

SWANSEA CENTRAL SUSTAINABILITY STATEMENT

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PREPARED BY
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FOR



SUSTAINABILITY STATEMENT



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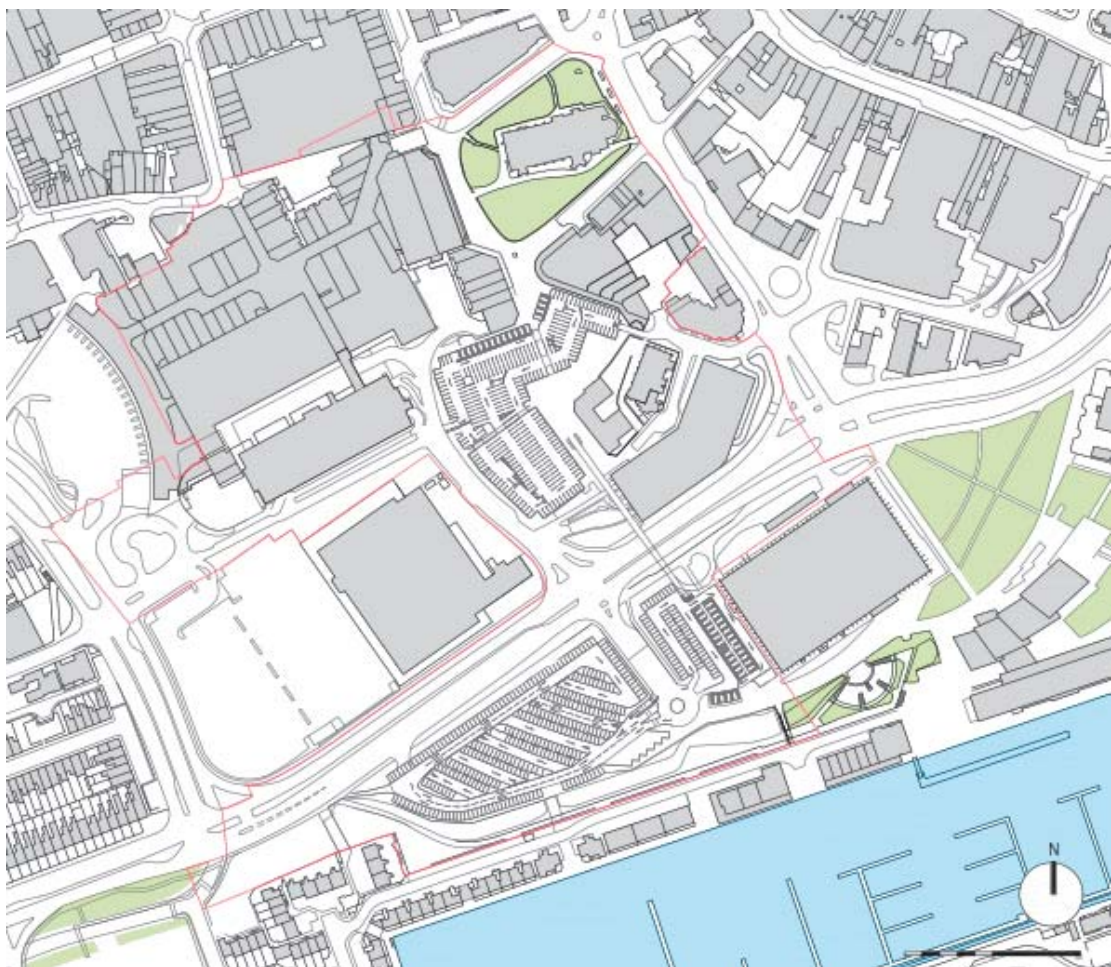
1.0 EXECUTIVE SUMMARY

- 1.1 Greengage Environmental Ltd were commissioned by the Council of the City and County of Swansea (the 'applicant') to prepare a Sustainability Statement for the proposed Swansea Central development within the administrative boundary of the City of Swansea.
- 1.2 This report details the approach that the applicant and the design team have collectively taken towards achieving a high standard of sustainable development and environmental performance. This Statement outlines the features that have been incorporated into the design proposals and the measures that will be implemented during the construction and operation phases, which seek to simultaneously progress economic, social, cultural and environmental goals and policies in ways that develop and maintain a good quality of life for everyone and enable future generations to do the same.
- 1.3 The purpose of the Sustainability Statement is to provide an independent verification that the design of the proposed development is in accordance with the sustainability objectives of relevant planning policy at all levels and is an example of good practice in sustainable design. This Statement reports the performance of the proposed development using national, regional and local level guidance on sustainability indicators from both government and industry.
- 1.4 The Statement includes:
- A brief description of the proposed development;
 - A summary of the relevant international, national and local sustainable development policy drivers; and
 - An examination of the performance of the outline scheme in accordance with other key sustainable policies at all levels, including the Well-being of Future Generations Act¹; the Environment (Wales) Act², Planning Policy Wales³, the Swansea Local Development Plan⁴ and Swansea Central Area: Regeneration Framework⁵.
- 1.5 A review of the proposed development's sustainability against set planning objectives and best practice identifies the opportunities and constraints of both the application site and the proposals. By undertaking an assessment of the sustainability at this stage in the design process, the potential to contribute positively to sustainable development is optimised.

2.0 THE PROPOSED DEVELOPMENT

- 2.1 The proposed development is located on the land block St David's/Quadrant in Swansea City Centre either side of the A4067 Oystermouth Road. The site includes the former St. David's shopping centre, the existing Quadrant Shopping Centre, two surface car parks, two multi-storey car parks and various other commercial buildings covering a total of 11.4 hectares.
- 2.2 The proposed development is an outline planning application (with all matters reserved) for the refurbishment, alteration and / or demolition of all existing buildings / structures on the site (except St Mary's Church and St David's Church) and redevelopment of site with indicative access / layout and scale parameters on the north site of a maximum of 1 to 7 storeys and maximum new floorspace of 84,050 sqm comprising retail / commercial / office use (Classes A1/A2/A3/B1) residential (Class C3), non-residential institution (Class D1) and leisure (Class D2), multi storey car park and redevelopment of south site of a maximum of 40,700 sqm of floorspace comprising a new arena (Class D2), up to 13 storey hotel / residential building (Class C1/ C3), food and drink (Class A3), potential energy centre. Across both sites, the provision of associated new public open space / public realm and landscaping, new pedestrian and vehicular access and servicing arrangements (including a pedestrian bridge link across Oystermouth Road), provision of new bus stops on Oystermouth Road, new pedestrian access through existing arches along Victoria Quay, relocation of Sir H Hussey Vivian statue, earthworks, and plant.

Figure 2.1 Red line plan of buildings at Swansea Central (existing buildings in grey)



3.0 PLANNING POLICY & LEGISLATIVE CONTEXT

3.1 KEY SUSTAINABILITY DRIVERS

3.1.1 Strategies for sustainable development – broad, long-term plans of action aimed at achieving the goals of sustainable development – have been developed by national governments, and a range of organisations throughout the world, to set out a blueprint for action. There are also several international and national policy drivers for energy efficiency and reduced carbon dioxide (CO₂) emissions, which have been introduced to address the implications of climate change.

CLIMATE CHANGE ACT 2008

3.1.2 On 26th November 2008, the UK Government published the Climate Change Act 2008⁶, the world's first long-term legally binding framework to mitigate against climate change. Within this framework, the Act sets legally binding targets to reduce greenhouse gas emissions by 80% by 2050 compared to 1990 levels. In addition, there is an interim target that carbon dioxide emissions must be at least 26% lower than the 1990 baseline by 2020.

Convention on Biological Diversity 1992

3.1.3 The Convention on Biological Diversity⁷ (CBD), known informally as the Biodiversity Convention, is a multilateral treaty. The three main goals of the CBD are:

- conservation of biological diversity;
- sustainable use of its components; and
- fair and equitable sharing of benefits arising from genetic resources.

3.1.4 Its objective is therefore to develop national strategies for the conservation and sustainable use of biological diversity.

Well-being of Future Generations (Wales) Act 2015

3.1.5 In May 2015, the Welsh Government published the Well-being of Future Generations (Wales) Act 2015. This Act is about improving the social, economic, environmental and cultural well-being of Wales. The legislation requires public bodies to carry out sustainable development, meaning that they must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. The Act outlines five ways of working which public bodies are required to take into account when applying the sustainability principle:

- The importance of balancing short term needs with the need to safeguard the ability to meet long term needs, especially where things done to meet short term needs may have detrimental long term effect;
- The need to take an integrated approach, by considering how –
 - i. The body's well-being objectives may impact upon each of the well-being goals;

- ii. The body's well-being objectives impact upon each other or upon other public bodies' objectives, in particular where steps taken by the body may contribute to meeting one objective but may be detrimental to meeting another.
- The importance of involving other persons with an interest in achieving the well-being goals and of ensuring those persons reflect the diversity of the population of –
 - i. Wales (where the body exercises functions in relation to the whole of Wales), or
 - ii. The part of Wales in relation to which the body exercises functions.
 - How acting in collaboration with any other person (or how different parts of the body acting together) could assist the body to meet its well-being objectives, or assist another body to meet its objectives; and
 - How deploying resources to prevent problems occurring or getting worse may contribute to meeting the body's well-being objectives, or another body's objectives.
- 3.1.6 The Act establishes a statutory Future Generations Commissioner for Wales, whose role is to act as a guardian for the interests of future generations in Wales, and to support the public bodies listed in the Act to work towards achieving the well-being goals.
- 3.1.7 The Act also establishes Public Services Boards (PSBs) for each local authority area in Wales. Each PSB must improve the economic, social, environmental and cultural well-being of its area by working to achieve the well-being goals.
- 3.1.8 The Act has seven goals that are known as the Wellbeing Goals:
- i. A globally responsible Wales - A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being;
 - ii. A prosperous Wales - An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work;
 - iii. A resilient Wales - A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change);
 - iv. A healthier Wales - A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood;
 - v. A more equal Wales - A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio-economic background and circumstances);
 - vi. A Wales of cohesive communities - Attractive, viable, safe and well-connected communities; and

vii. A Wales of vibrant culture and thriving Welsh language - A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation.

3.1.9 The Wales of vibrant culture and thriving Welsh language is underpinned by the Welsh Language (Wales) Measure⁸ legislation 2011.

3.1.10 The City and County of Swansea is subject to the Act.

Environment (Wales) Act 2016

3.1.11 In March 2016, the Welsh Government published the Environment (Wales) Act 2016. The Environment (Wales) Act puts in place the legislation needed to plan and manage Wales' natural resources in a more proactive, sustainable and joined-up way. The Act received Royal Assent on 21st March 2016. It delivers against the Programme for Government commitment to introduce new legislation for the environment and positions Wales as a low carbon, green economy ready to adapt to the impacts of climate change. The key parts of the Act are:

- a. Sustainable management of natural resources – enables Wales' resources to be managed in a more proactive, sustainable and joined-up way with the aim of making the most of the opportunities that the resources present while safeguarding and building the resilience of natural systems to continue to provide these benefits over the long term;
- b. Climate change – provides the Welsh Ministers with powers to put in place statutory emission reduction targets, including at least an 80% reduction in emissions by 2050 and carbon budgeting to support their delivery. This is vital within the context of existing UK and EU obligations and sets a clear pathway for decarbonisation. It also provides certainty and clarity for business and investment;
- c. Charges for carrier bags – extends the Welsh Ministers' powers so that they may set a charge for other types of carrier bags such as bags for life. It also places a duty on retailers to donate the net proceeds from the sale of carrier bags to good causes;
- d. Collection and disposal of waste – improves waste management processes by helping to achieve higher levels of business waste recycling, better food waste treatment and increased energy recovery. This will help to decrease pressure on natural resources whilst also contributing towards positive results for both the economy and the environment;
- e. Fisheries for shellfish and marine licensing – clarifies the law in relation to shellfisheries management and marine licensing; and
- f. Flood & Coastal Erosion Committee and land drainage – clarifies the law for other environmental regulatory regimes including flood risk management and land drainage.

3.1.12 The Environment Act places an enhanced Biodiversity Duty on Local Authorities which are now required "to seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing, promote the resilience of ecosystems so far as consistent with the proper

exercise of those functions”. The Act also requires local authorities to prepare a Plan by March 2017 setting out what it proposes to do to comply with the new Duty.

Planning Policy Wales (Jan 2016)

- 3.1.13 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs). Procedural advice is given in circulars and policy clarification letters. It translates the Welsh Government’s commitment to sustainable development into the planning system so that it can play an appropriate role in moving towards sustainability.
- 3.1.14 Every local planning authority in Wales must prepare a Local Development Plan (LDP) for its area based on the policy statements. The LDP will be the development plan for each county or county borough council and each National Park, superseding the Unitary Development Plan (UDP) or any other existing development plan.
- 3.1.15 PPW also provides further guidance on how the seven wellbeing goals can be accounted for in the planning of developments.
- 3.1.16 PPW Chapter 4 ‘Planning for Sustainability’ sets out the objectives of ‘good design’ and states that all development proposals should meet these:
- Access – ensuring ease of access for all;
 - Character – promoting innovative design and sustaining or enhancing local character;
 - Community safety – ensuring attractive, safe public spaces;
 - Environmental sustainability – efficient use and protection of natural resources, enhancing biodiversity, designing for change; and
 - Movement – promoting sustainable means of travel.
- 3.1.17 Chapter 4 of PPW also sets out the importance of tackling climate change as a fundamental part of delivering sustainable development. The Welsh Government has a target to achieve a 40% reduction in greenhouse gas emissions by 2020, against a 1990 baseline. Closely linked to this is the policy and guidance set out in Chapter 4 to reduce Wales’ ecological footprint, whilst also delivering sustainable development and tackling climate change. The guidance encourages the development of Green Belts and green wedges to increase access to the countryside and outdoor recreation as well as maintaining landscape and wildlife interest and creating a carbon sink.

Waste Framework Directive (2008/98/EC)

- 3.1.18 The revised Waste Framework Directive⁹ (2008/98/EC) came into force in 2008. Article 40 required EU member states to bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 2010.
- 3.1.19 The Directive provides the legislative framework for the collection, transport, recovery and disposal of waste, and includes a common definition of waste. The directive requires all member states to take the necessary measures to ensure waste is recovered or disposed of without endangering human health or causing harm to the environment and includes permitting, registration and inspection requirements.

- 3.1.20 Revisions to the Waste Framework Directive have been implemented in England and Wales through the Waste (England and Wales) Regulations 2011 and ancillary legislation in Wales.
- 3.1.21 The Directive also requires member states to take appropriate measures to encourage firstly, the prevention or reduction of waste production and its harmfulness, and secondly the recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials, or the use of waste as a source of energy. The Directive's requirements are supplemented by other directives for specific waste streams.
- 3.1.22 The Directive requires the UK to design and implement waste prevention programmes and sets the challenging target to reuse and recycle 70% of construction and demolition waste by 2020. Such programmes will need to take account of the following five-step waste hierarchy:
- Waste prevention;
 - Reuse;
 - Recycling;
 - Recovery (including energy recovery); and
 - Safe disposal.

The Active Travel (Wales) Act 2013

- 3.1.23 The Active Travel (Wales) Act¹⁰ requires Welsh ministers to publish annual reports on the amount so active travel journeys that are made in Wales.
- 3.1.24 The Act was implemented in September 2014, making it a legal requirement for local authorities in Wales to map and plan for suitable routes for active travel, and to build and improve their infrastructure for walking and cycling every year. It also creates new duties for highways authorities to consider and make provisions for walkers and cyclists.

The Equality Act 2010 (Statutory Duties) (Wales) Regulations 2011

- 3.1.25 The Equality Act 2010¹¹ brings together a number of pieces of existing legislation regarding discrimination including equal pay, race relations, sex discrimination and disability discrimination. In the case of disability, employers and service providers are under a duty to make reasonable adjustments to their workplaces to overcome barriers experienced by disabled people.
- 3.1.26 The Welsh Regulations were produced in 2011 and aim to ensure public authorities and those carrying out a public function consider how they can positively contribute to a fairer society in their day-to-day activities through paying due regard to eliminating unlawful discrimination, advancing equality of opportunity and fostering good relations.
- 3.1.27 Associated to the Act is the Public Sector Equality Duty for Wales that aims to ensure that the consideration of issues of equality forms part of the day-to-day routine of decision making and the operational delivery of public bodies.

3.2 LOCAL POLICY DRIVERS

Swansea Local Development Plan, Draft Plan July 2016

- 3.2.1 Once adopted, the City and County of Swansea LDP for the period 2010-2025 will provide a clear planning framework to address key issues facing Swansea; its policies and proposals will enable the delivery of sustainable development and ensure that social, economic, environmental and cultural well-being goals are all suitably balanced.
- 3.2.2 The policies of relevance to sustainability at the Proposed Development are detailed in the paragraphs below.

Policy SI 1: Health and well-being

This policy aims to encourage healthy lifestyles to reduce health inequalities by ensuring that developments create sustainable places according to the principles of placemaking, are supported by appropriate community facilities, maintain green infrastructure networks and do not result in significant risk to life, human health or well-being particularly in respect of air, noise, light, water or land pollution.

Policy ER 1: Climate change

To mitigate against the effects of climate change and ensure resilience, developments should take into account reducing carbon emissions; increasing carbon sinks; adapting to climate change effects at a strategic and detailed level; promoting energy and resource efficiency and increasing the supply of renewable and low carbon energy; avoiding unnecessary flood risk, and maintaining ecological resilience.

Policy ER 2: Strategic green infrastructure network

Development is required to maintain or enhance the extent, quality and connectivity of Swansea's multi-functional green infrastructure network.

Policy ER 9: Ecological networks and features of importance for biodiversity

This policy requires development proposals to maintain, protect and enhance ecological networks and features of importance for biodiversity with particular importance for protected and priority species.

Policy ER 11: Trees and development

Any development that would adversely affect trees, woodlands and hedgerows of public amenity, cultural value or that provide important ecosystem services will not normally be permitted.

Policy T 1: Transport

This policy sets out the transport measures and infrastructure that should be provided for all development. This includes the provision of safe and efficient access to the transport network, reduction in reliance on the car by maximising use of public transport, ensuring all new transport measures are integral elements and ensuring developments have adequate parking provision.

Policy T 2: Active travel

Development must enhance walking and cycling access by providing routes connecting the proposed development to surrounding areas, leisure, community facilities, employment areas and transport nodes. Facilities that encourage the uptake of walking and cycling should also be included such as signage, cycle parking and changing/shower facilities.

Policy EU 2: Renewable and low carbon energy technology in new development

Development is required to maximise the contribution of renewable or low carbon energy technology to meet the energy demands of the proposal.

Policy EU 3: District heating and cooling

Significant energy consuming developments will be expected to facilitate the development of and/or connection to proposed district heating and cooling networks.

Policy RP 1: Safeguarding public health and natural resources

Development that would result in significant risk to life, human health and well-being, property, controlled waters or the natural and historic environment will not be permitted, particularly in respect of air, noise or light pollution; flood risk; quality and quantity of water resources; land contamination; land instability; sustainable development of mineral resources; and sustainable waste management.

Policy RP 2: Air, noise or light pollution

If development could lead to exposure to any of these sources of pollution, appropriate mitigation measures must be implemented to minimise the effects on future occupants.

RP 3: Water pollution and the protection of water resources

This policy seeks to ensure that development that compromises the quality of the water environment will not be permitted and requires sustainable drainage systems to be implemented wherever they would be effective and practicable.

RP 4: Avoidance of flood risk

Development will not be permitted in areas at risk of all types of flooding or where the development would lead to an increase in the risk of flooding unless there is a verifiable assessment that shows how the new development is designed to alleviate the threat and consequences of flooding.

RP 8: Sustainable waste management for new development

Development will be required to incorporate adequate and effective provision for the storage, recycling and other sustainable management of waste and allow for appropriate access arrangements for recycling and refuse collection vehicles.

IO 2: Employment and training opportunities

Developers are required to maximise added benefits from the development in relation to the creation of job opportunities in line with the Council's Beyond Bricks and Mortar Policy.

Swansea Central Area: Regeneration Framework

- 3.2.3 The Swansea Central Area: Regeneration Framework (SCARF) is a guide to future new development and investment and provides a robust evidence base on which to plan future regeneration of the area. It considers initiatives from the 2007 Strategic Framework and proposes alternative means of regenerating particular areas with the overall vision ‘to create a mixed-use location with a strong retail, commercial and leisure heart supported by a vibrant resident population.’
- 3.2.4 The framework is divided into strategic themes, the first one being ‘sustainability strategy’ with the objective ‘to create a resilient Central Area by reinforcing its regional role for commerce, shopping and leisure and to increase city living, from which there will be economic longevity, social inclusivity and environmental equilibrium for existing and future residents and visitors. These will be achieved through the following objectives:
- Sustainable transport;
 - Provide a high quality built and natural environment with a distinct sense of place;
 - Build a new urban economy;
 - Meet community requirements;
 - Encourage good health, well-being and healthy living;
 - Ensure that learning opportunities are available and affordable to all;
 - Energy efficiency and carbon reduction; and
 - Sustainable Urban Design.
- 3.2.5 The framework also focusses on selected areas including St David’s/Quadrant, of which the proposed development is a part. The key vision theme for this area is the delivery of a retail and leisure led mixed use centre. The development and design principles that are set out for the area include adopting a place-making approach to develop a comprehensive vibrant viable retail and leisure mixed use place; substantially increase green space through innovative design; promote the use of high quality and sustainable materials; connection or allowing space provision to connect to a district heat network, and flexible design solutions that enable the site and buildings to be adapted to the changing requirements of occupiers.
- 3.2.6 The framework promotes the theme of a connecting ‘Green Artery’ through the Central Area that provides new and enhanced existing public realm with the aim of increasing green space and biodiversity.

Places to live: Residential design guide

- 3.2.7 The City and County of Swansea adopted a residential design guide¹² in January 2014 with the aim of inspiring, encouraging and supporting the creation of more sustainable communities through the application of urban design principles to new residential development.
- 3.2.8 The principles of relevance to sustainability include:

- Design to encourage walking and cycling;
- Carry out an ecological assessment of the site at an early stage to identify important species and habitats;
- Design in new features to promote biodiversity, for example by planting native trees or developing the ecological value of a sustainable drainage system (SuDS);
- Consider the value of the existing or new features in providing natural wind mitigation in exposed locations;
- Ensure access for all to the natural environment without diminishing the value of the ecological resource;
- Consider the requirements of public transport early in the design process;
- Ensure that public space is accessible to all and caters for all elements of the community from children to older people;
- Design for community safety;
- Provision for refuse and recycling storage should be positively integrated and visually unobtrusive;
- Provide convenient, covered and secure cycle parking;
- Use permeable surfaces to reduce surface water runoff where ground conditions are suitable;
- Select materials carefully to reflect the best aspects of local character whilst addressing robustness, fitness for purpose and weathering; also consider the environmental impact of materials through the Green Guide to Specification.

Tall Buildings Strategy Supplementary Planning Guidance (SPG)

- 3.2.9 The Swansea Tall Buildings Strategy SPG¹³ was adopted in November 2016 in order to implement the visions in the Swansea Central Area Regeneration Framework.
- 3.2.10 The strategy defines a tall building as one that is more than twice the height of adjacent buildings, generally buildings of 6-10 storeys in the City Centre. It highlights their increasing role in future development of cities as iconic structures, for signifying areas of regeneration or acting as symbols of economic activity.
- 3.2.11 The strategy states that there is a role for a critical mass of taller buildings at three strategic gateways into the City Centre.
- 3.2.12 The area of the proposed development is located in an area designated a ‘considered zone’ meaning tall buildings may have a positive impact, subject to the availability of supporting information to justify the proposals.
- 3.2.13 The key design principles for tall buildings relevant to this statement are as follows:

- Transport – tall buildings should be accessible by sustainable transport means;
- Movement – great emphasis is expected on high standards of inclusive design;
- Public realm – this should form an integral part of the design and promote safety and accessibility for all;
- Adaptability – tall buildings should be adaptable to ensure flexibility over time, be functional and fit for purpose;
- Sustainability – tall building proposals must demonstrate an integrated energy conscious design that sets to achieve the highest energy efficiency and sustainability levels; and
- Lighting – tall buildings must be illuminated at night and sensitivity on surrounding developments and habitats considered.

City & County of Swansea’s Energy Strategy

3.2.14 The City & County of Swansea developed an Energy Strategy¹⁴ in April 2016, the aim of which is to define how the Authority will contribute towards a sustainable low carbon economy by delivering real benefits to society, the economy and the environment. It sets out wider and long term aims for energy across Swansea the place, as well as the Council within the context of national and international developments. In order to achieve Swansea’s vision ‘to create a safer, greener, smarter, fairer, healthier and richer Swansea’, the strategy is focused around opportunities to:

- Invest in renewable energy (solar, hydro, wind, tidal, biomass etc.);
- Reduce our own rising electricity and gas costs and those of our communities;
- Invest in energy saving and storage initiatives (LED, insulation, smart controls, batteries etc.);
- Deliver targets on CO₂ emissions (£% per annum savings) and reduce our Carbon Reduction Commitment Energy Efficiency Scheme charges;
- Meet energy efficiency standards e.g. BREEAM;
- Look at innovative energy generation and saving initiatives, which can create economic benefit, including employment and inward investment in Swansea, building on world class projects like the Tidal Lagoon; and
- Look to increase local energy security, becoming less reliant on imported fossil fuels and less exposed to higher energy prices in the future.

City & County of Swansea Community Benefit Policy

3.2.15 The Community Benefit Policy¹⁵ sets out the principles of including community benefit clauses in all suitable procurements, developments and planning applications.

Beyond Bricks & Mortar is the team implementing the policy and was set up to help tackle poverty and promote inclusion.

4.0 POLICY RESPONSE

- 4.0.1 The Well-being of Future Generations Act is used as the basis for examining the proposed development's response to all policy requirements as it covers all aspects of sustainability – environmental, social, cultural and economic – and ensures all are considered equally within the development proposal. A response to other policies is also incorporated throughout to show how the proposed development meets all policy requirements.
- 4.0.2 The policy response will also consider how the five ways of working established in the Well-being of Future Generations Act will be addressed by the proposed development.

4.1 A GLOBALLY RESPONSIBLE WALES

A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.

- 4.1.1 The proposed redevelopment aims to provide high quality urban realm and landscaped areas that contribute to a better environment for everyone. The proposed building uses would bring jobs, accommodation and commerce back to the City Centre, adding economic and social value to the area. The improved environment would contribute towards global well-being, thus meeting the goals of the Swansea LDP Policy SI 1 on Health and well-being, and the social and economic development is likely to encourage further social growth in the surrounding areas.
- 4.1.2 In order to provide recognition of the sustainability credentials of the proposed development, the buildings will be certified under the internationally recognised Building Research Establishment Environmental Assessment Methodology (BREEAM). It has been shown in the standalone BREEAM pre-assessment report (appended to this statement) that a 'Very Good' rating is achievable for all buildings but an 'Excellent' rating is the aspiration.
- 4.1.3 The buildings will be designed with a long design life so they can be adapted if the required use changes in the future. This is undertaken as acknowledgement that both the local and global environmental and social conditions may change significantly throughout the life of the building, thus necessitating a change of use. By ensuring the building can be adapted for this change of use without significant rebuilding, material use is minimised, a positive contribution to global environmental well-being is made and both the long and short term needs are considered, as required by the Well-being of Future Generations Act.
- 4.1.4 The active retail area to be provided as part of the proposed development will have extended opening hours for many shops, restaurants and other similar amenities. This will attract people to the area and contribute to the local economy but from a wider point of view, will also mark Swansea out as an area that provides high standards of well-being with a range of facilities.

4.2 A PROSPEROUS WALES

An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.

- 4.2.1 The proposed development will contribute to a prosperous Wales by creating high quality work and living spaces that retain talent and bring in new jobs, particularly in the retail, leisure and service industries. This will also contribute to meeting the SCARF requirements for building a new urban economy and meeting community needs.
- 4.2.2 The proposed development will contribute to a prosperous Wales by ensuring participation in the economic and social regeneration of the locality and implementation of the Council's Beyond Bricks & Mortar community benefit policy, which aims to help secure the social and physical regeneration of the City for the lasting benefits of the community.
- 4.2.3 Through initial development, construction phases and end use, the proposed development will deliver on community benefits such as targeted recruitment and training, requiring employment opportunities to be targeted at people registered with agreed agencies, including in particular, new entrants and returners to the labour market.
- 4.2.4 The challenges of climate change will be addressed through the design including energy efficiency measures, appropriate thermal performance of buildings, efficient water use and the use of renewable energy where possible to meet carbon emission targets. These design intentions will contribute towards multiple policies in the Swansea draft LDP, including Policy ER1, EU2, EU3, RP1 & RP4.
- 4.2.5 The project has adopted good practice energy objectives to consider adoption of passive measures including the use of thermal mass and external shading in architectural design, and to provide mechanical and electrical engineering systems that assist in achieving the lowest possible annual energy input to reduce CO₂ emissions and contribute to the target in the Swansea Energy Strategy of a 3% per annum CO₂ reduction compared to a 2009/2010 baseline. The passive energy measures include thermal performance and U-values improved beyond Building Regulations Part L 2013 standards, solar shading and solar glazing, where applicable.
- 4.2.6 In order to ensure effective resource use into the future, all central heating systems in the buildings will be provided with connection points to allow future connection to an energy centre if one becomes available. In line with Swansea's Energy Strategy, renewable sources of energy including PV, air source heat pumps and solar water heating will also be considered.
- 4.2.7 To use resources efficiently, decrease pressure on natural resources, and contribute to the local economy and environment, the design will consider where material wastage can be designed out of the process, reused or recycled in line with the requirements of the Waste Hierarchy. The use of recycled materials will also be considered where appropriate and monitoring of waste through the Construction phase will be measured using industry benchmarks and waste management tools such as Site Waste Management Plans.
- 4.2.8 Other material considerations, that will also reduce waste over the life of the building, include selecting materials that are durable, for example high quality, robust hard landscaping will be included that can cope with the expected pedestrian footfall. All materials will be selected guided by a sustainable procurement plan that will set out the principles for material procurement including the required environmental rating and level of responsible sourcing.
- 4.2.9 In recognition of the fact that the global environment has limits, air quality and noise assessments will be carried out prior to development so that any findings from these can be incorporated into the design and mitigate any impacts as appropriate.

4.3 A RESILIENT WALES

A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).

- 4.3.1 The proposed development contains several features and design principles that will ensure the natural environment is a biodiverse one that can adapt to climate change and also that social and economic considerations are incorporated.
- 4.3.2 The ground conditions report identified that there are no groundwater abstraction sites within 2000m and no areas of ecological sensitivity within 500m of the site. Considering also the record of no pollution incidents within the site boundary, this report concluded that identified pollutant contamination risks are low or very low, thus confirming that the area is suitable as the basis for a healthy, functioning ecosystem.
- 4.3.3 Due to its coastal location, a flood consequences assessment has been carried out for the proposed development. This has concluded that the present-day risk of tidal and fluvial flooding is acceptable but as a result of climate change, the consequences of tidal flooding will be unacceptable by 2080 and therefore require a strategic flood defence scheme. This will also be required for protection against the risk of flooding from wave overtopping.
- 4.3.4 The proposed development is potentially at risk of surface water flooding but it is considered that this can be mitigated with enhanced drainage measures. The drainage strategy has confirmed that, in line with planning policy, a decrease in discharge rate will be achieved for the proposed development as well as the discharge volume remaining the same through no increase in impermeable area or decreasing due to the introduction of soft landscaping. An allowance of 20% for climate change will also be incorporated into the drainage capacity and attenuation requirements to ensure that the development has the capability to adapt to change. On-site rainwater retention, such as via a green roof and rainwater harvesting tank, will be considered as a means of reducing surface water run-off and preventing flooding, thus complying with Swansea draft LDP Policy RP3. This will take the form of an integrated sustainable urban drainage system combining surface water management at roof and podium parkland to provide rainwater attenuation and assist with irrigation. A clear maintenance and ownership system will also be set out for the drainage scheme to ensure that it remains fully resilient to the effects of flooding over the long term as described in the strategy.
- 4.3.5 An ecological report and habitat survey has been carried out as part of this outline planning application, as advised in the 'Places to live: Residential design guide'. This has enabled all existing habitats and species to be identified and concluded that the site is currently of limited biodiversity value. Adequate protection measures are recommended where necessary, for example site clearance outside of the breeding bird season. The report also suggests opportunities for further biodiversity gains to be made and existing areas to be enhanced to ensure they continue to function healthily and are resilient to climate change over a long time period. The design plan intends to retain as many of the existing trees so that habitats that are already established in and around the trees are not lost. New trees and native plants are also to be planted as well as green roofs and green walls considered that would create new habitats and have the additional benefit of improving air quality, visual amenity and flood resilience.
- 4.3.6 The public realm strategy has the intention of enhancing green infrastructure within the site boundary to fill the existing hole identified in the green network. This will improve ecological

connectivity and enable ecosystems to flourish and expand and hence be more resilient to change. Areas of green informal parkland will also enhance the natural environment, encourage biodiversity and provide areas for social interaction too, thereby meeting the requirements of Policy SI1, ER2 and ER9 within the Swansea LDP that will require green infrastructure networks that contribute to well-being of residents and users.

- 4.3.7 The scheme will include opportunities to provide green infrastructure across the development, which will be linked to a wider network of green corridors beyond the site boundary. Green infrastructure can include green roofs, green walls, landscaping and pocket parks and the emerging CCS Green Infrastructure Strategy will provide further guidance. The proposed development will explore the opportunities for interaction between people and wildlife through interpretation and interactive features within the landscape, providing a valuable ecological and educational resource, and enhancing the experience nature brings to people's lives. The landscape framework will be designed by integrating a comprehensive range of habitats to deliver a wide range of environmental benefits for both the local community and wildlife. These different landscape layers offer climate change adaptation benefits such as being heat sinks and intercepting rainfall, as well as having economic value.

4.4 A HEALTHIER WALES

A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.

- 4.4.1 The design of the proposed development will incorporate many features that improve both physical and mental well-being. Pedestrianised streets and cycle routes encourage walking and cycling, whilst pocket parks and seats will encourage rest and relaxation outdoors.
- 4.4.2 Air quality and noise assessments that have been carried out ensure that physical well-being is maximised by ensuring people are not exposed to unacceptable levels of air pollution or noise pollution within their home or work life and the principles of Swansea LDP Policy RP2 are met. The air quality impact assessment concluded that there are no air quality constraints to the proposed development and the only pollution is likely to be construction dust that can be controlled by a package of recommended mitigation measures. Electric vehicle charging points will also be considered, these would contribute towards a reduction in local air pollution if electric cars were encouraged.
- 4.4.3 The noise and vibration assessment concluded that the site is suitable for the proposed development from a noise impact perspective. Acoustic criteria and limits have been suggested for the building services plant, retail units and arena, and provided these limits are complied with there is unlikely to be a significant noise impact on the surrounding receptors.
- 4.4.4 The daylight assessment has concluded that daylight availability is sufficiently good that conventional window design is likely to provide good internal daylight except at low level where it can be mitigated through design development. With regards to sunlight, the proposed development would have no significant impacts on existing buildings or open spaces requiring sunlight. Some facades do not benefit from good levels of solar exposure, although this could again be mitigated by design development.
- 4.4.5 The lighting design will also be carefully considered so that it provides adequate lighting of open spaces in the evening, enhances the presence of listed buildings but also mitigates any negative impacts and prevents light pollution, thus enhancing physical and mental well-being.

- 4.4.6 New trees are planned to be planted throughout the development and the species will be selected to be sensitive to the local natural environment, as advised by the 'Places to live: Residential design guide'. These will have many purposes, one of which is to improve the microclimate and provide visual amenity, thus improving physical and mental well-being.
- 4.4.7 The public realm in the development will be well maintained and managed, therefore ensuring that the area remains an attractive and welcoming place that encourages people to spend time in it and improve their well-being.
- 4.4.8 As part of the development of the design, the local community will be consulted to seek their feedback and ensure the development is meeting their needs. By doing this, it will improve community cohesion and well-being by providing a development that benefits all members of the community and is consequently socially sustainable. This will also ensure that community requirements are fully addressed as required by the Swansea Central Area Regeneration Framework and that collaboration and involvement under the Well-being of Future Generations Act are achieved to meet well-being objectives.

4.5 A MORE EQUAL WALES

A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio-economic background and circumstances).

- 4.5.1 Inclusive design will be a focal point of the proposed scheme, thereby ensuring that it can be used by all members of society in Swansea and visitors from all backgrounds and circumstances will also be attracted to live, work or use the leisure facilities there. This meets the guidance in the residential design guide by ensuring the natural environment and public space is accessible for all.
- 4.5.2 Affordable housing in line with Council policy will be provided to ensure accommodation is available for people from all economic backgrounds.
- 4.5.3 An accessibility consultant has been appointed to ensure that all areas of the design of all buildings meet the requirements for the whole spectrum of potential users and comply with the requirements of the Equality Act through a pan disability approach. The consultant will speak to and enhance the contribution of local accessibility and disabled people's groups, thus ensuring all aspects specific to the local and wider area are fully considered. Accessible routes and step free access are important considerations throughout the public realm and building entrances. Vertical movement is provided by stairs and ramps, for example the pedestrian street in the Development Zone is intended to rise gently so as all users can make use of this and enjoy the views that are created over the elevated promenade. This also contributes to the main objectives of the PPW by ensuring ease of access for all.
- 4.5.4 The play strategy will be designed to enable all ages and abilities of children to use the different facilities and several informal play opportunities will be provided that are accessible to all socio-economic backgrounds.

4.6 A WALES OF COHESIVE COMMUNITIES

Attractive, viable, safe and well-connected communities.

- 4.6.1 The vision for the scheme is that of an attractive and safe environment with adequate lighting, good quality surfaces and street furniture, connecting to all neighbouring areas and throughout the development site with well proportioned, mainly pedestrian, streets. The scheme also has the aim of being a design leader and establishing a precedent for high quality design within the area.
- 4.6.2 The key design components for the scheme include ‘sequence of spaces’, ‘movement’ and ‘green infrastructure’. These all mean that it is a priority to connect the various areas of the development to each other and the wider area, including a physical and visual connection to the water front, through active travel and green links, both of which also contribute to the design objectives set out in PPW that require environmental sustainability and movement as well as Swansea LDP Policy T2 that requires improved access to walking and cycling.
- 4.6.3 The Green Bridge that may be developed will provide a vital function in terms of accessibility for pedestrians and cyclists and improve their safety by separating them from vehicular traffic. The street level will also be used by pedestrians and cyclists, thus creating a more extensive accessibility network for them. Pedestrian permeability is considered as one of the key design principles with the aim of developing routes beyond the City Centre to create a truly sustainable network of routes to connect communities.
- 4.6.4 New pedestrian and vehicle access points will be incorporated into the design as well as new bus stops to maintain and improve traffic flows around and through the area. There is also a cycle path strategy connecting both university campuses that can be used by users of the redevelopment and therefore improve connectivity between areas of the city and contribute towards the requirements of the Active Travel (Wales) Act and Policy T2 ‘Active travel’ in the draft LDP. Increased provision of cycling and walking facilities has multiple benefits including combatting transport poverty, providing for the student population, reducing reliance on the motor car for road networks that cannot cope and also the sustainability and health benefits from active travel.
- 4.6.5 The redevelopment area is approximately half a mile away from Swansea mainline station that provides good connectivity to the rest of Wales and longer distance routes to London and Manchester. Its location therefore enables easy access via sustainable transport means, making it a well-connected area and encouraging more people to use the facilities there, as well as meeting the requirements of the Swansea Central Area Regeneration Framework for sustainable transport.
- 4.6.6 General security is of high importance within the design principles and advised in the residential design guide to design for community safety. Extensive consultation will be carried out to determine the requirements and the development will be designed with Secure by Design principles employed. This will include the use of CCTV cameras as well as considering the design to improve natural surveillance.
- 4.6.7 The lighting design has several functions across the development, but the primary function is to provide safety, security, orientation and assist wayfinding. It will also be designed to be attractive and provide a unique identity for the area as well as creating an appropriate ambience and mood. Ensuring attractive, safe public spaces is one of the key ‘good design’ objectives of PPW, which is therefore met by the lighting design.
- 4.6.8 The material design will be considered carefully in terms of the way it can be used to meet other functions such as preventing overheating and maximising natural lighting. Another example is green infrastructure, such as green walls, which will also be considered as it would have a variety of functions and benefits to both people and the natural environment.
- 4.6.9 The look of shop fronts and the quality of the facades will be controlled to maintain the integrity of the architectural expression. This will contribute to maintaining the attractiveness of the area and ensure that all buildings meet the required design standards.

4.7 A WALES OF VIBRANT CULTURE AND THRIVING WELSH LANGUAGE

A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation.

- 4.7.1 The proposed redevelopment incorporates multiple facilities for culture, leisure and recreation and the design incorporates aspects of Welsh heritage and protects the existing features.
- 4.7.2 One of the key design principles is to enhance the appearance of buildings and the setting of all listed buildings through lighting and design of the surrounding area so improving the heritage value of the buildings.
- 4.7.3 The proposed development has a mix of uses including retail, office, restaurants, a cinema, a hotel, an arena, landscaped areas and residential dwellings. By its very nature, this range of facilities will provide a varied culture that accommodates all tastes. The landscaped areas of public realm and the Green Artery provide ample space for recreation and could be used to host a range of events. The significant development of the public realm will provide a high quality built and natural environment with a distinct sense of place as the Regeneration Framework requires. This will also be an opportunity to incorporate public art to increase local heritage value.
- 4.7.4 Public buildings will have Welsh language signage and audio announcements and businesses/tenants for the proposed development will be encouraged to have a proactive approach to using the Welsh language.
- 4.7.5 The play strategy will ensure that there are a range of accessible play options across the site for different ages and abilities. This includes the provision of defined playable space, for example on the top deck of one of the car parks, which will be carefully designed to ensure it is safe and secure and provide sensory delight. Incidental play will also be integrated within the public realm framework, which will be associated with key spaces and key pedestrian routes to form a 'play trail'. The trail might include artwork, sculptures, or similar elements that offer informal play/stimulate imagination and creativity.
- 4.7.6 The materials proposed for the main design palette have a strong local history in Swansea and some can be locally produced, therefore maintaining the heritage value of the proposed buildings. Natural stone is also a traditional Welsh building material that is proposed to be used throughout the public realm to ensure the development is in keeping with the local area and further maintain the heritage value. This also contributes to the requirements of the Environment (Wales) Act as it represents a proactive, sustainable use of local resources.
- 4.7.7 Heritage value will also be maintained by using local skills and processes in the construction of the buildings, public realm and landscape features wherever possible. This will also contribute to the Green Artery running through the proposed development and ensure this also provides Welsh heritage value.

4.8 WELL-BEING OF FUTURE GENERATIONS ACT: FIVE WAYS OF WORKING

- 4.8.1 The five ways of working set out in the Well-being of Future Generations Act have been incorporated across the development proposals and will continue to be applied throughout the redevelopment of the City Centre. The below highlights the key points:

4.8.2 *The importance of balancing short term needs with the need to safeguard the ability to meet long term needs, especially where things done to meet short term needs may have detrimental long term effect.*

This forms the basis of the widely-recognised definition of sustainability and this statement aims to demonstrate how this has been achieved across all aspects of the development, including demonstrating how key sustainability policy has been met and will be embedded throughout the ongoing development. Environmental (energy, biodiversity, climate change), social (wellbeing, transport, security) and economic (employment, local spend, business space creation) aspects of the proposed development have all been considered to ensure it is truly sustainable.

4.8.3 *The need to take an integrated approach, by considering how –*

- *The body's well-being objectives may impact upon each of the well-being goals;*
- *The body's well-being objectives impact upon each other or upon other public bodies' objectives, in particular where steps taken by the body may contribute to meeting one objective but may be detrimental to meeting another.*

An integrated appraisal has been undertaken looking at different policy and seeking the best solution that balances all objectives. Through the consultation described below, impacts and trade-offs with other public bodies have been addressed throughout the development process.

4.8.4 *The importance of involving other persons with an interest in achieving the well-being goals and of ensuring those persons reflect the diversity of the population of –*

- *Wales (where the body exercises functions in relation to the whole of Wales), or*
- *The part of Wales in relation to which the body exercises functions.*

Extensive consultation has been carried out with a range of stakeholders to compile the sustainability statement at an early stage in the design to ensure all well-being goals can be achieved and maximum benefit is obtained from them.

4.8.5 *How acting in collaboration with any other person (or how different parts of the body acting together) could assist the body to meet its well-being objectives, or assist another body to meet its objectives;*

Consultation and collaboration with a range of groups, technical consultants and organisations has enabled a detailed strategy to be produced, thus meeting well-being objectives. Before construction, a range of groups/individuals will be consulted including the local community, security officers, specialist consultants and local disability groups.

4.8.6 *How deploying resources to prevent problems occurring or getting worse may contribute to meeting the body's well-being objectives, or another body's objectives.*

A number of climate change mitigation measures will be considered and incorporated, including sustainable drainage and green infrastructure. Active travel measures will also be incorporated to reduce potential problems with increasing vehicular traffic and comply with the Active Travel (Wales) Act.

5.0 SUMMARY

5.0.1 This Sustainability Statement shows that the development proposals are meeting key policy objectives, responding to local needs and requirements, and conforming to best practice sustainability criteria applicable to this development.

5.0.2 The seven Wellbeing Goals in the Well-being of Future Generations Act are all incorporated into the proposed development as well as the five ways of working, so that community well-being is placed at the heart of the design but also meeting the other policy requirements for the area. The proposed development provides a mixed-use strategy and community facilities that result in a significant improvement in well-being. Key features include:

- Consideration of climate change and the long-term needs of the development as well as short term requirements;
- A range of buildings to provide employment opportunities and grow the economic potential of the area;
- Biodiversity improvements to enhance well-being, visual amenity and ecosystem resilience;
- Areas of public realm and play space to provide areas for social interaction, relaxation and connectivity;
- Inclusive design to enable the whole community to benefit from the development;
- A safe and attractive layout and design that is well connected through sustainable means of transport;
- Use of local materials where possible to minimise travel distances, improve the local economy and protect Welsh heritage; and
- Demonstration that a BREEAM ‘Very Good’ level can be achieved for all buildings, demonstrating all-round sustainability.

5.0.3 Throughout this statement, it has been demonstrated how the five ways of working will be addressed at all stages of the proposed development, in particular by taking an integrated approach, using extensive consultation and considering environmental, social and economic aspects of the development to ensure it meets sustainability criteria from all angles throughout the development lifetime.

REFERENCES

- ¹ Welsh Government, (2015), Well-being of Future Generations (Wales) Act 2015
- ² Welsh Government, (2016), Environment (Wales) Act 2016
- ³ Welsh Government, (2016), Planning Policy Wales, Edition 9, November 2016
- ⁴ City and County of Swansea, (2016), Swansea Local Development Plan 2010-2025: Deposit Plan, July 2016
- ⁵ Swansea City Centre, (2016), Swansea Central Area: Regeneration Framework, February 2016
- ⁶ Great Britain. Climate Change Act 2008: Elizabeth II. (2008) London, The Stationery Office
- ⁷ United Nations, (1992), Convention on Biological Diversity
- ⁸ Welsh Government, (2011), Welsh Language (Wales) Measure 2011
- ⁹ Official Journal of the European Union, (2008), Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives
- ¹⁰ Welsh Government, (2013), Active Travel (Wales) Act, November 2013
- ¹¹ Welsh Statutory Instruments, (2011), The Equality Act 2010 (Statutory Duties) (Wales) Regulations 2011
- ¹² City and County of Swansea, (2014), Places to Live, Residential Design Guide, January 2014
- ¹³ City and County of Swansea, (2016), Swansea Tall Buildings Strategy, November 2016
- ¹⁴ City and County of Swansea, (2016), City & County of Swansea's Energy Strategy
- ¹⁵ City and County of Swansea, (2016), City & County of Swansea Community Benefit Policy



APPENDIX

BREEAM PRE-ASSESSMENT (ARENA – FULLY FITTED)

BREEAM PRE-ASSESSMENT (SHELL AND CORE)



BREEAM PRE- ASSESSMENT (ARENA – FULLY FITTED)

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1.0 INTRODUCTION

- 1.0 Greengage Environmental Ltd were commissioned by the Council of the City and County of Swansea (the ‘applicant’) to undertake a BREEAM pre-assessment for the proposed Swansea Central development within the administrative boundary of the City of Swansea.
- 1.1 This BREEAM pre-assessment report details the credits currently targeted by the design and presents an assessment strategy to achieve the best possible BREEAM rating. The assessment outlined in this document provides a strategy for the Arena building on site that is being specified as fully fitted. It therefore includes all building elements of the building from fabric to Cat- A and B fit out.
- 1.2 In accordance with commitments made for the scheme, and what is considered appropriate and achievable for the arena building, a ‘Very Good’ rating has been targeted as the minimum performance standard. An aspiration remains to achieve an ‘Excellent’ rating if feasible. As the design progresses, credits targeted will be regularly reviewed to determine the highest rating possible.

2.0 BREEAM

BACKGROUND

- 2.1 The Building Research Establishment's Environmental Assessment Method (BREEAM) is a nationally recognised means of reviewing and improving the environmental performance of buildings. There are several BREEAM methodologies in place to assess different types of projects e.g. BREEAM New Construction for new buildings and BREEAM Refurbishment and Fit-Out for refurbishment or fit-out projects. This assessment provides a strategy for the arena building which will be fully fitted on handover to the operator and is therefore being assessed in this way. This has been undertaken using the BREEAM New Construction 2014 Fully Fitted methodology, which is appropriate to establish a credit framework for the project at this stage of works.
- 2.2 Used as a design tool, BREEAM will assess the environmental performance of new build buildings and refurbishments, providing a framework for improvement and an auditable demonstration of good design practice.

BREEAM CATEGORIES

- 2.3 BREEAM considers key global and local environmental issues and the internal environment for building occupants under various categories, covering:
- **Management** – rewards good construction site practices, provision of information to building occupants and security;
 - **Health & Wellbeing** – promotes a healthy internal environment;
 - **Energy** – rewards energy efficiency and renewable energy generation;
 - **Transport** – encourages locations with good access to public transport;
 - **Water** – promotes water efficiency and water recycling;
 - **Materials** – rewards the responsible sourcing of materials;
 - **Waste** – encourages good waste management practices and recycling;
 - **Land Use & Ecology** – encourages ecological enhancement and use of land already built on; and
 - **Pollution** – promotes measures to reduce air and water pollution.

CATEGORY WEIGHTINGS

- 2.4 Each BREEAM category is allocated an environmental weighting factor, which is dependent on the credits applicable to the scope of work and the type of assessment being undertaken, as

appropriate to the project. The total available score for each BREEAM category can be found in Section 5.

- 2.5 In addition to this, there are varying numbers of credits within each category; the result is that not all credits carry equal value and some credits have a higher individual percentage score than others.

BREEAM RATINGS

- 2.6 At the certified assessment stage, the building is assessed against the BREEAM criteria and credits are awarded where it can be demonstrated, by an auditable trail of supporting evidence, that the BREEAM credit requirements have been met. The overall environmental performance across the categories is calculated as a percentage score and expressed as a single rating on a scale of Pass, Good, Very Good, Excellent or Outstanding.

Table 1: BREEAM Ratings and percentage scores

Rating	Percentage Score
UNCLASSIFIED	<30
PASS	≥30
GOOD	≥45
VERY GOOD	≥55
EXCELLENT	≥70
OUTSTANDING	≥85

MINIMUM RATING REQUIREMENT CREDITS

- 2.7 Under Management, Energy, Water, Materials, Waste and Land Use & Ecology, there are minimum credit requirements that need to be obtained for each BREEAM rating i.e. specific credits that will need to be achieved before a particular BREEAM rating can be awarded. All other credits are flexible.
- 2.8 The following minimum standards are required to reach the targeted ‘Very Good’ rating:

Table 2: BREEAM Very Good minimum standards

Credit	Minimum Standard
Ene 02: Energy monitoring	One credit (First sub-metering credit)
Wat 01: Water consumption	One credit
Wat 02: Water monitoring	Criterion 1 only
Mat 03: Responsible sourcing of materials	Criterion 1 only
LE 03: Minimising impact on existing site ecology	One credit

3.0 THE ASSESSMENT PROCESS

THE PRE-ASSESSMENT

- 3.1 The purpose of a BREEAM pre-assessment is to:
- Confirm those credits that have been identified as a framework for the minimum targeted rating; and
 - Confirm the supporting information to be submitted at the certified assessment stage and thereby enable the team to address BREEAM requirements at the earliest opportunity, and the appropriate stage in the design, with the aim of reducing the need for design reiterations.
- 3.2 A certified assessment is third party verified by the Building Research Establishment (BRE) ensuring comparable benchmarking and high standards of assessment across the UK. Carried out by trained assessors, BREEAM provides an easily understood, independent and transparent label of environmental performance. In addition, to ensure high standards of BREEAM assessors and assessments, all BREEAM schemes are operated under a Competent Person Scheme, which is UKAS accredited as meeting the requirements of ISO 17024.

THE DESIGN STAGE (DS) ASSESSMENT

- 3.3 Following completion of detailed design, the appropriate supporting evidence in the form of detailed drawings, completed specifications, and manufacturers' information etc. is available and therefore, the certified DS assessment can be undertaken. During the certified assessment, the relevant information is collected from the appropriate design team members and evaluated against the BREEAM criteria requirements.
- 3.4 Following the collation and review of the outstanding information, a BREEAM DS Assessment report will be produced that will be submitted to the BRE for quality assurance and 'interim' certification of the assessment undertaken, following which, it is anticipated that the 'Interim' DS BREEAM certificates will be issued by the BRE.

THE POST CONSTRUCTION REVIEW (PCR)

- 3.5 The PCR assessment is undertaken to confirm that buildings are built to the BREEAM DS specifications, or if there are variances from the DS these are documented, reassessed, and a new rating determined.
- 3.6 A PCR assessment comprises a site visit at or towards the end of completion, as near to handover as possible. Each issue must be reviewed, or assessed where there was no DS assessment, and documentary evidence recorded to confirm that it complies with the requirements for PCR assessment. It should be noted that because the evidence required for the PCR assessment relates to what has been, or is actually being done, for some credits to be awarded the evidence required differs from that required at the DS (for example, a written commitment to use FSC Timber at the DS has to be matched by documentation that demonstrates that the timber used was actually FSC).
- 3.7 On completion of the PCR assessment, a Final Certified BREEAM Report will be submitted to the BRE for final certification and quality assurance for the scheme.

4.0 THE PROPOSED DEVELOPMENT'S BREEAM PERFORMANCE

- 4.1 Liaison with the design team was undertaken to identify the opportunities and constraints of the proposed development site and to confirm where credits can be targeted, in correspondence with the project team.
- 4.2 This BREEAM pre-assessment report has set out a possible BREEAM pathway for the arena building that is being constructed to a fully fitted specification for handover to the building operator.
- 4.3 The pre-assessment BREEAM score that can be achieved for the building is 60.61%, which is equivalent to a BREEAM rating of 'Very Good'.
- 4.4 The credit framework identified within this report for pursuing the target rating is based on a number of assumptions that will need to be substantiated by team members during the detailed design stage, prior to final confirmation of their feasibility. As such, the pathway identifies one possible route to achieving a rating, but as the design evolves, the credits that can or cannot be targeted may change.
- 4.5 It should also be noted that the strategy outlined in this report may vary when building specific assessments are undertaken for each building type on the site. There will be some minor variation when detailed pre-assessments are undertaken for each of the building types, however at this stage it is possible to group them together to provide an indication of those credits that can be targeted.
- 4.5 We would always recommend that a score of at least 4 or 5 percent above this minimum score is aimed for during the design stages and achieved at the final certification stage. This is to ensure that during the project's progress as well as the BRE third party review of the certified final report, in the event that a credit was lost or disputed and revoked, the target rating would still be likely to be achieved. The credit pathway set out provides this 'buffer' above the 'Very Good' rating boundary.
- 4.6 The credit summary tables indicating the proposed development's performance against the BREEAM 2014 New Construction scheme are provided in Section 5.
- 4.7 A breakdown summary of the targeted BREEAM credits is presented in Section 6.

5.0 BREEAM PRE-ASSESSMENT CREDIT SUMMARY

Table 3: BREEAM credit summary

		Available	Targeted
Man 01	Project brief and design	4	4
Man 02	Life cycle cost and service life planning	4	1
Man 03	Responsible construction practices	6	6
Man 04	Commissioning and handover	4	3
		21	14
Hea 01	Visual Comfort	4	2
Hea 02	Indoor Air Quality	5	3
Hea 04	Thermal comfort	3	3
Hea 05	Acoustic Performance	3	3
Hea 06	Safety and Security	2	2
		17	13
Ene 01	Reduction of energy use and carbon emissions	12	0
Ene 02	Energy Monitoring	2	2
Ene 03	External Lighting	1	1
Ene 04	Low carbon design	3	0
Ene 06	Energy efficient transportation systems	3	3
Ene 08	Energy Efficient Equipment	2	0
		23	6
Tra 01	Public Transport Accessibility	5	3
Tra 02	Proximity to amenities	1	1
Tra 03	Cyclist facilities	2	0
Tra 04	Maximum car parking capacity	2	0
Tra 05	Travel Plan	1	1
		11	5
Wat 01	Water Consumption	5	3
Wat 02	Water Monitoring	1	1
Wat 03	Leak Detection	2	2
Wat 04	Water Efficient Equipment	1	1
		9	7
Mat 01	Life Cycle Impacts	6	2
Mat 02	Hard Landscaping and Boundary Protection	1	1
Mat 03	Responsible Sourcing of Materials	4	2
Mat 04	Insulation	1	1
Mat 05	Designing for durability and resilience	1	1
Mat 06	Material efficiency	1	0
		14	7
Wst 01	Construction Waste Management	4	2
Wst 02	Recycled Aggregates	1	0
Wst 03	Operational Waste	1	1

Wst 05	Adaptation to climate change	1	0
Wst 06	Functional adaptability	1	1
		8	4
LE 01	Site Selection	2	1
LE 02	Ecological Value of Site and Protection of Ecological Features	2	2
LE 03	Minimising impact on existing site ecology	2	2
LE 04	Enhancing site ecology	2	2
LE 05	Long Term Impact on Biodiversity	2	2
		10	9
Pol 01	Impact of Refrigerants	3	1
Pol 02	NOx emissions	3	3
Pol 03	Surface Water Run Off	5	4
Pol 04	Reduction of Night Time Light Pollution	1	1
Pol 05	Noise Attenuation	1	1
		13	10
Man 03	Responsible construction practices	1	0
Man 05	Aftercare	1	0
Hea 01	Visual Comfort	1	0
Hea 02	Indoor Air Quality	2	0
Ene 01	Reduction of energy use and carbon emissions	5	0
Wat 01	Water Consumption	1	0
Mat 01	Life Cycle Impacts	3	0
Mat 03	Responsible Sourcing of Materials	1	0
Wst 01	Construction Waste Management	1	0
Wst 02	Recycled Aggregates	1	0
Wst 05	Adaptation to climate change	1	0
AI	Approved Innovation	1	0
		Max 10	0

6.0 DETAILED CREDIT ASSUMPTIONS

6.1 The detailed credit assumptions for the BREEAM strategy are set out below.

MANAGEMENT

Man 01: Project brief and design	
Targeted: 4 of 4	
Credit 1 - 1 credit where;	
Requirement 1	Prior to completion of the Concept Design (RIBA Stage 2 or equivalent), the project delivery stakeholders (see Relevant definitions) have met to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery.
Requirement 2	In defining the roles and responsibilities for each key phase of the project, the following must be considered: End user requirements Aims of the design and design strategy Particular installation and construction requirements/limitations Occupiers budget and technical expertise in maintaining any proposed systems Maintainability and adaptability of the proposals Requirements for the production of project and end user documentation Requirements for commissioning, training and aftercare support
Requirement 3	The project team demonstrate how the project delivery stakeholder contributions and the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design.
Credit 2 - 1 credit where;	
One credit targeted	

Requirement 4	Prior to completion of the Concept Design stage, all relevant third party stakeholders have been consulted by the design team and this covers the minimum consultation content (see compliance note CN3).	One credit targeted
Requirement 5	The project must demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design.	
Requirement 6	Prior to completion of the detailed design (RIBA Stage 4, Technical Design or equivalent), consultation feedback has been given to, and received by, all relevant parties.	
Credit 3 - 1 credit where;		
Requirement 8	A Sustainability Champion has been appointed to facilitate the setting and achievement of BREEAM performance target(s) for the project. The design stage Sustainability Champion is appointed to perform this role during the feasibility stage (Stage 1, Preparation and Brief stage, as defined by the RIBA Plan of Work 2013 or equivalent).	One credit targeted
Requirement 9	The defined BREEAM performance target(s) has been formally agreed (see Relevant definitions) between the client and design/project team no later than the Concept Design stage (RIBA Stage 2 or equivalent).	
Requirement 10	To achieve this credit at the interim design stage assessment, the agreed BREEAM performance target(s) must be demonstrably achieved by the project design. This must be demonstrated via the BREEAM Assessor's design stage assessment report.	
Credit 4 - 1 credit where;		
Requirement 11	The Sustainability Champion criteria 8, 9 and 10 have been achieved.	One credit targeted

Requirement 12	<p>A Sustainability Champion is appointed to monitor progress against the agreed BREEAM performance target(s) throughout the design process and formally report progress to the client and design team.</p> <p>Note: To do this the Sustainability Champion must attend key project/design team meetings during the Concept Design, Developed Design and Technical Design stages, as defined by the RIBA Plan of Work 2013, reporting during, and prior to, completion of each stage, as a minimum.</p>
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Man 02: Life cycle cost and service life planning	
Targeted: 1 of 4	
Credit 1 – Up to 2 credits where;	
Requirement 1	An outline, entire asset elemental life cycle cost (LCC) analysis has been carried out, at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2) together with any design option appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008.
Requirement 2	<p>The elemental LCC: Provides an indication of future replacement costs over a period of analysis as required by the client (e.g. 20, 30, 50 or 60 years); and Includes service life, maintenance and operation cost estimates.</p>
Requirement 3	Demonstrate, using appropriate examples provided by the design team, how the elemental LCC plan has been used to influence building and systems designs/specification to minimise life cycle costs and maximise critical value.
Credit 2 – 1 credit where;	
Requirement 4	A component level LCC plan has been developed by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008 and includes the following component types (where present):
Credit not targeted	

	Envelope e.g. cladding, windows and/or roofing; Services e.g. heat source, cooling source and/or controls; Finishes e.g. walls, floors and/or ceilings; and External spaces e.g. alternative hard landscaping, boundary protection.	
Requirement 5	Demonstrate, using appropriate examples provided by the design team, how the component level LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.	
Credit 3 – 1 credit where;		
Requirement 6	Report the capital cost for the building in pounds per square metre via the BREEM Assessment Scoring and Reporting tool, Assessment Scoring tab, Management section	One credit targeted

Man 03: Responsible construction practices

Targeted: 6 of 6

Pre-requisite

Requirement 1	All timber and timber based products used on the project is 'legally harvested and traded timber' (see Relevant definitions). Note: For other materials, there are no pre-requisite requirements at this stage.	Pre-requisite assumed
Credit 1 - 1 credit where;		
Requirement 2	The principal contractor operates an environmental management system (EMS) covering their main operations. The EMS must be either: third party certified, to ISO 14001/EMAS or equivalent standard; or have a structure that is in compliance with BS 8555:2003 and has reached phase four of the implementation stage, 'implementation	One credit targeted

	and operation of the environmental management system', and has completed phase audits one to four, as defined in BS 8555.	
Requirement 3	The principal contractor implements best practice pollution prevention policies and procedures on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG6.	
Credit 2 - 1 credit where;		
Requirement 4	<p>A Sustainability Champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target(s), during the Construction, Handover and Close Out stages (as defined by the RIBA Plan of Works 2013, stages 5 and 6).</p> <p>To do this the Sustainability Champion will ideally be site based or will visit the site regularly to carry out spot checks, with the relevant authority to do so and require action to be taken to address shortcomings in compliance. The Sustainability Champion will monitor site activities with sufficient frequency (see compliance note CN6) to ensure that risks of noncompliance are minimised. They will report on progress at relevant project team meetings including identifying potential areas of non-compliance and any action needed to mitigate.</p>	One credit targeted
Requirement 5	The defined BREEAM performance target forms a requirement of the principal contractor's contract (see compliance note Man 01 Project brief and design – CN5 and in Man 01 Project brief and design – Relevant definitions).	
Requirement 6	To achieve this credit at the final post-construction stage of assessment, the BREEAM related performance target for the project must be demonstrably achieved by the project. This is	

	demonstrated via the BREEM assessor's final post-construction stage certification report.	
Credit 3 – Up to 2 credits where;		
Requirement 7	<p>Where the principal contractor has used a 'compliant' organisational, local or national considerate construction scheme and their performance against the scheme has been confirmed by independent assessment and verification. The BREEM credits can be awarded as follows:</p> <p>One credit where the contractor achieves 'compliance' with the criteria of a compliant scheme.</p> <p>Two credits where the contractor significantly exceeds 'compliance' with the criteria of the scheme.</p> <p>Refer to the Relevant definitions section for a list of compliant schemes and therefore how performance, as determined by a compliant scheme, translates in to BREEM credits.</p>	Two credits targeted
Credit 4 – Up to 2 credits where;		
Requirement 8	<p>Responsibility has been assigned to an individual(s) for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from all on-site construction processes (and dedicated off-site monitoring) throughout the build programme.</p> <p>To ensure the robust collection of information, this individual(s) must have the appropriate authority and responsibility to request and access the data required. Where appointed, the Sustainability Champion could perform this role.</p>	Two credits targeted
Requirement 9	<p>First monitoring credit: Utility consumption - Energy</p> <p>Criterion 8 is achieved.</p>	



Requirement 10	Monitor and record data on principal constructor's and subcontractors' energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation.
Requirement 11	Report the total carbon dioxide emissions (total kgCO ₂ /project value) from the construction process via the BREEAM Assessment Scoring and Reporting tool.
Requirement 12	First monitoring credit: Utility consumption - Water Criterion 8 is achieved.
Requirement 13	Monitor and record data on principal constructor's and subcontractors' potable water consumption (m ³) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation.
Requirement 14	Using the collated data, report the total net water consumption (m ³), i.e. consumption minus any recycled water use, from the construction process via the BREEAM Assessment Scoring and Reporting tool.
Requirement 15	Second monitoring credit: Transport of construction materials & waste Criterion 8 is achieved.
Requirement 16	Monitor and record data on transport movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum, this must cover: Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution. See Relevant definitions.



	<p>Scope of this monitoring must cover the following as a minimum:</p> <p>Materials used in major building elements (i.e. those defined in BREEM issue Mat 01 Life cycle impacts), including insulation materials.</p> <p>Ground works and landscaping materials.</p> <p>Transport of construction waste from the construction gate to waste disposal processing/recovery centre gate. Scope of this monitoring must cover the construction waste groups outlined in the project's waste management plan.</p>
Requirement 17	<p>Using the collated data, report separately for materials and waste, the total fuel consumption (litres) and total carbon dioxide emissions (kgCO2 eq), plus total distance travelled (km) via the BREEM Assessment Scoring and Reporting tool.</p>

Man 04: Commissioning and handover	
Targeted: 3 of 4	
Credit 1 - 1 credit where;	
Requirement 1	<p>A schedule of commissioning and testing that identifies and includes a suitable timescale for commissioning and recommissioning of all complex and non-complex building services and control systems and testing and inspecting building fabric.</p>
Requirement 2	<p>The schedule will identify the appropriate standards that all commissioning activities will be conducted in accordance with, such as current Building Regulations, BSRIA and CIBSE guidelines and/or other appropriate standards, where applicable. Where a building management system (BMS) is specified, refer to compliance note CN5 on BMS commissioning procedures.</p>
One credit targeted	

Requirement 3	An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of the client.
Requirement 4	The principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works, allowing for the required time to complete all commissioning and testing activities prior to handover.
Credit 2 - 1 credit where;	
Requirement 5	The commissioning and testing schedule and responsibilities credit (credit 1) is achieved.
Requirement 6	For buildings with complex building services and systems, a specialist commissioning manager is appointed during the design stage (by either the client or the principal contractor) with responsibility for: Undertaking design reviews and giving advice on suitability for ease of commissioning. Providing commissioning management input to construction programming and during installation stages. Management of commissioning, performance testing and handover/post-handover stages. Where there are simple building services, this role can be carried out by an appropriate project team member (see criterion 3), provided they are not involved in the general installation works for the building services system(s).
Credit 3 - 1 credit where;	
Requirement 7	The commissioning and testing schedule and responsibilities credit is achieved.
Credit not targeted	

Requirement 8	The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of post construction testing and inspection. Dependent on building type or construction, this can be demonstrated through the completion of a thermographic survey as well as an airtightness test and inspection (see compliance notes CN6 and CN7. The survey and testing is undertaken by a Suitably Qualified Professional (see Relevant definitions) in accordance with the appropriate standard.	
Requirement 9	Any defects identified in the thermographic survey or the airtightness testing reports are rectified prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building/element.	
Credit 4 – 1 credit where		
Requirement 10	A Building User Guide (BUG) is developed prior to handover for distribution to the building occupiers and premises managers (see Relevant definitions).	One credit targeted
Requirement 11	<p>A training schedule is prepared for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum:</p> <p>The building’s design intent</p> <p>The available aftercare provision and aftercare team main contact(s), including any scheduled seasonal commissioning and post occupancy evaluation</p> <p>Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces</p> <p>Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides,</p>	



	<p>maintenance strategy, operations and maintenance (O&M) manual, commissioning records, log book etc. Maintenance requirements, including any maintenance contracts and regimes in place.</p>	
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HEALTH & WELLBEING

Hea 01: Visual Comfort		
Targeted: 2 of 4		
Credit 1 – 1 credit where;		
Requirement 1	The potential for disabling glare has been designed out of all relevant building areas using a glare control strategy, either through building form and layout and/or building design measures.	One credit targeted
Requirement 2	<p>The glare control strategy avoids increasing lighting energy consumption, by ensuring that:</p> <p>a. The glare control system is designed to maximise daylight levels under all conditions while avoiding disabling glare in the workplace or other sensitive areas. The system should not inhibit daylight from entering the space under cloudy conditions, or when sunlight is not on the facade</p> <p>AND</p> <p>b. The use or location of shading does not conflict with the operation of lighting control systems.</p>	
Credit 2 - 1 credit where;		
Requirement 3	<p>Daylighting criteria have been met using either of the following options:</p> <p>The relevant building areas meet good practice daylight factor(s) and other criterion as outlined in Table - 10 and Table - 11.</p> <p>OR</p> <p>The relevant building areas meet good practice average and minimum point daylight illuminance criteria as outlined in Table - 12.</p>	Credit not targeted



Credit 3 - 1 credit where;		Credit not targeted
Requirement 4	95% of the floor area in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out.	
Requirement 5	The window/opening must be $\geq 20\%$ of the surrounding wall area (refer to Relevant definitions in the Additional information section). Where the room depth is greater than 7m, compliance is only possible where the percentage of window/opening is the same as, or greater than, the values in table 1.0 of BS 8206.	
Requirement 6	In addition, the building type criteria in Table - 13 are applicable to view out criteria.	
Credit 4 - 1 credit where;		One credit targeted
Requirement 7	Internal lighting All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts.	
Requirement 8	Internal lighting in all relevant areas of the building is designed to provide an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels. This can be demonstrated through a lighting design strategy that provides illuminance levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard.	
Requirement 9	For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 sections 3.3, 4.6, 4.7, 4.8 and 4.9. This gives recommendations highlighting: Limits to the luminance of the luminaires to avoid screen reflections. (Manufacturers' data for the luminaires should be sought to confirm this.)	

	<p>For uplighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this.</p> <p>Recommendations for direct lighting, ceiling illuminance, and average wall illuminance.</p>
<p>Requirement 10</p>	<p>External lighting</p> <p>All external lighting located within the construction zone is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. To demonstrate this, external lighting provided is specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.</p>
<p>Requirement 11</p>	<p>Zoning and occupant control</p> <p>Internal lighting is zoned to allow for occupant control (see Relevant definitions) in accordance with the criteria below for relevant areas present within the building:</p> <p>In office areas, zones of no more than four workplaces</p> <p>Workstations adjacent to windows/atria and other building areas separately zoned and controlled</p> <p>Seminar and lecture rooms: zoned for presentation and audience areas</p> <p>Library spaces: separate zoning of stacks, reading and counter areas</p> <p>Teaching space or demonstration area</p> <p>Whiteboard or display screen</p> <p>Auditoria: zoning of seating areas, circulation space and lectern area</p>

	<p>Dining, restaurant, café areas: separate zoning of servery and seating/dining areas</p> <p>Retail: separate zoning of display and counter areas</p> <p>Bar areas: separate zoning of bar and seating areas</p> <p>Wards or bedded areas: zoned lighting control for individual bed spaces and control for staff over groups of bed spaces</p> <p>Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff.</p>
Requirement 12	Areas used for teaching, seminar or lecture purposes have lighting controls provided in accordance with CIBSE Lighting Guide 5.
Requirement 13	In addition, meet the building type criteria in Table - 14 (where relevant).

Hea 02: Indoor Air Quality	
Targeted: 3 of 5	
Credit 1 – 1 credit where;	
Requirement 1	<p>An indoor air quality plan has been produced, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building. The indoor air quality plan must consider the following:</p> <ol style="list-style-type: none"> Removal of contaminant sources Dilution and control of contaminant sources Procedures for pre-occupancy flush out Third party testing and analysis Maintaining indoor air quality in-use
Credit 2 - 1 credit where;	
One credit targeted	

Requirement 2	<p>The building has been designed to minimise the concentration and recirculation of pollutants in the building as follows:</p> <p>Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation.</p>	One credit targeted
Requirement 3	<p>Design ventilation pathways to minimise the build-up of air pollutants in the building, as follows:</p> <p>In air conditioned and mixed mode buildings/spaces:</p> <p>The building's air intakes and exhausts are over 10m apart and intakes are over 20m from sources of external pollution. OR</p> <p>The location of the building's air intakes and exhausts, in relation to each other and external sources of pollution, is designed in accordance with BS EN 13779:2007 Annex A2.</p> <p>In naturally ventilated buildings/spaces: openable windows/ventilators are over 10m from sources of external pollution.</p>	
Requirement 4	<p>Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3.</p>	
Requirement 5	<p>Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO2) or air quality sensors specified and:</p> <p>In mechanically ventilated buildings/spaces: sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space.</p> <p>In naturally ventilated buildings/spaces: sensors either have the ability to alert the building owner or manager when CO2 levels exceed the recommended set point, or are linked to controls</p>	

	with the ability to adjust the quantity of fresh air, i.e. automatic opening windows/roof vents.	
Credit 3 – 1 credit where;		
Requirement 6	All decorative paints and varnishes specified meet the criteria in Table - 18	One credit targeted
Requirement 7	At least five of the seven remaining product categories listed in Table - 18 meet the testing requirements and emission levels criteria for volatile organic compound (VOC) emissions (listed in the table).	
Credit 4 – 1 credit where;		
Requirement 8	The formaldehyde concentration level is measured post construction (but pre-occupancy) and is found to be less than or equal to 100µg/averaged over 30 minutes (WHO guidelines for indoor air quality: Selected pollutants, 2010).	Credit not targeted
Requirement 9	The total volatile organic compound (TVOC) concentration level is measured post construction (but pre-occupancy) and found to be less than 300µg/over 8 hours, in line with the building regulation requirements.	
Requirement 10	Where VOC and formaldehyde levels are found to exceed the limits defined in criteria 10 and 11, the project team confirms the measures that have, or will be taken, in accordance with the IAQ plan, to reduce the levels to within these limits.	
Requirement 11	The testing and measurement of the above pollutants are in accordance with the following standards where relevant:	
	<ul style="list-style-type: none"> a. BS ISO 16000-4: 2011 Diffusive sampling of formaldehyde in air b. BS ISO 16000-6: 2011 VOCs in air by active sampling c. BS EN ISO 16017-2: 2003 VOCs - Indoor, ambient and workplace air by passive sampling 	



	d. BS ISO 16000-3: 2011 formaldehyde and other carbonyls in air by pumped sampling.
Requirement 12	The measured concentration levels of formaldehyde ($\mu\text{g}/\text{m}^3$) and TVOC ($\mu\text{g}/\text{m}^3$) are reported, via the BREEAM Assessment Scoring and Reporting Tool.
Credit 5 – 1 credit where;	
Requirement 13	<p>The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. This can be demonstrated as follows:</p> <p>Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy. The following are methods deemed to satisfy this criterion dependent upon the complexity of the proposed system: Room depths are designed in accordance with CIBSE AM10 to ensure effectiveness of any natural ventilation system. The openable window area in each occupied space is equivalent to 5% of the gross internal floor area of that room/floor plate. OR The design demonstrates that the natural ventilation strategy provides adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates. This is demonstrated using ventilation design tool types recommended by CIBSE AM10.</p> <p>For a strategy that does not rely on openable windows, or which has occupied spaces with a plan depth greater than 15m, the design must demonstrate (in accordance with criterion 13i above) that the ventilation strategy can provide adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates.</p>
Credit not targeted	

<p>Requirement 14</p>	<p>The natural ventilation strategy is capable of providing at least two levels of user-control on the supply of fresh air to the occupied space (see compliance note CN6).</p> <p>Note: Any opening mechanisms must be easily accessible and provide adequate user-control over air flow rates to avoid draughts. Relevant industry standards for ventilation can be used to define 'adequate levels of fresh air' sufficient for occupancy and internal air pollution loads relevant to the building type.</p>
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<p>Hea 04: Thermal comfort</p>	
<p>Targeted: 3 of 3</p>	
<p>Credit 1 - 1 credit where;</p>	
<p>Requirement 1</p>	<p>Thermal modelling has been carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling.</p>
<p>Requirement 2</p>	<p>The software used to carry out the simulation at the detailed design stage provides full dynamic thermal analysis. For smaller and more basic building designs with less complex heating or cooling systems, an alternative less complex means of analysis may be appropriate (such methodologies must still be in accordance with CIBSE AM11).</p>
<p>Requirement 3</p>	<p>The modelling demonstrates that: For air conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). For naturally ventilated/free running buildings:</p>

	<p>Winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). The building is designed to limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings.</p>
Requirement 4	For air conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.
Credit 2 - 1 credit where;	
Requirement 5	Criteria 1 to 4 are achieved.
Requirement 6	The thermal modelling demonstrates that the relevant requirements set out in criteria 3 are achieved for a projected climate change environment (see Relevant definitions).
Requirement 7	Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrates how the building has been adapted, or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements under criterion 6.
Requirement 8	For air conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.
Credit 3 – 1 credit where;	
One credit targeted	

Requirement 9	Criteria 1 to 4 are achieved.	One credit targeted
Requirement 10	The thermal modelling analysis (undertaken for compliance with criteria 1 to 4) has informed the temperature control strategy for the building and its users.	
Requirement 11	<p>The strategy for proposed heating/cooling system(s) demonstrates that it has addressed the following:</p> <ul style="list-style-type: none"> a. Zones within the building and how the building services could efficiently and appropriately heat or cool these areas. For example, consider the different requirements for the central core of a building compared with the external perimeter adjacent to the windows. b. The degree of occupant control required for these zones, based on discussions with the end user (or alternatively building type or use specific design guidance, case studies, feedback) considers: <ul style="list-style-type: none"> i. User knowledge of building services iii. Occupancy type, patterns and room functions (and therefore appropriate level of control required) iii. How the user is likely to operate or interact with the system(s), e.g. are they likely to open windows, access thermostatic radiator valves (TRV) on radiators, change air-conditioning settings etc., iv. The user expectations (this may differ in the summer and winter) and degree of individual control (i.e. obtaining the balance between occupant preferences, for example some occupants like fresh air and others dislike drafts). 	

	<p>c. How the proposed systems will interact with each other (where there is more than one system) and how this may affect the thermal comfort of the building occupants.</p> <p>d. The need or otherwise for an accessible building user actuated manual override for any automatic systems.</p>
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Hea 05: Acoustic Performance	
Targeted: 3 of 3	
Credit 1 - Up to 3 credits where;	
Requirement 2	<p>Up to two credits are available for Industrial, Retail, Prisons and 'Other' building types:</p> <p>Where the building meets the acoustic performance standards and testing requirements detailed in Table - 21 (see additional information) for all relevant functional areas.</p>
Requirement 3	<p>Up to one credit Where a suitably qualified acoustician (see relevant definitions) is appointed to define a bespoke set of performance requirements for all function areas in the building using the three acoustic principles defined in criterion 1, setting out the performance requirements for each and the testing regime required.</p>
Three credits targeted	

Hea 06: Safety and Security	
Targeted: 2 of 2	
Credit 1 - 1 credit where;	
Requirement 1	<p>Where external site areas form part of the assessed development the following apply:</p> <p style="text-align: right;">One credit targeted</p>

	Dedicated cycle paths provide direct access from the site entrance(s) to any cycle storage provided, without the need to deviate from the cycle path and, if relevant, connect to off-site cycle paths (or other appropriate safe route) where these run adjacent to the development's site boundary.
Requirement 2	Footpaths on-site provide direct access from the site entrance(s) to the building entrance(s) and connect to public footpaths off-site (where existing), providing practical and convenient access to local transport nodes and other off-site amenities (where existing).
Requirement 3	Where provided, drop-off areas are designed off/adjoining to the access road and provide direct access to pedestrian footpaths, therefore avoiding the need for the pedestrian to cross vehicle access routes.
Requirement 4	Dedicated pedestrian crossings are provided where pedestrian routes cross vehicle access routes, and appropriate traffic calming measures are in place to slow traffic down at these crossing points.
Requirement 5	For large developments with a high number of public users or visitors, pedestrian footpaths must be signposted to other local amenities and public transport nodes off-site (where existing).
Requirement 6	The lighting for access roads, pedestrian routes and cycle lanes is compliant with the external lighting criteria defined in Hea 01 Visual comfort, i.e. in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas.
Requirement 7	Where vehicle delivery access and drop-off areas form part of the assessed development, the following apply: Delivery areas are not directly accessed through general parking areas and do not cross or share pedestrian and cyclist routes and



	other outside amenity areas accessible to building users and general public.
Requirement 8	There is a dedicated parking/waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking.
Requirement 9	Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.
Requirement 10	There is a dedicated space for the storage of refuse skips and pallets away from the delivery vehicle manoeuvring area and staff/visitor car parking (if appropriate given the building type/function).
Credit 2 - 1 credit where;	
Requirement 11	A suitably qualified security specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent).
Requirement 12	The SQSS develops a set of recommendations or solutions during or prior to Concept Design (RIBA Stage 2 or equivalent). These recommendations or solutions aim to ensure that the design of buildings, public and private car parks and public or amenity space are planned, designed and specified to address the issues identified in the preceding SNA.
Requirement 13	The recommendations or solutions proposed by the SQSS are implemented (see CN9). Any deviation from those recommendations or solutions will need to be justified, documented and agreed in advance with a suitably qualified security specialist.
One credit targeted	

ENERGY

Ene 01: Reduction of energy use and carbon emissions	
Targeted: 0 of 12	
Credit 1 - Up to 12 credits where;	
Requirement 1	Calculate an Energy Performance Ratio for New Constructions (EPRNC). Compare the EPRNC achieved with the benchmarks in Table - 25 and award the corresponding number of BREEAM credits. Zero credits targeted
Ene 02: Energy Monitoring	
Targeted: 2 of 2	
Credit 1 - 1 credit where;	
Requirement 1	Energy metering systems are installed that enable at least 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems (see Methodology). One credit targeted
Requirement 2	The energy consuming systems in buildings with a total useful floor area greater than 1,000m ² are metered using an appropriate energy monitoring and management system.
Requirement 3	The systems in smaller buildings are metered either with an energy monitoring and management system or with separate accessible energy sub-meters with pulsed or other open protocol communication outputs, to enable future connection to an energy monitoring and management system (see Relevant definitions).
Requirement 4	The end energy consuming uses are identifiable to the building users, for example through labelling or data outputs.
Credit 2 - 1 credit where;	

Requirement 5	An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, covering a significant majority of the energy supply to tenanted areas or, in the case of single occupancy buildings, relevant function areas or departments within the building/unit.	One credit targeted
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Ene 03: External Lighting		
Targeted: 1 of 1		
Credit 1 - 1 credit where;		
Requirement 1	The building has been designed to operate without the need for external lighting (which includes on the building, signs and at entrances). OR alternatively, where the building does have external lighting, one credit can be awarded as follows:	One credit targeted
Requirement 2	The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt.	
Requirement 3	All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.	

Ene 04: Low carbon design		
Targeted: 0 of 3		
Credit 1 - 1 credit where;		

Requirement 1	The first credit within issue Hea 04 Thermal comfort has been achieved to demonstrate the building design can deliver appropriate thermal comfort levels in occupied spaces.	Credit not targeted
Requirement 2	The project team carries out an analysis of the proposed building design/development to influence decisions made during Concept Design stage (RIBA Stage 2 or equivalent) and identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services (see compliance note CN4).	
Requirement 3	The building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis and the analysis demonstrates a meaningful reduction in the total energy demand as a result (see compliance note CN16).	
Credit 2 – 1 credit where;		
Requirement 4	The passive design analysis credit (credit 1) is achieved.	Credit not targeted
Requirement 5	The passive design analysis carried out under criterion 2 includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions.	
Requirement 6	The building uses ANY of the free cooling strategies listed in compliance note CN5 to reduce the cooling energy demand, i.e. it does not use active cooling.	
Credit 3 – 1 credit where;		
Requirement 7	A feasibility study has been carried out by the completion of the Concept Design stage (RIBA Stage 2 or equivalent) by an energy specialist (see Relevant definitions) to establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy source(s) for the building/development (see compliance note CN7).	Credit not targeted



Requirement 8	A local LZC technology/technologies has/have been specified for the building/development in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated carbon dioxide (CO2) emissions (see compliance note CN16).	
Ene 08 Energy Efficient Equipment		
Targeted: 0 of 2		
Credit 1 – 2 credits where;		
Requirement 1	Identify the building's unregulated energy consuming loads and estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical/standard specification.	Credits not targeted
Requirement 2	Identify the systems and/or processes that use a significant proportion of the total annual unregulated energy consumption of the development and its operation.	
Requirement 3	Demonstrate a meaningful reduction in the total annual unregulated energy consumption of the building. See Table - 28 Table - 28 contains solutions deemed to satisfy compliance for common examples of significant contributors to unregulated energy consumption, for a number of different building types/functions.	

TRANSPORT

Tra 01: Public Transport Accessibility		Three credits targeted
Targeted: 3 of 5		
Credit 1 - Up to 5 credits where;		
Requirement 1	<p>Up to 5 credits - Accessibility Index</p> <p>The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded in accordance with the table of building types, AI benchmarks and BREEAM credits in Table - 29 (see checklists and tables).</p>	
Requirement 2	<p>The Accessibility Index is determined by entering the following information in to the BREEAM Tra 01 calculator:</p> <p>The distance (m) from the main building entrance to each compliant public transport node</p> <p>The public transport type(s) serving the compliant node e.g. bus or rail</p> <p>The average number of services stopping per hour at each compliant node during the operating hours of the building for a typical day (see compliance notes and Table - 30 in the Additional Information section).</p> <p>OR</p>	
Requirement 3	<p>One credit - Dedicated bus service</p> <p>For buildings with a fixed shift pattern, i.e. where building users will predominantly arrive/depart at set times, one credit can be awarded where the building occupier provides, or commits to providing a dedicated bus service to and from the building at the beginning and end of each shift/day.</p>	



	This credit is only available in cases where a development is unable to achieve any of the available credits using the Accessibility Index criteria (i.e. its location has a low public transport Accessibility Index).
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Tra 02: Proximity to amenities	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	Where the building is located within close proximity of, and accessible to, local amenities which are likely to be frequently required and used by building occupants, as outlined in Table - 31
Requirement 2	Where a building type is indicated to have core amenities (Labelled as C in Table - 31) at least two of these must be provided as a part of the total number required. The remaining number of amenities required can be met using any other applicable amenities (including any remaining core amenities).
	One credit targeted

Tra 03: Cyclist facilities	
Targeted: 0 of 2	
Credit 1 - 1 credit where;	
Requirement 1	Compliant cycle storage spaces that meet the minimum levels set out in Table - 32 (see checklists and tables) are installed.
	Credit not targeted
Credit 2 - 1 credit where;	
Requirement 2	Criterion 1 has been achieved.
	Credit not targeted
Requirement 3	At least two of the following types of compliant cyclist facilities have been provided for all staff and pupils (where appropriate)

	(see relevant definitions for the scope of each compliant cyclist facilities: Showers Changing facilities Lockers Drying spaces
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Tra 05: Travel Plan	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	A travel plan has been developed as part of the feasibility and design stages.
Requirement 2	A site specific travel assessment/statement has been undertaken to ensure the travel plan is structured to meet the needs of the particular site and covers the following (as a minimum): Where relevant, existing travel patterns and opinions of existing building or site users towards cycling and walking so that constraints and opportunities can be identified. Travel patterns and transport impact of future building users. Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children) Disabled access (accounting for varying levels of disability and visual impairment) Public transport links serving the site Current facilities for cyclists.
Requirement 3	The travel plan includes a package of measures to encourage the use of sustainable modes of transport and movement of people and goods during the buildings operation and use.
	One credit targeted

Requirement 4	If the occupier is known, they must be involved in the development of the travel plan and they must confirm that the travel plan will be implemented post construction and be supported by the buildings management in operation.	
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WATER

Wat 01: Water Consumption	
Targeted: 3 of 5	
Credit 1 - Up to 5 credits where;	
	Three credits targeted
Requirement 1	An assessment of the efficiency of the building's domestic water-consuming components is undertaken using the BREEAM Wat 01 calculator.
Requirement 2	The water consumption (L/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table - 35.
Requirement 3	The efficiency of the following 'domestic scale' water-consuming components must be included in the assessment (where specified): WCs Urinals Taps (wash hand basins and where specified kitchen taps and waste disposal unit) Showers Baths Dishwashers (domestic and commercial sized) Washing machines (domestic and commercial or industrial sized). The BREEAM Wat 01 calculator defines the building types and activity areas for which the above components must be assessed.
Requirement 4	Where a greywater and/or rainwater system is specified, its yield (L/person/day) is used to off-set non potable water demand from components that would otherwise be supplied using potable water.



Requirement 5	Any greywater systems must be specified and installed in compliance with BS 8525-1:2010 Greywater Systems - Part 1 Code of Practice. Any rainwater systems must be specified and installed in compliance with BS 8515:2009+A1:2013 Rainwater Harvesting Systems - Code of practice.
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Wat 02: Water Monitoring	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.
Requirement 2	Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area (see Compliance notes).
Requirement 3	Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption (see Relevant definitions).
Requirement 4	If the site on which the building is located has an existing BMS, managed by the same occupier/owner (as the new building), the pulsed/digital water meter(s) for the new building must be connected to the existing BMS.
One credit targeted	

Wat 03: Leak Detection	
Targeted: 2 of 2	
Credit 1 - 1 credit where;	

Requirement 1	<p>A leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter is installed. The leak detection system must be:</p> <p>A permanent automated water leak detection system that alerts the building occupants to the leak OR an in-built automated diagnostic procedure for detecting leaks is installed.</p> <p>Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time.</p> <p>Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods.</p> <p>Programmable to suit the owner/occupiers' water consumption criteria.</p> <p>Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.</p>	One credit targeted
Credit 2 - 1 credit where;		
Requirement 2	Flow control devices that regulate the supply of water to each WC area/facility according to demand are installed (and therefore minimise water leaks and wastage from sanitary fittings).	One credit targeted
Wat 04: Water efficient equipment		
Targeted: 1 of 1		
Credit 1 - 1 credit where;		
Requirement 1	The design team has identified all unregulated water demands that could be realistically mitigated or reduced.	One credit targeted
Requirement 2	System(s) or processes have been identified to reduce the unregulated water demand and demonstrate, through either	

good practice design or specification, a meaningful reduction in the total water demand of the building.



MATERIALS

Mat 01: Life Cycle Impacts	
Targeted: 2 of 6	
Credit 1 - Up to 6 credits where;	
Requirement 1	BREEAM awards credits on the basis of the building's quantified environmental life cycle impact through assessment of the main building elements, as set out in Table - 38:
Requirement 2	<p>Credits are awarded on the basis of the total number of points achieved, as set out in Table - 39 below, and calculated using the BREEAM Mat 01 calculator. This points score is based on the Green Guide rating(s) achieved for the specifications that make up the main building elements (as in Table - 38).</p> <p>Note: Where an independently verified third party Environmental Product Declaration (EPD), covering part of or the whole life cycle, is available for a material or product that forms part of an assessed building element, this can be used to increase the contribution of that element to the building's Mat 01 performance. (Refer to Calculation procedure where a specific Environmental Product Declaration (EPD) is available for a material in the Methodology section for more details.)</p>
Requirement 3	Life cycle greenhouse gas emissions (kgCO2 eq.) for each element are also required to be reported based on a 60-year building life. Where specific data is not available for a product or element, generic data should be used. Generic data can be obtained from the online Green Guide for each element and must be entered in to the BREEAM Mat 01 calculator.
Two credits targeted	
Mat 02: Hard Landscaping and Boundary Protection	



Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	Where at least 80% of all external hard landscaping and 80% of all boundary protection (by area) in the construction zone achieves an A or A+ rating, as defined in the Green Guide to Specification. Green Guide ratings for the specification(s) of each element can be found at www.thegreenguide.org.uk
	One credit targeted
Mat 03: Responsible Sourcing of Materials	
Targeted: 2 of 4	
Pre-requisite	
Requirement 1	All timber and timber based products used on the project is 'legally harvested and traded timber' (see Relevant definitions). Note: It is a minimum requirement for achieving a BREEAM rating (for any rating level) that compliance with criterion 1 is confirmed. For other materials there are no pre-requisite requirements at this stage.
	Pre-requisite assumed
Credit 1 - 1 credit where;	
Requirement 2	The principal contractor sources materials for the project in accordance with a documented sustainable procurement plan (see the Relevant definitions in the Additional information section).
	One credit targeted
Credit 2 – Up to 3 credits where;	
Requirement 3	The available RSM credits (refer to Table - 43) can be awarded where the applicable building materials (refer to Table - 44) are responsibly sourced in accordance with the BREEAM
	One credit targeted

	methodology, as defined in steps 1 to 2 in the Methodology section.
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Mat 04: Insulation	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	Any new insulation specified for use within the following building elements must be assessed: External walls Ground floor Roof Building services
Requirement 2	The Insulation index for the building fabric and services insulation is the same as or greater than 2.5. See Mat 04 Insulation section for a description of calculating the Insulation index.
	One credit targeted

Mat 05: Designing for durability and resilience	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	Protecting vulnerable parts of the building from damage. The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This must include, but is not necessarily limited to:
	One credit targeted

	<p>Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.).</p> <p>Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.</p> <p>Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas.</p>	
<p>Requirement 2</p>	<p>Protecting exposed parts of the building from material degradation</p> <p>The relevant building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors. (See Methodology for the process to assess this criterion).</p> <p>See Table - 47 in the Checklists and tables section for a list of applicable elements, environmental factors and material degradation effects to consider.</p>	

<p>Mat 06: Material efficiency</p>		
<p>Targeted: 0 of 1</p>		
<p>Credit 1 - 1 credit where;</p>		
<p>Requirement 1</p>	<p>Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life</p>	<p>Credit not targeted</p>

<p>Requirement 2</p>	<p>The above is carried out by the design/construction team in consultation with the relevant parties (see CN3) at each of the following RIBA stages:</p> <ul style="list-style-type: none"> Preparation and Brief Concept Design Developed Design Technical Design Construction.
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WASTE

Wst 01: Construction Waste Management	
Targeted: 2 of 4	
Credit 1 - Up to 3 credits where;	
Requirement 1	Up to three credits Where a Resource Management Plan (RMP) has been developed covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication (including demolition and excavation waste) generated by the building's design and construction (see CN3).
Requirement 2	Where construction waste related to on-site construction and dedicated off-site manufacture/fabrication (excluding demolition and excavation waste) meets or is lower than that shown in Table - 48:
Requirement 3	Where existing buildings on the site will be demolished a pre-demolition audit of any existing buildings, structures or hard surfaces is completed to determine if, in the case of demolition, refurbishment/reuse is feasible and, if not, to maximise the recovery of material from demolition for subsequent high grade/value applications. The audit must be referenced in the RMP and cover: Identification of the key refurbishment/demolition materials. Potential applications and any related issues for the reuse and recycling of the key refurbishment and demolition materials in accordance with the waste hierarchy.
Credit 2 - 1 credit where;	
One credit targeted	

Requirement 4	The following percentages of non-hazardous construction (on-site and off-site manufacture/fabrication in a dedicated facility), demolition and excavation waste (where applicable) generated by the project have been diverted from landfill as shown in Table - 49.	One credit targeted
Requirement 5	Waste materials will be sorted into separate key waste groups as per Table - 50 (according to the waste streams generated by the scope of the works) either on-site or through a licensed contractor for recovery.	

Wst 02: Recycled Aggregates

Targeted: 0 of 1

Credit 1 - 1 credit where;

Requirement 1	The percentage of high-grade aggregate that is recycled and/or secondary aggregate, specified in each application (present) must meet the following minimum % levels (by weight or volume) to contribute to the total amount of recycled and/or secondary aggregate, as specified in table -48.	Credit not targeted
Requirement 2	The total amount of recycled or secondary aggregate specified, and meeting criterion 1, is greater than 25% (by weight or volume) of the total high grade aggregate specified for the development. Where the minimum level in criterion 1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.	
Requirement 3	The recycled and/or secondary aggregates are EITHER: Construction, demolition and excavation waste obtained on-site or off-site OR	

	Secondary aggregates obtained from a non-construction post-consumer industrial by product source (see Relevant definitions section).
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Wst 03: Operational Waste	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	<p>Dedicated space(s) is provided for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. This space must be:</p> <p>Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams</p> <p>Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management contractors</p> <p>Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates.</p>
Requirement 2	<p>Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities are provided:</p> <p>Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space.</p> <p>Vessel(s) for composting suitable organic waste resulting from the building's daily operation and use; OR adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility.</p>
One credit targeted	

	Where organic waste is to be stored/composted on-site, a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.
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Wst 05: Adaptation to climate change	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 1	<p>Credit not targeted</p> <p>Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of Concept Design (RIBA Stage 2 or equivalent), in accordance with the following approach:</p> <p>Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages:</p> <ul style="list-style-type: none"> Hazard identification Hazard assessment Risk estimation Risk evaluation Risk management

Wst 06: Functional adaptability	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	<p>One credit targeted</p> <p>A building-specific functional adaptation strategy study has been undertaken by the client and design team by Concept Design</p>

	(RIBA Stage 2 or equivalent), which includes recommendations for measures to be incorporated to facilitate future adaptation.	
Requirement 2	Functional adaptation measures have been implemented (RIBA Stage 4 or equivalent) in accordance with the functional adaptation strategy recommendations, where practical and cost effective. Omissions have been justified in writing to the assessor.	

LAND USE & ECOLOGY

LE 01: Site Selection	
Targeted: 1 of 2	
Credit 1 - 1 credit where;	
Requirement 1	At least 75% of the proposed development's footprint is on an area of land which has previously been occupied by industrial, commercial or domestic buildings or fixed surface infrastructure.
Credit 2 – 1 credit where;	
Requirement 2	A contaminated land specialist's site investigation, risk assessment and appraisal has deemed land within the site to be affected by contamination. The site investigation, risk assessment and appraisal have identified: The degree of contamination The contaminant sources/types The options for remediating sources of contamination which present an unacceptable risk
Requirement 3	The client or principal contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan as recommended by the contaminated land specialist.
	Credit not targeted

LE 02: Ecological Value of Site and Protection of Ecological Features	
Targeted: 2 of 2	
Credit 1 - 1 credit where;	
Requirement 1	Land within the construction zone is defined as 'land of low ecological value' using either:
	One credit targeted

	<p>The BREEAM checklist for defining land of low ecological value (see Table -52); OR</p> <p>A Suitably Qualified Ecologist (SQE) who has identified the land as being of 'low ecological value' within an ecological assessment report, based on a site survey.</p>	
Credit 2 - 1 credit where;		
Requirement 2	All existing features of ecological value within and surrounding the construction zone and site boundary area are adequately protected from damage during clearance, site preparation and construction activities in line with BS42020: 2013.	One credit targeted
Requirement 3	In all cases, the principal contractor is required to construct ecological protection recommended by the SQE, prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities).	

LE 03: Minimising impact on existing site ecology

Targeted: 2 of 2

Credit 1 - Up to 2 credits where;

Requirement 1	<p>Two credits</p> <p>The change in ecological value of the site is equal to or greater than zero plant species, i.e. no negative change, using the methods outlined in either (a) or (b) below:</p> <p>Determine the following information and input this data in to the BREEAM LE 03/LE 04 calculator:</p>	Two credits targeted
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	<p>The broad habitat type(s) that define the landscape of the assessed site in its existing pre-developed state and proposed state (see Table - 53). Area (m²) of the existing and proposed broad habitat types. OR</p> <p>Where a Suitably Qualified Ecologist (SQE) has been appointed and, based on their site survey, they confirm the following and either the assessor or ecologist inputs this data in to the BREEAM LE 03/LE 04 calculator:</p> <p>The broad habitat types that define the landscape of the assessed site in its existing pre-developed state and proposed state. Area (m²) of the existing and proposed broad habitat plot types. Average total taxon (plant species) richness within each habitat type. OR</p>	
Requirement 2	<p>One credit</p> <p>Where the change in ecological value of the site is less than zero but equal to or greater than minus nine plant species i.e. a minimal change, use the methods outlined in either 1(a) or (b) above.</p>	

LE 04: Enhancing site ecology		
Targeted: 2 of 2		
Credit 1 - 1 credit where;		
Requirement 1	A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the end of the	One credit targeted

	Preparation and Brief stage (RIBA Stage 1 or equivalent) to advise on enhancing the ecology of the site at an early stage.	
Requirement 2	The SQE has provided an Ecology Report with appropriate recommendations for the enhancement of the site's ecology at Concept Design stage (RIBA Stage 2 or equivalent). The report is based on a site visit/survey by the SQE (see also CN4).	
Requirement 3	The early stage advice and recommendations of the Ecology Report for the enhancement of site ecology have been, or will be, implemented in the final design and build.	
Credit 2 - 1 credit where;		
Requirement 4	The criteria of the first credit are met.	One credit targeted
Requirement 5	The recommendations of the Ecology Report for the enhancement of site ecology have been implemented in the final design and build, and the SQE confirms that this will result in an increase in ecological value of the site, with an increase of six plant species or greater (refer also to Compliance note CN8 for alternative means of compliance).	
Requirement 6	The increase in plant species has been calculated using the BREEAM LE 03/LE 04 calculator, using actual plant species numbers.	

LE 05: Long Term Impact on Biodiversity

Targeted: 2 of 2

Credit 1 - Up to 2 credits where;

Requirement 1	Where a Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and	Two credits targeted
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	enhancement of ecology has been complied with during the design and construction process.	
Requirement 2	Where a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS 42020:2013 Section 11.1. This is to be handed over to the building owner/occupants for use by the grounds maintenance staff.	
Requirement 3	<p>Where additional measures to improve the assessed site's long term biodiversity are adopted, according to Table - 55.</p> <ul style="list-style-type: none"> • One credit where at least 2 additional measures are adopted • Two credits where at least 4 additional measures are adopted <p>Where the Suitably Qualified Ecologist (SQE) confirms that some of the additional measures listed in Table - 55 are not applicable to the assessed development, the credits can be awarded in accordance with the table in the Tracker Plus Additional Guidance document.</p>	



POLLUTION

Pol 01: Impact of Refrigerants	
Targeted: 1 of 3	
Credit 1 - Up to 3 credits where;	
Requirement 1	<p>Three credits - No refrigerant use</p> <p>Where the building does not require the use of refrigerants within its installed plant/systems.</p> <p>OR alternatively, where the building does require the use of refrigerants, the three credits can be awarded through compliance with requirements 2 to 7.</p>
Requirement 2	<p>Pre-requisite</p> <p>All systems (with electric compressors) must comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.</p>
Requirement 3	<p>Impact of refrigerant:</p> <p>2 credits:</p> <p>Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELCO2e) of ≤ 100 kgCO2e/kW cooling/heating capacity. To calculate the DELCO2e please refer to the Relevant definitions in the Additional information section and the Methodology section.</p> <p>OR</p>
One credit targeted under requirement 5	

Requirement 4	Where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤ 10.
	OR
Requirement 5	One credit: Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤ 1000 kgCO2e/kW cooling/heating capacity.

Pol 02: NOx emissions	
Targeted: 3 of 3	
Credit 1 - Up to 3 credits where;	
Requirement 1	Where the plant installed to meet the building's delivered heating and hot water demand has, under normal operating conditions, a NOx emission level (measured on a dry basis at 0% excess O2) as follows: <ul style="list-style-type: none"> • 1 Credit: ≤ 100 mg/kWh • Credits: ≤ 70 mg/kWh • 3 Credits: ≤ 40 mg/kWh
Requirement 2	Report via the BREEAM scoring and reporting tool the direct and indirect NOx emissions in mg/kWh and energy consumption in kWh/m2/yr arising from systems installed to meet the building's space heating, cooling and hot water demands.
Three credits targeted	

Pol 03: Surface Water Run Off	
Targeted: 4 of 5	
Credit 1 - Up to 2 credits where;	

Requirement 1	<p>Two credits - Low flood risk</p> <p>Where a site-specific flood risk assessment (FRA) confirms the development is situated in a flood zone that is defined as having a low annual probability of flooding (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration (see CN5).</p>	Two credits targeted
Requirement 2	<p>One credit - Medium / High flood risk</p> <p>Where a site-specific FRA confirms the development is situated in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration (see CN5).</p> <p>AND</p>	
Requirement 3	<p>To increase the resilience and resistance of the development to flooding, one of the following must be achieved:</p> <p>The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600mm above the design flood level of the flood zone in which the assessed development is located (see CN8); OR</p> <p>The final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2011.</p>	
Credit 2 - Up to 2 credits where;		

Requirement 4	<p>Pre-requisite</p> <p>An Appropriate Consultant is appointed to carry out, demonstrate and/or confirm the development's compliance with the following criteria:</p>	Pre-requisite assumed
Requirement 5	<p>One credit</p> <p>Where drainage measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events.</p>	One credit targeted
Requirement 6	<p>Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place.</p>	
Requirement 7	<p>Calculations include an allowance for climate change; this should be made in accordance with current best practice planning guidance (see definitions).</p>	
Requirement 8	<p>One credit</p> <p>Where flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance); AND</p> <p>EITHER</p>	One credit targeted
Requirement 9	<p>Drainage design measures are specified to ensure that the post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development for the 100-year 6-hour event, including an allowance for climate change (see criterion 14).</p>	

Requirement 10	Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other Sustainable Drainage System (SuDS) techniques.
Requirement 11	<p>OR (only where criteria 9 and 10 for this credit cannot be achieved):</p> <p>Justification from the Appropriate Consultant indicating why the above criteria cannot be achieved, i.e. where infiltration or other SuDS techniques are not technically viable options.</p>
Requirement 12	<p>Drainage design measures are specified to ensure that the post development peak rate of run-off is reduced to the limiting discharge. The limiting discharge is defined as the highest flow rate from the following options:</p> <p>The pre-development 1-year peak flow rate; OR The mean annual flow rate Q_{bar}; OR 2L/s/ha.</p> <p>Note that for the 1-year peak flow rate the 1-year return period event criterion applies (as described in the peak run-off criteria above).</p>
Requirement 13	Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place.
Requirement 14	For either option, above calculations must include an allowance for climate change; this should be made in accordance with current best practice planning guidance.
Credit 3 - 1 credit where;	
Requirement 15	There is no discharge from the developed site for rainfall up to 5mm (confirmed by the Appropriate Consultant).
	Credit not targeted

Requirement 16	In areas with a low risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques.
Requirement 17	Where there is a high risk of contamination or spillage of substances such as petrol and oil (see Compliance notes for a list of areas), separators (or an equivalent system) are installed in surface water drainage systems.
Requirement 18	Where the building has chemical/liquid gas storage areas, a means of containment is fitted to the site drainage system (i.e. shut-off valves) to prevent the escape of chemicals to natural watercourses (in the event of a spillage or bunding failure).
Requirement 19	All water pollution prevention systems have been designed and installed in accordance with the recommendations of documents such as Pollution Prevention Guideline 3 (PPG 3) and/or where applicable the SUDS manual. For areas where vehicle washing will be taking place, pollution prevention systems must be in accordance with Pollution Prevention Guidelines 13.
Requirement 20	A comprehensive and up-to date drainage plan of the site will be made available for the building/site occupiers.
Requirement 21	Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS must be in place.
Requirement 22	Where present, all external storage and delivery areas designed and detailed in accordance with the current best practice planning guidance (see Other information for further information).

Pol 04: Reduction of Night Time Light Pollution

Targeted: 1 of 1

Credit 1 - 1 credit where;		One credit targeted
Requirement 1	Where external lighting pollution has been eliminated through effective design that removes the need for external lighting without adversely affecting the safety and security of the site and its users. OR alternatively, where the building has no external lighting, one credit may be awarded as follows:	
Requirement 2	The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011. This can be demonstrated via completion of the checklists in Annexes B and C of the guidance note by a relevant member of the design team.	
Requirement 3	All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.	
Requirement 4	If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes.	
Requirement 5	Illuminated advertisements, where specified, must be designed in compliance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements.	

Pol 05: Noise Attenuation		
Targeted: 1 of 1		
Credit 1 - 1 credit where;		
Requirement 1	Where there are, or will be, no noise-sensitive areas or buildings within 800m radius of the assessed development.	One credit targeted

Requirement 2	<p>OR alternatively, where the building does have noise-sensitive areas or buildings within 800m radius of the development, one credit can be awarded as follows:</p> <p>Where a noise impact assessment in compliance with BS 7445 has been carried out and the following noise levels measured/determined:</p> <p>Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar.</p> <p>The rating noise level resulting from the new noise source (see CN4).</p>
Requirement 3	<p>The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body (see Relevant definitions in the Additional information section).</p>
Requirement 4	<p>The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level.</p>
Requirement 5	<p>Where the noise source(s) from the proposed site/building is greater than the levels described in criterion 4, measures have been installed to attenuate the noise at its source to a level where it will comply with criterion 4.</p>

INNOVATION

Man 03: Responsible construction practices	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 17	With reference to the considerate construction criterion 7, in addition to meeting the criteria for two credits, the contractor achieves compliance with the criteria of the compliant scheme to an exemplary level of practice.
	Credit not targeted

Hea 01: Visual Comfort	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 14	Daylighting criteria have been met using either of the following options: Relevant building areas meet exemplary daylight factor(s) and the relevant criteria in Table - 15. OR Relevant building areas meet exemplary average and minimum point daylight illuminance criteria in Table - 16.
	Credit not targeted

Ene 01: Reduction of energy use and carbon emissions	
Targeted: 0 of 5	
Credit 1 - Up to 5 credits where;	

Requirement 2	Up to four credits - Zero regulated carbon The building achieves an EPRNC \geq 0.9 and zero net regulated CO2 emissions (see Relevant definitions).	Credit not targeted
Requirement 3	An equivalent percentage of the buildings modelled 'regulated' operational energy consumption, as stipulated in Table - 26, is generated by carbon neutral on-site or near-site sources and used to meet energy demand from 'unregulated' building systems or processes.	
Requirement 4	Five credits - Carbon negative The building is 'carbon negative' in terms of its total modelled operational energy consumption, including regulated and unregulated energy (see Relevant definitions in the Additional information section of this issue).	

Wat 01: Water Consumption		
Targeted: 0 of 1		
Credit 1 - 1 credit where;		
Requirement 1	An assessment of the efficiency of the building's domestic water-consuming components is undertaken using the BREEAM Wat 01 calculator.	Credit not targeted
Requirement 2	The water consumption (L/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table - 35.	
Requirement 3	The efficiency of the following 'domestic scale' water-consuming components must be included in the assessment (where specified): WCs	

	<p>Urinals Taps (wash hand basins and where specified kitchen taps and waste disposal unit) Showers Baths Dishwashers (domestic and commercial sized) Washing machine (domestic and commercial or industrial sized) The BREEAM Wat 01 calculator defines the building types and activity areas for which the above components must be assessed.</p>
Requirement 4	Where a greywater and/or rainwater system is specified, its yield (L/person/day) is used to off-set non potable water demand from components that would otherwise be supplied using potable water.
Requirement 5	Any greywater systems must be specified and installed in compliance with BS 8525-1:2010 Greywater Systems - Part 1 Code of Practice. Any rainwater systems must be specified and installed in compliance with BS 8515:2009+A1:2013 Rainwater Harvesting Systems - Code of practice.

Mat 01: Life Cycle Impacts	
Targeted: 0 of 3	
Credit 1 - 1 credit where;	
Requirement 4	Where assessing four or more applicable building elements, the building achieves at least two points in addition to the total points required to achieve maximum credits under the standard BREEAM criteria (as outlined in the table above) OR
Requirement 5	Where assessing fewer than four applicable building elements, the building achieves at least one point in addition to the total points required to achieve maximum credits under the standard BREEAM criteria.
Credit not targeted	

	Where the assessed building does not specify an element listed above, see the compliance note CN3 regarding the exemplary level benchmark.	
Credit 2 - Up to 2 credits where;		
Requirement 6	Where the design team has used an IMPACT compliant software tool (or equivalent) to measure the environmental impact of the building;	Credits not targeted
Requirement 7	Where the design team can demonstrate how the use of an IMPACT compliant software (or equivalent) has benefited the building in terms of measuring and reducing its environmental impact. See compliance note CN16.	
Requirement 8	Where the design team submit the building information model (BIM) from the IMPACT compliant software tool (or equivalent) for the assessed building to BRE Global (via the project's appointed BREEAM Assessor). See compliance note CN17.	

Mat 03: Responsible Sourcing of Materials

Targeted: 0 of 1

Credit 1 - 1 credit where;

Requirement 4	Where at least 70% of the available RSM points are achieved.	Credit not targeted
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Wst 01: Construction Waste Management

Targeted: 0 of 1

Credit 1 - 1 credit where;

Requirement 6	Non-hazardous construction waste generated by the building's design and on-site construction and off-site manufacture or	Credit not targeted
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	fabrication (excluding demolition and excavation waste) is no greater than the exemplary level resource efficiency benchmark (outlined in Table - 48).
Requirement 7	The percentage of non-hazardous construction (on-site and dedicated off-site manufacture/fabrication), demolition and excavation waste (if relevant) diverted from landfill meets or exceeds the exemplary level percentage benchmark (outlined in Table - 49).
Requirement 8	All key waste groups are identified for diversion from landfill in the RMP.

Wst 02: Recycled Aggregates

Targeted: 0 of 1

Credit 1 - 1 credit where;

Requirement 4	The percentage of high grade aggregate that is recycled or secondary aggregate, specified in each application (present) must meet the exemplary minimum levels (by weight or volume), as defined in table -51. Where this minimum level is not met, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.	Credit not targeted
Requirement 5	Where the total amount of recycled or secondary aggregate specified is greater than 35% (by weight or volume) of the total high grade aggregate specified for the project. Where the minimum level in criterion 1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.	
Requirement 6	The contributing recycled or secondary aggregate must not be transported more than 30 km by road transport.	

Wst 05: Adaptation to climate change	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 2	<p>Achievement of the Structural and fabric resilience criterion in this issue and the following criteria points or credits:</p> <p>Hea 04 Thermal comfort (Link to Wst 05 issue:- to preventing increasing risks of overheating) Criterion 6 in the second credit of the Hea 04 issue has been achieved.</p> <p>Ene 01 Reduction of energy use and carbon emissions (Link to Wst 05 issue: to maximise energy efficiency contributing to low carbon emissions resulting from increasing energy demands) At least eight credits in this issue have been achieved.</p> <p>Ene 04 Low carbon design (Link to Wst 05 issue: to maximise opportunities to avoid unnecessary carbon emissions) The Passive design analysis credit in this issue has been achieved.</p> <p>Wat 01 Water consumption (Link to Wst 05: to minimise water demands in periods of drought) A minimum of three credits in this issue have been achieved.</p> <p>Mat 05 Designing for durability and resilience (Link to Wst 05 issue: to avoid increased risks of deterioration and higher maintenance demands)</p>
	Credit not targeted



	<p>Criterion 2 relating to material degradation in this issue has been achieved.</p> <p>Pol 03 Surface water run-off (Link to Wst 05: to minimise the risks of increased flood risk and surface water run-off affecting the site or others) Flood risk – a minimum of one credit has been achieved. Surface water run-off – two credits have been achieved.</p>	
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AI: Approved Innovation		
Targeted: 0 of 1		
Credit 1 - 1 credit where;		
Requirement 2	One innovation credit can be awarded for each innovation approved by BRE Global, where the building complies with the criteria defined within an Approved Innovation application form.	Credit not targeted

7.0 CONCLUSION

- 7.1 This BREEAM pre-assessment report has set out a pathway to achieve a 'Very Good' rating for the arena building at Swansea Central that is being constructed to a fully fitted specification.
- 7.2 The report highlights the development's sustainability credentials and environmental performance through compliance with BREEAM standards. The resulting pre-assessment BREEAM score that is likely to be achieved is 60.61%, equivalent to a 'Very Good' rating.
- 7.3 Following this pre-assessment report, a BREEAM Design Stage and eventually Post Construction Stage assessment should be undertaken to gain full BREEAM certification. The current strategy achieves a score with a 5.61% buffer score over the 55% benchmark requirement for a 'Very Good' rating. As the assessment progresses this therefore allows for potential changes to the strategy to account for variation in the scheme design.

BREEAM PRE- ASSESSMENT (SHELL AND CORE)

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I.0 INTRODUCTION

- 1.0 Greengage Environmental Ltd were commissioned by the Council of the City and County of Swansea (the ‘applicant’) to undertake a BREEAM pre-assessment for the proposed Swansea Central development within the administrative boundary of the City of Swansea.
- 1.1 This BREEAM pre-assessment report details the credits currently targeted by the design and presents an assessment strategy to achieve the best possible BREEAM rating. The assessment outlined in this document provides a strategy for those commercial buildings on site being constructed to a Shell and Core specification
- 1.2 In accordance with commitments made for the scheme, and what is considered appropriate and achievable for the commercial buildings in the development, a ‘Very Good’ rating has been targeted as the minimum performance standard. An aspiration remains to achieve an ‘Excellent’ rating if feasible. As the design progresses, credits targeted will be regularly reviewed to determine the highest rating possible.

2.0 BREEAM

BACKGROUND

- 2.1 The Building Research Establishment's Environmental Assessment Method (BREEAM) is a nationally recognised means of reviewing and improving the environmental performance of buildings. There are several BREEAM methodologies in place to assess different types of projects e.g. BREEAM New Construction for new buildings and BREEAM Refurbishment and Fit-Out for refurbishment or fit-out projects. This assessment represents an overarching strategy for a commercial building that can be applied to the variety of specific building types that will be developed in the Swansea Central scheme. This has been undertaken using the BREEAM New Construction 2014 Shell and Core methodology, which is considered appropriate to establish a credit framework for the project at this stage of works.
- 2.2 Used as a design tool, BREEAM will assess the environmental performance of new build buildings and refurbishments, providing a framework for improvement and an auditable demonstration of good design practice.

BREEAM CATEGORIES

- 2.3 BREEAM considers key global and local environmental issues and the internal environment for building occupants under various categories, covering:
- **Management** – rewards good construction site practices, provision of information to building occupants and security;
 - **Health & Wellbeing** – promotes a healthy internal environment;
 - **Energy** – rewards energy efficiency and renewable energy generation;
 - **Transport** – encourages locations with good access to public transport;
 - **Water** – promotes water efficiency and water recycling;
 - **Materials** – rewards the responsible sourcing of materials;
 - **Waste** – encourages good waste management practices and recycling;
 - **Land Use & Ecology** – encourages ecological enhancement and use of land already built on; and
 - **Pollution** – promotes measures to reduce air and water pollution.

CATEGORY WEIGHTINGS

- 2.4 Each BREEAM category is allocated an environmental weighting factor, which is dependent on the credits applicable to the scope of work and the type of assessment being undertaken, as appropriate to the project. The total available score for each BREEAM category can be found in Section 5.

- 2.5 In addition to this, there are varying numbers of credits within each category; the result is that not all credits carry equal value and some credits have a higher individual percentage score than others.

BREEAM RATINGS

- 2.6 At the certified assessment stage, the building is assessed against the BREEAM criteria and credits are awarded where it can be demonstrated, by an auditable trail of supporting evidence, that the BREEAM credit requirements have been met. The overall environmental performance across the categories is calculated as a percentage score and expressed as a single rating on a scale of Pass, Good, Very Good, Excellent or Outstanding.

Table 1: BREEAM Ratings and percentage scores

Rating	Percentage Score
UNCLASSIFIED	<30
PASS	≥30
GOOD	≥45
VERY GOOD	≥55
EXCELLENT	≥70
OUTSTANDING	≥85

MINIMUM RATING REQUIREMENT CREDITS

- 2.7 Under Management, Energy, Water, Materials, Waste and Land Use & Ecology, there are minimum credit requirements that need to be obtained for each BREEAM rating i.e. specific credits that will need to be achieved before a particular BREEAM rating can be awarded. All other credits are flexible.
- 2.8 The following minimum standards are required to reach the targeted ‘Very Good’ rating:

Table 2: BREEAM Very Good minimum standards

Credit	Minimum Standard
Ene 02: Energy monitoring	One credit (First sub-metering credit)
Wat 01: Water consumption	One credit
Wat 02: Water monitoring	Criterion 1 only
Mat 03: Responsible sourcing of materials	Criterion 1 only
LE 03: Minimising impact on existing site ecology	One credit

3.0 THE ASSESSMENT PROCESS

THE PRE-ASSESSMENT

- 3.1 The purpose of a BREEAM pre-assessment is to:
- Confirm those credits that have been identified as a framework for the minimum targeted rating; and
 - Confirm the supporting information to be submitted at the certified assessment stage and thereby enable the team to address BREEAM requirements at the earliest opportunity, and the appropriate stage in the design, with the aim of reducing the need for design reiterations.
- 3.2 A certified assessment is third party verified by the Building Research Establishment (BRE) ensuring comparable benchmarking and high standards of assessment across the UK. Carried out by trained assessors, BREEAM provides an easily understood, independent and transparent label of environmental performance. In addition, to ensure high standards of BREEAM assessors and assessments, all BREEAM schemes are operated under a Competent Person Scheme, which is UKAS accredited as meeting the requirements of ISO 17024.

THE DESIGN STAGE (DS) ASSESSMENT

- 3.3 Following completion of detailed design, the appropriate supporting evidence in the form of detailed drawings, completed specifications, and manufacturers' information etc. is available and therefore, the certified DS assessment can be undertaken. During the certified assessment, the relevant information is collected from the appropriate design team members and evaluated against the BREEAM criteria requirements.
- 3.4 Following the collation and review of the outstanding information, a BREEAM DS Assessment report will be produced that will be submitted to the BRE for quality assurance and 'interim' certification of the assessment undertaken, following which, it is anticipated that the 'Interim' DS BREEAM certificates will be issued by the BRE.

THE POST CONSTRUCTION REVIEW (PCR)

- 3.5 The PCR assessment is undertaken to confirm that buildings are built to the BREEAM DS specifications, or if there are variances from the DS these are documented, reassessed, and a new rating determined.
- 3.6 A PCR assessment comprises a site visit at or towards the end of completion, as near to handover as possible. Each issue must be reviewed, or assessed where there was no DS assessment, and documentary evidence recorded to confirm that it complies with the requirements for PCR assessment. It should be noted that because the evidence required for the PCR assessment relates to what has been, or is actually being done, for some credits to be awarded the evidence required differs from that required at the DS (for example, a written commitment to use FSC Timber at the DS has to be matched by documentation that demonstrates that the timber used was actually FSC).
- 3.7 On completion of the PCR assessment, a Final Certified BREEAM Report will be submitted to the BRE for final certification and quality assurance for the scheme.

4.0 THE PROPOSED DEVELOPMENT'S BREEAM PERFORMANCE

- 4.1 Liaison with the design team was undertaken to identify the opportunities and constraints of the proposed development site and to confirm where credits can be targeted, in correspondence with the project team.
- 4.2 This BREEAM pre-assessment report has set out a possible BREEAM pathway for all commercial buildings on site that are being constructed to shell and core specification for handover to the individual tenants. This is therefore applicable to the following building types where they make up part of the scheme:
- Retail
 - Hotel
 - Cinema
 - University facilities (incl. associated library/art gallery)
 - Student accommodation
- 4.3 The pre-assessment BREEAM score that can be achieved for the building is 60.93%, which is equivalent to a BREEAM rating of 'Very Good'.
- 4.4 The credit framework identified within this report for pursuing the target rating is based on a number of assumptions that will need to be substantiated by team members during the detailed design stage, prior to final confirmation of their feasibility. As such, the pathway identifies one possible route to achieving a rating, but as the design evolves, the credits that can or cannot be targeted may change.
- 4.5 It should also be noted that the strategy outlined in this report may vary when building specific assessments are undertaken for each building type on the site. There will be some minor variation when detailed pre-assessments are undertaken for each of the building types. However at this stage it is possible to group them together to provide an indication of those credits that can be targeted.
- 4.5 We would always recommend that a score of at least 4 or 5 percent above this minimum score is aimed for during the design stages and achieved at the final certification stage. This is to ensure that during the project's progress as well as the BRE third party review of the certified final report, in the event that a credit was lost or disputed and revoked, the target rating would still be likely to be achieved. The credit pathway set out provides this 'buffer' above the 'Very Good' rating boundary.
- 4.6 The credit summary tables indicating the proposed development's performance against the BREEAM 2014 New Construction scheme are provided in Section 5.
- 4.7 A breakdown summary of the targeted BREEAM credits is presented in Section 6.

5.0 BREEAM PRE-ASSESSMENT CREDIT SUMMARY

Table 3: BREEAM credit summary

		Available	Targeted
Man 01	Project brief and design	4	4
Man 02	Life cycle cost and service life planning	4	1
Man 03	Responsible construction practices	6	6
Man 04	Commissioning and handover	4	3
		18	14
Hea 01	Visual Comfort	3	1
Hea 02	Indoor Air Quality	2	1
Hea 04	Thermal comfort	2	2
Hea 05	Acoustic Performance	1	1
Hea 06	Safety and Security	2	2
		10	7
Ene 01	Reduction of energy use and carbon emissions	12	0
Ene 02	Energy Monitoring	2	2
Ene 03	External Lighting	1	1
Ene 04	Low carbon design	3	0
Ene 06	Energy efficient transportation systems	2	2
		21	6
Tra 01	Public Transport Accessibility	5	3
Tra 02	Proximity to amenities	1	1
Tra 03	Cyclist facilities	2	0
Tra 04	Maximum car parking capacity	2	0
Tra 05	Travel Plan	1	1
		11	5
Wat 01	Water Consumption	5	3
Wat 02	Water Monitoring	1	1
Wat 03	Leak Detection	2	2
Wat 04	Water Efficient Equipment	1	1
		9	7
Mat 01	Life Cycle Impacts	6	2
Mat 02	Hard Landscaping and Boundary Protection	1	1
Mat 03	Responsible Sourcing of Materials	4	2
Mat 04	Insulation	1	1
Mat 05	Designing for durability and resilience	1	1
Mat 06	Material efficiency	1	0
		14	7
Wst 01	Construction Waste Management	4	2
Wst 02	Recycled Aggregates	1	0
Wst 03	Operational Waste	1	1
Wst 05	Adaptation to climate change	1	0
Wst 06	Functional adaptability	1	1

		8	4
LE 01	Site Selection	2	1
LE 02	Ecological Value of Site and Protection of Ecological Features	2	2
LE 03	Minimising impact on existing site ecology	2	2
LE 04	Enhancing site ecology	2	2
LE 05	Long Term Impact on Biodiversity	2	2
		10	9
Pol 01	Impact of Refrigerants	3	1
Pol 02	NOx emissions	3	3
Pol 03	Surface Water Run Off	5	4
Pol 04	Reduction of Night Time Light Pollution	1	1
Pol 05	Noise Attenuation	1	1
		13	10
Man 03	Responsible construction practices	1	0
Man 05	Aftercare	1	0
Hea 01	Visual Comfort	1	0
Hea 02	Indoor Air Quality	2	0
Ene 01	Reduction of energy use and carbon emissions	5	0
Wat 01	Water Consumption	1	0
Mat 01	Life Cycle Impacts	3	0
Mat 03	Responsible Sourcing of Materials	1	0
Wst 01	Construction Waste Management	1	0
Wst 02	Recycled Aggregates	1	0
Wst 05	Adaptation to climate change	1	0
AI	Approved Innovation	1	0
		Max 10	0

6.0 DETAILED CREDIT ASSUMPTIONS

6.1 The detailed credit assumptions for the BREEM strategy are set out below.

MANAGEMENT

Man 01: Project brief and design		
Targeted: 4 of 4		
Credit 1 - 1 credit where;		One credit targeted
Requirement 1	Prior to completion of the Concept Design (RIBA Stage 2 or equivalent), the project delivery stakeholders (see Relevant definitions) have met to identify and define their roles, responsibilities and contributions for each of the key phases of project delivery.	
Requirement 2	In defining the roles and responsibilities for each key phase of the project, the following must be considered: End user requirements Aims of the design and design strategy Particular installation and construction requirements/limitations Occupiers budget and technical expertise in maintaining any proposed systems Maintainability and adaptability of the proposals Requirements for the production of project and end user documentation Requirements for commissioning, training and aftercare support	
Requirement 3	The project team demonstrate how the project delivery stakeholder contributions and the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design.	
Credit 2 - 1 credit where;		One credit targeted
Requirement 4	Prior to completion of the Concept Design stage, all relevant third party stakeholders have been consulted by the design team and this covers the minimum consultation content (see compliance note CN3).	

Requirement 5	The project must demonstrate how the stakeholder contributions and outcomes of the consultation exercise have influenced or changed the Initial Project Brief and Concept Design.	
Requirement 6	Prior to completion of the detailed design (RIBA Stage 4, Technical Design or equivalent), consultation feedback has been given to, and received by, all relevant parties.	
Credit 3 - 1 credit where;		
Requirement 8	A Sustainability Champion has been appointed to facilitate the setting and achievement of BREEAM performance target(s) for the project. The design stage Sustainability Champion is appointed to perform this role during the feasibility stage (Stage 1, Preparation and Brief stage, as defined by the RIBA Plan of Work 2013 or equivalent).	One credit targeted
Requirement 9	The defined BREEAM performance target(s) has been formally agreed (see Relevant definitions) between the client and design/project team no later than the Concept Design stage (RIBA Stage 2 or equivalent).	
Requirement 10	To achieve this credit at the interim design stage assessment, the agreed BREEAM performance target(s) must be demonstrably achieved by the project design. This must be demonstrated via the BREEAM Assessor's design stage assessment report.	
Credit 4 - 1 credit where;		
Requirement 11	The Sustainability Champion criteria 8, 9 and 10 have been achieved.	One credit targeted
Requirement 12	A Sustainability Champion is appointed to monitor progress against the agreed BREEAM performance target(s) throughout the design process and formally report progress to the client and design team. Note: To do this the Sustainability Champion must attend key project/design team meetings during the Concept Design, Developed Design and Technical Design stages, as defined by the RIBA Plan of Work	

	2013, reporting during, and prior to, completion of each stage, as a minimum.
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Man 02: Life cycle cost and service life planning	
Targeted: 1 of 4	
Credit 1 – Up to 2 credits where;	
Requirement 1	An outline, entire asset elemental life cycle cost (LCC) analysis has been carried out, at Process Stage 2 (equivalent to Concept Design - RIBA Stage 2) together with any design option appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865:2008.
Requirement 2	The elemental LCC: Provides an indication of future replacement costs over a period of analysis as required by the client (e.g. 20, 30, 50 or 60 years); and Includes service life, maintenance and operation cost estimates.
Requirement 3	Demonstrate, using appropriate examples provided by the design team, how the elemental LCC plan has been used to influence building and systems designs/specification to minimise life cycle costs and maximise critical value.
Credit 2 – 1 credit where;	
Requirement 4	A component level LCC plan has been developed by the end of Process Stage 4 (equivalent to Technical Design – RIBA Stage 4) in line with PD 156865:2008 and includes the following component types (where present): Envelope e.g. cladding, windows and/or roofing; Services e.g. heat source, cooling source and/or controls; Finishes e.g. walls, floors and/or ceilings; and External spaces e.g. alternative hard landscaping, boundary protection. Demonstrate, using appropriate examples provided by the design team, how the component level LCC plan has been used to influence building and systems design/specification to minimise life cycle costs and maximise critical value.
Requirement 5	

Credit 3 – 1 credit where;	
Requirement 6	Report the capital cost for the building in pounds per square metre via the BREEAM Assessment Scoring and Reporting tool, Assessment Scoring tab, Management section
	One credit targeted

Man 03: Responsible construction practices	
Targeted: 6 of 6	
Pre-requisite	
Requirement 1	<p>All timber and timber based products used on the project is 'legally harvested and traded timber' (see Relevant definitions).</p> <p>Note: For other materials, there are no pre-requisite requirements at this stage.</p>
	Pre-requisite assumed
Credit 1 - 1 credit where;	
Requirement 2	<p>The principal contractor operates an environmental management system (EMS) covering their main operations. The EMS must be either:</p> <p>third party certified, to ISO 14001/EMAS or equivalent standard;</p> <p>or</p> <p>have a structure that is in compliance with BS 8555:2003 and has reached phase four of the implementation stage, 'implementation and operation of the environmental management system', and has completed phase audits one to four, as defined in BS 8555.</p>
Requirement 3	<p>The principal contractor implements best practice pollution prevention policies and procedures on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG6.</p>
	One credit targeted
Credit 2 - 1 credit where;	

Requirement 4	<p>A Sustainability Champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target(s), during the Construction, Handover and Close Out stages (as defined by the RIBA Plan of Works 2013, stages 5 and 6).</p> <p>To do this the Sustainability Champion will ideally be site based or will visit the site regularly to carry out spot checks, with the relevant authority to do so and require action to be taken to address shortcomings in compliance. The Sustainability Champion will monitor site activities with sufficient frequency (see compliance note CN6) to ensure that risks of non-compliance are minimised. They will report on progress at relevant project team meetings including identifying potential areas of non-compliance and any action needed to mitigate.</p>	One credit targeted
Requirement 5	<p>The defined BREEAM performance target forms a requirement of the principal contractor's contract (see compliance note Man 01 Project brief and design – CN5 and in Man 01 Project brief and design – Relevant definitions).</p>	
Requirement 6	<p>To achieve this credit at the final post-construction stage of assessment, the BREEAM related performance target for the project must be demonstrably achieved by the project. This is demonstrated via the BREEAM assessor's final post-construction stage certification report.</p>	
Credit 3 – Up to 2 credits where;		
Requirement 7	<p>Where the principal contractor has used a 'compliant' organisational, local or national considerate construction scheme and their performance against the scheme has been confirmed by independent assessment and verification. The BREEAM credits can be awarded as follows:</p>	Two credits targeted

	<p>One credit where the contractor achieves 'compliance' with the criteria of a compliant scheme.</p> <p>Two credits where the contractor significantly exceeds 'compliance' with the criteria of the scheme.</p> <p>Refer to the Relevant definitions section for a list of compliant schemes and therefore how performance, as determined by a compliant scheme, translates in to BREEAM credits.</p>	
<p>Credit 4 – Up to 2 credits where;</p>		
<p>Requirement 8</p>	<p>Responsibility has been assigned to an individual(s) for monitoring, recording and reporting energy use, water consumption and transport data (where measured) resulting from all on-site construction processes (and dedicated off-site monitoring) throughout the build programme.</p> <p>To ensure the robust collection of information, this individual(s) must have the appropriate authority and responsibility to request and access the data required. Where appointed, the Sustainability Champion could perform this role.</p>	<p>Two credits targeted</p>
<p>Requirement 9</p>	<p>First monitoring credit: Utility consumption - Energy</p> <p>Criterion 8 is achieved.</p>	
<p>Requirement 10</p>	<p>Monitor and record data on principal constructor's and subcontractors' energy consumption in kWh (and where relevant, litres of fuel used) as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation.</p>	
<p>Requirement 11</p>	<p>Report the total carbon dioxide emissions (total kgCO2/project value) from the construction process via the BREEAM Assessment Scoring and Reporting tool.</p>	

Requirement 12	<p>First monitoring credit: Utility consumption - Water</p> <p>Criterion 8 is achieved.</p>
Requirement 13	<p>Monitor and record data on principal constructor's and subcontractors' potable water consumption (m3) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation.</p>
Requirement 14	<p>Using the collated data, report the total net water consumption (m3), i.e. consumption minus any recycled water use, from the construction process via the BREEAM Assessment Scoring and Reporting tool.</p>
Requirement 15	<p>Second monitoring credit: Transport of construction materials & waste</p> <p>Criterion 8 is achieved.</p>
Requirement 16	<p>Monitor and record data on transport movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum, this must cover:</p> <p>Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution. See Relevant definitions.</p> <p>Scope of this monitoring must cover the following as a minimum:</p> <p>Materials used in major building elements (i.e. those defined in BREEAM issue Mat 01 Life cycle impacts), including insulation materials. Ground works and landscaping materials. Transport of construction waste from the construction gate to waste disposal processing/recovery centre gate. Scope of this</p>



	monitoring must cover the construction waste groups outlined in the project's waste management plan.
Requirement 17	Using the collated data, report separately for materials and waste, the total fuel consumption (litres) and total carbon dioxide emissions (kgCO2 eq), plus total distance travelled (km) via the BREEAM Assessment Scoring and Reporting tool.

Man 04: Commissioning and handover

Targeted: 3 of 4

Credit 1 - 1 credit where;

Requirement 1	A schedule of commissioning and testing that identifies and includes a suitable timescale for commissioning and recommissioning of all complex and non-complex building services and control systems and testing and inspecting building fabric.	One credit targeted
Requirement 2	The schedule will identify the appropriate standards that all commissioning activities will be conducted in accordance with, such as current Building Regulations, BSRIA and CIBSE guidelines and/or other appropriate standards, where applicable. Where a building management system (BMS) is specified, refer to compliance note CN5 on BMS commissioning procedures.	
Requirement 3	An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of the client.	
Requirement 4	The principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works, allowing for the required	

	time to complete all commissioning and testing activities prior to handover.	
Credit 2 - 1 credit where;		
Requirement 5	The commissioning and testing schedule and responsibilities credit (credit 1) is achieved.	One credit targeted
Requirement 6	<p>For buildings with complex building services and systems, a specialist commissioning manager is appointed during the design stage (by either the client or the principal contractor) with responsibility for:</p> <p>Undertaking design reviews and giving advice on suitability for ease of commissioning.</p> <p>Providing commissioning management input to construction programming and during installation stages.</p> <p>Management of commissioning, performance testing and handover/post-handover stages.</p> <p>Where there are simple building services, this role can be carried out by an appropriate project team member (see criterion 3), provided they are not involved in the general installation works for the building services system(s).</p>	
Credit 3 - 1 credit where;		
Requirement 7	The commissioning and testing schedule and responsibilities credit is achieved.	Credit not targeted
Requirement 8	The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of post construction testing and inspection. Dependent on building type or construction, this can be demonstrated through the completion of a thermographic survey as well as an airtightness test and inspection (see compliance notes CN6 and CN7. The survey and testing is	

	undertaken by a Suitably Qualified Professional (see Relevant definitions) in accordance with the appropriate standard.
Requirement 9	Any defects identified in the thermographic survey or the airtightness testing reports are rectified prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building/element.
Credit 4 – 1 credit where	
Requirement 10	A Building User Guide (BUG) is developed prior to handover for distribution to the building occupiers and premises managers (see Relevant definitions).
Requirement 11	<p>A training schedule is prepared for building occupiers/premises managers, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum:</p> <p>The building's design intent</p> <p>The available aftercare provision and aftercare team main contact(s), including any scheduled seasonal commissioning and post occupancy evaluation</p> <p>Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces</p> <p>Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations and maintenance (O&M) manual, commissioning records, log book etc.</p> <p>Maintenance requirements, including any maintenance contracts and regimes in place.</p>
One credit targeted	

HEALTH & WELLBEING

Hea 01: Visual Comfort		
Targeted: 1 of 3		
Credit 1 – Credit not applicable		
Credit 2 - 1 credit where;		
Requirement 3	<p>Daylighting criteria have been met using either of the following options:</p> <p>The relevant building areas meet good practice daylight factor(s) and other criterion as outlined in Table - 10 and Table - 11.</p> <p>OR</p> <p>The relevant building areas meet good practice average and minimum point daylight illuminance criteria as outlined in Table - 12.</p>	Credit not targeted
Credit 3 - 1 credit where;		
Requirement 4	95% of the floor area in relevant building areas is within 7m of a wall which has a window or permanent opening that provides an adequate view out.	Credit not targeted
Requirement 5	The window/opening must be $\geq 20\%$ of the surrounding wall area (refer to Relevant definitions in the Additional information section). Where the room depth is greater than 7m, compliance is only possible where the percentage of window/opening is the same as, or greater than, the values in table 1.0 of BS 8206.	
Requirement 6	In addition, the building type criteria in Table - 13 are applicable to view out criteria.	
Credit 4 - 1 credit where;		

Requirement 7	<p>Internal lighting</p> <p>All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts.</p>	One credit targeted
Requirement 8	<p>Internal lighting in all relevant areas of the building is designed to provide an illuminance (lux) level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels. This can be demonstrated through a lighting design strategy that provides illuminance levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard.</p>	
Requirement 9	<p>For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 sections 3.3, 4.6, 4.7, 4.8 and 4.9. This gives recommendations highlighting:</p> <p>Limits to the luminance of the luminaires to avoid screen reflections. (Manufacturers' data for the luminaires should be sought to confirm this.)</p> <p>For uplighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this.</p> <p>Recommendations for direct lighting, ceiling illuminance, and average wall illuminance.</p>	
Requirement 10	<p>External lighting</p> <p>All external lighting located within the construction zone is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. To demonstrate this, external lighting provided is specified in accordance with BS 5489-1:2013 Lighting of roads and</p>	

Requirement 11	<p>public amenity areas and BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.</p> <p>Zoning and occupant control</p> <p>Internal lighting is zoned to allow for occupant control (see Relevant definitions) in accordance with the criteria below for relevant areas present within the building:</p> <p>In office areas, zones of no more than four workplaces</p> <p>Workstations adjacent to windows/atria and other building areas separately zoned and controlled</p> <p>Seminar and lecture rooms: zoned for presentation and audience areas</p> <p>Library spaces: separate zoning of stacks, reading and counter areas</p> <p>Teaching space or demonstration area</p> <p>Whiteboard or display screen</p> <p>Auditoria: zoning of seating areas, circulation space and lectern area</p> <p>Dining, restaurant, café areas: separate zoning of servery and seating/dining areas</p> <p>Retail: separate zoning of display and counter areas</p> <p>Bar areas: separate zoning of bar and seating areas</p> <p>Wards or bedded areas: zoned lighting control for individual bed spaces and control for staff over groups of bed spaces</p> <p>Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff.</p>
Requirement 12	<p>Areas used for teaching, seminar or lecture purposes have lighting controls provided in accordance with CIBSE Lighting Guide 5.</p>

Requirement 13	In addition, meet the building type criteria in Table - 14 (where relevant).
Hea 02: Indoor Air Quality	
Targeted: 1 of 2	
Credit 1 – Credit not applicable	
Credit 2 - 1 credit where;	
Requirement 2	<p>The building has been designed to minimise the concentration and recirculation of pollutants in the building as follows:</p> <p>Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation.</p>
Requirement 3	<p>Design ventilation pathways to minimise the build-up of air pollutants in the building, as follows:</p> <p>In air conditioned and mixed mode buildings/spaces:</p> <p>The building's air intakes and exhausts are over 10m apart and intakes are over 20m from sources of external pollution. OR</p> <p>The location of the building's air intakes and exhausts, in relation to each other and external sources of pollution, is designed in accordance with BS EN 13779:2007 Annex A2.</p> <p>In naturally ventilated buildings/spaces: openable windows/ventilators are over 10m from sources of external pollution.</p>
Requirement 4	Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3.
One credit targeted	

<p>Requirement 5</p>	<p>Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO2) or air quality sensors specified and:</p> <p>In mechanically ventilated buildings/spaces: sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space.</p> <p>In naturally ventilated buildings/spaces: sensors either have the ability to alert the building owner or manager when CO2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows/roof vents.</p>
<p>Credit 3 – Credit not applicable</p>	
<p>Credit 4 – Credit not applicable</p>	
<p>Credit 5 – 1 credit where;</p>	
<p>Requirement 13</p>	<p>The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios. This can be demonstrated as follows:</p> <p>Occupied spaces of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy. The following are methods deemed to satisfy this criterion dependent upon the complexity of the proposed system:</p> <p>Room depths are designed in accordance with CIBSE AM10 to ensure effectiveness of any natural ventilation system. The openable window area in each occupied space is equivalent to 5% of the gross internal floor area of that room/floor plate. OR</p> <p>The design demonstrates that the natural ventilation strategy provides adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates. This is</p>
<p>Credit not targeted</p>	

	<p>demonstrated using ventilation design tool types recommended by CIBSE AM10.</p> <p>For a strategy that does not rely on openable windows, or which has occupied spaces with a plan depth greater than 15m, the design must demonstrate (in accordance with criterion 13i above) that the ventilation strategy can provide adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates.</p>
<p>Requirement 14</p>	<p>The natural ventilation strategy is capable of providing at least two levels of user-control on the supply of fresh air to the occupied space (see compliance note CN6).</p> <p>Note: Any opening mechanisms must be easily accessible and provide adequate user-control over air flow rates to avoid draughts. Relevant industry standards for ventilation can be used to define 'adequate levels of fresh air' sufficient for occupancy and internal air pollution loads relevant to the building type.</p>

<p>Hea 04: Thermal comfort</p>	
<p>Targeted: 2 of 2</p>	
<p>Credit 1 - 1 credit where;</p>	
<p>Requirement 1</p>	<p>Thermal modelling has been carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling.</p>
<p>Requirement 2</p>	<p>The software used to carry out the simulation at the detailed design stage provides full dynamic thermal analysis. For smaller and more basic building designs with less complex heating or cooling systems, an alternative less complex means of analysis may be appropriate (such methodologies must still be in accordance with CIBSE AM11).</p>
<p>One credit targeted</p>	

Requirement 3	<p>The modelling demonstrates that:</p> <p>For air conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). For naturally ventilated/free running buildings:</p> <p>Winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard (where this sets a higher or more appropriate requirement/level for the building type). The building is designed to limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings.</p>
Requirement 4	<p>For air conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.</p>
Credit 2 - 1 credit where;	
Requirement 5	Criteria 1 to 4 are achieved.
Requirement 6	The thermal modelling demonstrates that the relevant requirements set out in criteria 3 are achieved for a projected climate change environment (see Relevant definitions).
Requirement 7	Where thermal comfort criteria are not met for the projected climate change environment, the project team demonstrates how the building has been adapted, or designed to be easily adapted
One credit targeted	

	in future using passive design solutions in order to subsequently meet the requirements under criterion 6.
Requirement 8	For air conditioned buildings, the PMV and PPD indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.
Credit 3 – Credit not applicable	

Hea 05: Acoustic Performance	
Targeted: 1 of 1	
Credit 1 - Up to 1 credit where;	
Requirement 2	<p>Up to one credit is available for Industrial, Retail, Prisons and 'Other' building types:</p> <p>Up to one credit Where the building meets the acoustic performance standards and testing requirements detailed in Table - 21 (see additional information) for all relevant functional areas. OR</p> <p>Up to one credit Where a suitably qualified acoustician (see relevant definitions) is appointed to define a bespoke set of performance requirements for all function areas in the building using the three acoustic principles defined in criterion 1, setting out the performance requirements for each and the testing regime required.</p>
Requirement 3	
One credit targeted	

Hea 06: Safety and Security	
Targeted: 2 of 2	
Credit 1 - 1 credit where;	

Requirement	Where external site areas form part of the assessed development the following apply:	One credit targeted
1	<p>Dedicated cycle paths provide direct access from the site entrance(s) to any cycle storage provided, without the need to deviate from the cycle path and, if relevant, connect to off-site cycle paths (or other appropriate safe route) where these run adjacent to the development's site boundary.</p>	
2	<p>Footpaths on-site provide direct access from the site entrance(s) to the building entrance(s) and connect to public footpaths off-site (where existing), providing practical and convenient access to local transport nodes and other off-site amenities (where existing).</p>	
3	<p>Where provided, drop-off areas are designed off/adjoining to the access road and provide direct access to pedestrian footpaths, therefore avoiding the need for the pedestrian to cross vehicle access routes.</p>	
4	<p>Dedicated pedestrian crossings are provided where pedestrian routes cross vehicle access routes, and appropriate traffic calming measures are in place to slow traffic down at these crossing points.</p>	
5	<p>For large developments with a high number of public users or visitors, pedestrian footpaths must be signposted to other local amenities and public transport nodes off-site (where existing).</p>	
6	<p>The lighting for access roads, pedestrian routes and cycle lanes is compliant with the external lighting criteria defined in Hea 01 Visual comfort, i.e. in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas.</p>	
7	<p>Where vehicle delivery access and drop-off areas form part of the assessed development, the following apply:</p>	



	Delivery areas are not directly accessed through general parking areas and do not cross or share pedestrian and cyclist routes and other outside amenity areas accessible to building users and general public.
Requirement 8	There is a dedicated parking/waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking.
Requirement 9	Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.
Requirement 10	There is a dedicated space for the storage of refuse skips and pallets away from the delivery vehicle manoeuvring area and staff/visitor car parking (if appropriate given the building type/function).
Credit 2 - 1 credit where;	
Requirement 11	A suitably qualified security specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent).
Requirement 12	The SQSS develops a set of recommendations or solutions during or prior to Concept Design (RIBA Stage 2 or equivalent). These recommendations or solutions aim to ensure that the design of buildings, public and private car parks and public or amenity space are planned, designed and specified to address the issues identified in the preceding SNA.
Requirement 13	The recommendations or solutions proposed by the SQSS are implemented (see CN9). Any deviation from those recommendations or solutions will need to be justified, documented and agreed in advance with a suitably qualified security specialist.
One credit targeted	

ENERGY

Ene 01: Reduction of energy use and carbon emissions	
Targeted: 0 of 12	
Credit 1 - Up to 12 credits where;	
Requirement 1	Calculate an Energy Performance Ratio for New Constructions (EPRNC). Compare the EPRNC achieved with the benchmarks in Table - 25 and award the corresponding number of BREEAM credits. Zero credits targeted
Ene 02: Energy Monitoring	
Targeted: 2 of 2	
Credit 1 - 1 credit where;	
Requirement 1	Energy metering systems are installed that enable at least 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems (see Methodology). One credit targeted
Requirement 2	The energy consuming systems in buildings with a total useful floor area greater than 1,000m ² are metered using an appropriate energy monitoring and management system.
Requirement 3	The systems in smaller buildings are metered either with an energy monitoring and management system or with separate accessible energy sub-meters with pulsed or other open protocol communication outputs, to enable future connection to an energy monitoring and management system (see Relevant definitions).
Requirement 4	The end energy consuming uses are identifiable to the building users, for example through labelling or data outputs.
Credit 2 - 1 credit where;	

Requirement 5	An accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, covering a significant majority of the energy supply to tenanted areas or, in the case of single occupancy buildings, relevant function areas or departments within the building/unit.	One credit targeted
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Ene 03: External Lighting		
Targeted: 1 of 1		
Credit 1 - 1 credit where;		
Requirement 1	The building has been designed to operate without the need for external lighting (which includes on the building, signs and at entrances). OR alternatively, where the building does have external lighting, one credit can be awarded as follows:	One credit targeted
Requirement 2	The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt.	
Requirement 3	All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.	

Ene 04: Low carbon design		
Targeted: 0 of 3		
Credit 1 - 1 credit where;		

Requirement 1	The first credit within issue Hea 04 Thermal comfort has been achieved to demonstrate the building design can deliver appropriate thermal comfort levels in occupied spaces.	Credit not targeted
Requirement 2	The project team carries out an analysis of the proposed building design/development to influence decisions made during Concept Design stage (RIBA Stage 2 or equivalent) and identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services (see compliance note CN4).	
Requirement 3	The building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis and the analysis demonstrates a meaningful reduction in the total energy demand as a result (see compliance note CN16).	
Credit 2 – 1 credit where;		
Requirement 4	The passive design analysis credit (credit 1) is achieved.	Credit not targeted
Requirement 5	The passive design analysis carried out under criterion 2 includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions.	
Requirement 6	The building uses ANY of the free cooling strategies listed in compliance note CN5 to reduce the cooling energy demand, i.e. it does not use active cooling.	
Credit 3 – 1 credit where;		
Requirement 7	A feasibility study has been carried out by the completion of the Concept Design stage (RIBA Stage 2 or equivalent) by an energy specialist (see Relevant definitions) to establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy source(s) for the building/development (see compliance note CN7).	Credit not targeted



<p>Requirement 8</p>	<p>A local LZC technology/technologies has/have been specified for the building/development in line with the recommendations of this feasibility study and this method of supply results in a meaningful reduction in regulated carbon dioxide (CO2) emissions (see compliance note CN16).</p>	
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TRANSPORT

Tra 01: Public Transport Accessibility		Three credits targeted
Targeted: 3 of 5		
Credit 1 - Up to 5 credits where;		
Requirement 1	<p>Up to 5 credits - Accessibility Index</p> <p>The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded in accordance with the table of building types, AI benchmarks and BREEAM credits in Table - 29 (see checklists and tables).</p>	
Requirement 2	<p>The Accessibility Index is determined by entering the following information in to the BREEAM Tra 01 calculator:</p> <p>The distance (m) from the main building entrance to each compliant public transport node</p> <p>The public transport type(s) serving the compliant node e.g. bus or rail</p> <p>The average number of services stopping per hour at each compliant node during the operating hours of the building for a typical day (see compliance notes and Table - 30 in the Additional Information section).</p> <p>OR</p> <p>One credit - Dedicated bus service</p> <p>For buildings with a fixed shift pattern, i.e. where building users will predominantly arrive/depart at set times, one credit can be awarded where the building occupier provides, or commits to providing a dedicated bus service to and from the building at the beginning and end of each shift/day.</p>	
Requirement 3		



	This credit is only available in cases where a development is unable to achieve any of the available credits using the Accessibility Index criteria (i.e. its location has a low public transport Accessibility Index).
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Tra 02: Proximity to amenities	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	Where the building is located within close proximity of, and accessible to, local amenities which are likely to be frequently required and used by building occupants, as outlined in Table - 31
Requirement 2	Where a building type is indicated to have core amenities (Labelled as C in Table - 31) at least two of these must be provided as a part of the total number required. The remaining number of amenities required can be met using any other applicable amenities (including any remaining core amenities).
	One credit targeted

Tra 03: Cyclist facilities	
Targeted: 0 of 2	
Credit 1 - 1 credit where;	
Requirement 1	Compliant cycle storage spaces that meet the minimum levels set out in Table - 32 (see checklists and tables) are installed.
	Credit not targeted
Credit 2 - 1 credit where;	
Requirement 2	Criterion 1 has been achieved.
	Credit not targeted
Requirement 3	At least two of the following types of compliant cyclist facilities have been provided for all staff and pupils (where appropriate)

	(see relevant definitions for the scope of each compliant cyclist facilities: Showers Changing facilities Lockers Drying spaces
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Tra 05: Travel Plan	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 1	A travel plan has been developed as part of the feasibility and design stages.
Requirement 2	A site specific travel assessment/statement has been undertaken to ensure the travel plan is structured to meet the needs of the particular site and covers the following (as a minimum): Where relevant, existing travel patterns and opinions of existing building or site users towards cycling and walking so that constraints and opportunities can be identified. Travel patterns and transport impact of future building users. Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children) Disabled access (accounting for varying levels of disability and visual impairment) Public transport links serving the site Current facilities for cyclists.
Requirement 3	The travel plan includes a package of measures to encourage the use of sustainable modes of transport and movement of people and goods during the buildings operation and use.
	One credit targeted

<p>Requirement 4</p>	<p>If the occupier is known, they must be involved in the development of the travel plan and they must confirm that the travel plan will be implemented post construction and be supported by the buildings management in operation.</p>	
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WATER

Wat 01: Water Consumption	
Targeted: 3 of 5	
Credit 1 - Up to 5 credits where;	
Requirement 1	An assessment of the efficiency of the building's domestic water-consuming components is undertaken using the BREEAM Wat 01 calculator.
Requirement 2	The water consumption (L/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table - 35.
Requirement 3	The efficiency of the following 'domestic scale' water-consuming components must be included in the assessment (where specified): WCs Urinals Taps (wash hand basins and where specified kitchen taps and waste disposal unit) Showers Baths Dishwashers (domestic and commercial sized) Washing machines (domestic and commercial or industrial sized). The BREEAM Wat 01 calculator defines the building types and activity areas for which the above components must be assessed.
Requirement 4	Where a greywater and/or rainwater system is specified, its yield (L/person/day) is used to off-set non potable water demand from components that would otherwise be supplied using potable water.
Three credits targeted	



Requirement 5	Any greywater systems must be specified and installed in compliance with BS 8525-1:2010 Greywater Systems - Part 1 Code of Practice. Any rainwater systems must be specified and installed in compliance with BS 8515:2009+A1:2013 Rainwater Harvesting Systems - Code of practice.
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Wat 02: Water Monitoring	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.
Requirement 2	Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with easily accessible sub-meters or have water monitoring equipment integral to the plant or area (see Compliance notes).
Requirement 3	Each meter (main and sub) has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption (see Relevant definitions).
Requirement 4	If the site on which the building is located has an existing BMS, managed by the same occupier/owner (as the new building), the pulsed/digital water meter(s) for the new building must be connected to the existing BMS.
One credit targeted	

Wat 03: Leak Detection	
Targeted: 2 of 2	
Credit 1 - 1 credit where;	

Requirement 1	<p>A leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter is installed. The leak detection system must be:</p> <p>A permanent automated water leak detection system that alerts the building occupants to the leak OR an in-built automated diagnostic procedure for detecting leaks is installed.</p> <p>Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time.</p> <p>Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods.</p> <p>Programmable to suit the owner/occupiers' water consumption criteria.</p> <p>Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.</p>	One credit targeted
Credit 2 - 1 credit where;		
Requirement 2	Flow control devices that regulate the supply of water to each WC area/facility according to demand are installed (and therefore minimise water leaks and wastage from sanitary fittings).	One credit targeted
Wat 04: Water efficient equipment		
Targeted: 1 of 1		
Credit 1 - 1 credit where;		
Requirement 1	The design team has identified all unregulated water demands that could be realistically mitigated or reduced.	One credit targeted
Requirement 2	System(s) or processes have been identified to reduce the unregulated water demand and demonstrate, through either	

good practice design or specification, a meaningful reduction in the total water demand of the building.



MATERIALS

Mat 01: Life Cycle Impacts	
Targeted: 2 of 6	
Credit 1 - Up to 6 credits where;	
Requirement 1	BREEAM awards credits on the basis of the building's quantified environmental life cycle impact through assessment of the main building elements, as set out in Table - 38:
Requirement 2	<p>Credits are awarded on the basis of the total number of points achieved, as set out in Table - 39 below, and calculated using the BREEAM Mat 01 calculator. This points score is based on the Green Guide rating(s) achieved for the specifications that make up the main building elements (as in Table - 38).</p> <p>Note: Where an independently verified third party Environmental Product Declaration (EPD), covering part of or the whole life cycle, is available for a material or product that forms part of an assessed building element, this can be used to increase the contribution of that element to the building's Mat 01 performance. (Refer to Calculation procedure where a specific Environmental Product Declaration (EPD) is available for a material in the Methodology section for more details.)</p>
Requirement 3	Life cycle greenhouse gas emissions (kgCO2 eq.) for each element are also required to be reported based on a 60-year building life. Where specific data is not available for a product or element, generic data should be used. Generic data can be obtained from the online Green Guide for each element and must be entered in to the BREEAM Mat 01 calculator.
Two credits targeted	
Mat 02: Hard Landscaping and Boundary Protection	

Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	Where at least 80% of all external hard landscaping and 80% of all boundary protection (by area) in the construction zone achieves an A or A+ rating, as defined in the Green Guide to Specification. Green Guide ratings for the specification(s) of each element can be found at www.thegreenguide.org.uk
	One credit targeted

Mat 03: Responsible Sourcing of Materials

Targeted: 2 of 4

Pre-requisite

Requirement 1	<p>All timber and timber based products used on the project is 'legally harvested and traded timber' (see Relevant definitions).</p> <p>Note:</p> <p>It is a minimum requirement for achieving a BREEAM rating (for any rating level) that compliance with criterion 1 is confirmed. For other materials there are no pre-requisite requirements at this stage.</p>	Pre-requisite assumed
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Credit 1 - 1 credit where;

Requirement 2	The principal contractor sources materials for the project in accordance with a documented sustainable procurement plan (see the Relevant definitions in the Additional information section).	One credit targeted
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Credit 2 – Up to 3 credits where;

Requirement 3	The available RSM credits (refer to Table - 43) can be awarded where the applicable building materials (refer to Table - 44) are responsibly sourced in accordance with the BREEAM	One credit targeted
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	methodology, as defined in steps 1 to 2 in the Methodology section.
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Mat 04: Insulation	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	Any new insulation specified for use within the following building elements must be assessed: External walls Ground floor Roof Building services
Requirement 2	The Insulation index for the building fabric and services insulation is the same as or greater than 2.5. See Mat 04 Insulation section for a description of calculating the Insulation index.
	One credit targeted

Mat 05: Designing for durability and resilience	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	Protecting vulnerable parts of the building from damage. The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This must include, but is not necessarily limited to:
	One credit targeted

	<p>Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.).</p> <p>Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.</p> <p>Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas.</p>	
<p>Requirement 2</p>	<p>Protecting exposed parts of the building from material degradation</p> <p>The relevant building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors. (See Methodology for the process to assess this criterion).</p> <p>See Table - 47 in the Checklists and tables section for a list of applicable elements, environmental factors and material degradation effects to consider.</p>	

<p>Mat 06: Material efficiency</p>		
<p>Targeted: 0 of 1</p>		
<p>Credit 1 - 1 credit where;</p>		
<p>Requirement 1</p>	<p>Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life</p>	<p>Credit not targeted</p>

<p>Requirement 2</p>	<p>The above is carried out by the design/construction team in consultation with the relevant parties (see CN3) at each of the following RIBA stages:</p> <ul style="list-style-type: none"> Preparation and Brief Concept Design Developed Design Technical Design Construction. 	
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WASTE

Wst 01: Construction Waste Management	
Targeted: 2 of 4	
Credit 1 - Up to 3 credits where;	
Requirement 1	Up to three credits Where a Resource Management Plan (RMP) has been developed covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication (including demolition and excavation waste) generated by the building's design and construction (see CN3).
Requirement 2	Where construction waste related to on-site construction and dedicated off-site manufacture/fabrication (excluding demolition and excavation waste) meets or is lower than that shown in Table - 48:
Requirement 3	Where existing buildings on the site will be demolished a pre-demolition audit of any existing buildings, structures or hard surfaces is completed to determine if, in the case of demolition, refurbishment/reuse is feasible and, if not, to maximise the recovery of material from demolition for subsequent high grade/value applications. The audit must be referenced in the RMP and cover: Identification of the key refurbishment/demolition materials. Potential applications and any related issues for the reuse and recycling of the key refurbishment and demolition materials in accordance with the waste hierarchy.
Credit 2 - 1 credit where;	
One credit targeted	

Requirement 4	The following percentages of non-hazardous construction (on-site and off-site manufacture/fabrication in a dedicated facility), demolition and excavation waste (where applicable) generated by the project have been diverted from landfill as shown in Table - 49.	One credit targeted
Requirement 5	Waste materials will be sorted into separate key waste groups as per Table - 50 (according to the waste streams generated by the scope of the works) either on-site or through a licensed contractor for recovery.	

Wst 02: Recycled Aggregates

Targeted: 0 of 1

Credit 1 - 1 credit where;

Requirement 1	The percentage of high-grade aggregate that is recycled and/or secondary aggregate, specified in each application (present) must meet the following minimum % levels (by weight or volume) to contribute to the total amount of recycled and/or secondary aggregate, as specified in table -48.	Credit not targeted
Requirement 2	The total amount of recycled or secondary aggregate specified, and meeting criterion 1, is greater than 25% (by weight or volume) of the total high grade aggregate specified for the development. Where the minimum level in criterion 1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.	
Requirement 3	The recycled and/or secondary aggregates are EITHER: Construction, demolition and excavation waste obtained on-site or off-site OR	

	Secondary aggregates obtained from a non-construction post-consumer industrial by product source (see Relevant definitions section).
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Wst 03: Operational Waste	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	<p>Dedicated space(s) is provided for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities. This space must be:</p> <p>Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams</p> <p>Accessible to building occupants or facilities operators for the deposit of materials and collections by waste management contractors</p> <p>Of a capacity appropriate to the building type, size, number of units (if relevant) and predicted volumes of waste that will arise from daily/weekly operational activities and occupancy rates.</p>
Requirement 2	<p>Where the consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, the following facilities are provided:</p> <p>Static waste compactor(s) or baler(s); situated in a service area or dedicated waste management space.</p> <p>Vessel(s) for composting suitable organic waste resulting from the building's daily operation and use; OR adequate space(s) for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility.</p>
	One credit targeted

	Where organic waste is to be stored/composted on-site, a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes.
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Wst 05: Adaptation to climate change	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 1	<p>Credit not targeted</p> <p>Conduct a climate change adaptation strategy appraisal for structural and fabric resilience by the end of Concept Design (RIBA Stage 2 or equivalent), in accordance with the following approach:</p> <p>Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts. The assessment should cover the following stages:</p> <ul style="list-style-type: none"> Hazard identification Hazard assessment Risk estimation Risk evaluation Risk management

Wst 06: Functional adaptability	
Targeted: 1 of 1	
Credit 1 - 1 credit where;	
Requirement 1	<p>One credit targeted</p> <p>A building-specific functional adaptation strategy study has been undertaken by the client and design team by Concept Design</p>

	(RIBA Stage 2 or equivalent), which includes recommendations for measures to be incorporated to facilitate future adaptation.	
Requirement 2	Functional adaptation measures have been implemented (RIBA Stage 4 or equivalent) in accordance with the functional adaptation strategy recommendations, where practical and cost effective. Omissions have been justified in writing to the assessor.	

LAND USE & ECOLOGY

LE 01: Site Selection	
Targeted: 1 of 2	
Credit 1 - 1 credit where;	
Requirement 1	At least 75% of the proposed development's footprint is on an area of land which has previously been occupied by industrial, commercial or domestic buildings or fixed surface infrastructure.
Credit 2 – 1 credit where;	
Requirement 2	A contaminated land specialist's site investigation, risk assessment and appraisal has deemed land within the site to be affected by contamination. The site investigation, risk assessment and appraisal have identified: The degree of contamination The contaminant sources/types The options for remediating sources of contamination which present an unacceptable risk
Requirement 3	The client or principal contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan as recommended by the contaminated land specialist.
	One credit targeted

LE 02: Ecological Value of Site and Protection of Ecological Features	
Targeted: 2 of 2	
Credit 1 - 1 credit where;	
Requirement 1	Land within the construction zone is defined as 'land of low ecological value' using either:
	One credit targeted

	<p>The BREEAM checklist for defining land of low ecological value (see Table -52); OR</p> <p>A Suitably Qualified Ecologist (SQE) who has identified the land as being of 'low ecological value' within an ecological assessment report, based on a site survey.</p>	
Credit 2 - 1 credit where;		
Requirement 2	All existing features of ecological value within and surrounding the construction zone and site boundary area are adequately protected from damage during clearance, site preparation and construction activities in line with BS42020: 2013.	One credit targeted
Requirement 3	In all cases, the principal contractor is required to construct ecological protection recommended by the SQE, prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities).	

LE 03: Minimising impact on existing site ecology		
Targeted: 2 of 2		
Credit 1 - Up to 2 credits where;		
Requirement 1	<p>Two credits</p> <p>The change in ecological value of the site is equal to or greater than zero plant species, i.e. no negative change, using the methods outlined in either (a) or (b) below:</p> <p>Determine the following information and input this data in to the BREEAM LE 03/LE 04 calculator:</p>	Two credits targeted

	<p>The broad habitat type(s) that define the landscape of the assessed site in its existing pre-developed state and proposed state (see Table - 53). Area (m2) of the existing and proposed broad habitat types. OR</p> <p>Where a Suitably Qualified Ecologist (SQE) has been appointed and, based on their site survey, they confirm the following and either the assessor or ecologist inputs this data in to the BREEAM LE 03/LE 04 calculator:</p> <p>The broad habitat types that define the landscape of the assessed site in its existing pre-developed state and proposed state. Area (m2) of the existing and proposed broad habitat plot types. Average total taxon (plant species) richness within each habitat type. OR</p>	
Requirement 2	<p>One credit</p> <p>Where the change in ecological value of the site is less than zero but equal to or greater than minus nine plant species i.e. a minimal change, use the methods outlined in either 1(a) or (b) above.</p>	

LE 04: Enhancing site ecology		
Targeted: 2 of 2		
Credit 1 - 1 credit where;		
Requirement 1	A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the end of the	One credit targeted

	Preparation and Brief stage (RIBA Stage 1 or equivalent) to advise on enhancing the ecology of the site at an early stage.	
Requirement 2	The SQE has provided an Ecology Report with appropriate recommendations for the enhancement of the site's ecology at Concept Design stage (RIBA Stage 2 or equivalent). The report is based on a site visit/survey by the SQE (see also CN4).	
Requirement 3	The early stage advice and recommendations of the Ecology Report for the enhancement of site ecology have been, or will be, implemented in the final design and build.	
Credit 2 - 1 credit where;		
Requirement 4	The criteria of the first credit are met.	One credit targeted
Requirement 5	The recommendations of the Ecology Report for the enhancement of site ecology have been implemented in the final design and build, and the SQE confirms that this will result in an increase in ecological value of the site, with an increase of six plant species or greater (refer also to Compliance note CN8 for alternative means of compliance).	
Requirement 6	The increase in plant species has been calculated using the BREEAM LE 03/LE 04 calculator, using actual plant species numbers.	

LE 05: Long Term Impact on Biodiversity

Targeted: 2 of 2

Credit 1 - Up to 2 credits where;

Requirement 1	Where a Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and	Two credits targeted
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	enhancement of ecology has been complied with during the design and construction process.	
Requirement 2	Where a landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS 42020:2013 Section 11.1. This is to be handed over to the building owner/occupants for use by the grounds maintenance staff.	
Requirement 3	<p>Where additional measures to improve the assessed site's long term biodiversity are adopted, according to Table - 55.</p> <ul style="list-style-type: none"> • One credit where at least 2 additional measures are adopted • Two credits where at least 4 additional measures are adopted <p>Where the Suitably Qualified Ecologist (SQE) confirms that some of the additional measures listed in Table - 55 are not applicable to the assessed development, the credits can be awarded in accordance with the table in the Tracker Plus Additional Guidance document.</p>	



POLLUTION

Pol 01: Impact of Refrigerants	
Targeted: 1 of 3	
Credit 1 - Up to 3 credits where;	
Requirement 1	<p>Three credits - No refrigerant use</p> <p>Where the building does not require the use of refrigerants within its installed plant/systems.</p> <p>OR alternatively, where the building does require the use of refrigerants, the three credits can be awarded through compliance with requirements 2 to 7.</p>
Requirement 2	<p>Pre-requisite</p> <p>All systems (with electric compressors) must comply with the requirements of BS EN 378:2008 (parts 2 and 3) and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice.</p>
Requirement 3	<p>Impact of refrigerant:</p> <p>2 credits:</p> <p>Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELCO2e) of ≤ 100 kgCO2e/kW cooling/heating capacity. To calculate the DELCO2e please refer to the Relevant definitions in the Additional information section and the Methodology section.</p> <p>OR</p>
One credit targeted under requirement 5	

Requirement 4	Where air-conditioning or refrigeration systems are installed the refrigerants used have a Global Warming Potential (GWP) ≤ 10.
	OR
Requirement 5	Where the systems using refrigerants have Direct Effect Life Cycle CO2 equivalent emissions (DELC CO2e) of ≤ 1000 kgCO2e/kW cooling/heating capacity.

Pol 02: NOx emissions	
Targeted: 3 of 3	
Credit 1 - Up to 3 credits where;	
Requirement 1	Where the plant installed to meet the building's delivered heating and hot water demand has, under normal operating conditions, a NOx emission level (measured on a dry basis at 0% excess O2) as follows: <ul style="list-style-type: none"> • 1 Credit: ≤ 100 mg/kWh • Credits: ≤ 70 mg/kWh • 3 Credits: ≤ 40 mg/kWh
Requirement 2	Report via the BREEAM scoring and reporting tool the direct and indirect NOx emissions in mg/kWh and energy consumption in kWh/m2/yr arising from systems installed to meet the building's space heating, cooling and hot water demands.
Three credits targeted	

Pol 03: Surface Water Run Off	
Targeted: 4 of 5	
Credit 1 - Up to 2 credits where;	

Requirement 1	<p>Two credits - Low flood risk</p> <p>Where a site-specific flood risk assessment (FRA) confirms the development is situated in a flood zone that is defined as having a low annual probability of flooding (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration (see CN5).</p>	Two credits targeted
Requirement 2	<p>One credit - Medium / High flood risk</p> <p>Where a site-specific FRA confirms the development is situated in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain (in accordance with current best practice national planning guidance). The FRA must take all current and future sources of flooding into consideration (see CN5).</p> <p>AND</p>	
Requirement 3	<p>To increase the resilience and resistance of the development to flooding, one of the following must be achieved:</p> <p>The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600mm above the design flood level of the flood zone in which the assessed development is located (see CN8); OR</p> <p>The final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2011.</p>	
Credit 2 - Up to 2 credits where;		

Requirement 4	Pre-requisite An Appropriate Consultant is appointed to carry out, demonstrate and/or confirm the development's compliance with the following criteria:	Pre-requisite assumed
Requirement 5	One credit Where drainage measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events.	One credit targeted
Requirement 6	Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place.	
Requirement 7	Calculations include an allowance for climate change; this should be made in accordance with current best practice planning guidance (see definitions).	
Requirement 8	One credit Where flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance); AND EITHER	One credit targeted
Requirement 9	Drainage design measures are specified to ensure that the post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development for the 100-year 6-hour event, including an allowance for climate change (see criterion 14).	

Requirement 10	Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other Sustainable Drainage System (SuDS) techniques.
Requirement 11	<p>OR (only where criteria 9 and 10 for this credit cannot be achieved):</p> <p>Justification from the Appropriate Consultant indicating why the above criteria cannot be achieved, i.e. where infiltration or other SuDS techniques are not technically viable options.</p>
Requirement 12	<p>Drainage design measures are specified to ensure that the post development peak rate of run-off is reduced to the limiting discharge. The limiting discharge is defined as the highest flow rate from the following options:</p> <p>The pre-development 1-year peak flow rate; OR The mean annual flow rate Q_{bar}; OR $2L/s/ha$.</p> <p>Note that for the 1-year peak flow rate the 1-year return period event criterion applies (as described in the peak run-off criteria above).</p>
Requirement 13	Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place.
Requirement 14	For either option, above calculations must include an allowance for climate change; this should be made in accordance with current best practice planning guidance.
Credit 3 - 1 credit where;	
Requirement 15	There is no discharge from the developed site for rainfall up to 5mm (confirmed by the Appropriate Consultant).
	Credit not targeted

Requirement 16	In areas with a low risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques.
Requirement 17	Where there is a high risk of contamination or spillage of substances such as petrol and oil (see Compliance notes for a list of areas), separators (or an equivalent system) are installed in surface water drainage systems.
Requirement 18	Where the building has chemical/liquid gas storage areas, a means of containment is fitted to the site drainage system (i.e. shut-off valves) to prevent the escape of chemicals to natural watercourses (in the event of a spillage or bunding failure).
Requirement 19	All water pollution prevention systems have been designed and installed in accordance with the recommendations of documents such as Pollution Prevention Guideline 3 (PPG 3) and/or where applicable the SUDS manual. For areas where vehicle washing will be taking place, pollution prevention systems must be in accordance with Pollution Prevention Guidelines 13.
Requirement 20	A comprehensive and up-to date drainage plan of the site will be made available for the building/site occupiers.
Requirement 21	Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS must be in place.
Requirement 22	Where present, all external storage and delivery areas designed and detailed in accordance with the current best practice planning guidance (see Other information for further information).

Pol 04: Reduction of Night Time Light Pollution

Targeted: 1 of 1

Credit 1 - 1 credit where;		One credit targeted
Requirement 1	Where external lighting pollution has been eliminated through effective design that removes the need for external lighting without adversely affecting the safety and security of the site and its users. OR alternatively, where the building has no external lighting, one credit may be awarded as follows:	
Requirement 2	The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011. This can be demonstrated via completion of the checklists in Annexes B and C of the guidance note by a relevant member of the design team.	
Requirement 3	All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.	
Requirement 4	If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes.	
Requirement 5	Illuminated advertisements, where specified, must be designed in compliance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements.	

Pol 05: Noise Attenuation		
Targeted: 1 of 1		
Credit 1 - 1 credit where;		One credit targeted
Requirement 1	Where there are, or will be, no noise-sensitive areas or buildings within 800m radius of the assessed development.	

Requirement 2	<p>OR alternatively, where the building does have noise-sensitive areas or buildings within 800m radius of the development, one credit can be awarded as follows:</p> <p>Where a noise impact assessment in compliance with BS 7445 has been carried out and the following noise levels measured/determined:</p> <p>Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development or at a location where background conditions can be argued to be similar.</p> <p>The rating noise level resulting from the new noise source (see CN4).</p>
Requirement 3	<p>The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body (see Relevant definitions in the Additional information section).</p>
Requirement 4	<p>The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference no greater than +5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level.</p>
Requirement 5	<p>Where the noise source(s) from the proposed site/building is greater than the levels described in criterion 4, measures have been installed to attenuate the noise at its source to a level where it will comply with criterion 4.</p>

INNOVATION

Man 03: Responsible construction practices	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 17	With reference to the considerate construction criterion 7, in addition to meeting the criteria for two credits, the contractor achieves compliance with the criteria of the compliant scheme to an exemplary level of practice.
	Credit not targeted

Hea 01: Visual Comfort	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 14	Daylighting criteria have been met using either of the following options: Relevant building areas meet exemplary daylight factor(s) and the relevant criteria in Table - 15. OR Relevant building areas meet exemplary average and minimum point daylight illuminance criteria in Table - 16.
	Credit not targeted

Ene 01: Reduction of energy use and carbon emissions	
Targeted: 0 of 5	
Credit 1 - Up to 5 credits where;	

Requirement 2	Up to four credits - Zero regulated carbon The building achieves an EPRNC \geq 0.9 and zero net regulated CO2 emissions (see Relevant definitions).	Credit not targeted
Requirement 3	An equivalent percentage of the buildings modelled 'regulated' operational energy consumption, as stipulated in Table - 26, is generated by carbon neutral on-site or near-site sources and used to meet energy demand from 'unregulated' building systems or processes.	
Requirement 4	Five credits - Carbon negative The building is 'carbon negative' in terms of its total modelled operational energy consumption, including regulated and unregulated energy (see Relevant definitions in the Additional information section of this issue).	

Wat 01: Water Consumption		
Targeted: 0 of 1		
Credit 1 - 1 credit where;		
Requirement 1	An assessment of the efficiency of the building's domestic water-consuming components is undertaken using the BREEAM Wat 01 calculator.	Credit not targeted
Requirement 2	The water consumption (L/person/day) for the assessed building is compared against a baseline performance and BREEAM credits awarded based upon Table - 35.	
Requirement 3	The efficiency of the following 'domestic scale' water-consuming components must be included in the assessment (where specified): WCs	

	<p>Urinals Taps (wash hand basins and where specified kitchen taps and waste disposal unit) Showers Baths Dishwashers (domestic and commercial sized) Washing machine (domestic and commercial or industrial sized) The BREEAM Wat 01 calculator defines the building types and activity areas for which the above components must be assessed.</p>
Requirement 4	Where a greywater and/or rainwater system is specified, its yield (L/person/day) is used to off-set non potable water demand from components that would otherwise be supplied using potable water.
Requirement 5	Any greywater systems must be specified and installed in compliance with BS 8525-1:2010 Greywater Systems - Part 1 Code of Practice. Any rainwater systems must be specified and installed in compliance with BS 8515:2009+A1:2013 Rainwater Harvesting Systems - Code of practice.

Mat 01: Life Cycle Impacts	
Targeted: 0 of 3	
Credit 1 - 1 credit where;	
Requirement 4	Where assessing four or more applicable building elements, the building achieves at least two points in addition to the total points required to achieve maximum credits under the standard BREEAM criteria (as outlined in the table above) OR
Requirement 5	Where assessing fewer than four applicable building elements, the building achieves at least one point in addition to the total points required to achieve maximum credits under the standard BREEAM criteria.
Credit not targeted	

	Where the assessed building does not specify an element listed above, see the compliance note CN3 regarding the exemplary level benchmark.	
Credit 2 - Up to 2 credits where;		
Requirement 6	Where the design team has used an IMPACT compliant software tool (or equivalent) to measure the environmental impact of the building;	Credits not targeted
Requirement 7	Where the design team can demonstrate how the use of an IMPACT compliant software (or equivalent) has benefited the building in terms of measuring and reducing its environmental impact. See compliance note CN16.	
Requirement 8	Where the design team submit the building information model (BIM) from the IMPACT compliant software tool (or equivalent) for the assessed building to BRE Global (via the project's appointed BREEAM Assessor). See compliance note CN17.	

Mat 03: Responsible Sourcing of Materials

Targeted: 0 of 1

Credit 1 - 1 credit where;

Requirement 4	Where at least 70% of the available RSM points are achieved.	Credit not targeted
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Wst 01: Construction Waste Management

Targeted: 0 of 1

Credit 1 - 1 credit where;

Requirement 6	Non-hazardous construction waste generated by the building's design and on-site construction and off-site manufacture or	Credit not targeted
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	fabrication (excluding demolition and excavation waste) is no greater than the exemplary level resource efficiency benchmark (outlined in Table - 48).
Requirement 7	The percentage of non-hazardous construction (on-site and dedicated off-site manufacture/fabrication), demolition and excavation waste (if relevant) diverted from landfill meets or exceeds the exemplary level percentage benchmark (outlined in Table - 49).
Requirement 8	All key waste groups are identified for diversion from landfill in the RMP.

Wst 02: Recycled Aggregates

Targeted: 0 of 1

Credit 1 - 1 credit where;

Requirement 4	The percentage of high grade aggregate that is recycled or secondary aggregate, specified in each application (present) must meet the exemplary minimum levels (by weight or volume), as defined in table -51. Where this minimum level is not met, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.	Credit not targeted
Requirement 5	Where the total amount of recycled or secondary aggregate specified is greater than 35% (by weight or volume) of the total high grade aggregate specified for the project. Where the minimum level in criterion 1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.	
Requirement 6	The contributing recycled or secondary aggregate must not be transported more than 30 km by road transport.	

Wst 05: Adaptation to climate change	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 2	<p>Achievement of the Structural and fabric resilience criterion in this issue and the following criteria points or credits:</p> <p>Hea 04 Thermal comfort (Link to Wst 05 issue:- to preventing increasing risks of overheating) Criterion 6 in the second credit of the Hea 04 issue has been achieved.</p> <p>Ene 01 Reduction of energy use and carbon emissions (Link to Wst 05 issue: to maximise energy efficiency contributing to low carbon emissions resulting from increasing energy demands) At least eight credits in this issue have been achieved.</p> <p>Ene 04 Low carbon design (Link to Wst 05 issue: to maximise opportunities to avoid unnecessary carbon emissions) The Passive design analysis credit in this issue has been achieved.</p> <p>Wat 01 Water consumption (Link to Wst 05: to minimise water demands in periods of drought) A minimum of three credits in this issue have been achieved.</p> <p>Mat 05 Designing for durability and resilience (Link to Wst 05 issue: to avoid increased risks of deterioration and higher maintenance demands)</p>
	Credit not targeted

	<p>Criterion 2 relating to material degradation in this issue has been achieved.</p> <p>Pol 03 Surface water run-off (Link to Wst 05: to minimise the risks of increased flood risk and surface water run-off affecting the site or others) Flood risk – a minimum of one credit has been achieved. Surface water run-off – two credits have been achieved.</p>
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AI: Approved Innovation	
Targeted: 0 of 1	
Credit 1 - 1 credit where;	
Requirement 2	One innovation credit can be awarded for each innovation approved by BRE Global, where the building complies with the criteria defined within an Approved Innovation application form. Credit not targeted

7.0 CONCLUSION

- 7.1 This BREEAM pre-assessment report has set out a potential pathway to achieve a 'Very Good' rating for the commercial buildings at Swansea Central that are being constructed to shell and core specification.
- 7.2 The report highlights the development's sustainability credentials and environmental performance through compliance with BREEAM standards. The resulting pre-assessment BREEAM score that is likely to be achieved is 60.93%, equivalent to a 'Very Good' rating.
- 7.3 Following this pre-assessment report, a BREEAM Design Stage and eventually Post Construction Stage assessment are recommended to be undertaken for each of the specific buildings to gain full BREEAM certification. Due to the variety of commercial buildings on site there is likely to be some variation between the finalised assessment scores to achieve the 'Very Good' rating. However, this strategy provides the base strategy to be followed and demonstrates the sustainable performance of the design to date.