

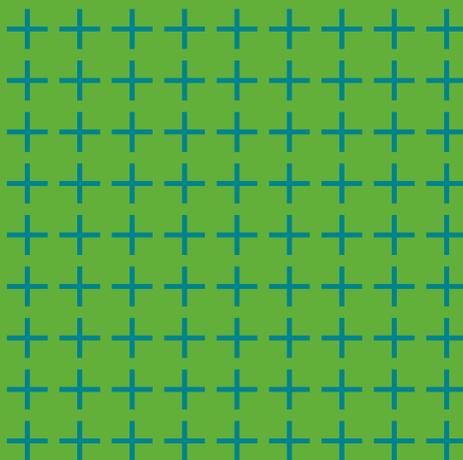


'Land' at
Birkenhead
town centre

August
2020

Outline Planning Application Energy and Sustainability Statement.

Hannan Associates.
Prepared on
behalf of Wirral
Growth Company.



A joint venture between



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1.0 Introduction and Background to the Development

This Sustainability and Infrastructure Statement for the Outline planning application is made by Wirral Growth Company for the regeneration of Birkenhead town centre, north of the Pyramids Shopping Centre.

Hybrid Planning Application for the phased redevelopment of land within Birkenhead Town Centre comprising:

Outline planning application (with all matters reserved for future consideration) for the development of a car park on Plot B; office, retail and leisure floorspace (including food and beverage, hot food takeaway or drinking establishment) on Plot C which will include a new market hall/leisure building; infrastructure works on Plot D that will create a substation but no new publicly accessible floorspace; office, retail, hotel, leisure (including food and beverage, hot food takeaway or drinking establishment) and residential floorspace on Plot E; infrastructure works to provide a 'super-crossing' at Conway Street and improvements to the existing bus station on Plot F; residential floorspace or a hotel or a car park on Plot G; residential floorspace on Plots I and J; and ancillary residential car and cycle parking, servicing arrangements and infrastructure and all associated works on land to the west of Europa Boulevard and land south of Conway Street and alterations and improvement works to the public highway

Full planning application for the construction of:

- i) two five storey office buildings on Plot A comprising flexible office, retail or leisure (including food and beverage, hot food takeaway or drinking establishment) floorspace at ground floor level, and office floorspace at first to fourth floor level and a plant area at fifth floor level with associated landscaping; highways and infrastructure works including the creation of new junction from Claughton Road/Hemingford Street; and
- ii) an electricity substation on Plot H along with the necessary amendments to the arrangement of the Europa Pool surface car park to relocate coach parking spaces and the associated infrastructure and landscaping works and access/servicing arrangements.

This report covers the approach to sustainability at this stage for the wider outline scheme responds to the outline nature of the proposals and explores the following:

- How the proposals are inherently sustainable in principle, due to their location, scale and mixed range of proposed uses
- How the development is committed to sustainability objectives and targets
- How the parameters and principles that underpin the applications might be implemented to embrace the latest thinking
- How the development will address climate change in design
- How the best use of recycling and waste management will be encouraged
- How the development will encompass and prioritise life cycle and carbon assessment for construction and in use

It is important to remember that sustainability is a rapidly evolving issue, with a climate change emergency being declared and Wirral Councils Cool Wirral policy to substantially cut climate pollution the aims are to:

- Reduce demand for energy and make Wirral more energy efficient
- Generate and source more of our local energy needs from 'renewable' sources
- use more sustainable modes of transport, more fuel-efficient vehicles and less polluting means of getting around
- reduce the indirect negative impacts that our decisions have for climate pollution in Wirral and elsewhere
- identify the risks and vulnerabilities from expected changes and bring forward plans and actions to limit negative impacts and improve resilience

The Wirral Growth Company proposals span a 15 year time period, so will see further changes in technologies, policy objectives/targets and economic conditions. The commitments and level of details that can be provided at this outline stage (except for Buildings A1 and A2 which have full details provided) are therefore broad. It is proposed that an approach to implementation needs to guide the detailed design and delivery of the individual projects and allow it to respond to changes in circumstances.

A separate report Energy and Sustainability Report for Plot A Wirral Growth Company dated 11th August 2020 is provided with respect to the detailed proposals for the two 5 storey office buildings.

2.0 Policy

In view of the scale and nature of the proposals, a range of prevailing sustainability issues and policies are relevant to varying degrees.

The policies detailed in the remainder of Section 2 are a response to a number of key environmental challenges which can be summarised as follows:

Climate Change

Global warming is associated with problems of increased climatic disturbance and rising sea levels and has been the subject of major international political activity. Gases recognised as having a “greenhouse” or global warming effect include CFCs, HCFCs, HFCs methane and carbon dioxide. Policy framework seeks to reduce the levels of these in the atmosphere. In the UK, nine out of the ten hottest years on record occurred between 1983 and 1998.

Fossil Fuel Depletion

There is a move away from a reliance on fossil fuel energy sources and towards an increase in non-carbon energy sources.

Ozone Depletion

Under EU regulations, the use of CFCs has been banned since 2001. HCFCs are no longer able to be sold as of 2010 and they will be phased out of use. Ozone depleting gases cause damage to stratospheric ozone. CFCs, Halons and HCFCs are the major causes of ozone depletion. Damage to the ozone layer reduces its ability to prevent ultraviolet (UV) light entering the earth’s atmosphere, increasing the amount of harmful UVB light hitting the earth’s surface.

Pollution

Policy framework seeks to reduce levels of pollution. Many construction materials contain substances, which are hazardous to health. The emission to air or water of some substances such as heavy metals, dioxins and hydrocarbons used during the construction and operation of a building can have serious environmental impacts on human health and plant and animal ecosystems.

Water Resource Depletion

UK water resources are being depleted on account of a 70% rise in water consumption over the past 30 years. Whilst the North West of England is well supplied, existing water resources must be protected through strategies to reduce water consumption in buildings and minimise the depletion of aquifers.

Resource Efficiency

Buildings are major consumers of resources, both during construction and in their operation. They use land, involve materials, use (fossil) fuels and other natural materials. The buildings’ occupants use water and generate waste. About 20% of building materials used are for civil engineering, infrastructure projects. Over 50% is for repair and maintenance of the existing stock of buildings. The quarrying of 250-300 million tonnes of materials in the UK each year for aggregates, cement and bricks imposes significant environmental costs.

Sustainable Timber

Deforestation of tropical forests is a matter for global concern. Timber, whilst a renewable resource, is largely imported into the UK. Most of the timber used in Britain for construction is imported from temperate sources where forest management practices are firmly established. Only a very small proportion of timber from tropical forests is sold on the international market, and of this less than 0.1% is used in the UK.

Waste

The construction industry accounts for 29% of all UK controlled waste, of these 70 million tonnes is construction and demolition waste. The bulk of construction and demolition waste that is recycled is used for low-grade purposes such as road building, 30% of construction and demolition waste is dumped in landfill.

Transport

The transport of people between buildings accounts for around 25% of UK energy use. Transport energy and emissions are growing at 4% per annum.

2.1 Planning Policy Context

2.1.1 National Context

The National Planning Policy Context is set by the National Planning Policy Framework (NPPF) which was published during February 2019. It provides a framework within which locally prepared plans for development can be produced and it is a requirement of planning law that applications for planning permission be determined in accordance with the development plan, unless material considerations indicate otherwise.

NPPF says that the purpose of the planning system is to contribute to the achievement of sustainable development, which it is said is the meeting of the needs of the present without compromising the ability of future generations to meet their own needs. NPPF says at paragraph 4.8 that achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supporting ways. They are:

- a) *Economic objective - to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.*
- b) *Social objective - to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being.*
- c) *Environmental objective - to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*

NPPF continues to say that at the heart of it is a presumption in favour of sustainable development which it says at paragraph 11 for decision making means:

- a) *"approving development proposals that accord with an up-to-date development plan without delay; or*
- b) *where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:*
- c) *the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or*
- d) *any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole."*

A full summary of NPPF is provided within the Planning Statement which has also been submitted in support of this planning application for comprehensive new development in Birkenhead, therefore, it is not summarised again here. However, we would highlight the content of Chapter 14: Meeting the challenge of Climate Change, flooding and coastal change. Paragraph 148 says:

"The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure."

It then says at paragraph 150:

"New development should be planned for in ways that:

avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and

can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards."

To achieve this NPPF sets out a requirement for local authorities to expect new development to comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated having regard to the type of development involved and its design, that it is not feasible or viable to do so. Also, it requires that development takes account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

2.1.2 The Local Context

The Development Plan for Wirral Consists of the Wirral Unitary Development Plan (UDP) which was adopted in 2000. Within the Wirral UDP there are no policies which relate specifically to sustainability and there are no requirements for decentralised energy supply or for energy consumption within development.

Wirral Borough Council is preparing a new Local Plan which will outline targets for the Borough but it is at a very early stage in its preparation and the policies have not yet been published for consultation and are not due to be adopted before this planning application will be determined.

2.1.3 Other Relevant Considerations

As outlined above there is currently a lack of guidance/targets set by National Policy and the Local Development Plan relating to specific energy usage or carbon reduction measures. However, The Climate Change Act (2008) sets a legally binding target for reducing greenhouse gas (GHG) emissions, in particular carbon dioxide (CO₂), by at least 80% (on 1990 levels) by the year 2050 in the United Kingdom (UK), and a requirement that domestic emissions are reduced by no less than 3% each year. This was updated in May 2019, where a 100% reduction ('net zero') is to be achieved in greenhouse gases by 2050.

In October 2017, the UK Government published its Clean Growth Strategy (CGS) setting out ambitious policies and proposals, to 2050, to reduce emissions across the economy and promote clean growth. The CGS provides an 'ambitious' blueprint for Britain's low carbon future, outlining how investment in green energy goes hand – in – hand with economic growth and industrial, commercial and residential strategies. Core to the strategy are actions that will cut emissions, increase efficiency and lower the amount consumers and businesses spend on energy. Following this Wirral Borough Council declared a Climate Emergency in July 2019.

The proposed development takes account of the above and the detailed element of the proposals – delivery of two office buildings for Wirral Council will target a BREEAM rating of excellent. More on the implications of the BREEAM Excellent rating is presented below.

In addition to BREEAM, it is a material consideration that All newly constructed buildings in the UK must comply with Approved Document L2A of the English Building Regulations. Currently at the 2013 version, this document is concerned with the conservation of fuel and power in new buildings other than dwellings. To comply with the building regulations, the building's carbon emission rate (BER) must be no greater than the emissions of an equivalent 'notional' target building (TER). This 'notional' building follows a specific specification and new buildings should be designed to better specifications than the notional building specification. UK building regulations allows a flexible approach in achieving compliance. However, in general this requires the adoption of a number of sustainability measures above and beyond the minimum.

2.1.4 Part L Compliance and Energy Efficiency

The works will be required to comply with the 2013 version of The Building Regulations Part L2A Conservation of Fuel and Power in Non-Domestic Buildings. This is to show compliance with Building Control and will not feed into the planning report. The development will have to meet the requirements of Criterion 1: the calculated CO2 emission rate (Building Emission Rate – BER) must not be greater than the Target Emission Rate – TER. Criterion 2 stipulates that the performance of the individual fabric elements and fixed building services should achieve reasonable standards of energy efficiency. Criterion 3 requires the building to demonstrate that it has appropriate passive control measures to limit solar gains. Provision of an Energy Performance Certificate and SBEM calculations will be required upon completion of works.

2.1.5 BREEAM

In the absence of specific sustainability requirements set by national and local planning policy WGC is targeting a BREEAM rating of ‘Excellent’ to meet the sustainability agenda and objectives of Wirral Council which are anticipated to be introduced through the emerging Local Plan.

BREEAM is the World’s leading sustainability assessment method and an independent and third-party certified assessment builds robust and trusted assessment of wide-ranging sustainability for new and existing buildings.

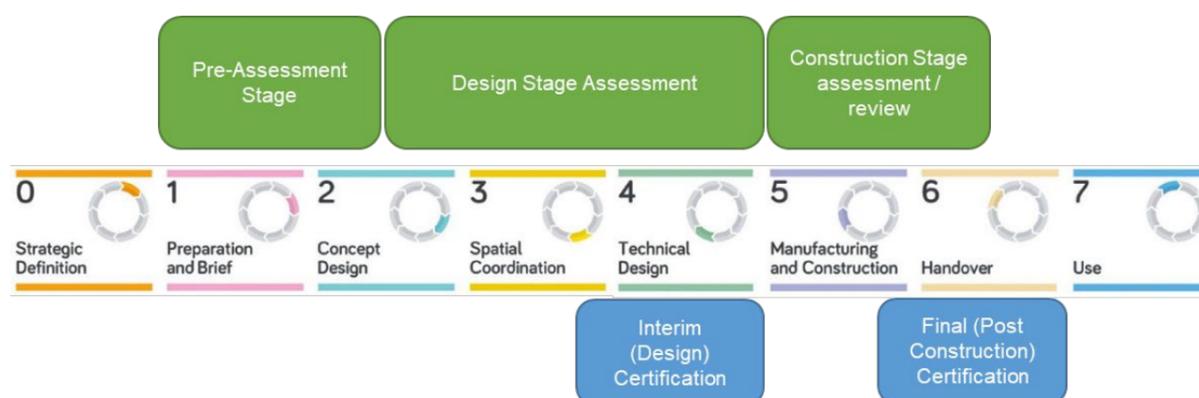
The objectives of BREEAM are to:

- Provide market recognition of buildings with a low environmental impact
- To ensure best environmental practice is incorporated in the planning, design, construction and operation of buildings and the wider built environment.
- To define a robust, cost-effective performance standard surpassing that required by regulations.
- To challenge the market to provide innovative, cost effective solutions that minimise the environmental impact of buildings.
- To raise awareness amongst owners, occupants, designers and operators of the benefits and value of buildings with a reduced life cycle impact on the environment.
- To allow organisations to demonstrate progress towards corporate environmental objectives.

BREEAM is developed and operated to meet the following underlying principles:

- To ensure environmental quality through an accessible, holistic and balanced measure of environmental impacts.
- Use quantified measures for determining environmental quality.
- Adopt a flexible approach that encourages and rewards positive outcomes, avoiding prescribed solutions.
- Use robust science and best practice as the basis for quantifying and calibrating a cost effective and rigorous performance standard for defining environmental quality.
- Reflect the social and economic benefits of meeting the environmental objectives covered.
- Provide a common international framework of assessment that is tailored to meet the ‘local’ context including regulation, climate and sector.
- Integrate building professionals in the development and operational processes to ensure wide understanding and accessibility.
- Adopt third party certification to ensure independence, credibility and consistency of the label.
- Adopt existing industry tools, practices and other standards wherever possible to support developments in policy and technology, build on existing skills and understanding and minimise costs.
- Align technically and operationally with relevant international standards, including the suite of standards on the ‘Sustainability of Construction Works’ prepared by the European Committee for Standardisation Technical Committee CEN/TC 350.
- Engage with a representative range of stakeholders to inform ongoing development in accordance with the underlying principles and the pace of change in performance standards (accounting regulation and market capability).

The process is an assessment through the design stages as follows:



The assessment covers the following areas:

- Management
- Health & Wellbeing
- Energy & Carbon Emissions
- Transport
- Water
- Materials & Embodied Carbon
- Waste
- Land Use & Ecology
- Pollution

Where applicable the plan is to target a BREEAM rating of Excellent which would place the buildings in the top 10th percentile of new buildings in the UK and the average carbon emissions saving for a BREEAM Excellent building assessed building is 33%.

2.2 Objectives for Wirral Growth Company Outline Planning Application

Given the scale and breadth of the proposals, significant consideration has been given to the underlying sustainability objectives of the project. A series of criteria were developed for the project that both embrace and address the various tiers of sustainability policy as summarised above. These criteria fall into nine broad categories:

- **Design:** formulated from the nine criteria of the By Design guidance, which are reflected in the Northwest Toolkit
- **Visual, Heritage and Townscape:** seven objectives to encompass a range of key issues
- **Natural and Physical Environment:** six objectives incorporating key environmental/EIA issues
- **Human Environment:** seven objectives using key environmental/EIA issues
- **Infrastructure and Transport:** six objectives informed by the transport analysis of the Baseline Study and the need for exemplar project infrastructure
- **Climate Change and Sustainability:** six objectives to incorporate carbon reduction and other key sustainability aims
- **Sustainable Communities:** eleven objectives informed by the Baseline Study and review of issues facing the inner Wirral area
- **Economic Development:** seven priority objectives for maximising the economic benefits of Wirral Waters
- **Spatial Integration:** Three key objective aims for ensuring the proposals integrated with the surrounding area

The above objectives also serve to inform the approach to the ITC and can be used and adapted, to help further shape the proposals and provide a means of monitoring sustainability as the project evolves.

3.0 Policy Response and Options

The project aspires to use the scale of the development, in the time over which it is to be built out and the expertise of the design team in sustainable design, technology and transport, to full advantage in creating a sustainable development project.

The effects of climate change are a key consideration. While the scheme seeks to reduce the effects of the development on climate change the design will also take account of the predicted effects of current climate change on weather including storm design flow rates and predicted future temperature increases.

As with many developments the development team is supportive of national and local government policies that relate to the environment and construction techniques. As well as rejuvenating the town centre and bringing dormant areas back into economic use, the scheme will comply with high environmental standards in design and construction.

The scheme will identify and deliver opportunities for sustainable design technology and building quality for what will be an exemplar project in order to attract international business, be an asset for the local community and be sustainable in the long term.

These principles will be applied and will incorporate environmental mitigation as necessary in terms of drainage, flood risk and other measures:

- a) A **mixed-use development of scale and critical mass**, occupied by businesses from range of business sectors
- b) A **catalyst to regeneration opportunities**
- c) A **locally supported project**, through integration with local regeneration priorities and community aspirations, representing a significant source of jobs for local people, linked to the local and wider business and skills network
- d) A means of **unlocking new markets and enhancing business competitiveness**
- e) An **integrated facility** providing a range of synergistic business advantages and supporting infrastructure and facilities.
- f) A **flexible development**, that allows a full range of town centre uses
- g) An underpinning **economic and tenancy model** which maximises the attractiveness of the facility to tenants.
- h) A **phased approach** to delivery with meanwhile uses
- i) A **high-quality built development** incorporating sustainable technologies and bringing wider sustainability benefits
- j) An **internationally and locally accessible development**, served strategically by water, air, rail and road, connected to the local community by public transport, walking and cycling.

The scheme will create sustainable economic growth by providing the environment for business competitiveness, enterprise growth and significant inward investment. That will assist in creating an economically active and skilled local workforce.

3.1 Sustainable Transport and Movement

The transport strategy is to create sustainable forms of movement for goods and products, through a site location which already benefits from a high level of accessibility by walking, cycling and public transport modes.

The site is ideally located to serve journeys on foot, be they for employment, retail or leisure purposes. The pedestrian infrastructure surrounding the site is of appropriate quality and coverage to safely serve trips on foot across the development site, and a wide range of amenities, services and public transport opportunities are conveniently located to encourage journeys on foot.

The site is well located to encourage trips by bicycle, with identified cycle routes and supporting infrastructure located in the vicinity of the site.

The site is also extremely well located for access to public transport services, with both Birkenhead bus station and Conway Park rail station conveniently located from all parts of the site. The extensive services operated from these transport hubs provide frequent and convenient connections to destination across Wirral and Merseyside, a fact that is reflected in the BREEAM public transport Accessibility Index rating.

The site will therefore be highly accessible for employees, residents and those visiting the town centre for retail or leisure purposes. The development will provide measures to encourage sustainable travel practices such as cycle parking and electric vehicle charging infrastructure, while future employees and residents will also be encouraged to maximise the use of sustainable travel modes through the Travel Plan process. This will help to reduce single occupancy vehicle travel, which will minimise carbon outputs, air quality and acoustic impacts as well as aid the efficient operation of the surrounding road network.

The wider delivery of a range of complimentary land uses, connected by improved high quality public realm and linkages, will help to sustainably stimulate the regeneration of the surrounding area thus ensuring that the development acts as a genuine stimulus for the surrounding communities.

3.2 Sustainable Design

In terms of the built development itself and its approach to sustainability, the strategy is to create an exemplar, low carbon, low resource demand, sustainable development, through design approaches that:

- a) Have low energy demands
- b) Use low carbon technologies in construction and operation
- c) Incorporate use of renewable technologies

The energy hierarchy approach to carbon reduction will be followed. It will be necessary to reduce energy demand and incorporate energy efficient measures within the built environment ("Be Lean"). Then, as the project evolves, it will be necessary to supply energy to the development efficiently, through the use of sustainable energy sources ("Be Clean and Green").

National, regional policy targets in respect of the sustainability and energy credentials will be considered. This remains subject to possible future revisions to those targets and viability.

The detailed design of the buildings will incorporate passive design principles to minimise energy demand. This may involve parts of the buildings being naturally ventilated where applicable and maximising natural light while considering heat gains. Passive design is considered further below.

3.3 Sustainable Energy

The approach to the design of buildings will be to explore and where possible include sustainable energy solutions such as improved passive and thermal performance, improved technologies and renewable such as heat pumps and photovoltaics

At this outline stage of design, Wirral Growth Company will commit to achieving a minimum of current building regulations requirements and providing a proportion of the remaining carbon emissions from a low or zero carbon sources.

In addition, the approach is to commit to a number of sustainable energy principles, as follows:

- To reduce energy demands, maximise energy efficiency, provide long term sustainable energy solutions and achieve economy of scale
- To ensure detailed design is passive and minimises energy demand
- To empower tenants to use less energy through clear communication and easy-to-use infrastructure

- To maximise the carbon-saving potential of energy within the context of overall commercial viability and a “total carbon footprint” approach to understanding and reducing carbon emissions
- To embrace the potential for integration, offsetting and other carbon mitigation measures allied to the wider community

In optimising “passive design”, opportunities will be taken to minimise energy demand by benefitting from daylight, sunlight, orientation and built form. Heat island effects will be managed through landscaping and water and consideration of natural mixed-mode ventilation options.

Opportunities will be explored to maximise the use of thermal mass including through assessing the potential to incorporate exposed concrete soffits coupled with night cooling for passive cooling where appropriate. Shading devices will be considered where necessary. Lower energy cooling techniques will be considered.

The detailed design will promote energy efficient technologies including encouraging the partial use of green roofs and other types of planting within and around the buildings.

3.4 Sustainable Waste Management (Outline Site Waste Management Plan)

This section outlines how the development will meet the sustainability objectives in relation to waste minimisation during the design, construction, and operational phases of the development.

Central and local government have set targets for zero avoidable waste by 2050 and eliminate plastic waste by 2042. Waste forms a key element of the circular economy which has been set up for the Liverpool City Region, which reinforces the need to redouble efforts to achieve recycling targets.

Wirral Growth Company will work with the Council and other partners (including Merseyside Recycling and Waste Authority (MWRA) as appropriate to identify and take forward the optimum solutions for both waste management.

Design Phase

In the design phase the following strategy will be implemented:

- Waste will be minimised by considering the following construction methodologies at the design stage:
- Review of demolition recycling
- Maximisation of pre-fabrication of building structure and façade elements
- Maximisation of pre-fabrication of building services elements such as pipework and ductwork
- Standardisation of unit specification within buildings
- Procurement of materials cut to standard widths and heights

Facilities will be provided to allow users of the buildings to sort and store recyclable waste. Waste storage space can be provided within the built development. Waste collection and carbon minimisation will be optimised through the development. Site Waste Management Plans will be provided for projects as they are taken forward.

Construction Phase

The demolition process will minimise the amount of waste material emanating from the site. During construction, the development will divert significant proportions of its construction waste from landfill and ensure that it follows best practice measures wherever possible. This will be achieved by sorting waste at source and sending as much as possible to be recycled, using techniques such as cut and fill to minimise the volume of waste material and using recycled materials within the construction where feasible.

Operational Phase

During the operational phase of development, the scheme will aim to meet a reduction in the amount of waste generated in line with regional MRWA. The management strategies and infrastructure needed to manage the waste that will be generated on-site, will be developed in the most effective way in line with phasing. In order to minimise and manage waste generated on-site, an integrated waste management strategy will be developed that will follow the waste hierarchy as set out below:



Prevention

Example: Employing strategies such as not printing documents or wrapping goods unless completely necessary or using hand driers instead of paper towels avoids waste generation and these are often the simplest and most effective ways to reduce waste.

Action: provide educational information on waste avoidance techniques to ensure that during the operation of the completed buildings, the actual waste generated will be reduced. This will be managed by providing a set of guidelines following best practice to tenants/buildings owners to implement as part of the overall management guidelines for the development. WGC is considering setting performance targets for waste reduction to further encourage users to waste less.

Preparing for Re-use

Example: Using reusable products e.g. packaging, boxes etc, instead of disposable ones will reduce the need to throw away materials.

Action: The developer will provide educational information to all tenants/occupiers on methods of reducing waste through better re-use.

Below are some initiatives that will be suggested and developed with the local council to encourage re-use:

- Encouraging businesses to collect and re-use or re-cycle packaging

Encourage Companies to use Printer Recycling Schemes and post back to suppliers

- Waste scheme for tenants/occupiers, including a directory and sticker campaign
- Direct people to a website to raise awareness and local facilities
- Provide dedicated waste storage and re-use areas

Recycling

Example: When waste is generated, recycling materials such as paper, glass, metal, and plastics will help to minimise the amount of refuse which will need to be taken to landfill sites.

Action: Recycling can be promoted through following measures:

- Develop targets and strategies to minimise waste to landfill
- Maximise recycled content in all construction materials
- No mixing of wastes
- Labelling of all waste skips and containers with their contents
- Ensuring all waste containers are in good order, not leaking and not overflowing
- Provide guidelines at detailed design to ensure adequate space is allowed for in all buildings for the location of recycling collection points
- Provide all building tenants with information on the collection streams available to them and highlight the benefits of recycling
- Consider setting performance targets for recycling rates to further encourage users to recycle more
- Collaborate with WRAP (Waste and Resource Action Programme)

Other Recovery

Example: Using processing to create energy or alternative materials.

Action: Initiate food waste schemes promoted through following measures:

- Initiate food waste collection from all generators of waste for food composting/anaerobic digestion for energy

For large kitchens encourage onsite dewatering systems to reduce waste volume

- Initiate Waste Oil Collection for biodiesel from large generators

Waste from Energy is a potential route for much residual waste collected by a commercial waste collector

Disposal of waste

Residual general waste collected by a Commercial waste collector will be typically passed through a waste recovery facility so that practically all waste is diverted from landfill.

Example: When refuse has been generated and it is not able to be reused, recycled, or converted to energy, the final stage would be to dispose of it.

Action: In minimising waste disposal and ensuring that disposal is undertaken sustainably, the following steps can be followed:

- Investigate the use of the existing Waste Recycling, Recovery, Composting and Transfer Facility at Bidston in order to minimise the environmental costs of transporting the waste
- If it is at full capacity, develop further local opportunities in conjunction with the local council and the Circular economy initiatives

3.5 Sustainable Engineering

The approach to the design of buildings will be to explore and where possible include sustainable solutions such as lower carbon impact materials and improved construction technologies.

At this outline stage of design, Wirral Growth Company will commit to sustainable principles, as follows:

- To maximise the carbon-saving potential within the context of overall commercial viability and a “total carbon footprint” approach to understanding and reducing carbon emissions
- To embrace the potential for other carbon mitigation measures allied to the wider community

3.6 Superstructure

The approach to the design of the superstructure has been to holistically explore, and where viable implement engineering solutions structural materials whilst also considering the interface with the wider sustainability drivers summarised as follows:

- Flexibility for changing use - The super-structure has been designed with a column free floor plate to maximise future flexibility for changing internal layout and distribution of services.
- Maximising structural repetition – The structural components have been optimised to maximise repetition and hence opportunity for offsite construction techniques. This will reduce waste through manufacturing and construction process and the simplification of interfaces with other construction components.
- Low embodied carbon – The superstructure options have been assessed for the embodied carbon in the primary structural components. The material specifications of these components will be further developed through detailed design and construction in conjunction with the Contractors supply chain.
- Design for recycling – The superstructure options have been assessed against the future requirement for dismantling and re-cycling or repurposing.

3.7 Sub Structure

The approach to the design of the substructure has been to holistically explore, and where viable implement engineering solutions which minimise works and materials in the ground, as summarised as follows:

- Establishing a superstructure solution which is relatively lightweight hence minimising supporting sub-structures
- Early site investigations to accurately profile the bedrock formation to accurately establish pile lengths
- Minimising depth of excavations to minimise excavated materials to be taken of site hence reducing forward impacts on the road network
- Using low embodied carbon cement mixes to respond to the local ground conditions and design life whilst minimising embodied carbon

3.8 Drainage

The approach to the design of the surface water drainage has followed the principals of Sustainable Urban Drainage Systems, as summarised as follows:

- Reducing surface water discharge into the public sewer
- Considering climate change allowances when assessing flow rates
- Providing surface water attenuation design structures with maximum design life to minimise requirement for repair or replacement
- Where possible using landscaping features to slow surface water ingress into the public sewer and/or provide localised attenuation

3.9 Water

The design of potable water systems will consider methods of reducing and conserving water consumption.

There are a number of opportunities for reducing water consumption that will be considered in the development, including:

- Dual flush WCs (using 4/6 litre flushes)
- Aerated / Spray taps
- Waterless Urinals
- PIR controls on wash hand basins
- Flow restrictor valves
- Leak detection meters and shut off

3.10 Sustainable Materials and Resources

This section outlines how the development can practically meet the objectives in relation to the selection of materials and conservation of natural resources. The key principles that will be employed where possible and feasible are:

- Minimising the volume of materials used
- Using recycled materials
- Using materials which are naturally self-regenerating
- Using locally sourced materials
- Avoiding materials which are harmful to environment and health - insulants with Global Warming Potential of less than 5
- Transport materials to site by water where possible
- Using or recycling demolition materials
- Adopting BRE's Green Guide to Specification as standard method for specifying materials
- Using the BREEAM life cycle and carbon assessment points to achieve excellent rating

During the detailed design and procurement process materials will be considered in accordance with the following criteria:

- Maximisation of the specification of materials which are inert such as (glass/concrete, ceramics)
- Maximisation of the use of materials which can be recycled easily (timber, steel) – see „superstructure“ section regarding steel. For sustainable timber it is not the intention to use timber as a structural element on this project although a timber frame option for the mezzanine floor will be considered as an option. Non-structural timber from sustainable sources can be prescribed.
- Minimisation of the use of hazardous materials
- Maximisation of the specification of materials which have a percentage recycled content
- Maximisation of the specification of materials which have a local content
- Minimisation of the specification of materials containing PV
- Maximisation of the specification of low VOC paints
- Minimisation of the use of solvent based mastics and sealants
- Avoidance of the use of tropical timber and plywood unless FSC certified
- Ozone Depletion – Use of products with ozone depleting chemicals would not be specified where practical alternatives are available

4.0 Conclusions

4.1 Plot A

Refer to the separate Plot A Energy and Sustainability Statement dated 6th August 2020 for the measures included

4.2 Future

The Sustainability and Infrastructure Statement sets out the broad strategy for developing the Wirral Growth Company as an exemplar project of sustainable development. It sets out a wide range of outline sustainability principles which will inform the implementation of the development.

The sustainability approach is a holistic one focusing on:

- How the proposals are inherently sustainable in principle, due to their location scale, scale and mixed range of proposed uses
- How the development is committed to (and where possible bettering) sustainability objectives and targets; and
- How the parameters and principles that underpin the application might be implemented to embrace both latest thinking and improving technical solutions.

In considering how the objective of creating a truly sustainable development can be achieved, it is important to understand the wide range of sustainability related targets as set out in national, regional and local policy, as well as their evolving nature.

The project aspires to use the scale of the development, the long-term time horizon over which it is expected to be built out. Accordingly, the sustainability strategy embraces all dimensions of the development's sustainability including sustainable economic growth; sustainable transport and movement; sustainable design; sustainable energy; sustainable waste management; sustainable engineering and sustainable material and resources. The following key sustainability principles can be drawn out of the strategy and which will inform the implementation of the scheme:

- **Sustainable Economic Growth:** The scheme seeks to deliver sustainable economic growth and investment in an area that has suffered a major decline in its population and economic base. The principal aim is to deliver a „transformational“ agenda in Inner Wirral and a legacy of sustainable regeneration
- **Sustainable Transport and Movement:** The transport strategy is to create sustainable forms of movement of goods and products and trade customers through a site location with multi-modal access by water, air, rail and road
- **Sustainable Design:** creating a scheme which has low energy demands; uses low carbon technology approaches throughout the site; incorporates the use of renewable technologies; incorporates large scale, site wider sustainability initiatives; and incorporates green infrastructure
- **Sustainable Energy:** a commitment to exploring opportunities to include sustainable energy solutions as part of the scheme such as improved thermal performance, installation of photovoltaic tiles and store water retention and optimising passive design
- **Sustainable Waste Management:** consideration will be given to a range of construction methods to reduce waste through the construction process, including maximisation of prefabricated building structures and standardisation of unit specification within building. An integrated waste management strategy will be developed for the operational phase of development which will follow the principles of the waste hierarchy, namely avoid - re-use – recycle – waste-to-energy – disposal
- **Sustainable Engineering:** seeking opportunities to use sustainable construction methods, including use of steel construction materials, off- site manufacturing of materials; re-use of materials from demolished structures and excavated during site preparation works and minimising water consumption through a range of measures
- **Sustainable Materials and Resources:** minimising the volume of materials used; using recycled materials where possible; using locally sourced materials; transporting materials to site by water where possible; minimising the use of hazardous materials and maximising the specification of materials which have a percentage recycled content.

In the circumstances this Sustainability and Infrastructure Statement establishes broad principles which will inform the detailed design of the development. This provides the necessary flexibility to allow for the requirements of investors and end users to be designed into the scheme, whilst at the same time providing sufficient certainty and a clear commitment that the overall objective of delivering an exemplar project of sustainable development will be achieved.

We propose use the current regulatory guidance to provide buildings to a high standard of performance for energy and carbon emissions. We will demonstrate the overall sustainability of the proposed commercial buildings via a BREEAM rating system with new commercial buildings designed to achieve a BREEAM rating of excellent and an EPC A rating.

Within the BREEAM rating system points are awarded for the carbon emissions efficiency of the building as one of the larger factors, but in addition to that we are proposing to review development against government targets based upon carbon the neutrality in the future. The meaning and achievability of carbon neutrality is the subject of ongoing debate nationally, however the UK Green Building Council are leading the way to developing a framework and timeline towards zero carbon and we will consider this in our proposals.

We proposed to use a lean mean and green approach and each building will be delivered through the utilisation of a holistic approach, which considers, plans and monitors the use of natural resources.

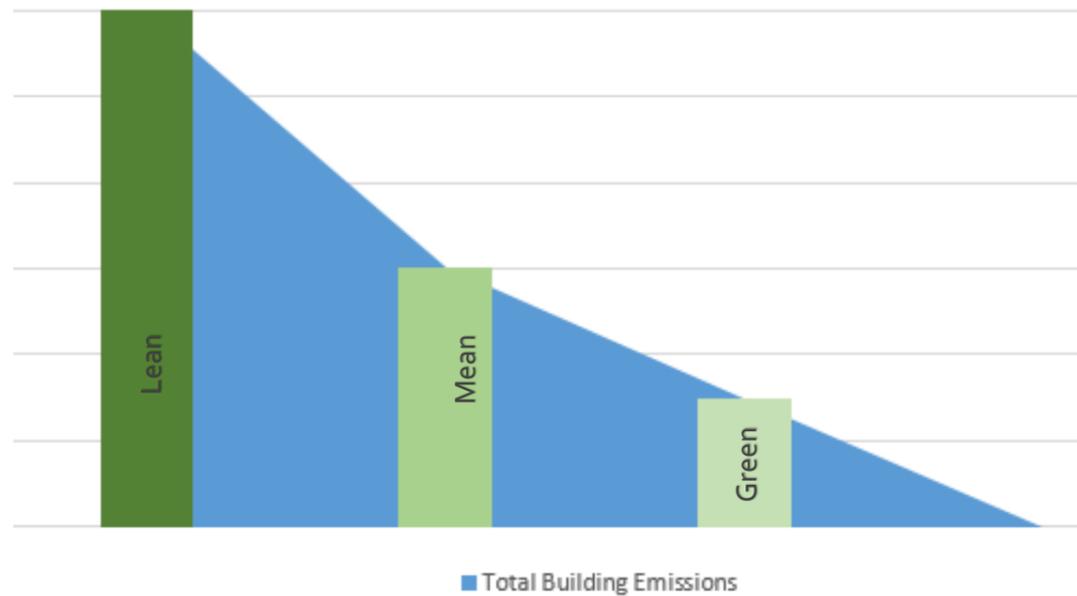
The strategy for achieving this is outlined as follows:

The Energy Hierarchy

The strategy for reducing carbon dioxide (CO₂) emissions and energy consumption within the new buildings will be to embrace a lean, mean and green approach as defined in figure 1 below.

- **Lean** – Reduce need for energy consumption by using advanced building modelling software and passive construction techniques – Can often have the biggest impact on reducing energy consumption and emissions from the baseline.
- **Mean** – Use energy as efficiently as possible through incorporation of high-efficiency systems and effective controls – further reduces demand and subsequent emissions.
- **Green** – Supply energy from low or zero-carbon technologies to help realise emission targets – contribution to remaining demand with low carbon solutions.

Fig 1 The Energy Hierarchy Principle



We propose to consider the use where applicable of a wide range of current low energy and renewable technologies including

Lean

- Specifications of materials and thermal properties and shading selected using passive design analysis and thermal modelling

Mean

- Ventilation with inverter driven fans
- Heat recovery
- Air quality CO₂ controlled
- Instantaneous water heating
- Timed percussion spray taps and flow restrictors
- Automatically switched power factor correction equipment.
- Low energy lighting installation utilising LED lamp sources.
- Automatic lighting controls with occupancy and daylight sensing.
- Regenerative drive technology used in passenger lifts.
- Automatic BMS controls and energy metering system.
- Zoned lighting and heating controls to meet BCO recommendations
- Metering of lighting and power in each tenant space 4 potential zones per floor
- Metering and monitoring of water supply to avoid leakages
- Auto water shut off to toilet areas to avoid leakages causing wasted water
- Improved building sealing to improve air leakage rate, insulation levels and glazing

Green

- Renewables Options
 - a) High efficiency air source VRF heat pumps with heat recovery technology
 - b) Photovoltaics
 - c) Solar Water

A factor in assessing a building’s carbon emissions are the levels of carbon from the fuel source chosen or utilised in any design. There have been major developments in the source and therefore carbon factors for grid electricity with fossil fuels being much reduced in use. This has led to a review of the building regulations guidance on carbon factors which will be amended later this year or by early 2021.

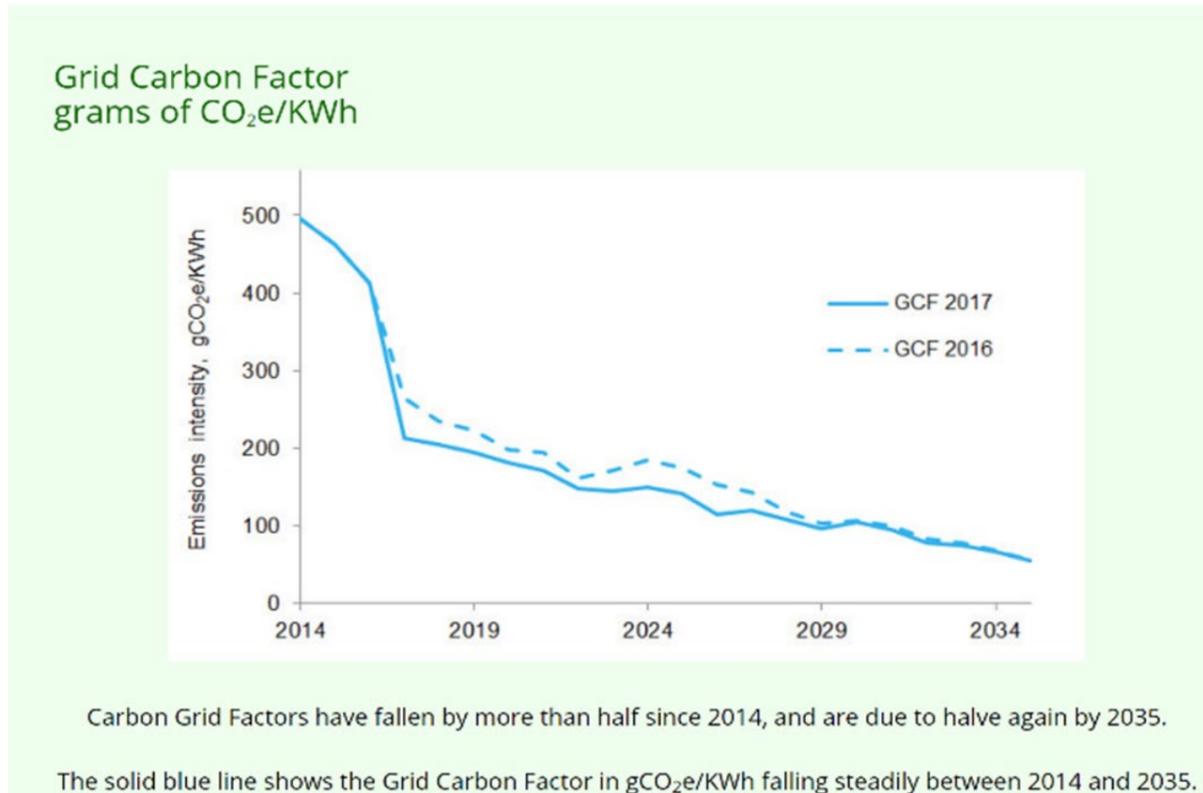
Table 1 below shows comparative emissions for fuels based on grams of carbon per kwh for current and proposed building regulations.

Table 1 – Building Regulations Emissions

	Existing Building Regulations	Proposed Building Regulations
Mains Gas	216	210
Grid Electricity	519	233

The data in table 2 below confirms that grid electricity has already reduced its actual carbon emissions by 40% since 2014 and that the carbon factor for electrical grid energy are going to continue to be improved by use of green technologies:

Table 2 - Carbon Factors for Grid Electricity



Our proposal is that all buildings where possible will be designed with zero on site fossil fuel and be powered entirely by grid electricity. We know that grid electricity is currently operating at under 200grams of carbon per kWh which is around 40% of the 2014 levels and will continue to improve towards the 2030s. Currently this will be applicable to most commercial buildings and apartments. Town houses or some other residential types and some commercial uses may still require gas to be installed.

While each scheme will be assessed for viability for renewables and low carbon technologies the most likely viable technology for typical commercial buildings would be air source heat pumps and the table below shows the reduction in emissions over fossil fuel options taking account of the current reduced carbon emissions demonstrated in the table above. As shown in table 3, the carbon emissions will continue to reduce with grid electricity which will decarbonise both new and existing buildings as the phases develop.

Table 3 below shows comparative emissions for different technologies demonstrating the low carbon efficiency provided by heat pumps provides an 80% comparative reduction in carbon emissions by avoiding gas fired heating.

Table 3 – System Carbon Emissions Comparisons

System Type	Efficiency	Carbon Emissions Grams / kWh of energy in building
Air or Ground Source Heat pumps	460%	44
Direct Electric heating	100%	215
Gas boiler	85%	215
Oil Boiler	85%	320
Coal	50%	630

The data in table 2 when applied to the equipment benefits in table 3 will result a huge improvement over time which would align with the current recommendations of the UK Green building Councils targets towards zero carbon by 2050 and provide a 90% reduction in carbon emissions against the current SAP 2012 assessment.

As this long-term project evolves, the understanding of climate change and how to deal with it will improve, resulting in new policies and targets. The approach to the scheme is predicated upon meeting and, where possible, exceeding prevailing policy targets. It is important to highlight that although compliance with policy targets is embedded at the heart of the proposals, the economic viability and delivery of the project is also critically important. Balances and choices will be made about how sustainability targets can be and are best met. For example, it could be that not all targets can be met within the first phase of development but that a gradual increase in the sustainability of the project over time will ensure it is both deliverable and sustainable and by using the decarbonisation of the grid existing buildings will also improve in carbon emissions

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