ESTATE SUPPORT SERVICE

Project Briefing Document

Section 1 – General Building Design Guide and Specifications

Issue 1      February 2013

Project Ref .....................................

Project Name ..................................

Project Manager .................................

Date Issue ........................................ Consultant /Contractor .................

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1 INTRODUCTION

• The purpose of this document is to outline the design standards that are acceptable to the University in terms of materials, methods of working and design criteria. The document does not cover all aspects of project design and is primarily concerned with those areas where the University wishes to express a preference and should be read in conjunction with further detailed specifications provided for a project.

• Where products and suppliers are named in the document this is with the aim to achieve consistency of materials and components used which benefits future maintenance and replacement when required. Whilst there is a need to control the range of products used the University will consider the use of alternatives to those suggested provided they are of equal specification and approved by the Project Manager.

• Designers should also refer to the University's project briefing document on Design and Construction Policy for Sustainable Buildings and Campus Environments.

   Design  Construction policy Sept 2010 (2).c

• All projects will also be subject to the general requirements of:
  – Equality Act 2010 (formerly DDA)
  – Current Building Regulations
  – Current Water Supply Regulations
  – CDM Regulations

2 COMMUNICATIONS

All communications by designers with University personnel must be agreed with the ESS Project Manager. Where references are made in this document regarding contact with ESS personnel, the ESS Project Manager will set up meetings and coordinate at each relevant stage of the RIBA Plan of Work.

3 SUSPENDED CEILINGS

• Ceiling systems and components generally to BS EN 13964.

• Suspended ceilings would normally be a 600 x 600 mm lay in grid type. Design of the ceiling grid needs to take into account access required to services above and clearance for integrated light fittings. The layout of the grid must align with the lighting design and choice of luminaries.
• Concealed grids and ceiling plank systems with limited access should be avoided unless there is a specific design requirement.

• Generally mineral ceiling tiles should be used as manufactured by Armstrong UK. Choice of tile for circulation areas, offices and teaching areas should be led by cost and future availability. Armstrong Dune tiles are commonly installed in these areas.

• Laboratory areas, clean rooms, kitchens and humid areas will need to be assessed and an appropriate tile such as Armstrong Bioguard, Hygiene or Hydroboard specified. Acoustic properties may also need to be considered in some areas.

4 FLOOR COVERINGS

• Carpets – in general carpet tiles are the preferred option. Designs and colours to be taken from an agreed range from the following manufacturers: Interface Europe Ltd, Forbo Flooring Ltd, Desso Ltd.

• The University has a framework agreement in place for the supply only of carpet tiles to all accommodation properties. The current supplier is Interface Europe Ltd and tiles should be obtained from them for accommodation projects unless otherwise agreed.

• Heavy duty entrance matting to be considered for all main entrances and should extend a suitable travel distance, preferably a minimum of 5m, to prevent soiling to other floor coverings

• Vinyl flooring or similar – generally sheet flooring is the preferred option. Designs and colours to be taken from an agreed range from the following manufacturers; Altro Ltd, Polyflor Ltd, Tarkett Ltd.

• When specifying sheet flooring, stone or ceramic tiling etc, the areas should be assessed for slip hazards and a product selected with the manufacturers appropriate slip-resistance value.

• Where sheet flooring is fitted in bathrooms, shower rooms, wet rooms etc. it should extend underneath all sanitary goods, baths, showers etc. and ideally have a coved or sealed skirting detail.

• Where an underlay is required under carpet tiles or vinyl 6 mm plywood should be used.

• Floors in plant rooms, subject to location in the building, should be tanked and have adequate drainage taking into account the equipment and services within the room.
PAINTING/CLEAR FINISHING

- Standards generally to BS 6150 2006
- Products generally are to match those already used on the University Campus and colours taken from an agreed palette from BS/Ral colour ranges.
- Paint products to be obtained from Crown Paints Ltd, Dulux Trade Paint or other equal and approved manufacturer.
- Walls in heavy duty areas requiring cleaning should be finished with acrylic eggshell, washable matt or similar products.
- Colour contrasts should be considered by the designer to accommodate the requirements of the Equality Act (DDA).
- Escape routes – subject to the wall and ceiling construction and previously applied finishes consideration should be given to the application of flame retardant coatings.

WINDOWS

- Performance
  - Provide independent certifications that all components comply with specified performance requirements
  - Replacement window installations to BS 8213-4
  - Wood windows to BS 644
  - Steel windows to BS 6510
  - Aluminium windows to BS 4873
  - PVC-U windows to BS 7412
- Where possible all windows to be manufactured to the 'Secured by Design' standard BS 7950
- Windows to be fitted with an integral adjustable restrictor to limit the opening width to max 100 mm.
- Where possible window design is to allow for cleaning to be carried out from the inside.
- Windows to be manufactured to achieve a minimum performance of Band C on the EU energy ratings scale or a U value of 1.6 W/m²K
7 AUTOMATIC DOORS

- Standards generally to BS 7036.
- Safety sensors to be installed to doors to detect any objects in the operating field and stop the motion of the door and return it to its original position.
- Full door height finger guards should be fitted on door leaves with auto operators.
- Motion sensors for opening the doors on approach may be required when specific DDA requirements of BS 8300/2009 need to be met.
- A break out facility should be included in the specification which allows doors to be opened manually in an emergency.

8 FIRE DOORS

- Fire doors generally to comply with BS 8214/2008 and tested in accordance with BS 476-22
- All fire doors should be clearly and permanently marked with their declared fire resistance with a colour coded label or plug.
- Ideally all fire doors should be supplied as complete door sets. Test certificates should be provided and indicate that the door has been tested as a complete assembly.
- Closing forces for fire doors should be in accordance with the recommendations set out in BS EN 1154.
- Where there is a conflict between the closing force required for a fire door under BS EN 1154 and the opening force requirement of Approved Doc. M then consideration should be given to the use of electromagnetic hold open or low energy door operators.

9 IRONMONGERY

- Generally all door furniture is to be in accordance with the Equality Act 2010 (formerly DDA), Approved doc M and BS 8300.
- Choice of ironmongery is to be consistent with that already fitted on the campus and generally obtained from an agreed range from Assa Abloy, Laidlaw Solutions Ltd. Dorma UK, NHN or other approved.
• Locks and cylinders will be obtained from the University's list of approved suppliers and the manufacturer/lock suite will usually match that already installed in a building.

• Cylinders for new projects would usually be obtained from ASL Master Locksmiths, or equal and approved contractors, and added to existing suites where appropriate. There will be exceptions to this where other manufacturers’ suited cylinders are fitted in a building. In these cases the existing suites should be matched, Assa Abloy and Union are the other main cylinder manufacturers currently installed on Campus.

• Common suites exist across the University campus for plant rooms, roof access etc. and any new provision must be added to this suite. Lock cylinders to be obtained from ASL Master Locksmiths.

10 GENERAL FIXTURES/PANEL CUBICLES etc

• Toilet cubicles, vanity units and IPS panelling to be manufactured from a moisture resistant MDF (or equivalent) core and faced with High Pressure Laminate (HPL).

• Consideration to be given to manufacturing cubicles in a solid grade laminate in areas of heavy use or higher humidity such as sports area changing rooms.

• Laboratory benches and similar to be manufactured from 22 mm Trespa solid laminate on metal frames.

• Laboratory under bench and wall furniture generally to be manufactured from – carcass Melamine faced MDF, doors Laminate faced MDF.

11 FITTED KITCHEN UNITS

• Units generally to be manufactured to BS 6222-2 and -3, and BS EN 14749.

• The University currently has a framework agreement for the supply of kitchen units and associated fittings with Rixonway Kitchens Ltd, Shawcross Business Park, Dewsbury, West Yorkshire, WF12 7RD and units should be obtained from this supplier unless otherwise agreed.
12 SANITARY APPLIANCES AND FITTINGS

- WC fittings are to be to DEFRA WC suite performance specification or equivalent approved by the relevant water company.

- Generally sanitary ware should be manufactured by Armitage Shanks/Ideal Standard although other equal and approved will be considered.

- Basin taps should be self closing or IR controlled and preferred manufacturers are Armitage Shanks, Dart Valley Systems or Reliance Water Controls.

- Shower Units – shower pods are the preferred option to the installation of separate components and the units currently installed in the University are manufactured by either Taplanes of Harrogate, Douglas James Ltd, Hull. En Suite bathroom pods as manufactured by Taplanes of Harrogate.

- Shower mixer valves to have thermoscopic controls as manufactured by Kohler Mira Ltd or Reliance Water Controls or other equal and approved.

13 PLUMBING WORK

- All waste pipework from sanitary ware to have mechanical and not welded fittings.

- Isolating valves to be fitted to all outlets or group of outlets.

- All redundant pipework and equipment to be removed during refurbishment works.

- Mains isolating valves serving a project area should be refurbished or renewed as required.

- Access for future maintenance of services must be provided for in the design of systems and waste systems should have appropriate access points for cleaning.

- Urinals to have flush control units fitted.
14 PORTABLE FIRE FIGHTING EQUIPMENT AND SIGNAGE

- The University’s current service provider for the supply and maintenance of portable fire fighting equipment is Safe and Sure Limited.
- New projects should allow for a review of the provision. Plans should be provided to the University Fire Safety Officer who will advise on provision of equipment and position of signage. Revised details to be sent to ESS for inclusion on the maintenance schedule.

15 INTERNAL/EXTERNAL SIGNAGE

- The University has an approved design and policy for internal and external directory and general signage which is to be used for new projects – details and suppliers can be found at (add link).

16 LANDSCAPING/STREET FURNITURE

- The University has a 'Coherent Campus' document which provides a definitive guide to approved palette of landscape, street furniture and paving materials which are to be used on all future projects. Details can be found at:

  [Landscape Element Specification.pdf](#)

17 ENVIRONMENTAL

- The University has an Environmental Sustainability Policy and Strategy which focuses on energy, waste management, water and sustainability issues. This should be referred to by project designers, details can be found at [http://www.ncl.ac.uk/estates/environment/policy.htm](http://www.ncl.ac.uk/estates/environment/policy.htm)
## Section 2 – Mechanical Services design guide and specifications

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1.0 Communications generally:

All communications by designers with University personnel must be agreed with the Estates Project Manager. Where references are made in this document regarding contact with Estate personnel, the Estates Project Manager will set up meetings and co-ordinate at each relevant stage of the RIBA Plan of Work.

2.0 Introduction and General Guide:

**Mechanical Services Design Guide**

The purpose of this document is to outline the design standards that are acceptable to the University in terms of materials, methods of working and design criteria with respect to the Mechanical Engineering services installations.

This document does not cover all aspects of Project Design, it is primarily concerned with those areas where the University wishes to express a preference and should be read in conjunction with further detailed specifications, room data sheets and other supporting documentation provided by the University.

The Design Engineer should liaise with the building users and ESS maintenance (via the Estate Project Manager) as far as possible to fully understand the operation and use of the building.
Although all projects will be job specific and may require design standards that complement or match the existing, the following sections identify the standards which are acceptable and preferred; all deviations from the recommendations contained within this document shall be supported by a written justification from the designer and must be authorised, in writing, by the Estate Project Manager.

A written reply will be provided by the Maintenance Section, sanctioning the deviation or rejecting (with explanation).

All material specifications are generally to match those already used throughout the University estate and also used by the Direct Works Organisation, however equal and approved options may be allowed at the discretion of the University Estate Support Services. Information relating to any major items of plant and equipment will be submitted to the Estate Support Services for inspection and approval by the Maintenance and Improvements Section prior to procurement.

The Mechanical services design and installations shall focus on producing a functional, flexible and energy efficient building by utilising best practice in order to provide the following :-

- Robust and resilient engineering systems
- Good comfort conditions for the occupants
- Installations which require relatively low maintenance
- Systems which have relatively low straightforward operational procedures
- Systems which are as energy efficient as possible and minimise carbon emissions

Where there are large or complex services and systems, a specialist commissioning agent should be appointed to advise at design stage and also to carry out and provide the project commissioning plan for the Mechanical services systems.

All commissioning is to be carried out in accordance with the current CIBSE and BSRIA commissioning guides.

All of the services installations and systems shall be designed and installed with due regard for the future maintenance. This is to take into account the sizing and location of plant with respect to routine inspection and servicing requirements and also the future replacement.
For all systems which require planned preventative maintenance by specialist service engineers the first year maintenance contract should be incorporated into the project requirements and costs.

The University have a set of agreed procedures and permits to work systems for specific mechanical tasks and mechanical isolations which must be complied with and the up to date procedures and documentation can be found on the University website address:

http://www.ncl.ac.uk/estates/healthsafety/forms.htm

For works required on any existing mechanical systems, ESS Maintenance must be notified of all main building Isolations, drain downs and re-filling of wet systems. This can be facilitated by the Maintenance team, however a minimum 14 day notification period is required in advance of ESS carrying out any of the above tasks.

Generated noise and noise breakout from Mechanical plant and services are to be controlled via acoustic attenuation measures in order to bring the external / internal noise criteria to within acceptable levels as dictated by the HSE guidance and noise at work regulations.

3.0 Environmental and Sustainability Strategy:

As concerns grow for future resources coupled with the effects of environmental pollution and global issues, the role of designers and operators of buildings and their energy use becomes ever more important.

It is essential that, for all minor and major projects, opportunities for improving the efficiency and effectiveness of energy use are examined and fully utilised to ensure energy and environmental savings, whilst maintaining the comfort and health of the occupants.

When areas are to be upgraded, or for new installations, the designers must always
consider their design from a sustainable and environmental perspective and will be required to comply with the current Building Regulations. In order to assist with this the Mechanical services will be designed to minimise CO2 production by providing the following passive measures:-

- High standards of insulation
- High standards of air tightness
- Low emissivity double glazing
- Maximising efficiency and heat recovery on mechanical systems
- Primary plant and equipment shall be selected to minimise energy use and carbon emissions

Designers are required to meet the requirements of all current Building Regulations and are also to be responsible for making all such necessary applications and approvals via Building Control.

In accordance with Government policy any major refurbishment or new project will be required to provide an option for incorporating building information modelling and soft landings into the project brief (also refer to handover documentation section).

A more detailed guide to the University and HEFCE requirements for design and construction policy for sustainable buildings and campus environments can be found on the standard specification document below:


Any variation to this guide should be discussed with the designated Project Manager and the Estates Energy Manager at the earliest indication that a change is being considered (this would normally occur at C or D stage of the RIBA Plan of Work).

4.0 **Incoming Services – Gas, Mains Cold Water and Drainage** :

It is the responsibility of the design team to include for any necessary works or upgrades to the infrastructure of the incoming services. This shall include carrying out the required
notifications and liaising with the appropriate providers, carrying out predicted load calculations and coordinating routes of the services into the buildings.

**Metering / sub-metering**

The necessity to meter or sub-meter gas, electricity, steam and water should be determined at design stage. Where applicable, the appropriate meter should be installed together with a unique identification label. This information, together with an accurate location description drawing and details of the service provider, should be forwarded to the University Energy Manager.

**Monitoring and Targeting**

As required by the current Building Regulations any new installation or upgrade over 1000m² should also provide sub metering of all Utility services which are also required to be compatible with the site Building Energy Management System.

**Gas Regulations**

All work in respect of the installation and maintenance of gas systems and appliances must conform to the requirements of the “Gas Safety (installation and use) Regulations” 1998 (or the latest edition).

The Operations and Maintenance Division of the Estate Support Services maintain a schedule of equipment in respect of gas fired equipment. It is the responsibility of the Project Manager to ensure that the schedule is updated prior to commissioning or following the removal of any gas fired equipment.

**Natural Gas Systems**

Natural gas supplies shall be extended from the incoming mains to serve the heating systems and as required by the project specific room requirements. As detailed above sub meters shall be installed to each supply serving differing areas of use.

Gas supplies within teaching areas shall be served with an emergency stop button located near the exit and which shall isolate all of the gas supplies to that particular area. Gas
supplies within commercial Kitchen areas shall be provided with a gas proving and interlock system with the extract ventilation system.

Gas schematic drawings must be provided and updated to reflect any alterations to the gas installations. The gas schematic drawings need to be placed at the meter location and also at any other relevant location such as the building or boiler room entry point.

**Water and Drainage Systems**

The designer shall liaise with the local water authority and regulations inspector to ensure the water services and drainage systems and installations fully meet and comply with their requirements.

(Refer also to section 6.0 - Domestic Water and Above Ground Drainage Systems).

Water and drainage system schematic drawings must be provided and updated to reflect any alterations to the water and drainage installations. The schematic drawings need to be placed at the meter location and also at any other relevant location such as the building or boiler room entry point.

**5.0 Heating and Cooling Systems**

Heating and Cooling loads shall be minimised by utilising the guidelines outlined in the Environmental Strategy.
Heating Systems:

The University have a heating policy document which must be adhered to and can be seen using the following link: Heating Policy_Final_Dec12.docx

An optional appraisal shall be presented to the University which shall cover the heat generation available to the development. The appraisal shall include estimates of life cycle costs, maintenance requirements, energy use and carbon emissions.

Possible methods should include Biomass, Ground Source, Solar Thermal, Combined Heat and Power and Conventional Gas Fired.

The heat generation plant shall be high efficiency in terms of energy use and low NOx and carbon emissions in accordance with the Building regulations and BREEAM requirements.

Condensing boilers with fully modulating burners shall be specified for new and replacement installations. If the case for a condensing boiler cannot be justified then the minimum standard will be a high efficiency low NOx boiler.

Careful consideration should be given to the size and number of boilers to be installed as oversized heating plant will reduce seasonal efficiency and increase capital cost unnecessarily.

There are a number of manufacturers of boiler plant which cause maintenance and stock problems within the department, boiler selection should be preferably based on those manufacturers which are currently installed on the University Campus.

The Design Engineer should be aware that most of the existing heating boiler plant on the Main Precinct is not normally operated during the summer from June until September.

The heating plant will generate low temperature hot water which shall be distributed around the building in a closed, pressurised pipework system with a system pressurisation unit and water treatment dosing system. A low loss header arrangement shall be utilised providing a constant temperature primary circuit and variable temperature secondary circuits.

Pressure, temperature test points shall be provided at all the main system locations with respect to the main items of plant and equipment and also the main flow and return headers.
For all low temperature hot water pumps, consideration must be given to the installation of duty / stand by arrangements. Inverter driven / speed control pump installations which are sized to cope with future expansion should also be provided.

Pumps shall be fitted with the necessary anti – vibration mounts and provided with strainers on inlet and non return valves on discharge side. All expansion bellows to equipment shall be supplied to a minimum double red band rating.

Generally isolating valves shall be butterfly / ball type valves with lever handle and shall be supplied and fitted to all parts of the system to allow isolation of all main and sub circuits and isolation of plant and equipment.

Commissioning valves and devices to allow measurement and flow shall be provided at all points to ensure the correct and efficient setting to work of the system as determined by the design.

The majority of heat emitters will be fed from a compensated circuit controlled by appropriate modulating valves at the dictates of the Building Management System. Unless absolutely necessary stand alone systems should not be used.

All radiators and perimeter heating systems will also be fitted with thermostatic radiator valves

All convectors and door curtains, will be connected to a constant temperature circuit.

The University water treatment specialist shall be employed to carry out an analysis of the installed heating system and provide a proposal to flush, clean and chemically dose the system in order to inhibit corrosion and bacterial growth and also to prevent detrimental effects to plant, pipework and equipment.

All heating pipelines shall be thermally insulated using phenolic foam sections with class ‘O’ rated foil finish. All pipework insulation located externally or in plantroom areas are to be finished with metal cladding.

The services shall be identified by means of colour bands and the name and flow direction of the piped service.

When work is carried out on existing heating systems all redundant pipe-work and equipment will be stripped out.
Schematic drawings must be provided for all new installations and updated to reflect any alterations to the existing heating installations and detailed as ‘As Installed Drawings’. The schematic drawings need to be added to the health and safety file and also placed at a relevant location such as the building or boiler room entry point.

**Cooling Systems:**

Wherever possible, designers should avoid mechanical ventilation and air conditioning systems. This may require designers to consider the options at early design concept to ensure natural ventilation/free cooling is fully utilised.

Introduction of full air conditioning into a design will dramatically increase the University’s energy costs and carbon footprint, therefore it must be avoided wherever possible.

Air conditioning/Comfort Cooling systems may only be specified after full consultation and agreement with the Energy Manager and is subject to receiving the necessary approval from the submission of the Air Conditioning and Cooling Case Assessment application form.

End users should be made aware (by the Estate Project Manager) that they may be responsible for energy and maintenance costs of any air conditioning or comfort cooling systems. Therefore all air conditioning and comfort cooling plant will have the electrical supply fitted with a simple totalising meter as the energy charges may be recouped from the school responsible for the unit.

Good control is essential for comfort conditions and energy efficient operation.

A suitable interface to the Building Management System will be incorporated so that heating and cooling systems cannot operate simultaneously. Cooling should not commence until the space temperature reaches 24 Deg C unless there is a process requirement for lower temperatures.

An option appraisal shall be presented to the University, which shall cover the methods of cooling / heat rejection and cooling distribution available to the development. The appraisal
shall include estimates of life cycle costs, maintenance requirements, energy use and carbon emissions.

Possible methods of cooling should include ground source, dry air coolers, absorption cooling, conventional air cooled chillers with free cooling coils/cycles and variable refrigerant systems with a primary water loop.

All cooling and air conditioning systems shall be supplied, installed and commissioned by a recognised and approved HVCA Contractor specialising in these installations.

Refrigerant based direct expansion split systems shall only be used for small specialist areas where none of the above systems are appropriate.

The chosen refrigerant gas installation and system will be environmentally friendly and will comply with the current F gas regulations.

Condensate discharge will be installed with an air break, normally a tundish arrangement, to a suitable agreed waste point, the tundish will be labelled to indicate which unit it serves.

Generally isolating valves shall be supplied and fitted to all parts of the system to allow isolation of all main and sub circuits and isolation of plant and equipment.

Commissioning valves and devices to allow measurement and flow shall be provided at all points to ensure the correct and efficient setting to work of the system as determined by the design.

Pressure, temperature test points shall be provided at all the main system locations with respect to the main items of plant and equipment and also the main flow and return headers.

The University water treatment specialist shall be employed to carry out an analysis of the installed cooling system and provide a proposal to flush, clean and chemically dose the system in order to inhibit corrosion and bacterial growth and also to prevent detrimental effects to plant, pipework and equipment.

All cooling pipelines shall be thermally insulated using phenolic foam sections with class ‘O’ rated foil finish. All pipework insulation located externally or in plantroom areas are to be finished with metal cladding.
The services shall be identified by means of colour bands and the name and flow direction of the piped service.

The installation will be installed complete with a service contract in place for the first year, service reports will be forwarded to the Estate Support Services on completion of each visit.

Where condensing units are located on roof areas the unit must either be installed on a proprietary support system or hung from a parapet. Sufficient space underneath plant must be allowed so that roof repairs can easily be carried out.

The Estate Support Services maintain a Schedule of Systems in respect of refrigerant gas systems. It is imperative that Project Managers update the document for each project where air conditioning units or refrigeration units are installed.

When work is carried out on existing cooling systems all redundant pipe-work and equipment will be stripped out.

Schematic drawings must be provided for all new installations and updated to reflect any alterations to the existing cooling installations and detailed as ‘As Installed Drawings’. The schematic drawings need to be added to the health and safety file and also placed at a relevant location such as the building or boiler room entry point.

**6.0 Domestic Water and Above Ground Drainage systems**

**Water Regulations**

The designer shall liaise with the local water authority and regulations inspector to ensure the water services and drainage systems and installations fully meet and comply with their requirements.

As part of the Water Supply (Water Fittings) Regulations the contractor working on these systems will need to be a member of an approved scheme, which may exempt
the project from certain Water Authority notification and inspection procedures.

The approved Contractors will be required to be a member of one of the following
groups: Water Industry Approved Plumber Scheme, The Institute of Plumbers, The
Association of Plumbing and Heating Contractors and the Scottish and Northern
Ireland Plumbing Employers Federation.

The installation shall include all appropriate means and measures to prevent back-
syphonage as required by the water regulations.

A water treatment specialist shall be employed to flush and disinfect all domestic hot
and cold water systems as per current legislation and guidance.

**Legionella**

All work on new or existing installations shall comply in all respects with the latest editions
of ACOP, the Control of Legionella Bacteria in Water Systems and the Estate Support Services
procedures. The University retain the services of a company to manage the control of
legionella in accordance with the ACOP; details of the current provider can be obtained from
the Maintenance and Improvements Section of Estate Support Services.

It is the duty of the Contractor to ensure that the building legionella risk assessment has
been revised to show any alterations or additions to the system.

**Water Systems**

An options appraisal shall be presented to the University, which shall cover the
possible integration of rain water harvesting and solar thermal hot water generation to
the development. The appraisal shall include estimates of life cycle costs,
maintenance requirements, energy use and carbon emissions.

Cold water systems, where possible shall avoid cold water storage tanks.

Outlets shall be served from the mains via a break tank and booster set, providing a potable
water supply system.
The University have a safe drinking water policy document which must be adhered to – this document can be seen by using the following link: Safe Drinking Water.docx

Hot water systems shall be provided from a central source with a distribution system comprising of flow and return circuits together with a circulating pump.

Where large quantities of hot water are not required, hot water storage systems should be avoided and where feasible instantaneous or plate heat exchangers systems should be utilised for the provision of hot water.

In small or isolated locations it may be more practicable to install small independent storage or instantaneous hot water heaters.

Fire fighting rising mains shall be provided in accordance with the fire strategy, current regulations and legislation.

Local fire fighting equipment will be provided in the form of fire extinguishers and where feasible any existing fire hose reel systems should be made redundant, stripped out and removed.

Generally isolating valves shall be butterfly / ball type valves with lever handle and shall be supplied and fitted to all parts of the system to allow isolation of all main and sub circuits and isolation of plant and equipment.

Each water appliance or group of outlets, will have local Ballofix isolating valves fitted to aid removal of appliances and taps.

Mains isolation valves will be renewed or refurbished as required even if they are outside of the project area, access locations to isolating valves will be clearly identified and labelled.

All hot and cold water pipelines shall be thermally insulated using phenolic foam sections with class ‘O’ rated foil finish. All pipework insulation located externally or in plantroom areas are to be finished with metal cladding.

The services shall be identified by means of colour bands and the name and flow direction of the piped service.

Generally:
Water boilers shall be provided to kitchenette areas.

Infra-red taps and flow regulators will be installed where appropriate – when used this type of installation must be provided with a purge valve to allow legionella flushing to be carried out.

Thermostatic mixing valves will be used for disabled facilities.

Where tank and mains water cold water supplies feed a building, all pipe-work and drinking water outlets will be clearly labelled.

Access to waste systems and rodding points on pipe-work will be provided and clearly identified.

All waste pipe-work will be carried out using push-fit connections, solvent welded fittings are not acceptable.

When planning new laboratory area’s it should be noted that eyewash facilities or localised drench showers may be required in Chemical, Biological and some Engineering spaces.

When work is carried out on existing plumbing systems all redundant pipe-work and equipment will be stripped out.

Schematic drawings must be provided for all new installations and updated to reflect any alterations to the existing water and drainage installations and detailed as ‘As Installed Drawings’. The schematic drawings need to be added to the health and safety file and also placed at a relevant location such as the building or boiler room entry point.

7.0 Ventilation Systems:
The University policy is to employ natural ventilation where possible. Therefore, where the external environment is favourable in terms of noise and pollution, natural ventilation shall be designed and utilised as outlined in the CIBSE natural ventilation guide and the building regulations for ventilation and energy.

Wherever possible, all designers should co-ordinate their work to consider the optimum position for rooms which would benefit from the use of passive cooling and avoid mechanical ventilation and air conditioning systems (Also refer to sections 3.0 environmental strategy and 5.0 Cooling Systems).

The purpose of the Ventilation system will be to achieve one or more of the following:

- To provide adequate indoor air quality by removing and/or diluting pollutants from occupied spaces
- To provide adequate ventilation for the effective operation of processes
- To provide a heat exchange mechanism
- To prevent condensation within the building

An option appraisal shall be presented to the University, which shall cover the methods and possible systems of ventilation available to the development. The appraisal shall include estimates of life cycle costs, maintenance requirements, energy use and carbon emissions.

The project ventilation options, strategy and requirements should be determined by following the guidelines detailed in the Ventilation and air conditioning CIBSE guide.

Where mechanical ventilation is a requirement then the possibilities of combining mechanical and natural ventilation systems through hybrid or mixed mode solutions should be considered. For example, seasonal hybrid systems might use natural ventilation in the Summer, when windows can be opened and mechanical in Winter, when it is cold outside and heat recovery from exhaust to supply air provides an energy efficiency and comfort advantage. Spatial hybrid solutions might have mechanical ventilation for the internal zones with natural ventilation at the perimeter.

With the exception of process or specialist ventilation systems such as laboratories, kitchens and toilets all air handling units shall incorporate a heat recovery system.

Good control is essential for comfort conditions and energy efficient operation.
A suitable interface to the Building Management System will be incorporated so that heating and cooling systems cannot operate simultaneously. Cooling should not commence until the space temperature reaches 24 Deg C unless there is a process requirement for lower temperatures.

**Mechanical Ventilation:**

Air handling units shall provide the supply and extract air to the specified area’s with distribution via sheet metal ductwork systems, which shall be constructed and installed in accordance with the current HVCA specification and good practice guide. Generally the ventilation systems should be designed on the basis of low velocity and low pressure drops.

There are a number of manufacturers of air handling units and ventilation plant which cause maintenance and stock problems within the department. Selection should therefore be preferably based on those manufacturers which are currently installed on the University Campus and where components and parts are readily available.

All air handling unit heater batteries will be connected to a constant temperature circuit and heat output will be controlled by appropriate valves operating from the Building Management System. Stand alone controls will not be installed. All heating batteries will be installed with adequate access for maintenance and cleaning.

The Design Engineer should be aware that most of the heating boiler plant on the main precinct is not normally operated during the summer from June until September.

All Air Handling Plant shall be fitted with variable speed inverter driven supply and extract fans. This shall allow the control of variable air volume systems within areas of variable occupancy and intermittent use. For constant volume air systems, the variable speed inverters will facilitate accurate and efficient commissioning.

All units are to be direct drive and standard frame type - those rated 1kW and above will be to the new energy efficiency standard IE 2 high efficiency or IE3 premium efficiency.
All ventilation and cooling systems are to fully comply with the current guidance, codes of practice and regulations relating to fire precautions and the building fire strategy.

The supply and extract air distribution systems shall be ducted to and from each room terminal. All main branch connections will have volume control dampers to allow for correct air balancing of the ductwork system.

Connections to each terminal are to be fully accessible with each having a volume control damper and flexible duct connections when fitted to a ceiling mounted diffuser or grille.

Access doors shall be provided to enable cleaning and inspection of all fire dampers, restrictions, bends, branches, dampers and heater batteries and at not more than 6 metre intervals on straight runs as outlined in the HVCA guidance.

All ventilation ductwork shall be thermally insulated using phenolic foam sections with class ‘O’ rated foil finish. All ductwork insulation located externally or in plant room areas are to be finished with metal cladding or weather proof membrane with colour finish to match surrounding environment.

The services shall be identified by means of colour bands and the name and flow direction of the ducted service.

Twin fan systems will not be installed in either supply or extract air handling units.

If duty and stand by units are required these will be two discreet separate units.

Humidification systems will not normally be required except in special circumstances and full discussions between the Estates team and the Engineer will be required prior to a system being specified.

Where ever possible ventilation plant will not be placed on outside roof areas however where plant is installed on external roofs then a proprietary support system will be used. Sufficient space underneath plant must be allowed so that roof repairs can easily be carried out.
Where external plant is being considered the Head of Capital development should be consulted to ensure that the location and aesthetics do not compromise the environmental coherence of the overall campus. The reasoning for the decision to install externally shall be provided to the head of Maintenance for consideration.

Attenuation and acoustic treatment shall be provided to the ventilation systems in order to meet acceptable noise levels.

All localised ventilation fans will have high efficiency motors, low energy and carbon. These installations shall be controlled locally, preferably automatically via sensors detecting air quality, humidity or occupancy, alternatively a local controller should be provided.

**Process Ventilation - Fume Cupboards, Safety Cabinets and Local Exhaust Systems:**

All cupboards, cabinets and hoods should be capable of operating independently of the building’s main ventilation systems.

Storage facilities built into the cupboard that require the extract system to run continuously must be avoided or run of its own independent system.

Unless there are overriding safety issues, Low volume fume extract systems are preferred with face velocities in the region of 0.25– 0.3 m/sec. and must comply with the containment tests detailed in the current CEN guides and legislation.

All cupboards and their fans should be able to be shut down and on multiple systems when cupboards are shutdown or out of use the extract fan should sequentially ramp down. This will need to be in conjunction with the supply system which will also need to ramp down but also maintain the pressure regime within the process area.

All fume extract fans are to be direct drive units with motors sited external to the air stream.

Flue dilution should be considered for multiple fume extract systems and each system must be provided with a vertical discharge stack and cone at a minimum height of 3 metres above the highest part of the building.

Laboratory fume extract and process extract duct and fan systems will generally be constructed and installed in rigid polypropylene which is chemical and corrosive resistant and meets the installation requirements of HVCA specification for plastic
ductwork installations.

Clean rooms and specialist areas, identified in the brief or room data sheets may require close environmental, temperature and humidity control. These specialist rooms are to be designed to meet the requirements of their classification but will more than likely be provided with their own dedicated close control equipment and ventilation plant.

Where a process produces airborne contaminants such as dust, mist, fume, vapour or gas in a workplace, than the designers are required to provide a local exhaust ventilation system. The systems will fully comply with the HSE guidance for controlling airborne contaminants at work. LEV systems shall be capable of operation independent of the building general air systems.

The University Safety Office should be consulted by the Project Manager on all Fume extract and Safety Cabinet Installations.

Schematic drawings must be provided for all new installations and updated to reflect any alterations to the existing ventilation systems and installations and detailed as ‘As Installed Drawings’. The schematic drawings need to be added to the health and safety file and also placed at a relevant location such as the building or plant room entry point.

8.0 Building Energy Management Systems:

A Building Energy Management system will be provided to control and monitor all the installed Mechanical services plant and any peripheral equipment.

The designated University BEMS controls specialist in conjunction with the controls Contractor shall be responsible for the complete design, supply, configuration, documentation and commissioning of the BEMS including all hardware, software and supply of all connected sensors and actuators, including all control wiring and power wiring from control panels to equipment or motors.
The controls specialist shall include for generating suitable graphic schematics for each new ducted or piped system and is to include real time plant status, sensor and actuator values etc. The graphics shall fit within the existing University BEMS hierarchy, a copy of which is available from the Estates Energy Manager.

The BEMS installation shall be completed prior to the commissioning of the Mechanical plant and the controls specialist shall be responsible for full pre and operational commissioning of the BEMS.

**Performance Testing:**

The new system shall be fully merged and integrated into the existing BEMS controls system and then fully interrogated to ensure that all control systems, strategies, routines and functionalities are operating correctly.

The testing and commissioning programme shall include for the continuous system performance tests as outlined below.

The University should be provided with a programme and prior notification so that they have the opportunity to be in attendance to witness these tests. These tests should be run in conjunction with the testing and commissioning of the BEMS installations.

Systems are to be run continuous to demonstrate that equipment, materials and systems are operating correctly, controls are properly adjusted, systems interact as intended and that the systems maintain the specified conditions within the building.

Test the performance of systems to demonstrate conditions are maintained under the summer and winter design conditions.

As the prevailing weather conditions may not be suitable at the time of commissioning then an additional visit and outstanding tests will be carried out in either the summer or winter. Should the system fail to perform, then any defects or faults shall be rectified.
and the system re-tested and proven to work, as part of the project conditions.

Upon completion of the installations and following the successful testing and commissioning of the BEMS, the controls specialist will carry out the necessary demonstration and training to the end user.

A more detailed specification and installation guide for the Building Energy Management System can be found on the following specification document:

BEMS Specification.pdf

Generally all new BEMS control equipment should be compatible with Siemens Building Management System and PX controllers.

The University has a maintenance contract for the existing Siemens control systems under which all their equipment is maintained and replaced under the terms of the contract. Exceptionally, as in the case for some of the existing Medical School Buildings where a Schneider Electric, Satchwell BEMS systems is already installed, then these may also be used.

9.0 Handover Documentation:

The Mechanical handover information and documentation is to follow the current BSRIA guidance document ‘Handover, O + M manuals, and Project Feedback’.

In accordance with the Building Regulations and the BSRIA guide, for all new buildings, a building log book will be produced and handed over. This document will describe the operation of the building and how to efficiently operate and maintain the buildings in terms of energy and carbon emissions. The log will also allow the building manager to record and log the operation and building energy in order to monitor the energy performance of the building.
The Mechanical Services section is to form part of the overall Health & Safety file and should therefore be designed so that it can easily be formatted and incorporated into the overall document, which will be handed over to the University on completion of the project. Mechanical manuals will not include manufacturers’ brochures a simple schedule of equipment incorporating model numbers, serial numbers and manufacturers details will suffice.

Timescales for preparing handover information should be set at the start of the project so that sufficient lead in times are times allowed for collating, checking and approving the information.

At the point of “Practical Completion” the contractors will supply an interim Operations and Maintenance manual which will detail items of equipment which have been removed or installed in the project area, details of any service contracts with specialist suppliers, details of warranty and service intervals and a list of contact numbers to be used in the event of a defect being reported.

One complete electronic copy should be presented to the Estates Office on handover of the project, should the file require any updates after it has been handed over the whole manual will be re-submitted.
1.0 Communications generally

All communications by designers with University personnel must be agreed with the Estates Project Manager. Where references are made in this document regarding
contact with Estate personnel, the Estates Project Manager will set up meetings and co-ordinate at each relevant stage of the RIBA Plan of Work.

2.0 Electricity at Work Regulations 1989 (SI 1989/635) as amended.

The University and all companies/persons that are employed by the University to design, construct, operate and maintain electrical installations and equipment have duties imposed on them under the above mentioned act. The University will ensure that all companies/persons have the necessary levels of competence to carry out the required category of works. In turn all companies shall ensure that their employees have the necessary levels of competence to carry out the required category of works. Reference should be made to appropriate guidance, such as may be found in national, international, reputable foreign and harmonised or industry standards and codes of practice or HSE guidance, or they should seek expert advice. Only those who have both the knowledge and the experience to make the right judgements and decisions and the necessary skill and ability to carry them into effect should undertake work subject to these Regulations


The EMC Directive and UK’s EMC Regulations 2005 require that all apparatus and electrical installations as defined shall be designed so as not to be unduly influenced or cause interference to other apparatus or equipment. Appropriate attention should be given to the design, installation and management to ensure that the regulations and Directive are adhered to.

4.0 Electrical Services Design and Specification guide

4.1 Lighting Design

The university has a variety of spaces and environments within the campus teaching and research buildings, student accommodation and other discrete locations and externally across the public realm, sporting and general circulation spaces. Consequently designers must take into account the differing spaces and design the particular lighting installation to with due regard to the application and brief provided.

The overarching principals that the designer must adhere to are outlined below.

1. Use recognised design principals and guidelines, in particular utilising guidance and parameters within the Society of Light and Lighting (SLL) guides.
2. Achieve compliance to Part L of the building regulations
3. Maximise natural daylight where possible.
4. Demonstrate value for money within selection of manufacturers and components.
5. Utilise effective and energy saving luminaires and lighting controls, avoiding the use of complicated control philosophies.
6. Particular attention should be paid to providing value for money through the selection of luminaires that will contribute to the overall campus wide maintenance strategy. Early discussions with the Head of Maintenance prior to detailed design shall be held.
7. Lighting shall be designed to ensure that colour, light and contrast is utilised to enhance the inclusive environment in buildings with particular reference to partially sighted and visually impaired persons.

The proposed lighting design schemes, including calculations and plots, details of manufactures luminaires and drawings, must be submitted to the Head of Maintenance for consultation

4.1.1 Specific requirements.

4.1.1.1 Lecture Theatres.

Lighting systems must be dimmable and controllable from the designated teaching position within the room, as well as a logical two way switching sequence to allow exit and egress from the room. Clear engraving of each particular lighting control must be provided as well as a local mimic diagram. A system of lighting controls for lecture theatres is currently being adopted across the University which ensures ease of operation through familiarity of controls.

4.1.2 Emergency Lighting.

Static Inverter emergency lighting units shall be used as the energy source in all cases of new emergency lighting installations. LED luminaires are to be used as lighting emitters. Where there is an extension to an existing system utilising central battery or self contained systems consultation with the Head of Maintenance must be carried out at an early stage to determine the overall strategy for the building as a whole. The emergency lighting system shall be utilised to provide reassurance lighting within corridors and other circulation areas as an addition to the existing lighting controls. Designers should ensure they consult the company currently nominated to carry out planned maintenance on University emergency lighting systems. The Head of Maintenance can provide details of the current provider.

4.2 Electrical Distribution.

4.2.1 General Electrical Information

1. All outlets will be labelled with their circuit identification number. All cables will be labelled with their circuit identification using PVC
2. Ring cable markers at every point of connection.
3. All means of isolation will have an engraved label fixed by screws.
4. Redundant circuits are to be stripped back to the origin along with the relevant containment.
5. New distribution boards should be numbered. Contact Estates Project Manager to advise on suitable references (avoiding, for example, numbers such as P1 and L1).
6. Where equipment requires a specialist service visit, the first year maintenance contract will be included in the installation costs. The end user will also be informed that they may be responsible for the ongoing service charges.
7. All tripping devices will be of the manual re-set type, auto re-set will not be considered.

The University owns and operates its electrical HV ad LV distribution system on the main campus from the point of connection to the supply authority 33KV distribution network. All applications for connection, modifications and change in demand must be made to the Head of Maintenance which will be considered in consultation with the Energy Manager giving due regard to the load profile and load flow to the network.

The following is a list, although not exclusive, which are connected directly to the supply authority network.

1. Grand Hotel
2. Henderson Hall
3. St Marys College
4. Bowsden Court
5. King’s Gate
6. Paul O’Gorman
7. Hancock Museum
8. Downing Plaza
9. Newburn Boathouse
10. NGH Site
11. ICFL
12. Longbento Sports,
13. Heaton Sports
14. Cochrane Park
15. City Gate

In the above cases enquires for connection, modification and change in demand must be made to the relevant supply authority in conjunction with the Head of Maintenance/Energy Manager.

Electrical distribution shall be designed and installed in accordance with all appropriate statutory regulations and applicable codes of practice. The design and installation methods shall be appropriate taking into account the location, accessibility, maintainability, characteristics and environmental conditions. Due to the varying uses and complexity within the University the following list shall be considered the minimum wiring standards applicable. In all cases the exact installation shall be agreed with the Head of Maintenance.

1. Industrial Installations i.e. Mechanical Workshops, Plant rooms or areas with a high risk of mechanical damage. All final circuit wiring will be of single cables contained within galvanised steel conduit.
2. Domestic Installations i.e. Study bedrooms, flats etc. Protected twin and earth may be used, the protection may either be by positioning, contained within the building fabric, or by the use of plastic trunking utilising propriety fittings.
3. Laboratories (excluding containment level 3 rooms). All final circuit wiring will be of single cables contained within trunking or conduit utilising propriety fittings.
4. Other rooms with ceiling voids or suspended ceilings. Twin and earth cable may be installed provided it is contained within open basket and is neatly clipped and dressed in accordance to the relevant sections of the IEE Regulations. The
connections to ceiling roses, “Klix” boxes or any other fittings, where the twin and earth cable is required to be installed outside of the basket must be of the shortest length possible to minimise the risk of mechanical damage.

5. Rooms with raised access floors. Twin and earth cable may be installed provided it is contained within open basket and is neatly clipped and dressed in according to the relevant sections of the IEE Regulations. The connections to ceiling roses, “Klix” boxes or any other fittings, where the twin and earth cable is required to be installed outside of the basket must be of the shortest length possible to minimise the risk of mechanical damage.

6. Medical School Installations are generally single cables drawn into galvanised steel conduit.

4.2.2 Cable Sizing.

With the exception of the Medical School all cables shall be sized in accordance with the appropriate regulations and codes of practice. In the case of the medical school the following shall apply;

- Ring main circuits, minimum cable size to be 4mm2
- Lighting circuits, minimum cable size to be 2.5mm2

4.2.3 Electrical Testing

Prior to a Distribution Board or Sub-circuit being re-energised the following tests and inspections will be carried out as per BS7671 Requirements for Electrical Installations. Copies of test certificates must be provided to the Head of Maintenance prior to areas being put back into use.

4.2.3.1 Before the supply is connected

1. Visual inspection of the installation
2. Continuity of protective conductors, main and supplementary bonding.
3. Continuity of ring final circuit conductors, including protective conductors.
4. Insulation resistance.
5. Polarity (by continuity methods).
6. Earth electrode resistance (where applicable).

4.2.3.2 With the supply connected

1. Re-check of polarity.
2. Earth fault loop impedance.

3. Functional testing.

4. Prospective fault current measurement, if applicable.

4.3 Data and Telecommunications Network

The University data and telecommunications network is managed by the Information and Systems Services (ISS). All new installations, modifications and additions including provision and system architecture must only be undertaken following consultation at all stages of the design process with the Telephony & Cabling Manager.

Containment for the installation must be suitably sized, exclusive and co-ordinated with the overall electrical installation.

Accessories such as data outlet plates must match the installed or proposed electrical scheme of accessories.

It is important that the requirements of ISS are fully understood throughout the design and installation process and an outline technical specification detailing specific University requirements is contained within appendix A of this document. This specification must be further developed in consultation with ISS to ensure that a full specification of works is provided.

4.3.1 Wireless Access Connectivity.

As part of the Universities requirement for the Digital Campus, wireless access points should be installed within all new internal and external developments. The installation shall provide a seamless connection throughout the development and to adjacent spaces. Determination of requirements shall be undertaken by site and predictions surveys in consultation with the ISS Telephony and Cabling manager who will provide details of client usage. All costs associated with the installation of wireless access including that of active network equipment should be undertaken as part of the project.

4.4 Audio Frequency Induction Loops (AFILS)

Induction loops within teaching spaces are maintained by the ISS Audio visual services, all other systems are maintained by project sponsor.

In all cases any new installations, modifications and additions must only be undertaken in consultation with the ISS Learning Spaces Manager.

4.5 Fire Alarm Systems

4.5.1 General
All modifications, additions and alterations to fire alarm systems must be carried out in consultation with the Head of Maintenance. A full risk assessment of the overall system strategy must be undertaken at the initial design stage. This may involve the University fire Officer, building control and other stakeholders. Fire alarm systems shall not be designed to classification L1 unless specifically requested by the Head of Maintenance.

4.5.2 Fire Alarm Panel Keys

The following is a mandatory list University staff /departments that should be supplied with control keys/access codes for new and upgraded fire alarm panels. The keys/access codes should be presented to the University project manager and have acceptance signatures recorded. The numbers of keys to be handed over will be confirmed by the Project Manager.

- Head of Maintenance
- School Safety Officer,
- The University Security Services Division

4.5.3 Labelling of Control Panels

Each fire alarm control panel must have a unique reference number and University call out procedure attached to or adjacent to the panel by means of an engraved notice.

4.5.4 Fire Alarm Monitoring.

Unless otherwise stated the fire alarm system will be monitored internally within the University by the University security service. Exact connection details will be determined in discussion with the Head of Maintenance.

4.6 Access Control

Access control should be by means of the University Smart card system details for installation purposes can be obtained form the Security or Smart Card manager. The use of digital locks should be avoided. Users should be advised that there will be a monitoring charge applicable to all smart card installations.

4.7 CCTV

The University operates several CCTV systems and installations, additions and modifications must only be undertaken following consultation with the University Security Manager. Users should be advised that there will be a monitoring charge applicable for all CCTV installations. Containment for the installation must be suitably sized, exclusive and co-ordinated with the overall electrical installation.

4.8 Intruder Alarm Systems

The University monitors the intruder alarm installations within the University and any installations, additions and modifications must only be undertaken following consultation with the University Security Manager.
Users should be advised that there will be a monitoring charge applicable for all intruder alarm installations. Containment for the installation must be suitably sized, exclusive and co-ordinated with the overall electrical installation.

4.9 Lightening Protection systems

Lightening protection systems shall be signalled inspected and maintained in accordance with BS EN 62305, Protection against lightening parts 1, 2, 3 & 4. Any new installation or modification shall be undertaken following a comprehensive risk assessment, and installed giving due regard to the levels and types of protection. The University currently uses a specialist contractor to maintain and test all lightening protection systems, details of the current provider, at any given time, are available from the Head of Maintenance.

4.10 Warrantees

Where applicable details of all warrantees associated with new plant, appliances etc. should be included within the Operations and Maintenance Manuals for the project. For all systems which require planned preventative maintenance by specialist service engineers the first year maintenance contract should be incorporated into the project costs, there after the school or service who “own” the system will be responsible.
ESTATES SUPPORT SERVICE

Design and Construction policy for sustainable buildings and Campus environments

1.0 INTRODUCTION

The Higher Education Funding Council for England, responding to Governmental direction, has espoused the need to reduce Universities’ carbon footprint by 80% by 2050 and 20% by 2020 (from a 1990 base level). Given that 80% of an institution’s carbon footprint comes from the operation of its buildings, we need to ensure that our building refurbishment and new build schemes contribute significantly to these targets.

Newcastle University is committed to making sustainable development an integral part of its curriculum, research, operations and outreach.

It is the Estate Support Service (ESS) commitment to minimize the environmental impact of Newcastle University’s activities, functions, and processes, as far as reasonably practicable and to aid the organization in its long term objective of becoming a low carbon institution. ESS will also seek to conserve natural resources, minimize pollution in all its forms and seek opportunities to increase the diversity of our flora and fauna.

This document provides information on our philosophy and intent concerning sustainable development and environment and describes the processes, approaches and design measures that our suppliers, manufacturers, designers and contractors must adopt when involved in projects at Newcastle University.

2.0 DEVELOPMENT PHILOSOPHY

2.1 ESS approach

The construction, fit-out, operational life, demolition and site rectification of buildings creates a serious impact on the earth’s environment; the design and construction of buildings also has a major consequence on the physical and psychological health of individuals and communities and the economic health of organisations. The philosophy for ESS is that the design of buildings and spaces should lead to healthy environments whilst minimizing resource throughputs, waste and pollution and protecting other species and environments.

Designers should satisfy a number of criteria:-
• Enhance Biodiversity; not use materials from threatened species or environments and improve habitats where possible through appropriate planting, water use and other measures.
• Support Communities; identify, with the ESS Project Manager, the real needs and requirements of communities and stakeholders and involve them in key decisions
• Use resources effectively; not consume a disproportionate amount of resources, including money and land during material sourcing, construction, use or disposal; not cause unnecessary waste of energy, water or materials due to short life, poor design, inefficiency, or less than ideal construction and manufacturing procedures. Buildings need to be considered from a life-cycle perspective
• Minimize pollution; create minimum dependencies on polluting products and materials, management practices, energy, power and forms of transport
• Create healthy environments; enhance living, leisure and work environments; they must not endanger the health of the contractors, occupants, servicing and Maintenance staff, etc., through exposure to pollutants, the use of toxic materials or providing host environments to harmful organisms.
• Manage the process; stewardship of projects is a vital and overarching aspect in delivering sustainable projects and enhancing the environment, both in the project and throughout the life cycle
• Design for the efficient use of space; good space management not only benefits the environment, it also frees up resources that can be used for teaching and learning. Designers need to demonstrate clearly life cycle benefits, value for money and environmental excellence in their spatial realisation of briefs

2.2 The Higher Education Funding Council for England (HEFCE): 2008 Strategic Statement
HEFCE have produced an updated Strategic Statement on sustainable development in Higher Education; they intend to make sustainable development a central part of their strategy for the future development of the HE sector. The vision is that “Within the next 10 years, the HE sector will be recognised as a major contributor to society’s efforts to achieve sustainability.”
HEFCE continue to provide Estates Management Statistics (EMS) containing information on environmental sustainability and produce benchmarking data and have also produced an action plan related to development. Together with the Association of University Directors of Estates (AUDE), HEFCE are funding the development of a Building Research Establishment Environmental Assessment Method (BREEAM) template specifically for higher education; they are also encouraging energy-efficient laboratories (this recognises the resource intensity of laboratory buildings and their wide variation in environmental performance). HEFCE now directly link capital investment funding to environmental performance and sustainable development.

3.0 DEVELOPMENT POLICY
Designing buildings for sustainability is an approach that is fast evolving and multi-faceted. It requires lateral thinking to provide solutions that move towards full sustainability. Accordingly, this design and construction policy will look at guiding principles to ensure best practice on all new buildings, refurbishment and major maintenance projects.
3.1 Objectives
To ensure that the vision for a project includes a sustainable approach from the outset
To adopt best practice for sustainable design and construction
To ensure all environmental risks are assessed, managed and controlled throughout the design and construction of a project to minimize their impact.
To ensure that a life cycle assessment or ‘cradle to grave’ approach is taken on all projects to reduce whole life costs and the carbon footprint.
To ensure that the design team include the ESS suite of documents on standard specification and guidelines within their design
To ensure that the Design team adhere to the University’s Coherent Campus and Estates Strategy
3.2 University and Estate Support Service (ESS) responsibilities (with designers’ guidance, as appropriate)

The University will agree the vision for the project taking into consideration strategic needs, community and stakeholder requirements, economic and social issues, environmental and sustainable viability (Project Champion, Head of Capital Development, Pro-Vice Chancellor for resources). For non-capital projects the size and complexity of the project will be assessed by ESS (Heads of Capital Development, Maintenance and Improvement).

The University will confirm the alignment to the Estates Strategy (Director of Estates).

The University will set an environmental performance target for the project, normally a BREEAM ‘excellent’ rating, unless there are fundamental reasons why the rating cannot be achieved (a very good rating is the minimum requirement).

The University will set an environmental performance target for residential projects, normally an Eco-Homes ‘excellent’ rating unless there are fundamental reasons why the rating cannot be achieved (a very good rating is the minimum requirement) for refurbishments; for new build residential, an energy performance rating A, or the Code for Sustainable Homes level 3 star rating is expected as a minimum standard, although designers should seek to achieve a level 4 star where economically feasible.

The University will agree the most sustainable energy source for the building (Energy Manager/Head of Maintenance).

The University will agree the IT, AV and Telecoms strategy for the building (Director of ISS).

The University will agree the procurement strategy for all loose furniture and non-fixed equipment (Head of Procurement).

The university will set performance targets for the project including spatial (ESS Planning Manager), Energy (Energy Manager), water and drainage (Energy Manager), waste production (Waste Manager).

The University will confirm the life cycle assessment approach (Head of FM, Head of Maintenance, Head of Improvements and Head of Capital Development) with the design team.

The University Project Manager will ensure stewardship of the project and will oversee the ESS gateway approval process throughout the design phase of the project.

The University will provide all up to date reference materials (with latest revisions), including Transport travel plan, coherent campus and standard specification reference documents (project Manager).

The Project Manager will ensure the co-ordination of university stakeholders and the external team (consultants/contractors).

The Project Manager will ensure that all projects have an environmental impact assessment indicating risks and methods of mitigation.

The Project Manager will ensure that a Post Occupancy Evaluation (POE) is carried out, including the actual environmental performance of the building as set against the theoretical design.

3.3 Designers’ Responsibilities

The designers will work together from the inception of the project to provide a fully integrative best practice sustainable approach (e.g. orientation, passive design, natural ventilation, glazing, insulation, materials, etc.) to the brief.
The Designers and Quantity Surveyor will ensure that a life cycle assessment or ‘cradle to grave’ approach is taken on the project to reduce whole life costs and to provide a more sustainable solution for the project. 
The design team will assess the ESS standard suite of specifications/guidelines within their design; ESS would generally expect compliance unless an alternative and more sustainable/innovative/cost effective solution is agreed in writing. 
The Design team will adhere to the University’s Coherent Campus and Estates Strategy unless an alternative and more sustainable/innovative/cost effective solution is agreed in writing. 
The Design Team will assess the potential for renewable energy for a given project and comment on the University’s suggested energy source. 
The Design Team will ensure that at least 7% of materials for the project are derived from recycled materials (although a target of 10% should be sought) and that materials and products selected in the design of a building are assessed in terms of sustainable, environmental and waste preventative strategies. Adequate facilities should be provided for the storage and collection of segregated recyclable wastes (e.g. paper, cardboard, glass and aluminium cans). 
For scientific and specialist facilities, additional consideration must be given to the provision of adequate facilities for the storage and collection of other wastes (e.g. chemical, clinical, radioactive and other hazardous wastes such as waste oils). 
The Design Team will ensure that all tenderers are environmentally aware and that contractors seek ‘Good Constructors’ awards. 
The Design team will ensure the protection of existing flora and fauna habitats on and adjacent the project site and seek to enhance bio diversity, where possible. 
The Design Team will work to the performance targets for the project including spatial (ESS Planning Manager), Energy (Energy Manager), water and drainage (Energy Manager), waste production (Waste Manager). Any agreed divergence will be in writing. 
The Design Team will incorporate Travel Plan requirements into their design (shower facilities, cycle racks, accessible routes, disabled parking, etc.). 
The Design team should demonstrate clearly how the building will cope (or be adapted to cope) in so far as it is practicable with the effects of climate change (UKCIP ‘medium-high emission scenario’ average UK temperature will rise by up to 3.5°C by 2080). The design of drainage systems and below-ground works should take into account the possibility of increased maximum run-off rates, increased risk of flooding and rising groundwater levels.