Mechanical & Electrical
Design & Project Management

# RAF CAM - Cranwell

## Ibex Report on services to include Power, Gas and Water

## 30th March 2020

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**Utilities Survey and Review:**

Ibex have undertaken a review of the services and utility requirements for the proposed RAF CAM development to assess the loads and requirements and how these will integrate, if necessary, with the existing Station infrastructure, or if new services are required.
The services and utilities to be assessed include power, gas and water.

The assessment identifies suitable connection points to the existing Station systems and any upgrade works required to these systems to support the RAF CAM development and includes recommendations for further investigations at the detailed design stage.

**Power**

In assessing the loads Ibex reviewed the GVA assessment study, the 20190625 - URD and the 20200213 - RAFCAM Infra annex, to ascertain the power requirements.

As a result of Covid 19 restrictions a planned site survey of the existing RAF CAM facility at RAF Henlow was cancelled, however Ibex have made its calculations, based on the information provided on some of the equipment and assessment based on photographs of the equipment, which enabled a realistic overall assessment to be carried out.

These initial assessments of the building power requirements, excluding any equipment loads, are based on BSRIA rule of thumb, with the majority of the building being heated via heatpumps in some form.

Ibex has used Table 2.3 from the GVA assessment study to ascertain the square meterage of each space and applied the BSRIA rule of thumb, plus a small margin, to ascertain the possible electrical load requirement for the building.

In addition to the initial assessment of the building load an initial assessment for the equipment load associated with each area has been added. These assessment calculations are shown on Appendix 1 to this report. Appendix 2 provides the building load assessment.

Our initial assessment of the overall power requirement indicates that the required electrical load would be between 600 and 800 Kva.

During a meeting on site with DIO it was confirmed that a planed upgrade of supplies to the station had been ordered and that a plan was in place that would make 800 Kva available for the proposed RAF CAM move to Cranwell. We understand that and existing 200 Kva transformer could be upgraded to 1,000 Kva to provide RAF CAM power requirements.

At the time of this report we are awaiting written confirmation on this.

We would recommend that further more detailed investigation be carried out to assist with the completion of the SRD.

Further consideration should be given to the possibility of additional power from PV panels. This would be subject to the effect on the radar and careful sighting of such panels needs to be taken into account.

Both the use of heatpumps and PV panels will go a long way to achieve the aim of zero carbon buildings.

## Gas

We would suggest the use of gas be kept to a minimum and, if feasible, only used for heating the large hanger type buildings. The use of CHP units should be considered. We have used a rule of thumb based on the areas in Table 2.3 (see appendix 2) to assess the gas demand, with estimated heights used to assess the heated volume where these are not specified in the Infra Annex.

Our initial assessment of the building heating gas load is 374 Kw of gas which relates to approximately 47 $M^3$/hr depending on the type of heating equipment. Consideration should be given to the use of CHP power generation unit to provide additional power and particularly if a larger demand for hot water is required due to a new swimming pool being included in the development.

Our Initial assessment therefore would suggest an approximate gas load would only be in the region of 60 $M^3$/hr. (90mm MDPE supply).

During a meeting on site with DIO and the site term contractors, it was indicated that there is more than sufficient gas available for the RAF CAM development, however we consider that a more detailed study assessment should be undertaken once the SRD has been developed to confirm the gas requirement.

## Water

Peak demand is dependent on whether or not water storage is utilised, which is something Ibex would not recommend, as this is a potential for legionella infections and would result in a requirement for water treatment and tank cleaning maintenance.

Our Initial assessment, without further detail investigation and calculation, would estimate a flow rate of 5.5 l/s should service the requirements of RAF CAM as suggested in section 3.36 of GVA assessment study.

However, the pipe size of 32mm as suggested in GVA assessment study, section 6.99 we consider is insufficient. Our initial calculations would suggest a pipe size of 90mm MDPE, depending on length of run, would be more appropriate. This would be in line with the size of supply to the High G development at RAF Cranwell.

Whilst existing fire hydrants are present in the vicinity of the RAF CAM development area, one of these may need relocating or an additional one provided, to comply with defence fire standards.

## Swimming Pool

The GVA assessment study proposed utilising the existing RAF Cranwell swimming pool to meet the RAF CAM requirement. It is our concern that the existing swimming pool will not meet the RAF CAM pool requirements of 15M x 15M x 3M depth together with the associated access and facilities, as the existing pool is (according to GVA assessment study) only 12M x 33M and the depth is not noted but we would assume that it's depth is not a constant 3M for 15M of its length.

However, we have made some allowance in our calculations for a new pool to be heated by a dedicated heatpump. The filling of the pool being carried out when the other demands are not in full use.

We recommend that the RAF CAM swimming pool requirement be investigated further and particularly the suitability of using the existing swimming pool, before the SRD is finalised.

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# Services Report — Appendix 1

**Additional columns added to original document to include cross referance numbers of Table 2.3 of GVA assessment study. Also Kw loadings as assessed by Ibex based on the information available. Building Kw loadings are based on areas provided in Table 2.3 refer to Appendix 2**

## RAF CAM office and technical accommodation requirements by section

NOTE - The information below is based on DIO assessments for a lift and shift of RAF CAM. It does not reflect a capability based assessment of equipment / user work space requirements and such may change as the final solution develops.

**30/03/2020**

**Notes**
**1 - All desk spaces to have access to MODNet/Telephone/communal printers**
**n.b. some offices will require dedicated printers (where stated) due to personally sensitive data.**

**2 - Functional - medical - implies clinical activity**

**3 - Tannoy implies ability to transmit a message, not just receive.**

**4 - Do work tops need to be a specific standard?**

| Ser | Section | Table 2.3 | Sub Ser | Requirement | Type of accommodation | Remarks/additional requirements | Amplifying comments | Kw Building | Kw Equipment | Special treatment Notes, in addition to those discribed in Requirements & Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | ing | not there | 1.1 | AO Med Ops | Office | Scaled for OF6<br>Restricted Access Room.<br>Requires MODNet/MODNet (SECRET)/SSS and VTC up to secret | Requirement to provide office accommodation for AO Med Ops and associated entourage tbc. | incl in offices | | |
| | | 12.1 | 1.2 | PA to AO Med Ops | Office | Adjacent to ser 1.1. | See note above | incl in offices | | |
| | | 12.2 | 1.3 | COS and DCOS | Office | Restricted Access Room.<br>Both roles require MODNet/MODNet (Secret).<br>Shared SSS phone<br>Cupboard to store material up to SECRET (1000x 500x2000mm) | | incl in offices | | |
| | | 12.3 | 1.4 | Finance<br>4 x personnel | Office | Hard copy storage requirement to hold financial records for 7yrs. Approx. 1x4 drawer filing cabinet per 2 yrs. | | incl in offices | | |
| | | 12.4 | 1.5 | RAF CAM Info Mgt and Admin Co-Ord Fit (IM&AC Fit)<br>5 x personnel | Office | Requires 1 x additional office for line management conversations.<br>Communal meeting space<br>Space for 6 full height double cupboards (each approx. 1000x500x1800mm)<br>Stationery store cupboard<br>Fireproof Safe (for IM Back-up)<br>Lockable Storage units for accountable office equipment (Laptops etc)<br>Postal Rack, including storage for parcels. | | incl in offices | | |

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| 1.0 | Support W | 12.5 | 1.6 | Reception area (for main building)<br><br>To hold 20 students and visitors. | Functional | Provision of Electronic Notice Board<br><br>H&S notice boards<br><br>Access from reception area to the main CAM areas should be restricted due to H&S, COSHH risks and restricted access areas within the unit.<br><br>Desk space with MODNet / Telephone, to receive large courses and visitors. | | incl in offices | | |
| | | 12.6 | 1.7 | Tissue Reference Sample (TRS) Office and Store<br><br>2 x Personnel | Office / Functional | Current store/office measures 8x8m incorporating 32 lockable cabinets for storage of human tissue samples.<br><br>2x MODNet Terminal, no specific environmental requirements, although ground floor would be more practical, must have simplex lock on door to control entry. | | 5.8 | | |
| | | 12.7 | 1.8 | Meeting Room | Functional | Capacity for 15pers.<br><br>Suitable desk<br><br>VTC (up to Secret)<br><br>Presentation suite (Large screen/projector etc) | | 2.7 | | |
| | | 12.8 | 1.9 | Tea bar / Rest room for all CAM personnel | Functional | Should be separate from Student rest area<br><br>TV aerial socket<br><br>Kitchen area with space for Fridge / Microwave and plumbing for dishwasher, water boiler, sink and washing up area. | | 2.7 | 4.0 | kitchen equ |
| | | 12.9 | 1.10 | Education / Learning Room | Functional | CAM also has a number of long-term students who are on the permanent staff. These include Environmental Health Technicians studying for first degrees as part of their military training pathway, Aviation Medicine trainees and PHD students. There is a requirement to have a study area with access to core texts (book shelf) and to online resources (standalone PC linked to the internet) and SMART board. Needs to be able to accommodate up to 4 pers at a time (SOTR for EH trg) needs table/desk space to allow scenario planning. Access to MODNet. | | incl in offices | | |
| 2.0 | AMW | 2.1 | 2.1 | DACOS AvMed and PS | Office | Office space for 2 x pers.<br><br>Scaled for OF5<br><br>Requires MODNet/MODNet (SECRET)/SSS and VTC up to secret | | incl in offices | | |
| | | 3.1 | 3.1 | AMWTS Personnel | Office | Office space for 24 personnel - Rank range?<br><br>Requirement for line management / private conversations; must have a minimum of 3 single offices and access to meeting space.<br>Must have access to private space with MODNet, phone and printer to facilitate sensitive medical in confidence work. Some office space should be in proximity to teaching space. | Need to identify which roles get individual offices and which can occupy shared space. | incl in offices | | |
| | | 3.2 | 3.2 | Classrooms | Functional | X Classrooms in close proximity to each other and near to instructors office space (instructors teach on different courses and frequently with little/no gap between lessons).<br><br>Classrooms should accommodate minimum of 16 pers and an instructor.<br><br>The User shall be able to pair up classrooms as required to increase class size.<br><br>Classrooms should be in a quiet area, away from through flow of personnel.<br><br>Classrooms should have suitable ICT and MODNet. | No of classrooms tbd pending articulation of annual usage rates/Course sizes/ course schedule etc. | 14.4 | | |

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| 3.0 | Aviation Medicine Training Wing | 3.3 | 3.3 | Lecture Theatres | Functional | 2 x lecture theatres for 70 pers.<br><br>Capability to combine lecture theatres to deliver to 140 pers.<br><br>Comfortable seating including provision of writing surface.<br><br>Lecture theatres should have suitable ICT and MODNet. | Lecture theatre requirmeent TBD | 25.2 | 4.0 | Ventilation and additional IT |
| | | 3.4 | 3.4 | Student lounge | Functional | Break-out area for students between classes/practical lessons, located ivo classrooms to prevent unnecessary transit times.<br><br>Capacity for 70 students<br><br>2 x MODNet Hot-desks<br><br>Phone<br><br>Snack bar / hot drink making facility/utilities<br><br>Could this co-locate with Staff Lounge? | | 6.3 | 6.0 | Ventilation and Vending etc. |
| | | 3.5 | 3.5 | Night Vision Device Practical Training | Functional | Dedicated facility that is light sealed. Houses a virtual reality computer generated image system with tiered seating for 10 students. A course of students consists of 10 pilots plus one instructor. Students must be seated whilst NVGs are being fitted because that's the position they will be in when using the goggles and centre of gravity has an impact on the fitting process; separate seating for instructor at the control station. Space to display NVG boards/screens on the walls which are used to calibrate and fit NVGs for pilots. Training ICT required | Current Facility:<br><br>10m x 10m room (3m high)<br><br>Internally painted with Black - non-IR reflective paint.<br><br>Fitted with LOW IR reflectance carpet.<br><br>Tiered seating | 9.0 | 3.0 | Ventilation & temp control |
| | | 3.6 | 3.6 | Medical Inspection Rooms | Functional - Medical | Standard medical examination room; it needs to accommodate 2 people, a MODNet terminal with printer (for access to DMICP) associated examination equipment, an examination couch and hand wash sink. | For medical inspection of personnel prior to using practical training equipment | 1.5 | | |
| | | 3.7 | 3.7 | Medical Supply Store | Functional | Suitable room for storage of medical supplies necessary to support Decompression and Hypoxia training. | Current Facility:<br><br>2m x 4m<br><br>Fitted with simplex locks<br><br>Temperature controlled at 8 - 25°C | 0.1 | | |
| | | 3.8 | 3.8 | Anthropometry room | Functional - medical | Sufficient sized room to accommodate:<br><br>Anthropometric measuring equipment (approx. 2m x 3m) including standalone computer (possible connection to a LDCN).<br><br>Air conditioned to 10 - 24°C for calibration of medical equipment<br><br>Private Changing Area | Current room 6m x 10m | 5.4 | 6.0 | Separate A/c |
| | | 3.9 | 3.9 | Disorientation practical training room | Functional | TBD dependent on solution | DISO Rooms need good temperature control due to the avionics involved and must have access to medical emergency room. High pressure hydraulics and other health and safety considerations (for example rapidly moving equipment). Double/roller door access to outside to enable installation and maintenance of large equipment. Air conditioned server room and main hall with enough space for safe operation of DISOs.<br><br>Air conditioned/cooled Hydraulic/Power Unit room. 230V, 400V and 415V power supplies.<br>DISOs need reinforced concrete base.<br><br>Dedicated and sole use of a high speed (fibre broadband) internet access to facilitate remote maintenance of DISO.<br><br>Plant room (currently 4m x 3m) and server room required (collocated with DISOs). Server room must be separate from plant room.<br><br>Specification of dimensions including height will need to be confirmed as the future DISO(s) may have a requirement for greater space.<br><br>Tannoy. | 5.6 | 20.0 | Temp Control and hydraulic power unit (loading to be confirmed) |

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| | 3.10 | 3.10 | Hypoxia training | Functional | TBD dependent on solution | Room needs immediate access to emergency medical treatment area and storage for medical supplies. Telephone and tannoy/alarm system required (allows medical staff to be on site but not in the SBHT Room and to be informed immediately an emergency occurs). Needs DOT(C) connectivity compliance.<br><br>Ground floor access and with emergency access/egress for occupied stretcher/gurney and any attached portable Med equipment.<br><br>Tannoy.<br><br>Current facility 11.5m x 7m (adequate/slightly small). Could be 3 separate areas with central rear corridor.<br><br>Storage space for spares – Currently housed in 5m run of cupboards with work surface over. | 4.1 | | Ventilation requirement? |
| | 3.11 | 3.11 | Decompression training | Functional | TBD dependent on solution<br><br>Equipment likely to require 230V, 400V and 415V power supplies and separate on-site back-up generator.<br><br>Any Plant room would require external wall access for cooling equipment and exhaust from vacuum pumps.<br><br>Oxygen ring main to supply each chamber at 100Bar pressure | Chamber Hall current size 61m x 6m (adequate for 4 chambers)<br>Reservoir Hall Current Size 46m x 4m (adequate)<br>Plant room Current Size 12m x 4m (adequate)<br><br>External, connected Reservoir supply location may be required.<br><br>External roller door access to Chamber for removal/refit of large items of equipment.<br><br>Access required for vacuum reservoir tanks (x4) installation.<br><br>Needs immediate access to emergency medical treatment area and storage for medical supplies. Could be co-located with a medical inspection room and provide a crash bay for SBHT, Chambers, and DISOs.<br><br>Ground floor access with emergency access/egress for stretcher/gurney and associated portable medical equipment that might be employed whilst stretcher occupied.<br><br>Tannoy. | 37.1 | 240.0 | Loadings based on New Hydrobaric equipment |
| | 3.12 | 3.12 | Debriefing room | Functional | Debriefing facility for students following Disorientation/Hypoxia/Depressurisation training. | Current Facility:<br><br>6m x 10m<br><br>MODNet access | 5.4 | | |
| | 4.1 | 4.1 | CBRN Training Pers<br><br>3 pers. | Office | Office Space for 1 x OF2 and 2 x SNCO | | incl in offices | | |
| | 4.2 | 4.2 | CBRN Store room | Functional | For Storage of Exercise Equipment, Chemical Agent Monitors, Simulation Equipment and Aircrew Equipment used for Practical Trg. Example kit stored is:<br>30xstorage boxes (each $2m^3$)<br>Tent poles<br>Camouflage nets<br>Flooring and security barriers<br><br>Total Storage capacity reqt tbd<br><br>Simplex Lock | Current facility:<br><br>10m x 4m (3m high?) | 0.4 | | |

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| 4.0 | CBRN Trg Sectio | 4.3 | 4.3 | CBRN Training Room | Functional | Practical training area for Collective Protection and Contamination Control Area line<br><br>Should be able to be made dark for NVG training - WHY? Do aircrew actually practice this | Current facility:<br><br>30m x 20m<br><br>The practical element of the training requires Aircrew to be placed through the safe undress procedure. In order to get full value of trg the procedure uses fuller's earth (substitute talc). Although non-toxic the area could not be used as a generic classroom due to the dust created and the need to sweep/clean the trg area after practical trg, therefore the trg room requires a hard non slip floor not carpet. Use of an existing classroom not practical because a min of 100 foot lane required to walk the aircrew through the decontamination process.<br>Large LEV to remove powder and cloud formations produced during decontamination process which builds static and has adverse health implications if exposed for too long and too often – ie instructors. | 54.0 | 6.0 | Special Vent requirements |
| | | 4.4 | 4.4 | CBRN Training - Student Ablutions area | Functional | Male / Female showers for post CBRN training and exercises. Suitable for 10pers. | Can this be combined with other student ablutions/shower facilities | incl in offices | 6.0 | hand dryers |
| 5.0 | Accident Investigation and Human Factors | 4.5 | 5.1 | AIHF Personnel<br><br>6 Pers | Functional | Office Space for 1 x OC AIHF, 3 x Aviation Psychologists, 1 x SE Fitter, 1 x AvMed Trainee.<br><br>Separate Office for Private Line Management conversations<br><br>MODNet<br><br>Phone<br><br>Printer (noting this section deals with sensitive accident investigation work). | The AvMed trainee will be a permanent member of the CAM staff, so will need office/desk space within CAM.<br><br>Office space for the permanent AIHF personnel should be in very close proximity to the main bay/lab as work day involves being constantly in an out of bay/lab. . | 2.7 | | |
| | | 4.6 | 5.2 | AIHF Workshop | Functional | A work area/office space for 1x EngTech(W) - MODNet / phone. This office space could be accommodated in the AIHF office space, but the work shop area could be contained within the main bay /lab (below) Ground floor essential. | Current facility:<br><br>7m x 5m (3m high)<br><br>Overhead Gantry (250Kg load) | 3.2 | 6.0 | Gantry motor |
| | | 4.7 | 5.3 | Drying Room / Wet Room | Functional | Facility for washing down soiled evidence / equipment and drying area.<br><br>Filtered drainage due to nature of potential soiling agent.<br><br>Hand Wash facility<br><br>Min size:<br><br>7m x 8m with overhead gantry (250kg load) and 3m ceiling height.<br><br>Must be immediately adjacent to to AIHF Office / Workshop | Ground floor essential. Roller door access (min 3m x 3m) is required to the outside so accident investigation kit (ejection seats, AEA , parachutes etc,) can be off loaded from vehicles, brought inside to the drying area/wet room before moving through into the main bay/accident investigation lab. For drying kit (rain, sea water) of aircrew clothing, AEA, parachutes etc involved in aircraft accidents. | 4.9 | 10.0 | Gantry motor & roller door |
| | | 4.8 | 5.4 | Main bay / classroom | Functional | Secure (simplex lock) Facility for investigating causes of aircraft accidents.<br><br>2 x MODnet Terminals<br>1 x Non-MODNet PC (access to CAMNET)<br><br>Easy Access to Helmet Drop Test Rig<br><br>Ventilation (Extraction capability/temperature control)<br><br>Hand Wash Facility<br><br>Requires Briefing Area (30pers) with Large Screen | Current facility:<br><br>11m x 20m<br><br>The nature of accident investigation teaching necessitates the use of accident damaged equipment, such as ejection seats, contained within the accident investigation lab, hence an accident investigation teaching/briefing area is required in the lab. | 19.8 | 5.0 | Vent |
| | | 4.9 | 5.5 | AIHF Helmet Store | Functional | Facility for storage of up to 40 helmets (stored in cardboard boxes) for 3 - 5yrs | Current facility:<br><br>6m x 6m<br><br>Note - a secure ISO CONTAINER could meet this requirement. | 0.4 | | |

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| | | 4.10 | 5.6 | AIHF External Store | Functional | 2 x ISO Containers (or equivalent) for storage of static and ejection seats / wreckage. | Could be stored internally if provision made.<br><br>For retention of evidence until the full conclusion of an investigation. Storage facilities are required for ejections seats and other accident damaged equipment, it does not need to be an ISO container, but must been secure – it could be in or out of the CAM building. These items need to be stored until any legal challenges or coroners' inquests are finalised. The items may need to be stored 3-5 years. Currently AIHF Has access to 2x20' ISO containers so any similar sized area/volume would be suitable. | | | |
| | | 4.11 | 5.7 | AIHF Store | Functional | Facility for storage of equipment used in Post Crash Management.<br><br>Facility should hold - go packs / PPE / investigatory equipment (needs defining)<br><br>Must be readily accessible - access required 24/7 | Ground floor essential for easy deployment of equipment. This is a mixture of PPE and deployable accident equipment (such as ejection seat portable tool chests). The weight of this equipment would make storage on an upper level impracticable. Double door access to exterior. Secure area (eg, simplex locks). | 0.4 | 3.0 | Is air lock required? |
| 6.0 | APS | 5.1 | 6.1 | APS personnel<br><br>4 x pers | Office | Office space for 1 x OC APS, 1 x OC AMCS, 2 x research staff | APS/AMCS must be co-located with AMWTS hypobaric chambers. Co-location of APS with other sections of AMW also essential. Access to MODNet and 1x non-MODNet internet computer with access to CAMNet. External Internet access required to perform a variety of software updates that are out of scope on MODNet . | 1.8 | | |
| 7.0 | Medicine Equipment Support | 5.2 | 7.1 | Technical oxygen Bay / B2 Rig (regulator testing) | Functional | Oxygen bay to be clean environment free from oil and greases. Requires low level extractor fan, non-organic benches/furniture, 100% Oxygen supply @ 100 bar. | Current Size 5m x 5m (adequate) – for maintenance of breathing O2 systems<br>Must comply with current legislation on Oxy bay storage and work environment law JSP 319.<br>Easy access to hand washing facilities. | 0.3 | 3.0 | Vent |
| | | 5.3 | 7.2 | Cylinder Compound | Functional | 60 x Oxygen bottles, 93 x 20cm each plus annex containing smaller quantities of oxygen, air and nitrogen high pressure gas cylinders (both technical and medical gasses). Lockable cage. | Secure cage located out with the building – Must comply with regulatory requirement for storage of hazardous and high pressure gas cylinders. Gases currently piped into the SBHT facility ring main. JSP 319 Regulations for storage of Gases.<br>Existing cage 9m x 4.5m (adequate). Also parking space for 3 gas bottle storage trailers (needed to recharge ejection seats in various locations). | | | |
| | | 5.4 | 7.3 | Technical Lumbar Bay | Functional | Fitting/measuring room with adjacent "laying up" bay and a cutting bay for fibre glass. Cutting and laying up bays require LEV systems and an extractor bench essential. Lighting and plug sockets need to be intrinsically safe.<br>2 x sinks required. One for equipment, one for personnel. | Fitting room Current Size 5m x 3m (adequate)<br>Cutting room Current Size 4m x 3m (adequate)<br>Lay-up room Current Size 5m x 3m (adequate)<br>Locker room for storage of safety equipment/PPE coveralls. Should be separate to communal area and located within facility to prevent cross contamination of irritants to other areas. | 4.5 | 10.0 | Vent |
| | | 5.5 | 7.4 | Technical Multi-point Pressure Breathing Rig | Functional | Requirement TBD in line with AMW equipment requirement<br><br>Space to use the rig<br>100 bar breathing air supply | Requires approx 8m x 3m space (currently in chamber hall).<br>Ground floor access and with emergency access/egress for stretcher/gurney. Tannoy. | 2.2 | | Breathing Air |
| | | 5.6 | 7.5 | Technical Mechanical Bay | Functional | Predominantly for Chamber maintenance<br>LEV (Local Exhaust Ventilation)<br>Work benches x2 | Current Size 9.5m x 4.5m (adequate)<br>MODNet required for access to technical publications.<br>Multiple tool kits required for maintenance of Chambers, DISOs, MPPBR, SPPBR and SBHT as well as various technical items located within CAM departments.<br>Tool cabinets: Qty four 1000x750mm cabinets plus one 1000x1500x75mm cabinet, plus two multi draw cabinets, 1800x1500x1000mm. | 3.9 | 6.0 | Vent |
| | | 5.7 | 7.6 | Technical Electronics Bay | Functional | For electrical system / computing equipment maintenance<br>Antistatic environment considerations. | Size required 4x5m<br>Work benches x2 with 8 additional power sockets.<br>2x MODNet workstation | 1.8 | 3.0 | Extra power points |

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| Aviation M | 5.8 | 7.7 | Technical Altitude Lab | Functional | For human trials work and teaching, containing research equipment.<br><br>Room should have a tannoy system to summon assistance.<br><br>Requires Piped Breathing Air supply.<br><br>Access to MODNet and CAMNet (TBD)<br><br>To accommodate the following equipment (subject to capability requirement):<br>•Typhoon Pressure Breathing Rig 5 x 5 m<br>•Lower body negative pressure facility 3 x 5m<br>•2x cycle ergometers (each 2 x 2m).<br>•Storage of research equipment on x9 Racking bays each measuring 1800(H)x1000(W)x750mm(D)<br>•12 x 4 drawer units, with work top over, for spares. | Current room 10m x 10m | 12.0 | 3.0 | Breathing Air Plus other equipment |
| | not there | 7.8 | AMES personnel | Office | 4 x permanent desks and 5 'Hot Desk' spaces for total of 12 pers.<br><br>1 x private office for line management conversations | Broadband Network Access required as NVD software is not compatible with DII and requires high speed network access and ability to utilise high speed graphics which exceeds the capability of DII network. Visiting lecturers also utilise high speed internet videos from wifi, although this is a secondary consideration. The system Servers and backup hardware also need regular software security updates only available via internet. - I Don't think this relates to this requirement! | incl in offices | | |
| | 5.9 | 7.9 | Locker Room | Office | Space for 10 personal lockers (why is 12 stated above?) for storage of personal clothing (pers require to change from No. 2 home dress to working dress (coveralls))<br><br>Equipment Storage 7.5m x 3m (What equipment?) | | incl in offices | | |
| | 5.10 | 7.10 | Technical Air Compressor Building | Functional | Capability to house and provide Breathing Air Compressor used to supply breathing air ring main. | Must be located immediately adjacent to Cylinder Compound. To house compressor capable of compressing breathing air to above 100Bar for ring main. | incl in offices | 4.0 | Comp Air |
| | 6.1 | 8.1 | AEIG Peronnel | Office | Office space for 11 personnel:<br><br>4 x Medical Officers<br>5 x WO & SNCO<br>2 x Civ Pers | At least one separate office to be available for line management conversations. | 2.3 | | |
| | not there | 8.2 | Access to Meeting room / Planning area | Functional | Sufficient size to accommodate 10 pers around a table.<br><br>Access to MODNet / VTC / Telecon facility | AEIG team need meeting / planning space to support equipment trials and planning meetings. | incl in offices | | |
| | 6.2 | 8.3 | AEIG Bay 2 and Office | Functional / Office | Secure room (simplex locks or equivalent) due to Valuable and Attractive items.<br><br>5 x Shared Desk spaces with MODNet (5 x Cpl and 4 x SAC)<br><br>1 x desk space for Standalone PC (Internet access via Wi-Fi or other means)<br><br>2 Large (define large) for analysis and review of aircrew equipment. | Current room 17m x 6m<br><br>Ground Floor essential – due to requirement to move heavy equipment into/out of room.<br>Fitted with simplex locks due to Valuable and Attractive (V&A) items. | 9.2 | | |

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| 8.0 | Aircrew Equipment Integration Group | 6.3 | 8.4 | AEIG Main Bay | Functional | Secure room (simplex locks or equivalent) due to Valuable and Attractive items.<br><br>Space to accommodate (subject to equipment capability requirements):<br>a) 2 aircraft cockpits (each 5mx3m)<br>b) Vertical drop tower (2x2x8m)<br>c) Helmet drop rig (1x1x8m)<br>d) Mechanical Winch (capable of lifting 1000Kg) (requires 5x3x8m and all round platform access up to 3m off ground) also has high level door to access outside to allow heavy equipment to be attached to the winch using manual handling aids.<br>e) Climatic Chamber (hot & cold) (5x4x3m)<br>f) Burns testing equipment (1x1.5m)<br>g) Inversion rig (2x2x2m)<br><br>Also require access to Hangar space to store Lynx a/c frame (cab only, no rotor blades etc).<br>Both AEIG and SEMB require access to ac integration cockpits.<br>For AEIG they provide the laboratory based platform for integration of man mounted protective equipment. Representative fast jet and rotary environments are required and used on a daily basis.<br>Currently a suite of cockpit models are accommodated at 2 sites within the CAM bldg with an additional Lynx Helicopter cockpit/airframe within an external hangar. These cockpits/ airframes could be collocated and used by both AEIG and SEMB. | Currently 20mx15mx9m<br>Vertical space is important for some of the testing equipment. It is 8m high with a 360 degree access platform at about 3m.<br>Ground Floor essential, due to size of equipment. Fitted with simplex locks due to V&A items. External access via roller door measuring 3x3m to allow movement of equipment.<br>Climatic Chamber is an insulated room with large sliding door opening internally to main bay, located on external wall for venting.<br>Burns testing requires Local Exhaust Ventilation (LEV)<br>Mechanical Winch and Inversion Rig require isolator to power supply.<br>This space has a large wall mounted monitor as it is also used as a teaching area for AvMed SE, MAME and Dip Av Med Courses.<br><br>Cockpits/airframes are also used by SEMB for the Av Med SE course and as part of the special fit clothing assessment.<br><br>DAv Med, MAME and MAME refresher courses also utilise these assets to teach and practice functional assessments of aircrew. | 27.0 | 30.0 | Winch, Roller Door, Climatic Chamber |
| | | 6.4 | 8.5 | AEIG Store and workspace | Functional | AEIG Store and workspace.<br><br>Secure room (simplex locks or equivalent) due to Valuable and Attractive items. Room includes 15m run of racking (shelves and hanging rails) for storage of specific to aircraft type Aircrew equipment and survival equipment.<br><br>Workbench / large table for checking and preparation of equipment<br><br>Access to MODNet desirable | Currently 14m x 7m<br>Ground Floor and double doors essential due to heavy equipment.<br>Fitted with simplex locks due to V&A items. | 0.1 | | |
| | | 6.5 | 8.6 | AEIG Equipment Store | Functional | Secure room (simplex locks or equivalent) due to Valuable and Attractive items.<br><br>Store for archive of equipment that has undergone testing including commercially sensitive prototypes and current stock of complete MOD Aircrew Equipment and Assemblies. | Current space 12m x 7m<br>Ground Floor and double doors essential due to heavy equipment.<br>Fitted with simplex locks due to V&A and commercially sensitive items.<br>It may be possible to send some of this equipment to a suitable archive. It is not understood how long these items are required to be kept for (test data / equipment may be called upon in the event of an incident). | 0.8 | | |
| | | not there | 8.7 | Access Requirement | Functional | External Ground floor access required to AEIG Main Bay area.<br><br>Minimum 3m x 3m opening to get palletised equipment in and out.<br><br>Internal doors from Main Bay to Stores rooms (3m x 3m) | | incl in offices | | |
| | | 7.1 | 9.1 | SEMB personnel | Office | Office Space for:<br><br>1 x FS SEMB<br>2 x Engineering personnel (1 x SNCO / 1 x JNCO) | | 1.4 | | |
| | | 7.2 | 9.2 | SEMB Main Bay | Functional | Secure room (simplex locks or equivalent) due to Valuable and Attractive items.<br><br>Facility for maintenance of Safety Equipment and Aircrew Equipment Assemblies use for trials and hypobaric chamber / trials support.<br><br>X Workbenches required (MODNet access needed to access technical publications on each workbench)<br><br>Separate area for Aircrew Clothing Special Measurements (is this a separate room or just a privacy screen?) | Ground Floor and double doors essential due to heavy equipment.<br>Fitted with simplex locks due to V&A items.<br>DII terminal essential.<br><br>Not essential that aircrew special measurements need to be conducted in SEMB. Facility could be located elsewhere. | 10.8 | 5.0 | Is Extract or Vent required? Workbench power? |
| | ance Bay | 7.3 | 9.3 | SEMB Non-technical Store | Functional | Secure room (simplex locks or equivalent) due to Valuable and Attractive items.<br><br>Facility to provide Clothing store and AEA fitting room | Ground Floor and double doors essential due to heavy equipment.<br><br>Current room:<br><br>10m x 8m x 3m area for storage racking and changing rooms / fitting cubicles x 5 | 7.2 | | |

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| 9.0 | Survival Equipment Maintenance | 7.4 | 9.4 | SEMB Store | Functional | Secure room (simplex locks or equivalent) due to Valuable and Attractive items.<br><br>Additional Store for AEA (FJ/RW/multi-engine) | Ground Floor and double doors essential due to heavy equipment.<br><br>Current room:<br><br>19m x 8m x 3m | 1.5 | | |
| | | 7.5 | 9.5 | SEMB Cockpit Room | Functional | Secure room (simplex locks or equivalent) due to Valuable and Attractive items.<br><br>Facility to conduct cockpit integration trials and confirmatory exercises following AEA sizing.<br><br>Future requirement is up to 5 cockpits - 3 x FJ, 2 x RW | COULD AND SHOULD BE COMBINED WITH AEIG REQUIREMENTS<br><br>Current Room:<br><br>15m x 9m x 4m<br><br>Currently houses GR4 and Hawk T1 cockpits (other cockpits housed in AEIG) | 12.2 | 3.0 | Power for any equipment? |
| | | 7.6 | 9.6 | SEMB - Wet Drill Maintenance Bay | Functional | Facility to Store / Dry / Maintain equipment used in trials.<br><br>9x8m Workshop area with DII access and protected electrics (maintenance / re-packing of wet items).<br>6x5m Drying room with rails and active drying / ventilation<br>5x6 m to accommodate Life-rafts whilst they are drying and to enable maintenance.<br>Dry Store rooms Qty 3 (4mx4m each, could be combined)<br>Utility room to wash out clothing / kit used during pool trials, must have space/plumbing for a washing machine, space for a vented tumble dryer and a large sink. (Currently part of the workshop area). | Stated sizes reflect minimum space needed to conduct work tasks / spread wet AEA / Life Support equipment (Single/multi-seat liferafts)<br><br>Must have sufficient space to dry life-rafts measuring 4x5m<br><br>IS THIS REQUIRED IF CAM DO NOT HAVE A POOL? | 16.2 | 10.0 | Ibex assume a pool may be required |
| | | 7.7 | 9.7 | SEMB - NVG Maintenance | Functional | NVG DARK Room Maintenance Area. Needs to be approx 3m x 3m | Potential for co-location next to, but not within the NVG classroom. However, preferable to have located within/adjacent to SEMB. | 0.8 | | |
| 10.0 | RAF Medical Board | 8.1 | 10.1 | DACOS RAF MB | Office | OF5 Office space | (NB if separate from the rest of CAM will need Secret VTC capability) | 0.5 | | |
| | | 8.2 | 10.2 | Med Boards Admin Area | Office | Office Space for 12 Personnel:<br><br>3 x RAF Medics (FS Practice Manager, Sgt and Cpl)<br>1 x TG17 SNCO<br>6 x Civil Servants<br><br>Min of 1 single office for Line Management / private conversations | 3 desks need to be larger to accommodate scanners. Original signatures needed, significant amount of scanning work to manage transfer of information to Individual Healthcare Record.<br>Space for A3 photocopier and colour printer.<br>Space for 2 lockable cupboards and one filing cabinet (medical notes being processed for boarding). | 5.0 | | |
| | | 8.3 | 10.3 | Patient Reception Area | Functional | Dedicated RAF Med Board Reception area (noting it could be combined with Clinical Services if suitable).<br><br>Desk area for 2 Staff - Desk space sufficient to include scanners.<br><br>Seating are for up to 12 patients and those accompanying them (So is this 12 seats or more?)<br><br>Privacy conversation screen for receptionist<br><br>Refreshment facility for patients<br><br>Toilets (including disabled) near by (define nearby) | | 1.8 | | |
| | | 8.4 | 10.4 | Medical Consulting rooms | Functional - medical | 6 Standard size consulting rooms (16.5m$^2$) with MODNet including printer, telephones, examination facilities/couch, hand washing and diagnostic equipment. | MODNet for access to DMICP (or successor).<br><br>Printer for printing confidential patient information.<br><br>Essential that rooms allow conversational privacy. | 8.9 | | medical gases? |
| | | not there | 10.5 | Interview rooms | Functional - medical | 3 x interview rooms<br><br>Each room to have:<br><br>Desk<br><br>4 Chairs - comfortable<br><br>MODNet desirable | Used for pre and post board interviews. | incl in offices | | |
| | | not there | 10.6 | Casework Office | Office | Space for 1 x SO1 casework officer.<br><br>Undertakes clinical work (define clinical work)<br><br>MODNet and Printer | MODNet for access to DMICP (or successor).<br><br>Printer for printing confidential patient information. | incl in offices | | |

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| | | 8.5 | 10.7 | Medical emergency treatment room | Functional - medical | Facility for conducting emergency treatment or undertaking preliminary medical examinations.<br><br>Stretcher access to exterior required via double doors.<br><br>Must be at least 6m long to permit Visual Acuity measurements<br><br>Close proximity to toilets<br><br>Space / storage for emergency equipment, secure drugs storage and hand washing facilities. | Can double up as a prelims room. Could be shared with Clinical Medicine service | 2.7 | | medical gases? |
| | | 8.6 | 10.8 | Medical Store room | Functional | Temperature controlled store room (8 - 25°C)<br><br>Lockable ? | | 0.2 | 6.0 | Temp Control |
| | | 8.7 | 10.9 | Medical Records Store | Functional | Secure facility for storage of confidential medical records.<br><br>Space for 4 x secure 4 drawer filing cabinets. | | 0.1 | | |
| | | 8.8 | 10.10 | Medical Patients Ablutions | Functional | Male / Female and disabled toilets.<br><br>Shower / changing areas for patients | Showers required for post-exercise tolerance tests | incl in offices | | |
| | | not there | 10.11 | Discreet patient entrance / exit | Functional | Discreet patient entrance/exit that does not lead directly onto the RAF CAM Thoroughfare. | Required to respect patient dignity following possible unwanted/unexpected news from Med Boards. | incl in offices | | |
| | | not there | 10.12 | Staff and patient toilets. Access to male, female and disabled toilets. | Functional | Repeat of 10.10? | Required where there is a separation from the main building. | incl in offices | | |
| | | not there | 10.13 | Kitchen facilities with wall mounted boiler, fridge and microwave. | Functional | What if this is part of the main building? Do you mean only a patient refreshment area as alluded to in 10.3 | Required where there is a separation from the main building and the need to provide patients with refreshments. | incl in offices | 4.0 | Kitchen Equip. |
| 11.0 | RAF Clinical Aviation Medical Service | 9.1 | 11.1 | Medical Consulting rooms | Functional - Medical | 3 Standard size consulting rooms (16.5m$^2$) with MODNet including printer, telephones, examination facilities/couch, hand washing and diagnostic equipment. | MODNet for access to DMICP (or successor).<br><br>Printer for printing confidential patient information.<br><br>Essential that rooms allow conversational privacy. | 4.5 | | |
| | | 9.2 | 11.2 | ECG Management Service | Functional / Office | Office space for 1 x Civil servant | MUSE Server to be repositioned and appropriate data back up in place - what is this? | 0.5 | | |
| | | 9.3 | 11.3 | Ophthalmology Suite | Functional - Medical | Standard size consulting rooms (16.5m$^2$) with Blackout capability.<br><br>8 Power points<br><br>MODNet including printer, telephone, examination facilities/couch, hand washing and diagnostic equipment. | Why specify 8 power points - what equipment is needed here? | 1.5 | 2.0 | additional power points? |
| | | 9.4 | 11.4 | Clinical Physiology Suite | Functional - Medical | Consultation Room large enough to accommodate exercise tolerance test equipment (treadmill).<br><br>Must be connected to emergency treatment room. | Requires separate rooms for each service and black out blinds for the Echo testing<br><br>Current room is 30m$^2$ | 2.7 | 3.0 | treadmill |
| | | 9.5 | 11.5 | Emergency treatment room | Functional - medical | As per ser 10.7 - could share the facility with Med Board. | | incl in offices | | |
| | | 9.6 | 11.6 | Medical Office / Patient Reception area | Functional | Desk area for 2 staff and 1 typist (including space for scanners)<br><br>Seating area for up to 20 patients | Could be combined with Med Board Waiting area and reception/medical office. | incl in offices | | |
| | | 9.7 | 11.7 | Medical records store | Functional | Secure facility for storage of confidential medical records.<br><br>Space for 5 x secure 4 drawer filing cabinets. | Could be combined with Med Board Records storage facility | incl in offices | | |
| | | 9.8 | 11.8 | Medical Patients Ablutions | Functional | Male / Female and disabled toilets.<br><br>Shower / changing areas for patients | Showers required for post-exercise tolerance tests<br><br>Is the same as 10.10<br><br>Could this be shared with Med Board ablutions? | incl in offices | 2.0 | Ventilation |
| | | 9.9 | 11.9 | Medical Store room | Functional | Temperature controlled store room (8 - 25°C)<br><br>Lockable ? | | 0.2 | 6.0 | Cold store room |
| | | not there | 11.10 | Medical emergency treatment room | Functional - medical | Facility for conducting emergency treatment or undertaking preliminary medical examinations.<br><br>Stretcher access to exterior required via double doors.<br><br>Must be at least 6m long to permit Visual Acuity measurements<br><br>Close proximity to toilets<br><br>Space / storage for emergency equipment, secure drugs storage and hand washing facilities. | Can double up as a prelims room. Could be shared with Med Board emergency room<br><br>Duplicate of 11.5 | incl in offices | | |

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| 12.0 | EOH Sqn | 10.1 | 12.1 | EOH Sqn Personnel | Office | Office space for:<br><br>24 pers. Ranging from SO1 - ???? Do they all need a desk? Are you double accounting for any of the teams below?<br><br>Requirement for 2 single offices and a four man office - Why?<br><br>Access to shared meeting space<br><br>1 x faz machine to be located with team (which team) for Caldecott purposes.<br><br>Space for 9 x 4-draw filing cabinets (archived specialist reports)<br><br>Access to MODNet Secret terminal (for who?). | 12.1, 12.2 and 13.1 to be collacated/very close proximity for collaborative working. | incl in offices | | |
| | | 10.2 | 12.2 | Major Accident Environmental Risk Assessment Team | Office (Functional) | Dedicated office space for 2 pers plus:<br><br>a) 2 x Desks (large enough to accommodate 2 terminals) with drawers.<br>b) Geological Map Cabinet<br>c) Map Table (minimum 1m x 2m)<br>d) Map draw unit<br>e) 2 x shelved cabinets (2mx1mx0.5m)<br>f) 4-draw filing cabinet<br>g) Bookcase<br>h) A3 printer / A0 scanner<br>i) 12m$^2$ useable wall space (or equivalent) for maps.<br>j) 2 x MODNet terminals and phones<br>k) 1 x Standalone PC - connected to CAMNet<br>l) 3m$^2$ field equipment cupboard | Standalone PC to enable use of non-MODNet compatible software (such as AutoCAD)<br><br>12.1, 12.2 and 13.1 to be collacated/very close proximity for collaborative working. | 2.2 | | |
| | | 10.3 | 12.3 | EOH Sqn Internal Store | Functional | Secure storage area (ambient temperature - what does this mean given that temps are likely to rise?)<br><br>External door access required - 24/7<br><br>At least 3m high to allow the use of storage racking for:<br><br>a) EOH Field Equipment<br>b) 2 x Series 900 Deployable EH Modules<br>Duty Crash Response Officer equipment | Current room is 58m$^2$<br><br>Manual Handling – ground floor with external doors required due to heavy lifting of equipment and loading of vehicles<br><br>Deployable modules and DCRO Equipment must be accessible 24/7 to fulfil HQ AIR and<br>Duty Environmental Health Officer/Tech on-call commitments.<br><br>Storage space at serials 12.3 and 13.3 to be combined.<br><br>Storage area requires simplex lock to allow 24/7 access and to ensure the physical security of expensive equipment. | 0.6 | 2.0 | Roller door? |
| | | not there | 12.4 | EOH Sqn personal locker area | Functional | Space for 18 x double locker for storage of specialist personal issue PPE. | Ideally colocated with ser 12.3 | incl in offices | | |
| | | not there | 12.5 | EOH Sqn External Store | Functional | Secure external storage area for Site Safe Store.<br><br>Minimum of 3m x 2m of readily accessible (24/7) floor space for storage of pesticides and associated equipment. | | external | | |
| | | 10.4 | 12.6 | EOH Sqn Technical work area | Functional | Occupational Health Fit Equipment laboratory<br><br>Secure facility<br><br>Minimum 32m$^2$ floor space for:<br><br>a) 1 x Standalone PC (Connected to CAMNet)<br>b) Sink Unit for preparation of sampling media and hand washing<br>c) 1m2 stone plinth base to support 2 x analytical micro-balances<br>d) Space for workbenches cupboards / draw units / equipment quarantine area and storage racking<br><br>Easily cleanable floor surface.<br>A mechanical ventilation system supplying temp and %RH controllable filtered air is required to allow the necessary preparation of sensitive sampling media and equipment.<br>8x double sockets at a height no less than 1m from floor level (bench height) for charging equipment.<br>Adequate lighting – (500 lux; in accordance with CIBSE Guidence).<br>Ability to secure (chain restraint) 2x in-use cylinders of compressed analytical gas. | Should be located in close proximity to EOH Sqn store and EOH Sqn office space.<br><br>Area requires simplex lock to allow 24/7 access and to ensure the physical security of expensive equipment.<br><br>Technical/ lab space at serials 12.6 and 13.3 to be located together. | 2.9 | 20.0 | Full Temp & RH control<br>Extra power |

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| 13.0 | Noise and Vibration Division | 11.1 | 13.1 | N&VD Pers | Office | Office space for 10 x personnel<br><br>1 x single office for line management activities<br><br>Each desk large enough to accommodate both MODNet and non-Modnet PCs<br><br>Space for 10 x 4 drawer filing cabinets | 12.1, 12.2 and 13.1 to be collacated/very close proximity for collaborative working.<br><br>Non DII network utilised in N&VD for non DII approved specialist analysis software 50% of work time.<br><br>24-hour access required due to early and late starts when travelling. | incl in offices | | |
| | | ? | 13.2 | Non MODNet Network | Functional | A Non-MODNet network is required comprising the following:<br><br>a) A netwrok with a minimum of 14 ports/netwrok connections in 2 office space and equipment technical preperation and testing areas<br>b) A minimum of 3 ports in equipment and prep area, 1 port in noise booth. Remaining ports in office area<br>c) A server / NAS drive with:<br>i) 12 TB storage capacity<br>ii) Back-up / restore functionality (either fire safe or NAS drive in remote location on the network)<br>d) Associated Hubs, Switched and UPS<br>e) Non-MODNet internet access for anti-virus and software updates | It is assumed all workstations will transfer from Henlow to new operating location.<br><br>Required software will not run on MODNet | incl in offices | 20.0 | assume a new server room |
| | | 11..3 | 13.3 | Store / Technical workspace | Functional | Secure facility for equipment storage, preperation and testing:<br><br>a) Must be Ground floor<br>b) Ceiling height at least 3m for racking<br>c) External Double door, level access to permit loading and unloading of heavy equipment<br>d) External Parking for 2 large vans adjacent to double doors<br>e) 30m$^2$ technical space<br>f) Double power sockets every meter around perimeter of room for equipment charging<br>g) Emergency Power cut-offs<br>h) Wall space for presentation boards - Health and safety plus work instructions | 24-hour access required due to early and late starts when travelling.<br><br>Combination locks required for access control to all areas.<br><br>Storage space to be combined with Serial 12.3<br><br>NVD equipment requires stable temperature storage.<br><br>Technical space to be combined with serial 12.6<br><br>CAMNet required in both office space and technical space. | 7.2 | | Temp control |
| | | 11.4 | 13.4 | Noise Booth | Functional | Space for noise booth - specifications TBD | To permit testing and calibration of personnel and equipment including AEA.<br><br>Existing anechoic chamber is 'lifed' to 2026. Comprises a main chamber (4m x 5m), and an observation chamber (2.5m x 5m). Has own power supply and air conditioning (both required due to sensitivity of equipment). Booth has visual fire alarm connected to the main Bldg system. | 1.4 | 5.0 | power for Chamber air conditioning and power |
| | | 11.5 | 13.5 | Locker Storage | Functional | Storage space for lockers for 8 pers | Personal issue PPE, survey and flying equipment. Ideally with storage space at 12.3 and 13.3 | incl in offices | | |
| | | | | Shared | main offices | total offices and classrooms | | 24.8 | | |
| | | | | Office areas total from above sec.2.6 table 2.3 | offices listed above | total area 276Msq. Plus office not in table 2.3 ( 1.1,7.8,8.2,10.5,10.6,10.13, 12.4 12.5) = 155m Sq | | 14.0 | | |
| | | | | | | | | | | |
| | | | | POOL ? | | | Is the existing suitable? | 20.0 | 20.0 | Pool equipment & heatpump |

| Notes | |
|---|---|
| | **90 W/Msq included for Heat pump heating**<br>**BISRIA rule of thumb estimates 87 Kw/M sq.**<br>**Our initial estimated calculations allow for 90Kw/Msq. (stores 10)** |
| | **we have based the requirment on a diversity of 70% but this could well be lower given the nature of the loads.** |

| | | |
|---|---|---|
| **Building total Kw** | **428.80** | |
| **Total Equip. Kw** | | **486.0** |
| **Sub Total Kw** | | **914.8** |
| **diversity** | | 0.70 |
| **Estimated Total Kw** | | **640.4** |
| **Total Estimated Kva** | | **753.0** |

IBEX ENVIRONMENTAL

# Services Report — Appendix 2 — 30/03/2020

**This is a copy of Table 2.3 from the GVA Assessment study with additional columns added to calculate the Kw loadings for the buildings based on BSRIA rule of thumb loadings for offices with ir conditioning / heatpumps. The RAFCAM classrooms have been treated as offices as these include computor equipement simular to offices. we have used this also to assess a nominal building load for other areas that may be heated with gas fired equipment. Ibex have also used a rule of thumb to calculate estimated loads on assumed building heights.**

| Area | ref | Description | Area M sq. | W/M sq. | Kw | Est. Ht M | Vol M3 | Kw / M3 | Gas Kw |
|---|---|---|---|---|---|---|---|---|---|
| AMW | 2.1 | Office space for 2x AMW personnel | Inc. in main office area | | incl. | | | | |
| | | | | | | | | | |
| AMWTS | 3.1 | Office space for 24x AWMTS personnel | Inc. in main office area | | incl. | | | | |
| | 3.2 | 5x classrooms for a minimum of 16 students | 160 | 90 | 14.4 | | | | |
| | 3.3 | 2x lecture theatres (70 person) | 280 | 90 | 25.2 | | | | |
| | 3.4 | 1x student refreshment facility | 70 | 90 | 6.3 | | | | |
| | 3.5 | Night Vision Goggle practical training room | 100 | 90 | 9.0 | | | | |
| | 3.6 | 1x medical inspection room | 16.5 | 90 | 1.5 | | | | |
| | 3.7 | Medical supplies store | 8 | 10 | 0.1 | | | | |
| | 3.8 | Anthropometry room | 60 | 90 | 5.4 | | | | |
| | 3.9 | 2x disorientation practical training rooms | 62 | 90 | 5.6 | | | | |
| | 3.10 | Scenario based hypoxia training area | 45 | 90 | 4.1 | | | | |
| | 3.11 | Hypobaric chambers, reservoir & plant | 412 | 90 | 37.1 | 6 | 2472 | 0.03 | 74 |
| | 3.12 | Debriefing room for students | 60 | 90 | 5.4 | | | | |
| | | | | | | | | | |
| CBRN | 4.1 | Office space for 3x CBRN personnel | Inc. in main office area | | incl. | | | | |
| | 4.2 | CBRN store room | 40 | 10 | 0.4 | | | | |
| | 4.3 | Practical training room for COLPRO/CCA | 600 | 90 | 54.0 | 5 | 3000 | 0.03 | 90 |
| | 4.4 | Post CBRN student ablutions | Inc. in main office area | | incl. | | | | |
| AIHF | 4.5 | Office space for 6x AIHF personnel | 30 | 90 | 2.7 | | | | |
| | 4.6 | AIHF office/workshop with overhead gantry | 35 | 90 | 3.2 | | | | |
| | 4.7 | Drying /wet room with overhead gantry | 54 | 90 | 4.9 | | | | |
| | 4.8 | Main bay/classroom | 220 | 90 | 19.8 | | | | |
| | 4.9 | Helmet storage room | 36 | 10 | 0.4 | | | | |
| | 4.10 | Space for 2x ISO containers | External area | | | | | | |
| | 4.11 | Store room | 36 | 10 | 0.4 | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| APS | 5.1 | Office space for 4x APS personnel | 20 | 90 | 1.8 | | | | |
| AMES | 5.2 | Oxygen bay | 25 | 10 | 0.3 | | | | |
| | 5.3 | Cylinder compound | External area | | | | | | |
| | 5.4 | Lumbar bay | 50 | 90 | 4.5 | | | | |
| | 5.5 | Multi-point pressure breathing rig | 24 | 90 | 2.2 | | | | |
| | 5.6 | Mechanical bay | 43 | 90 | 3.9 | | | | |
| | 5.7 | Electronics bay | 20 | 90 | 1.8 | | | | |
| | 5.8 | Altitude lab | 100 | 120 | 12.0 | | | | |
| | 5.9 | Locker room | incl. in area addition | | incl. | | | | |
| | 5.1 | Air compressor building | incl. in area addition | | incl. | | | | |
| | | | | | | | | | |
| AEIG | 6.1 | Office space for 6x AEIG personnel | 25 | 90 | 2.3 | | | | |
| | 6.2 | AEIG bay/office space | 102 | 90 | 9.2 | | | | |
| | 6.3 | AEIG main bay | 300 | 90 | 27.0 | 9 | 2700 | 0.03 | 81 |
| | 6.4 | AEIG store | 8 | 10 | 0.1 | | | | |
| | 6.5 | AEIG equipment store | 84 | 10 | 0.8 | | | | |
| | | | | | | | | | |
| SEMB | 7.1 | Office space for 2x SEMB personnel | 15 | 90 | 1.4 | | | | |
| | 7.2 | SEMB main bay | 120 | 90 | 10.8 | 5 | 600 | 0.03 | 18 |
| | 7.3 | AEA fitting room | 80 | 90 | 7.2 | | | | |
| | 7.4 | Clothing store | 152 | 10 | 1.5 | | | | |
| | 7.5 | Cockpit room | 135 | 90 | 12.2 | 5 | 675 | 0.03 | 20 |
| | 7.6 | Wet drill maintenance bay | 180 | 90 | 16.2 | 6 | 1080 | 0.03 | 32 |
| | 7.7 | NVG dark room maintenance area | 9 | 90 | 0.8 | | | | |
| | | | | | | | | | |
| RAF MB | 8.1 | Office space for 1x RAF MB personnel | 5 | 90 | 0.5 | | | | |
| | 8.2 | Office space for 11x RAF MB personnel | 55 | 90 | 5.0 | | | | |
| | 8.3 | Patient reception area | 20 | 90 | 1.8 | | | | |
| | 8.4 | 6x consulting rooms | 99 | 90 | 8.9 | | | | |
| | 8.5 | Emergency treatment room | 30 | 90 | 2.7 | | | | |
| | 8.6 | Medical store | 15 | 10 | 0.2 | | | | |
| | 8.7 | Medical records store | 5 | 10 | 0.1 | | | | |
| | 8.8 | Patient ablutions | incl. in area addition | | incl. | | | | |
| | | | | | | | | | |
| CAMS | 9.1 | 3x consulting rooms | 49.5 | 90 | 4.5 | | | | |
| | 9.2 | ECG management service office | 5 | 90 | 0.5 | | | | |
| | 9.3 | Ophthalmology suite | 16.5 | 90 | 1.5 | | | | |
| | 9.4 | Clinical physiology suite | 30 | 90 | 2.7 | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 9.5 | Emergency treatment room | incl.in serial 8.5 | | incl. | | | | |
| | 9.6 | Patient reception area | incl.in serial 8.5 | | incl. | | | | |
| | 9.7 | Medical records store | incl.in serial 8.5 | | incl. | | | | |
| | 9.8 | Patient ablutions | incl. in area addition | | incl. | | | | |
| | 9.9 | Medical store | 15 | 10 | 0.2 | | | | |
| | | | | | | | | | |
| EOH | 10.1 | Office space for 24x EOH personnel | Incl. in main office area | | incl. | | | | |
| | 10.2 | MAERA office space | 24 | 90 | 2.2 | | | | |
| | 10.3 | Store room | 58 | 10 | 0.6 | | | | |
| | 10.4 | Occupational Health Flt equipment lab | 32 | 90 | 2.9 | | | | |
| | | | | | | | | | |
| NVD | 11.1 | Office space for 10x NVD personnel | Incl. in main office area | | incl. | | | | |
| | 11.2 | there is no 11.2 | | | n/a | | | | |
| | 11.3 | Equipment storage, preparation and testing | 80 | 90 | 7.2 | | | | |
| | 11.4 | Noise booth | 15 | 90 | 1.4 | | | | |
| | 11.5 | Locker room | Incl. in main office area | | incl. | | | | |
| | | | | | | | | | |
| Support | 12.1 | Office space for 2x personnel | Incl. in main office area | | incl. | | | | |
| | 12.2 | Office space for 2x personnel | Incl. in main office area | | incl. | | | | |
| | 12.3 | Office space for 4x personnel | Incl. in main office area | | incl. | | | | |
| | 12.4 | Office space for 5x personnel | Incl. in main office area | | incl. | | | | |
| | 12.5 | Reception area | incl. in area addition | | incl. | | | | |
| | 12.6 | Tissue Reference Sample office and store | 64 | 90 | 5.8 | | | | |
| | 12.7 | Meeting room/VTC seating up to 20 | 30 | 90 | 2.7 | | | | |
| | 12.8 | Tea bar/rest room for all CAM personnel | 30 | 90 | 2.7 | | | | |
| | 12.9 | Education/learning room | Incl. in main office area | | incl. | | | | |
| | | | | | | | | | |
| Shared | | Main office area | 276 | 90 | 24.8 | | | | |
| | | Plus office not in table 2.3 (1.1,7.8,8.2,10.5,10.6,10.13, 12.4, 12.5) = 155m Sq | 155 | 90 | 14.0 | | | | |
| | | Allowance for pool area | 324 | | 20.0 | 6 | 1944 | 0.03 | 58 |
| | | Total area | 5,249.5 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Notes | | 90 W/Msq included for Heat pump heating based on BSRIA 87 for offices with A/C | **Buildings Total Power Kw** | | **428.8** | | | **Total Gas Kw** | **374** |
| | | | | | | | | **Total Gas M3/hr** | **47** |