;
* Availability of materials;
* Lessons Identified Log.

Additional progress meetings may be required upon request in order to update key stakeholders on progress.

On the Thursday of each week, the Contractor will also provide a programme of the works they consider will be carried out in the following week and the week after to provide NOC with as much advance information as possible.

### Programme / Progress

The Contractor shall record progress on a copy of the programme kept on site. If any circumstances arise which may affect the progress of the Works, the Contractor shall put forward proposals or take other action as appropriate to minimise any delay and to recover any lost time in accordance with NEC clause 32.

### Daily labour returns

The Contractor shall submit on a weekly basis; their daily labour returns to the Project Manager.

### Construction Documents

The Contractors shall provide, no later than 2 weeks before the commencement of construction, all Construction Documents relating to the complete works package for review by The Project Manager.

The Contractor shall keep copies of all agreed documentation and associated records on-site for inspection by The Client, Project Manager or Supervisor.

### Working Drawings

The Contractor shall provide working drawings as required by the Project Scope.

No additional monies will be paid due to site problems encountered through lack of working drawings or the lack of planning, coordinating and sequencing of the works required to produce the working drawings. No additional time will be allocated for the resolution of design issues which would have been foreseen by the production of working drawings in a timely manner. Working drawings shall include the text of all labels to be installed during the works.

A copy of the working drawings shall be available on site for inspection during the works. These drawings shall be marked up with all site alterations, Project Manager’s Instructions etc. as the work progresses.

## Contractor’s application for payment (re: ECC 50.2)

Payment applications shall be made by email in .pdf format. Where spreadsheet software (such as Microsoft Excel) has been used to make calculations and/or create tables then the Contractor shall also make this available to the Project Manager upon request.

# Working with The Client & Others

It is highly likely that the Contractor will need to work within the roof voids, however it is anticipated that the Contractor will need access externally to spaces and will limit the need for internal areas works. In the unlikely event that emergency maintenance is required by NOC Estates then they will be responsible for coordinating this with the Contractor via the Project Manager.

# Services & Other Things to be Provided

## By the Contractor for the use by the Client, Project Manager or Others

### Supervisor’s Office

The Contractor shall provide, within their site accommodation, a private office for the use of the Supervisor to the same standard as their own accommodation and containing 1no desk; 2no office chairs; and internet access (the cost of which shall be borne by The Contractor).

## By the Client (re: ECC 25.2)

### NOC Support & attendance

Where the Contractor requires NOC support or attendance this will have to arranged and co-ordinated in advance through the NOC PM. A minimum of 7 days’ notice will be required for support or attendance.

### Access to NOC Southampton

The Contractor should be aware of possible delays in gaining access to NOC Southampton due to congestion during peak times and rail movements in the port area. The Contractor is to note the restriction on entry times for material deliveries detailed in this document and the limitation of parking spaces at NOCS and the Contractor is required to contain all of their staff or site parking within the compound indicated which is likely to be a maximum of 4 car parking spaces. The Contractor should consider providing minibus/coaches for their staff to reduce the number of vehicles entering NOCS.

The normal route to site is along Central Road and then European Way.

### Utility connections for site accommodation

Water and power will be provided by NOC for the Contractor’s offices free of charge. The Contractor will be responsible for making the connections to the power, water and sewerage system and installing relevant metering. The Contractor’s proposed connections will need to be agreed and approved in advance by NOC. Water and power will also be provided for any on-site batching required. Generators will not be permitted on the scaffold.

### Parking for Contractor Personnel

The availability of parking for the Contractor’s private vehicles is very limited in and around the areas affected by the work. The Contractor must use their designated yard area for day-to-day parking. Contractors’ visitors (for example architects) may use the NOCS guest parking. For this, all vehicles will require site vehicle passes issued by NOCS reception and applied for 3 days in advance. A maximum of 3 works vehicles will be allowed at any one time in the visitor’s car park, so the Contractor is encouraged to use public transport or arrange for mini-buses where necessary.

### Covered Storage for Materials

No covered storage will be provided by NOC to the Contractor. If covered storage is required on site, the Contractor will provide such storage within the confines of the site.

# Health & Safety

## Health & safety requirements (re: ECC 27.4)

### General

All UK health and safety legislation shall apply, including the requirements of CDM Regulations 2015. NOC will submit the F10 form to the HSE to advise the HSE of the principal contractor’s appointment. Thereafter, the contractor will update and advise the HSE to comply with CDM requirements.

The Health and Safety Plan, Policy Documents and local Southampton regulations shall be fully complied with. The Contractor must be aware that Southampton has a large domestic population, families, schools, universities and the Contractor shall take this into consideration. Many staff, students and visitors access the NOC site on foot, by bicycle, or other two-wheel means, the safety of our occupants is of paramount importance.

### Fire alarm tests

The NOCS site has audible fire alarms situated around the buildings. This is tested every Monday morning at 8:45am. In order to ensure the fire alarm is audible when working on the roof, the Contractor must be present on the roof sections they intend to work on that week at this time, to ensure the alarm is audible, making allowance for any works noises that may be present during the roofing works.

The Contractor must only assemble in one muster point, which will be Assembly Point E.

Further detail can be found in the standard NOC induction form which includes the Emergency Evacuation Procedure as detailed in the Site Information.

### Site briefing & tool box talks

The Contractor is required to ensure all personnel and visitors receive the necessary site induction prior to entering the site. The Contractor is to maintain a register of all those personnel who have received such briefings. The Contractor is to ensure that tool box talks are conducted for each member of staff at least once per week as well as bespoke briefings prior to commencing a new phase of work. Attendance at all tool box talks and briefings is to be recorded in a register together with the topics discussed.

## Method statements

Any works being carried out with the use of cranes or any other lifting equipment must have an approved Method Statement, Risk Assessment and Lifting Plan, which must be approved by NOC prior to works commencing.

## Legal requirements

No additional requirements.

## Inspections

The contractor shall keep a copy of their health and safety procedures on site for review by the Client, Project Manager and/or Supervisor upon request.

## Deleterious & hazardous materials

In line with the recommendations set out in the BCO publication ‘Good Practice in the Selection of Construction Materials’, the Contractor shall not use deleterious or hazardous materials in the execution of the project.

### Pre-construction Information

The Contractor’s attention is drawn to the issues identified in the Pre-Construction Health and Safety Information provided in Appendix F of this booklet. The accuracy and sufficiency of the information provided is not guaranteed by NOC or NOC and the Contractor must ascertain for himself any information he may require to ensure the safety of all persons and the works.

Prior to any construction activities the Contractor will submit to NOC and the Principal Designer a copy of their H&S Plan for approval.

The information provided in the Pre-Construction H&S Information will be used as a basis for the H&S Plan. The format and content of the H&S Plan will be agreed in advance with NOC.

# Subcontracting

## Restrictions or requirements for subcontracting

The roofing work is to be undertaken by a VM Zinc at work approved contractor and is to be covered by a 30 Year guarantee for materials and workmanship

# Title

## Marking

Should marking of equipment be undertaken the Contractor shall assist the Supervisor in ensuring that:

* The items in question have been properly and securely set aside at the factory or workshop or other place where any such items have been manufactured, assembled or constructed or at any place where they are lying or from which they are being obtained;
* The items in question have been suitably marked or otherwise identified so as to show that their destination is the Site, that they are the property of the Client and, where relevant, to whose order they are held.

## Materials from excavation and demolition

No exceptions to NEC 4 ECC Clause 73.2 which states ‘*The Contractor has the right to use materials from excavation and demolition unless the Scope states otherwise.’*

# Ultimate Holding Company Guarantee (Option X4)

Form to be provided by Client prior to contract award.

# Transfer of Rights (Option X9)

No additional requirements above those contained within X9.

# The Contractor’s Design (Option X15)

The contractor is to retain copies of drawings, specifications, reports and other documents in accordance with X15.4. Files shall be retained in their native file format and as pdf.

# Client’s Work Specifications & Drawings

## Architectural Drawings

The design intent is shown on drawings prepared by Stride Treglown and included within Appendix D.

# Appendices

Appendix A: SCC Planning Confirmation

Appendix B: University of Southampton Term Times

Appendix C: Ocean Business Event Information

Appendix D: Tender Design Drawings

Appendix E: Specification of Materials and Workmanship

Appendix F: Pre-Construction Health & Safety Information

Appendix G: Risk Matrix