





**Asset Information Requirements**

**at Project Handover**

**Estates**

***Rev G***

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**Revision G**

*Update of Property Services Terrier Requirements & Associated Appendix*

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**Table of Contents**

1.0 INTRODUCTION 1

2.0 APPLICATION & USE 1

3.0 IP RIGHTS 2

4.0 GENERAL REQUIREMENTS

4.1 Core Information Requirements 2

4.2 Project Handover Control Schedule 2

4.3 Health & Safety Files 3

4.4 Operation and Maintenance (O&M) Manuals 4

4.5 Building Emergency Folder 4

5.0 BUILT ESTATE INFORMATION

5.1 Space Information 5

5.2 Asbestos Register 5

5.3 Property Terrier 6

5.4 Planning & Other Consents 6

5.5 Certification 7

5.6 Warranties 7

5.7 Commissioning Data 8

5.8 External Wayfinding Signage Asset Register 8

6.0 OPERATIONAL ESTATE INFORMATION

6.1 Maintained Assets & Planned Preventative Maintenance 8

62 Building Life Cycle Data 10

6.3 Maintenance Spares Schedule 10

6.4 Water Quality & Legionella Control 11

6.5 Cleaning Strategy 11

6.6 Security Systems (Intruder Alarms, CCTV, Access Control) 12

6.7 Key Schedule 12

6.8 Metering Information 13

6.9 Building Management System (BMS) Data 13

6.10 Energy Performance Data 14

6.11 Insurance Cover and Fixed Asset Valuation 14

6.12 Statutory Inspection/Written Scheme of Insurance Inspection 15

6.13 Operational Training & Instruction 15

7.0 CAD DRAWINGS and BUILDING INFORMATION MODELLING

7.1 AutoCAD ‘Design’ Drawings (2-D) 16

7.2 AutoCAD ‘As Built’ Drawings (2-D) 17

7.3 Master Plan AutoCAD Drawings (2-D) 17

7.4 Building Information Modelling 18

**Appendix List**

**Note:** The documents listed below are available to download from the Estates (Maintenance Services) web pages:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

A Project Handover Control Schedule (Section 4.2)

B Health & Safety File Contents (Section 4.3)

C Operation & Maintenance Manual Content (Section 4.4)

D Fire Safety Design Guide (Section 4.5)

E Space Management Information (5.1)

F Space Naming Convention (Section 5.1)

G Asbestos Management Plan (Section 5.2)

H Property Terrier Information Template (Section 5.3)

I Maintained Assets & System Hierarchy (Section 6.1)

J Building Life Cycle Data Return Template (Section 6.2)

K Spares Schedule (Section 6.3)

L Policy & Procedures for the Control of Legionella Bacteria within Water Systems (Section 6.4)

M Cleaning Information Template (Section 6.5)

N Security System Installation Record Template (Section 6.6)

O Key Schedule Template (Section 6.7)

P Electronic Metering Data Template (Section 6.8)

Q University Electronic Drawing Standards (Section 7.1)

## INTRODUCTION

One of the key objectives for all University projects is the handover of a fully operational and defect free building at practical completion. An essential element of a successful handover is the provision of accurate project information, delivered in a timely manner at the end of a project. This helps to support a seamless transfer of the facilities to the both building users and the operational facilities teams.

The aim of this Asset Information Requirements (AIR) document is to define the information required by the University at project handover stage; describing both our content and format requirements.

The key objectives are:

* To ensure that all relevant documentation described in this specification is provided in a timely manner at project handover, to allow the University to safely occupy and operate the facilities from the date of occupation.
* To provide the required drawings, documents and data in the defined electronic format. This will enable the information to be loaded onto the University’s CAFM database, the electronic document management system and/or other appropriate software.
* To deliver a Building Information Model (where specified) to a defined level of information and detail.

## APPLICATION & USE

The Asset Information Requirements apply to all University projects, including the construction of new buildings, alteration works and maintenance projects. The requirements described, however, are intended to be scalable dependent upon the size and complexity of the project.

It will be the joint responsibility of the project team and operational facilities management teams to establish which elements of the Asset Information Requirements apply to a particular project. The information deliverables should be agreed at project inception.

The University will decide on a project by project basis which schemes will be developed using Building Information Modelling (BIM). The Project Manager will inform the project team at inception whether or not BIM is applicable.

## IP RIGHTS

The University reserves the rights to use all manuals, drawings, models and any other documents referred to in the AIR for other purposes. For the avoidance of doubt all such documentation is ‘design information’ within the meaning of the contract, under which the AIR obliges the provision of such documents.

## GENERAL INFORMATION REQUIREMENTS

## Core Information Requirements

The following core information is currently required by the University at handover stage:

* Completed Project Handover Control Schedule
* Health & Safety File
* Operation and Maintenance Manual
* Building Emergency Folder
* WREN (CAFM) Data
* 2-D AutoCAD Drawings (Design and as-built drawings)
* Building Information Model & COBie Data (Specified Projects Only)

For some documentation, the University may specify that a draft version is submitted for review prior to handover. This is required to ensure that any issues relating to the content or format are identified **prior** to handover.

The University requires the documents listed above to be submitted on duplicate DVDs. Where a hard copy of documentation is required, two copies must be provided to the University.

## Project Handover Control Schedule

**General Requirements:** The project team should provide the University with a draft copy of the Project Handover Control Schedule **six weeks prior to handover**, where practicable. This should clearly identify what information will be provided at handover stage.

At handover the project team should provide a completed copy of the Control Schedule, which will be used as a checklist to ensure that all deliverable information has been provided.

**Media & Format:** An electronic copy of the Project Handover Control Schedule in MS Excel format should be included with the O&M manuals.

**Content/Notes:** The template for the Project Handover Control Schedule is shown as **Appendix A** and is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

This document should be used by the project team as a checklist to establish what information is relevant to the project and to summarise what information will be provided to the University at handover stage. The information deliverables must be agreed with the University’s Chief Engineer at least **4 weeks prior** to handover.

## Health & Safety Files

**General Requirements:** The Health & Safety (H&S) file should contain the information needed to allow future construction work, cleaning, maintenance, demolition etc. to be carried out safely. The H&S file should alert those carrying out such work to any associated risks and should help them to decide how to work safely. An H&S file is required on all projects that make a change to the structure of the building or the associated services, regardless of whether a CDM-C is appointed or the project is notified to the HSE.

**Media & Format:** The University requires that an electronic copy is provided in bookmarked .pdf format using Adobe Acrobat Professional. Each file size must not exceed 50Mbytes. If the file size exceeds this limit the document should be split into volumes, with each not exceeding 50Mbytes. Each volume should be numbered (e.g. volume 01, volume 02 etc.) and bookmarks used to identify the contents.

The .pdf file(s) should be provided on DVD, which should be clearly labelled using the following protocol: HS\_Discipline (where relevant)\_Project Description\_Volume Number. E.g. HS\_Kitchen Refurbishment 2015\_Volume 1. The document will be filed with Site/Building Reference Number and WREN job number as meta-data.

**Content/Notes:** The H&S Files must include the sections and information listed in **Appendix B** and is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

 Any section of the H&S File which is not relevant to a particular project should still be included, but should be notated as “Not Applicable”, rather than left blank.

## Operation and Maintenance (O&M) Manuals

**General Requirements:** O&M manuals should be provided by the project team on all projects, but should be scaled to suit the size and complexity of the scheme. The file should contain sufficient information to allow the University to safely operate and maintain the facility.

**Media & Format:** The University requires that an electronic copy is provided in bookmarked .pdf format using Adobe Acrobat Professional. Each file size must not exceed 50Mbytes. If the file size exceeds this limit the document should be split into volumes, with each not exceeding 50Mbytes. Each volume should be numbered (e.g. volume 01, volume 02 etc.) and bookmarks used to identify its contents.

The .pdf file(s) should be provided on DVD, which should be clearly labelled using the following protocol: OM\_Discipline (where relevant)\_Project Description\_Volume Number. E.g. OM\_Kitchen Refurbishment 2015\_Volume 1. The document will be filed with Site/Building Reference Number and WREN job number as meta-data.

**Content/Notes:** The O&M manuals must include the sections and information listed in **Appendix C** and is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

 Any section of the O&M File which is not relevant to a particular project should still be included in the document, but should be notated as “Not Applicable”, rather than left blank.

## Building Emergency Folder

**General Requirements**: A Building Emergency Folder is displayed in the foyer/main entrance of most University buildings and provides information for emergency services on the layout of the building, high risk areas, locations of gas cylinders, radioactive materials, hazardous chemicals, evacuation routes etc.

The Building Emergency Folder will normally be compiled and updated by the University’s Fire Safety Officer. To facilitate production of the file, the project team needs to provide a new or updated Fire Plan Drawing and Fire Alarm Cause and Effect Drawing.

**Media & Format:** An electronic copy of the drawings should be provided at handover in .pdf format as part of the H&S File.

**Content/Notes:** Copies of the drawings listed should be provided to the University as part of the H&S file at handover. If this information is not provided, then the H&S File will be deemed to be incomplete.

The Fire Plan Drawing must include the information listed in Section 16 of the University’s Fire Safety Design Guide. This document is shown as **Appendix D** and is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

## BUILT ESTATE RECORD INFORMATION

## Space Information

**General Requirements:** The project team should provide full details of all new and altered space in order that the University’s space management records can be updated.

**Media & Format:** Where necessary, at the start of a project, existing space information can be provided to the design team in MS Excel format from the University’s FM database.

An electronic copy of the updated space management information should be included with the O&M manuals in MS Excel format. The data input template is shown as **Appendix E** and is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

 Mandatory fields are marked on the template.

**Content/Notes:** Space data should be provided to the University using the naming protocols set out in **Appendix F**. This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

##  Asbestos Register

**General Requirements and Information:** The project team should provide the University with details of all work undertaken to remove, modify or encapsulate asbestos-based materials in accordance with the University’s Asbestos Management Plan. A copy of this document is available as **Appendix G** and is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

**Media & Format:** The asbestos register will be updated by the University’s Asbestos Coordinator. It is important that the project team provide the Asbestos Coordinator with details of any new or amended records in a timely manner as the work progresses. This requirement is intended to ensure that the asbestos register always reflects the current position.

**Content/Notes:** Updates should include details of all newly identified asbestos-based materials and details of where any previously identified materials have been encapsulated, modified or removed. All new and amended records must include a supporting material risk assessment, as required by HSG264. Associated documents including bulk sample analysis reports, four stage air clearance and waste transfer notes should be provided to the Asbestos Coordinator to append to the appropriate record on the asbestos register.

## Property Terrier

**General Requirements:** The project team should provide the University’s Property Services Land and Property Data Officer with any information, documents and drawing information required to update the Property Terrier. Examples of information required should include any leases/licences/rights of way/wayleaves/easements/restrictions or agreements for third party rights over land or property. Please note this is not an exhaustive or conclusive list.

Any updated agreements will need to have been formally agreed, signed and completed through Legal Services at the University of Reading to protect any University land and property interests.

Drawings and Plans, prepared in .DWG format, should be supplied so that the University Master Property Title drawings can be updated.  Where necessary, at the start of a project, existing property terrier information can be provided (where this is available), to the Project Lead by Property Services upon written request to the Land and Property Data Officer.

**Media & Format:** An electronic copy of the updated terrier information should be included within the relevant section of the O&M manuals along with any drawings indicating changes to land or property matters.  These should be included in DWG form. The final O&M should be distributed to Property Services c/o Land and Property Data Officer.

**Content/Notes:** Property terrier information should be provided to the University in the format shown in **Appendix H** and is available to download via the Estates website:  This should be provided in draft to Property Services minimum of 6 weeks in advance of Completion for review. If clarification of any of these requirements is needed by the Project please consult with Property Services in advance of draft being provided.

([**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**](http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset_Information_Requirements.aspx))

The University’s mandatory fields are marked on the template. If mandatory information is not provided, then the O&M manuals will be deemed to be incomplete.

## Planning & Other Consents

**General Requirements:** The project team should provide the University c/o Property Services Land and Property Data Officer with full electronic copies of all planning and listed building applications and consents, building regulation approvals, English Heritage consents etc. All documents relating to the release of Planning Conditions and S106 conditions will also need to be provided to Property Services.  A database setting out any unreleased planning conditions and S106 conditions should be provided to Property Services and the University. In addition the UOR Town and Country Planning Tracker (c/o Land and Property Data Officer) should be fully updated by the Project Lead upon handover.  The Project Lead to continue to be responsible for the ensuring that all unreleased Planning Conditions and S106 conditions are dealt with after handover and release documents are sent to the Property Services Land and Property Data Officer.

**Media & Format:** An electronic copy of all consents and approvals in .pdf format should be included with the Property Terrier information and included within the relevant section of the O&M manuals.   This should be provided in draft to Property Services minimum of 6 weeks in advance of Completion for review. If clarification of any of these requirements is needed by the Project please consult with Property Services in advance of draft being provided.

**Content/Notes:** If this information is not provided, then the O&M manual will be deemed to be incomplete.

## Certification

**General Requirements:** The project team should provide the University with electronic copies of all testing certificates relating to the structure, fabric, mechanical plant, electrical systems etc.

**Media & Format:** An electronic copy all testing certificates in .pdf format should be included within the relevant section of the O&M manuals.

**Content/Notes:** If this information is not provided, then the O&M manuals will be deemed to be incomplete.

## Warranties

**General Requirements:** The project team should provide the University with electronic copies of all warranties relating to the building fabric, mechanical and electrical systems and plant, fittings and equipment etc.

**Media & Format:** An electronic copy of all warranties in .pdf format should be included within the relevant section of the O&M manuals.

**Content/Notes:** If this information is not provided, then the O&M manuals will be deemed to be incomplete.

## Commissioning Data

**General Requirements:** The project team should provide the University with copies of all commissioning data.

**Media & Format:** An electronic copy of all commissioning data in .pdf format should be included with the O&M manuals.

**Content/Notes:** The project team should provide the University with all commissioning data sheets, together with the details of any rectification work required as part of the commissioning process. If this information is not provided, then the O&M manuals will be deemed to be incomplete.

## External Wayfinding Signage Asset Register

**General Requirements:**  The project team should provide the University with details of any new signage, removed signage and alterations to signage associated with the project. This information will be used to populate the University’s External Wayfinding Signage Asset Register.

**Media & Format:** Updates to the University’s External Wayfinding Signage Asset Register should be provided electronically using the **WREN Wayfinding Signage Module**. A ‘zipped’ copy of this database module will be provided by the Estates Business Systems Manager (tel: 0118 378 7299 / email: k.p.doyle@reading.ac.uk). Advice on the use of this module will be provided when the zip-file is supplied.

**Content/Notes:** Entry of signage data into the WREN Wayfinding Signage Module enforces completion of the mandatory fields and the University’s formatting requirements. Incomplete records cannot be saved.

## OPERATIONAL ESTATE INFORMATION

## Maintained Assets & Planned Preventative Maintenance

**Background:** The University aims to deliver a maintenance regime that ensures buildings are safe, compliant and fit-for-purpose. In support of this aim we have developed an annual planned preventative maintenance (PPM) programme which ensures that routine servicing, statutory inspection and testing is carried out on maintained assets in a timely and prescribed manner.

At the core of the PPM programme is the ‘maintenance asset register’, which records the assets and systems that are subject to cyclical maintenance and inspection. Routine maintenance ‘tasks’ are then allocated to the ‘assets’ in order to generate the PPM programme. Full and timely provision of the asset register is a key element of a successful project handover.

**General Requirements:** The project team should provide the University with an electronic copy of the updated asset register. This should detail all building fabric, plant & equipment requiring periodic maintenance/inspection and should include details of the maintenance and inspection regime required.

**Definitions:** A maintenance **‘asset’** is defined as any item which requires periodic maintenance, testing or inspection by Estates or their designated specialist contractors, for example, a fire alarm smoke detector.

A maintenance **‘system’** is defined as a collection of assets which make up a technical system requiring periodic maintenance, testing or inspection by Estates or their designated specialist contractors, for example, a (whole) fire alarm system.

The full list of maintenance ‘assets’ and ‘systems’ are described in **Appendix I** and is available download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

The University’s system and asset hierarchy has been mapped to the Uniclass 2015 classification system or product category to assist project teams with identification. It should be noted that this information has been provided for guidance only. It is the project team’s responsibility to ensure that details of all relevant systems and assets are provided at handover.

**Media & Format:** Updates to the University’s asset register **MUST** be provided electronically using the **WREN Asset Data Input Module**. Entry of data into this module enforces completion of the mandatory fields and the University’s formatting requirements. Incomplete records cannot be saved.

A ‘zipped’ copy of this module will be provided by the Estates, Business Systems Manager (Tel: 0118 378 7299 / email: k.p.doyle@reading.ac.uk). Advice on the use of this module will be provided when the zip-file is supplied.

**Content/Notes:** The project team shall provide full details of changes to maintained assets and systems. Where existing assets or systems have been removed or made inactive details should also be provided.

Provision of this information helps the University to ensure that appropriate maintenance regimes are in place at handover and manufacturer’s warranties are maintained. If this information is not provided in a timely manner, then project handover will be deemed to be incomplete.

## Building Life Cycle Data

**General Requirements:** The project team should provide the University with a schedule of the expected life-cycles for major items of building fabric, services and plant & equipment associated with the project. This information will be used to populate the WREN Building Condition module which is used to drive the University’s planned maintenance programme.

**Media & Format:** An electronic copy of the life-cycle data in MS Excel format should be included with the O&M manuals.

**Content/Notes:** The project team should provide estimated life-cycle data for the elements listed in **Appendix J** using the template provided. This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

The project team does not need to provide life-cycle data for elements of the building fabric, services plant etc. which have not been altered as part of the project.

If this information is not provided, then the O&M Manual will be deemed to be incomplete. Estimated life-cycles should only be provided for the building elements that have formed part of the project.

## Maintenance Spares Schedule

**General Requirements:** The project team should provide the University with a Spares Schedule at handover, so that these can be entered onto the WREN Inventory Control Module, where necessary.

**Media & Format:** An electronic copy of the Spares Schedule in MS Excel format should be included with the O&M manuals.

**Content/Notes:** The project team should provide the Spare Schedule using the template provided in **Appendix K**. This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

The schedule should include the manufacturer’s details, reference numbers, information on where the parts are stored, the approximate value of each part and the quantities provided at handover.

## Water Quality and Legionella Control

**General Requirements:** The project team should provide the University with a legionella risk assessment at handover. The relevant information from the risk assessment will be up-loaded, by the Maintenance team, onto the University’s web-based legionella control software, Opuz12.

The University’s Policy & Procedures for the Control of Legionella Bacteria within Water Systems is provided as **Appendix L**. This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

**Media & Format:** An electronic copy of the legionella information in .pdf format should be provided to the University at handover. In addition a hard copy should be provided within the relevant section of the O&M file.

**Content/Notes:** The project team should provide a legionella risk assessment at handover, which should include a water system schematic drawing, a list of the relevant assets and details of any hazard controls to be implemented.

Legionella risk assessments MUST be submitted using the University’s standard template, which is available to download via the Estates website:

The project team must provide details of chlorination/disinfection work on new/existing water systems, together with a copy of the water regulation compliance certificate. The project team should also supply flushing documents, if the water system went live more than a week before occupancy. If this information is not provided, then the O&M Manual will be deemed to be incomplete.

## Cleaning Information/Strategy

**General Requirements:** The project team should provide the University with a recommendation for the cleaning strategy to be adopted after handover.

**Media & Format:** An electronic copy of the Cleaning Strategy in MS Excel or Word format should be included within the relevant section of the O&M manuals.

**Content/Notes:** The project team shall provide a cleaning strategy, which should include details of all building finishings requiring periodic cleaning, together with information on the routine and deep-cleaning requirements for each area. The strategy should also include details of the recommended cleaning products and cleaning equipment required for each surface finish.

The template for provision of cleaning information is shown as **Appendix M**. This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

## Security Systems (Intruder Alarms, CCTV, Access Control)

**General Requirements:** The project team should provide the University with details of any additions, alterations and omissions to/from security systems. Where new systems have been installed the project team must arrange and pay for routine maintenance of the equipment installed from the date of hand-over to the next contract renewal date (March).

**Media & Format:** An electronic copy of the Security System Installation Records and Interim Maintenance Contract should be included in MS Word format within the relevant section O&M manuals.

**Content/Notes:** Additions, alterations and omissions to/from security systems should recorded on the Security System Installation Record Sheet, as shown in **Appendix N**. This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

The record sheet must include the relevant contract number(s) for the maintenance period up to the contract renewal date. If this information is not provided, then the O&M Manual will be deemed to be incomplete.

## Key Schedule

**General Requirements:** The project team should provide the University with a key schedule at handover stage.

**Media & Format:** An electronic copy of the key schedule should be included in MS Excel format within the relevant section of the O&M manuals.

**Content/Notes:** The key schedule should include details of the keys provided to the University, differentiating the number of master and sub-master keys provided. Suiting details and key reference numbers should also be included with the schedule.

The template for provision of the Key Schedule is shown as **Appendix O**. This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

If the project includes electronic room access control then a schematic diagram and an access card schedule should also be provided.

## Metering Information

**General Requirements:** The project team should provide the University with full details of all utility meters (fiscal meters and sub-meters) that have been added, altered or removed as part of the work.

**Media & Format:** An electronic copy of the metering data must be provided in MS Excel format within the relevant section of the O&M manuals.

**Content/Notes:** The project team should include details of the type of meter, the meter serial number, the opening meter reading (or closing reading if being removed), the meter reference (MPR, MPAN, MSN), details of the location of the meter, a photograph of the meter and access details, including any access restrictions.

The template for provision of meter data is shown as **Appendix P.** This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

The project team should also provide a schematic drawing showing the configuration of parent/child meters. An IP address linking the meter to the network data logger must be established and included with the metering data.

## Building Management System (BMS) Data

**General Requirements:** The project team should provide the University with full details of any additions, alterations or omissions to BMS systems at handover.

**Media & Format:** Electronic copies of relevant information should be included in .pdf format within section 4.0 of the O&M manuals.

**Content/Notes:** The project team shall provide a full description of the BMS system and its operation, details of any additions, alterations or omissions, a new or amended control panel schematic drawing, a list of critical BMS alarms configured at handover and a list of panel points.

## Energy Performance Data

**General Requirements:** The project team should provide the University with details of the listed energy performance data at handover.

**Media & Format:** Electronic copies of relevant energy performance data should be included in .pdf format within the relevant section of the O&M manuals.

**Content/Notes:** The University should be provided with a copy of the Energy Performance Certificate (EPC) (where relevant); details of any Low and Zero Carbon (LZC) technologies, including details of any applicable subsidies to be claimed (e.g. Feed-in-Tariff); details of any generating equipment installed, including design output; details of modelled energy performance of the project, including contractual output and operating assumptions.

## Insurance Cover and Fixed Asset Valuation

**General Requirements:** The project team must ensure that the University’s Insurance Department is notified prior to handover so that the University can make arrangements for appropriate insurance cover.

The date for practical completion shall be advised in writing to the University’s Insurance Officer at least 5 working days prior to handover. The project team should provide the University’s Insurance Department with an estimate of the new or updated insurance replacement value.

**Media & Format:** An electronic copy of the fixed asset valuation should be included in .pdf format with the relevant section of the O&M manuals.

**Fixed Asset Value Calculation:** This should be calculated based upon the following:

**Included Costs** - All superstructure, finishings, mechanical and electrical installations, fixed fittings and equipment.

**Excluded Costs** - Site clearance and demolition costs, substructure, external works and paving, underground drainage, loose fittings and equipment, AV equipment, VAT, professional fees, planning and building regulation fees, consequential loss costs.

The base date should be included with the valuation.

## Statutory Inspection / Written Scheme of Insurance Inspection

**General Requirements:** The project team should provide a Written Scheme of Examination for all plant, equipment and fabric that will require a statutory inspection/written scheme of insurance inspection.

**Media & Format:** An electronic copy of the Written Scheme of Examination in MS Word format should be included within the relevant section of the O&M manuals.

**Content/Notes:** The Written Scheme of Examination should include the following:

* Identification of the item of fabric, plant or equipment within the system;
* The parts of the system which are to be examined;
* The nature of the examination required, including the inspection and testing to be carried out on any protective devices;
* The preparatory work needed for the item to be examined safely;
* Where appropriate, the nature of any examination needed before the system is first used;
* The maximum interval between examinations;
* The critical parts of the system which, if modified or repaired, should be examined by a competent person before the system is used again;
* The name of the competent person certifying the written scheme of examination;
* The date of initial certification.

This will enable the University’s Insurance Inspector to implement monitoring regimes that are compliant with the relevant legislation or regulation.

## Operational Training & Instruction

**General Requirements:** The project team should provide written instructions for the training of both operational users and those involved in routine maintenance and inspection.

**Media & Format:** An electronic copy of the written instructions in MS Word format should be included within the Section 3 of the O&M manuals. In addition the University should be provided with two paper copies on plasticised paper, bound into A4 4-hole binders.

**Content/Notes:** The project team should provide written instructions for the training of University building users.

The project team should also provide separate written instructions for maintenance staff and contractors involved in routine maintenance, which should include ‘cause and effect’ guidance.

##  CAD DRAWINGS and BUILDING INFORMATION MODELLING

This section describes the standards that should be adopted when producing or updating CAD drawings, BIM models and associated COBie for the University.

## AutoCAD 2-Dimensional ‘Design’ Drawings

**CAD Drawing Standards:** The requirements for the development of CAD drawings are set out in University’s Electronic Drawing Standards. The current version of this document is shown as **Appendix Q**. This document is available to download via the Estates website:

(**http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/Asset\_Information\_Requirements.aspx**)

**Drawing Disciplines:** Drawings should be split into the following disciplines:

* Architectural
* Civil and Grounds
* Structural
* M.E.P. Services

**Software Platforms:** The project team should adopt a collaborative approach to design development and construction. Wherever possible a common software platform and version should be used by the project team. Where this is not the case, a common exchange format should be identified.

**Coordinates:** The project team should ensure that drawings are set out using common coordinates. Where applicable, northing and easting coordinates should be defined and these coordinates, together with any origin rotation/datum, should be provided to the project team.

Drawing Numbers: Drawing numbers are issued at the outset of the project by the University’s CAD and Project Documentation Officer (Tel: 0118 378 6807 / p.tsounou@reading.ac.uk).

**Title Blocks:** The standard University of Reading title block should be inserted in the bottom right hand corner of all drawings and must be populated with the required reference information. The title block is an AutoCAD attribute block and the standard template is available from the University’s CAD and Project Documentation Officer (Tel: 0118 378 6807 / p.tsounou@reading.ac.uk). The consultant’s title block should also be included on the drawing and must be fully populated.

**General Requirements:** The project team should provide the University with a full set of CAD 2-dimensional ‘design’ drawings at RIBA stage 3.

**Media & Format:** An electronic copy of the drawings should be included within the relevant section of the O&M manual CD(s). Drawings should be provided in both the following formats:

* Autodesk 2-D AutoCAD copies of the final “design” drawings, which should be supplied on DVD.
* Final design drawings converted to .pdf format, which should be included in the electronic O&M manual.

AutoCAD drawings should be supplied on a separate DVD, accompanied by a drawing schedule. The DVD must be labelled using the following protocol: Wren Job Number/Building Number/Design Drawings/Volume number. E.g. 0235678\_B001\_Design Drawings\_01

## AutoCAD ‘As Built’ Drawings (2-D)

**General Requirements:** The project team should provide the University with a full set of 2-D ‘as built’ drawings.

**Media & Format:** An electronic copy of the drawings should be included within the relevant section of the O&M manuals. Drawings should be provided in both the following formats:

* Autodesk 2-D AutoCAD copies of the final “as built” drawings, which should be supplied on DVD.
* As-built drawings converted to .pdf format, which should be included in the electronic O&M manual.

AutoCAD drawings should be supplied on a separate DVD accompanied by a drawing schedule. The DVD must be labelled using the following protocol: Wren Job Number/Building Number/As Built Drawings/Volume number. E.g. 0235678\_B001\_Design Drawings\_01

Drawing numbers are issued at the outset of the project by the University’s CAD and Project Documentation Officer (Tel: 0118 378 6807 / p.tsounou@reading.ac.uk).

## Master Plan AutoCAD Drawings (2-D)

**Campus Master Plan:** Where a scheme involves new build, demolition or alters the footprint of an existing building the project team **MUST** ensure that the Campus Master Plan is updated at handover.

The contractor should liaise with the Project Manager to obtain the latest version of Campus Master Plan prior to handover.

**Infrastructure Master Plan:** Where campus infrastructure is changed (added, re-routed or removed) the project team should arrange to update the Campus Infrastructure Master Plan. Updates to the plan should reflect all changes to buried services (electricity, water, natural gas, specialist gas, foul and surface water drainage, data cabling, site lighting wiring, CCTV wiring etc.).

The contractor should liaise with the Project Manager to obtain the latest version of the Infrastructure Master Plan. The plan differentiates between different services, with each being recorded on different CAD ‘levels’. The project team should liaise with the project manager to ensure alterations to infrastructure are recorded on the correct ‘level’ for the service.

## Building Information Modelling

See University Employer’s Requirements (separate document)