

## **INVITATION TO TENDER FOR**

Fleet Air Arm Museum (Environmental sustainability and environmental resilience of Cobham Hall) - Design & Build.

WORK TO BE UNDERTAKEN AT FLEET AIR ARM MUSEUM –  
B3151, RNAS YEOVILTON, BA22 8HT.

### **Annex A- Scope of Requirement**

The National Museum of the Royal Navy  
HMS Naval Base (PP66)  
Portsmouth  
PO1 3NH

ISSUE: 001

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## Annex A

### 1.0 Project Background

- 1.1 The Fleet Air Arm Museum (FAAM) is part of the National Museum of the Royal Navy and houses the historic Naval aircraft element of the NMRN Collection. The reserve collection storage building (Cobham Hall) is situated at Yeovilton, Somerset, on a site positioned opposite the main Museum site and having its own access. It does not require any specific MOD approved access or security controlling other than through Communication with Fleet Air Arm Museum staff.
- 1.2 Cobham Hall was constructed in 1999 and represents a very high quality (at the time) state of the art, climatically controlled museum storage building. The store is a steel portal frame structure (approx. size 100m X 60m), with block walls with metal sheet cladding. Internally there is a large open storage area, mezzanine with supporting steelwork and further Office and storage rooms. The roof structure is of the type common in the year of construction 1999 with the insulation values required at the time, being a steel portal frame building with transverse purlins set at 1500mm centres supporting composite panels. This has been over-skinned since construction (estimated in 2005).
- 1.3 In March 2021 a comprehensive survey was commissioned by the surveyors 'Gleeds' which identified and costed a significant backlog of maintenance, making proposals for priority of works. At Cobham Hall the priority identified was work required to ensure the building remains watertight – provision of new finish coatings to roofing panels works, and replacement of rainwater goods, etc.
- 1.4 Since the survey, the priority has further increased to urgent as it is evident that Cobham Hall is vulnerable to extreme weather events. In May 2023, following a thunder-storm Cobham Hall suffered a significant flood with over 15,000 litres of water entering the building. The FAAM Team initiated the Emergency Salvage Plan and with their good work fortunately no collections were damaged. This has highlighted that new rainwater management measures are essential.

### 2.0 Requirements of Contract

- 2.1 The project will appoint up to two prime contractors on a 'Design and Build' contract to work with the NMRN Conservation Team and local FAAM Operation and Facilities Team, to design and install a package of works:
  - a) Installation of Photovoltaic (PV) Solar Panels to 30% of Cobham Hall south-west roof elevation (the maximum given roof loading data), with associated battery storage, estimated to be in the region of 400 - 500 panels providing 176kWp
  - b) Provision of surface preparation and a new roof coating across whole roof elevation and end panels of Cobham Hall. To include Delcote architectural coating system (or similar) incorporating Seamsil to the edges and lap ends.
  - c) Provision of new rainwater management system (rainwater goods).
  - d) Installation of energy-efficient light-fittings throughout Cobham Hall.
  - e) Installation of additional ground-level PV array to north-west of Cobham Hall, estimated at 200 panels providing 132 kWp

- 2.2 The tenderer is required to design, manage and install every aspect of the works as shown. The Museum has agreed to split the works into two lots, but is not willing to split the scope of work into further fractions. However, contractors can appoint sub-contractors to complete some elements of the work.

The works have been clearly split as below: -

**Lot 1-** Design & Build – Roof / Panel Coating, Rainwater Goods, Solar PV (Roof Array) and Lighting Install

**Lot 2-** Design & Build – Ground Based Solar Array Install.

- 2.3 Tenderers can choose to bid for either or both of the lots but must make this clear within their submission. Tenderers cannot bid for individual elements of Lot 1.

- 2.4 **In compliance with CDM regulations, The Tenderer will act as Lead Designer and Principle Contractor for the project, and should reflect this in their tender submission.**

### **3.0 LOT ONE - Installation of Photovoltaic (PV) Solar Panels to 30% of Cobham Hall (south west elevation).**

- 3.1 The Museum wishes to Install Photovoltaic (PV) Solar Panels to 30% of Cobham Hall south-west roof elevation (the maximum given roof loading data), with associated battery storage, estimated to be in the region of 400 - 500 panels providing approx. 176kWp.
- 3.2 The Museum has worked to 'scope' potential capacity and to conduct a basic desktop appraisal of options for this roof array. The Museum has progressed it's G99 application to the grid and we expect to have the result of this to confirm capacity by the 18<sup>th</sup> of September 2023 (presumption). Any final solution needs to consider best value and include battery provision to enable to Museum to capitalise on its own generation to overall best efficiency. Tenderers must conduct their own calculations and also consider the roof load bearing (see 3.4 below), but we would expect a submission of circa 400 - 500 panels and see any related battery storage options that we can adapt based on the G99 results.
- 3.3 We have a great relationship with colleagues at RNAS Yeovilton who do not consider our plans to install Solar PV be an issue. They have given us informal advice prior to issuing this tender. However, we have progressed an application for a certificate of lawful development to seek formal permissions for this installation through the local authority. Please consider this in advance and within the remit of your proposed design. Any subsequent works or application that may be required would be subject to you to manage on behalf of us as the client.
- 3.4 The Museum has undertaken a structural survey of the roof to identify load bearing capacity. The Brody Forbes report is available at Annex H1/H2 and your proposal must consider this survey with any solution and specification suitable given these restrictions.
- 3.5 The Brody Forbes analysis found that there should be enough capacity in the roof structure to support the proposed panels over the first 10m (from the eaves) on the South side. At the time of writing this tender no information was known about the weight of the panels so a typical weight of 0.2kN/m<sup>2</sup> was used in the Brody Forbes analysis. Your submission will need to revisit these calculations to ensure an appropriate design proposal.

- 3.6 Whether bidding for LOT TWO or not, any design of Solar panels for the south-west roof elevation must consider the ground level PV array, to be added either now or at a later date. The project should consider the potential for future expansion and be designed to facilitate this addition and any future proofing.

#### **4.0 LOT ONE - Roof Coating / End Panels - Cobham Hall.**

- 4.1 The Gleeds Survey (Annex N) allowed a desktop appraisal of the roof, it's condition and related remedy. We require a new roof coating across whole roof elevation and end panels of Cobham Hall. The works also include remedial works to the coated metal cladding on both the front and rear elevations. The coating has heavily faded and there are some areas where the coating had failed and the substrate has been exposed.
- 4.2 The Museum has since undertaken its own drone survey to further assess the roof's condition. This can be seen via a digital one drive link. For access – please email Marc Farrance, General Manager – [marc.farrance@nmrn.org.uk](mailto:marc.farrance@nmrn.org.uk).
- 4.3 The solution needs to consider a Delcote architectural coating system or similar, incorporating Seamsil or similar to the edges and lap ends. Delcote is an inorganic coating with an outstanding proven resistance to weathering from UV, rain, snow and temperature extremes. It retains high movement accommodation, flexibility and adhesion without compromise. The solution requires an effective long-life remedy to address the problem of corrosion at cut edges and overlap joints on our profiled roof areas.

#### **5.0 LOT ONE - Provision of new rainwater management system (rainwater goods).**

- 5.1 The recent flooding at Cobham Hall and intense rain in our locality has highlighted the poor condition of the buildings rainwater goods. There is heavy corrosion between the gutters and downpipes and leaks are clearly evident.
- 5.2 The coating to the internal gutters has failed in recent years and the Museum invested in some temporary repairs in Feb / March 2020, with some elements of the coatings being relined and re-applied. However, this has since failed and a new long-term solution is required to consider all products installed on the exterior of the building to protect it from the rain. This includes continuous spouting, hoppers, guttering, downpipes and rainwater heads etc.

#### **6.0 LOT ONE - Installation of energy-efficient light-fittings throughout Cobham Hall.**

- 6.1 The Museum wishes to install a series of new lighting internally throughout Cobham Hall to reduce electricity consumption and create Environmental resilience.
- 6.2 Regardless of any efficiency generated by the solar element of this project, the Museum currently has inefficient lighting within the office and stores at Cobham Hall, using conventional fluorescent fittings and within a large section of the building. The existing lighting within the aero hall is a particular priority and opportunity to create efficiency, with fittings both inefficient and difficult to maintain given the complexity of the footprint and access restrictions.
- 6.3 As part of this work, your proposal must consider and recommend a solution for the following like for like LED replacement of the aero hall fittings as below: -

162 x metal halide fittings in the aero hall, installed in pairs.

11 x 58w Fluorescent Batten w 3hrEM.

11 x 2D Square Bulkhead w 3hrEM.  
 6 x 2D Square Bulkhead  
 54 x 58w Fluorescent Battens.  
 10 x 58w Fluorescent Batten w 3hrEM (under mezzanine).  
 30 x 58w Fluorescent Batten (under mezzanine).  
 4 x 58w Fluorescent Batten w 3hrEM (mezzanine stairs)  
 1 x 58w Fluorescent Batten w 3hrEM. (unloading bay)  
 5 x 2D Square Bulkhead w 3hrEM. (Plant room stairs)

- 6.4 A full survey and solution is required as part of your proposal. The tenderers proposal must deliver lux level at the level of the floor not less than present levels.
- 6.5 Further detail around the lighting configuration at Cobham Hall can be found in Annex M – Cobham Lighting Detail. This annex contains detail on all current lighting, some 829 fittings in total (including aero hall).
- 6.6 A non-scoring option document is required to gauge the cost of replacing other fittings within Cobham Hall. As per the Aero Hall, this should be scoped on a like for like LED replacement and itemised per workspace – please refer ‘Annex M – Cobham Lighting Detail’, tab ‘fixture quantities’ and list by ‘location’.
- 6.7 The aero hall contains the Museum reserve aircraft collection and associated components and parts. FAAM expects that the proposed lighting upgrade should enable us to continue using the majority of this footprint during any remedial work. A phased approach during the works must be considered as part of the proposal, as we are unable to remove the volume of aircraft and create a clear floor area throughout the aero hall. A method statement detailing your approach should form part of the written submission.

## 7.0 LOT TWO - Installation of additional ground-level PV array to (north-west of Cobham Hall).

- 7.1 The Museum wishes to install **additional ground-level PV array to north-west of Cobham Hall, estimated at approximately 200 panels providing 132 kWp.**
- 7.2 The Museum has worked to ‘scope’ potential capacity and to conduct a basic desktop appraisal of options for this ground array. The Museum has progressed it’s G99 application to the grid and we expect to have the result of this to confirm capacity by the 18<sup>th</sup> of September 2023 (presumption). Any final solution needs to consider best value and include battery provision to enable to Museum to capitalise on its own generation to overall best efficiency. Tenderers must undertake their own calculations, **but we would expect to a submission of circa 200 panels and see any related battery storage options that we can adapt based on the G99 results.**
- 7.3 We have a great relationship with colleagues at RNAS Yeovilton who do not consider our plans to install Solar PV be an issue. They have given us informal advice prior to issuing this tender. However, we have progressed a formal pre-application enquiry to seek formal permissions for this development through the

local authority. We would like further advice on the timescales to progress this and would expect you to submit and steer any planning application on our behalf as part of this work.

## 8.0 Health and Safety

- 8.1 **In compliance with CDM regulations, The Tenderer will act as Lead Designer and Principle Contractor for the project.** The Museum would act as a 'client' with the contractor taking the formal lead on all aspects of the project.
- 8.2 The Contractor is to be responsible for all aspects of Health and Safety when undertaking the work and is to produce Risk Assessment and Method Statements (RAMS) for review by NMRN prior to undertaking the work. Health and Safety shall mean the Health and Safety at Work Act 1974, subsequent legislation and all relevant regulations and legislation identified and defined by the Health and Safety Executive. Any work area must be clearly segregated from the Museum Operation and allow tenants to maintain safe operations in the vicinity. Any risk assessment should acknowledge these points.
- 8.3 The contractor must demonstrate how it will abide by both the security and health and safety regulations of both Museum and RNAS Yeovilton in addition to any national regulations. This includes ensuring the Museum continues to comply to the 'SHEF' agreement (see Annex G). The Cobham Hall site is completely separate to that of the air-station and is not in anyway subject to MOD or RN governance in terms of site operations. However, to maintain our great working relationship with base colleagues we will uphold the 'SHEF' agreement as part of our approach to managing this project.
- 8.4 Provide Traffic Management in accordance with requirements of Fleet Air Museum. Note: although the site is closed to the general public, the Museum works with tenants who occupy the southern section of the site. A traffic management plan is required - this includes erection of working area, creating pedestrian walkway and adding all appropriate signage as required. (includes - Establishment, maintenance, removal and reinstatement of traffic management).
- 8.5 The Museum supports the air-station policy towards protection against **Foreign Object Debris (FOD)**.

**Foreign Object Debris (FOD)** is defined as, any material (including loose articles) that originates from any source, either external to, or part of, an aircraft, which can cause damage to that aircraft or its equipment.

RNAS Yeovilton is a busy and complex station with an ongoing operational status. Each of the station users, including the construction site personnel must be accountable in their area of responsibility (AOR).

FOD is extremely costly in terms of the financial penalties, the negative effect on client operations by reducing aircraft availability and more significantly, the potential risk to flight safety and consequently human life. It is, therefore, the duty of every person on both the site and Station to be aware of FOD and implement the following FOD prevention measures.

Some mandatory procedures: -

- Personnel are not to wear clothing with loose or broken fasteners, torn pockets or any other potential source of FOD and are to empty pockets.
- Personnel finding debris on the site are to retrieve and place in an appropriate disposal container.
- All instances of Loose Articles found are to be secured immediately.
- Construction waste is to be placed in covered skips. Covers are to be in place at all times and secured.
- Materials are to be securely fastened down by means of ties. Temporary weighting of items likely to be blown will not be acceptable.

## 9.0 General Points

- 9.1 **We aim to complete all works in advance of the 31<sup>st</sup> March 2024, works should be complete and invoiced prior to this date.**
- 9.2 The Contractor is to provide all personnel and materials to undertake the work. The contractor will also remove and dispose of any surplus or waste materials not required.
- 9.3 Any submission should account for overall project management which would include the liaison with relevant officers within not only the Museum, but also the air-station and any other agencies / stakeholders as appropriate.
- 9.4 The following appendices will also assist your submission: -

Annex A – Specification of Works.

Annex G – Fleet Air Arm Museum / RNAS Yeovilton SHEF Agreement.

Annex H1 – Brody Forbes - Cobham Hall Roof Structural Assessment for Solar Panels.

Annex H2 – Brody Forbes - Cobham Hall Roof Structural Assessment for Solar Panels (digital images).

Annex I – Cobham Location Plan – Showing Footprint, current Services and Traffic Management.

Annex J – Cobham Hall Roof Survey (drone footage / images).

Annex K – Cobham Hall Electricity Consumption Analysis.

Annex L – Cobham Hall Flood Photos – May 2023.

Annex M – Cobham Lighting Detail.

Annex N – Museum and Cobham Hall Gleeds Condition Report.

*(Annex B-F is within the ITT documentation)*