

Network Rail

**170248 Headbolt Lane New
Station GRIP 4**

Sustainability Statement

170248-ARU-REP-EEN-000020

Final | August 2021

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Executive Summary

This sustainability Statement has been prepared on behalf of Buckingham Group Contracting Limited in support of the planning application for the development of the new Headbolt Lane Station Interchange in Kirkby. The purpose of this statement is to describe how the proposed station and car park addresses the sustainability requirements specified in Liverpool local planning policy and highlights the sustainable aspirations for the project.

This sustainability strategy links to the UN Sustainable Development Goals and takes a wide ranging, holistic and practical approach to the sustainable opportunities for the project.

This report makes a clear case that this project has sustainability ambitions. The design aims to reduce its impacts on the environment and to create a positive asset to the local community and economy in a wide range of areas. The development will facilitate the creation of jobs in the local economy and in a carbon neutral way.

The key sustainability aspects of the proposed development are summarised in the table below.

Aspect	Design Response
Energy and carbon emissions	The building has been designed to exceed the carbon targets set out by building regulations. The project has focused on reducing energy consumption through passive design measures and increasing efficiency in line with the energy hierarchy.
Water	The project has significantly reduced water consumption by water efficient fittings such as low flow sanitaryware.
Surface water and flooding	Under EA Guidance, there is a requirement for a flood risk assessment as the project is in Zone 3 and is a large site. Surface water run-off shall be collected, conveyed, treated (where appropriate) and discharged primarily by infiltration into the ground, and an anticipated outfall will still be required into Kirkby Brook. The surface water peak discharge rates will be restricted to Greenfield run-off rates (5 l/s).
Materials	Low embodied energy materials will be specified throughout where possible in addition to key materials being procured locally where possible.
Waste	Waste production during construction will be carefully monitored and controlled. Waste has also been reduced through optimisation of the building design.
Pollution	Local light pollution and noise pollution will be minimised where possible. Local air pollution has been minimised through specification of Air Source Heat Pumps.

Health and Wellbeing	The building has been designed with great consideration of health and wellbeing both internally and externally. For example, focus on improved air quality, biophilic design, accessibility, and improved daylighting.
Management	Client involvement will be sought throughout the design process and construction process, improving the appropriateness of the design. In addition, an effective handover process will be implemented.
Sustainable transport	The Headbolt Lane Station has excellent access for cycling and pedestrians as well as by car. The addition of the station improved the public transport links for the local area to the local commerce hubs in the city’s, so improves the sustainability of the transport to these areas by promoting train travel.

1 Introduction

1.1 Project Description

This Sustainability Statement has been commissioned by Buckingham Group Contracting Limited (BGCL), on behalf of Network Rail (“the Applicant”), to accompany an full planning application for the development of Headbolt Lane station, car park and associated railway line works.

1.2 Purpose and Scope

The purpose of this statement is to describe how the Headbolt Lane station and car park elements of the Proposed Scheme addresses the sustainability requirements specified in the Knowsley Local Plan Core Strategy (see Section 3) and highlights the sustainable aspirations for the project. The Headbolt Lane station and car park elements of the Proposed Scheme are referred to in this report as ‘the proposed station and car park’.

1.3 Description of Site

The proposed station and car park is situated in an area of green space adjacent to the A506 to the west and Headbolt Lane to the north (‘the Site’). The Site lies approximately 900 m north east of the centre of Kirkby.

The railway corridor element of the proposed station and car park is on the existing Liverpool-Wigan rail corridor between the existing Merseyrail Kirkby station to the Site. The alignment of the rail corridor is roughly south-west to north-east. For the majority of its length the existing rail corridor is bounded by residential properties to the north and south (shown in Figure 1: The Proposed Station and Car Park *Location (boundary in red)*).



Figure 1: The Proposed Station and Car Park Location (boundary in red)

1.4 Description of the Proposed Scheme

The Proposed Development comprises of the following features:

- railway line upgrade to a twin track and associated infrastructure (third line electrification, signalling etc);
- supply bulk point and substation to accommodate electrification of rail corridor upgrades and for the new station;
- a new station located on land at Headbolt Lane;
- a new car park comprising of approximately 300 spaces and associated structures (signage, waiting shelters and car park lighting) and to service the new station;
- new vehicular and pedestrian access including two footbridges over Kirkby Brook and a road bridge to access each section of the car park;
- associated landscaping; and
- decommissioning works to the existing Kirkby Station.



2 Sustainability Overview

At its core, sustainability describes the net positive or negative impacts of a project on the environment and community. A project with a net negative impact each year will deplete resources and not be sustainable in the long term. A project with a net positive impact contributes rather than takes from the local and wider area and is therefore ‘sustainable’ in the long term.

2.1 Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a set of 17 goals developed by the United Nations (UN) (see *Figure 3: The Sustainable Development Goals*). The goals cover a broad range of social, economic and environmental issues and set out the main global challenges. The goals provide a universal agenda that is not restricted to developing countries. An increased focus on these issues will provide benefits to all. They are also deliberately targeted at business and industry, enabling efficient solutions to be developed as part of growth and commerce. Each section of the report will highlight the SDG’s that the project will influence.



Figure 3: The Sustainable Development Goals

A focus on carbon emissions and energy usage are the most commonly recognised ways of being ‘sustainable’. These environmental issues are important; however, social and economic factors also contribute significantly to the sustainability of a development.

2.2 Sustainability Strategy for Headbolt Lane

At an early stage of design, Arup set a sustainability strategy for the project, using the SDGs.

Arup have carried out an initial prioritisation exercise and SDG workshop narrowing the breadth of the SDGs to focus on the areas which are important to this project, within our sphere of influence:



Figure 4: Initial prioritisation of SDG's

2.3 Potential Interventions and Initial Next Steps

The opportunity areas for the proposed station and car park were identified, and the potential for impact set out in *Figure 5: Sustainability Strategy Potential Interventions and Initial Next Steps*. For that impact to be realised and yield real outcomes, action needs to be taken.

Operational Carbon - Work towards net zero carbon with high efficiency	Resource Impacts - Structure to calculate embodied carbon and benchmark against established standards and criteria - Project specific sustainable materials specifications to be developed - Optimisation of loading allowances/elements where appropriate to avoid over-design/specification of elements	Health & Wellbeing - Include priority principles if no certification
Engagement - Engagement with rail operators - Engagement with key stakeholder - Engagement with the local community - Engagement with agents that buy into ethos.	Flexibility & Adaptability - Structural frame approach allows for reconfiguration of interior spaces should future need arise	Community - Improve transport links to the community. - Facilitates connection between the major commerce hubs - Public accessible building that is a safe and good place for people to meet

Figure 5: Sustainability Strategy Potential Interventions and Initial Next Steps

2.4 The Three Pillars of Sustainability

When assessing a project’s sustainability, the three pillars of sustainability must be considered. The three pillars are: environmental impact, economic impact and social impact. The UN’s SDGs address all three pillars of sustainability (*Figure 6: The three pillars of sustainability*).

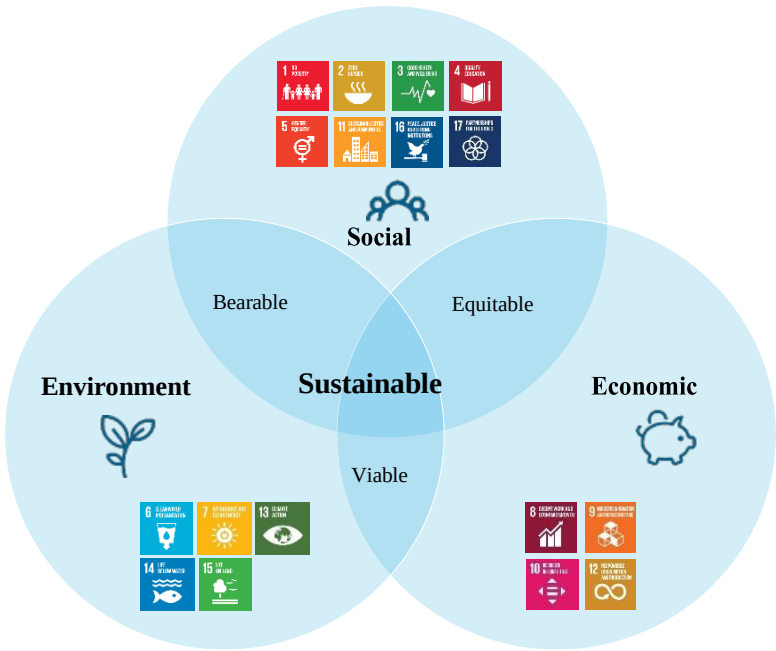


Figure 6: The three pillars of sustainability

3 Regulatory Standards

3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published by the government in July 2018, revised and updated in January 2019. The document sets out the government’s planning policies for England and how these are expected to be applied. This document focuses on the three pillars of sustainability identified in section 2.8 of the NPPF:

Environmental	 “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”
Social	 “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”
Economic	 “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”

The NPPF provides the framework and basis that the local government sustainability policies should build on. Therefore, by complying with local government policies, the criteria of the NPPF are considered to have been met.

3.2 Knowsley Local Plan: Core Strategy

The Knowsley Local Plan Core Strategy was adopted in January 2016. It aims to set out the vision, objectives and policies which will guide development within Knowsley up to the year 2028.

The following policies address the energy and sustainability of the development:

SD1: Sustainable Development
CS1: Spatial Strategy for Knowsley
CS2: Development Principles
CS5: Green Belt
CS7: Transport Networks
CS8: Green Infrastructure
CS19: Design Quality and Accessibility in New Development
CS22: Sustainable and Low Carbon Development
CS23: Renewable and Low Carbon Infrastructure
CS24: Managing Flood Risk

CS25: Management of Mineral Resources
CS26: Waste Management

3.3 Merseyside and Halton Joint Waste Local Plan

The Merseyside and Halton Joint Waste Local Plan was adopted in July 2013. It sets out the planning strategy for the sustainable management of waste across the sub region. It includes site allocations for waste management uses and is a constituent part of each district’s Local Plan.

The following policies address the energy and sustainability of the development:

Policy WM 8 Waste Prevention and Resource Management
Policy WM 9 Sustainable Waste Management Design and Layout for New Development
Policy WM 11 Sustainable Waste Transport

3.4 Sustainability Assessment Methods

3.4.1 CEEQUAL

The Civil Engineering Environmental Quality Assessment and Awards Scheme (CEEQUAL) is a similar environmental and sustainability assessment and rating scheme developed specifically by the BRE for infrastructure projects. Like BREEAM, the CEEQUAL process evaluates projects based on performance and is independently certified on a scale of Pass, Good, Very Good and Excellent.

The Proposed Development is aiming to achieve a CEEQUAL Very Good rating at design stage and on completion of construction.

4 Energy and Carbon Reduction

CS2: Development Principles
CS19: Design Quality and Accessibility in New Development
CS22: Sustainable and Low Carbon Development
CS23: Renewable and Low Carbon Infrastructure

Energy consumption and carbon emissions are key sustainability metrics against which most developments are measured, and they are of primary importance to the sustainability of the proposed station and car park so the issue is also addressed here.

Energy production and consumption is the main driver of greenhouse gas emissions and global warming. Non-domestic buildings contribute 18% of UK carbon emissions. The energy hierarchy sets out the order in which energy saving measures should be prioritised:

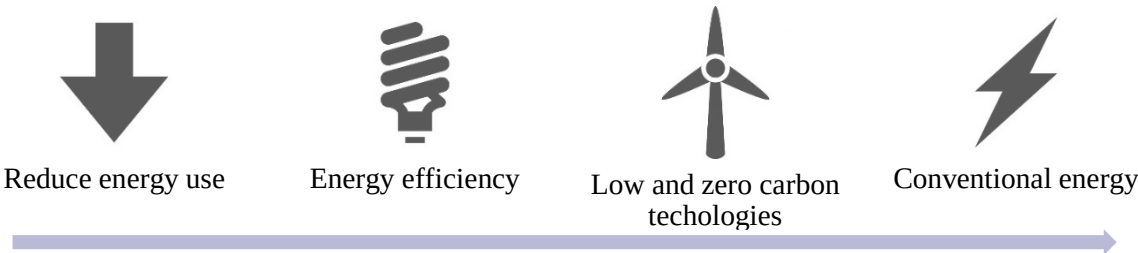


Figure 7: Energy Hierarchy

The energy reduction hierarchy has been applied to the design of the proposed station and car park and will continue to be used as a framework as the design develops. The sections below describe the key principles that will be considered to lessen the impact of the development on the environment and reduce the carbon dioxide emissions.

4.1 Reduce Energy Use

The main ways energy use can be reduced is to consider the various passive design principles and empower users to understand their energy use to enable them to take action.

4.1.1 Passive Design

Incorporating passive design measures helps to reduce the energy consumption of a building through reduced heating, cooling, mechanical ventilation, and lighting loads. Passive design principles consider a building’s layout, form, and fabric to help to reduce energy demand.

The passive design measures which will be considered for the proposed station and car park include:

- Building Envelope Permeability – An enhanced standard of air tightness will be targeted to limit the heat losses across the building envelope. Building Regulations Approved

Document Part L2A calls for the measured air permeability of the building to be limited to 10m³/h.m² at 50 Pa. An air permeability rating of 3 m³/h.m² @50 Pa will be targeted.

- Building Fabric Performance – The extent of insulation to conditioned spaces improves the performance of the building fabric, helping to reduce heating demands and result in lower energy consumption of the building. *Table 1: Headbolt Lane Facade Performance Criteria* shows the proposed U-values of the building fabric elements, and their improvement against typical values.

Table 1: Headbolt Lane Facade Performance Criteria

Element	Notional Building U-Values (W/m ² K)	Maximum Building U-Values to be adopted (W/m ² K)
Door	2.0	2.0
External Wall	0.26	0.2
Internal Partition	-	1.8
Roof	0.18	0.16
External Floor	0.22	0.22
Glazing	1.6	1.4
Skylight	1.6	1.4

Air Tightness Target	3	m ³ /(h.m ² @50 Pa)
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Façade	N	E	S	W
Maximum G- Value	0.35	0.35	0.35	0.35

- Glazing – High performance glazing will be used to reduce the solar gains in the occupied spaces, limiting the cooling loads and therefore reducing the buildings’ energy consumption. This will be of particular importance for the Booking Hall, due to the potential for high occupancy combined with substantial glazing percentage in order to achieve good daylighting levels. *Table 1: Headbolt Lane Facade Performance Criteria* shows the proposed G-values of the proposed glazing elements, and their improvement against typical values.
- Daylighting Strategy – The booking hall will be designed to have a high daylight factor, maximising natural light to reduce the overall amount of artificial lighting needed,

- providing a much more natural environment for the occupants. The daylighting strategy will take into consideration the thermal comfort.
- Natural Ventilation – The design of the booking hall enables a natural ventilation strategy to be employed, utilising high and low level openable windows or vents to provide ventilation to occupants and to allow a sufficient air exchange to prevent overheating, hence reducing overall energy load associated with ventilation.

4.1.2 Energy Metering

Metering will be provided to monitor:

- Incoming utility supplies
- separate metering to lighting and power installations.

Metering of energy consumption will be used to help to influence occupant behaviour by providing them with a clear indication of their energy use.

4.2 Energy Efficiency

Energy efficiency is vital in reducing operational energy over the lifetime of equipment and subsequently the proposed station and car park as a whole.

4.2.1 Lighting

The internal lighting designs will minimise energy usage by maximising the use of natural light and the installation of energy-efficient LED fittings. This will reduce energy consumption and limit internal heat gains, further reducing energy consumption through reduced peak cooling load.

Internal lighting will be controlled through automatic and zonal control to reduce unnecessary consumption of energy.

Any external lighting will have a high efficacy and be dimmable to 50% output when there is no pedestrian activity in the external spaces and shall be respond to available daylight. The control shall be triggered by a photocell and presence detector integral to the luminaire. When daylight falls below a threshold (e.g. 50lux ambient daylight) the luminaires will be energised to 100%. Following a period (e.g. 30minites) of pedestrian inactivity registered by the presence detector, the luminaires will dim to 50% output. If the presence detector is triggered, the luminaires return to 100% output and the cycle starts again. When the ambient daylight increases above the threshold the lighting is extinguished.

4.2.2 Mechanical Systems

While the booking hall will adopt a natural ventilation strategy, the offices and back of house areas will be provided with mechanical ventilation. Mechanical ventilation will be provided in line with current CIBSE design guidance and will provide sufficient volume to remove odours and limit the build-up of carbon dioxide from respiration, without unnecessary over-ventilation leading to additional energy consumption as requested from the relevant building standards.

Mechanical systems within the building will have high efficiencies and utilise heat recovery for further reductions in energy consumption and CO₂ emissions.

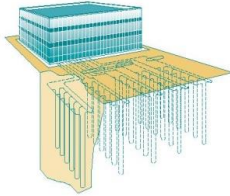
4.3 Low and Zero Carbon Technologies

This section gives a brief description of LZC technologies considered and evaluates the viability of installing them within the development. This initial assessment aims to eliminate technologies that are fundamentally incompatible for the project while those identified as viable will undergo a further review on their viability.

Table 2: LZC study summary

Technology	Viability	Description & Suitability
Solar Thermal 	✗	
Photovoltaic Panels 	Assess	
Small Scale Hydro Power 	✗	Liverpool
Tidal Power 	✗	
Wave Power 	✗	
Wind Turbines 	✗	There are public areas and residential properties, all of which could be disturbed by a wind turbine. This technology could face significant opposition from the public.

Biomass Single Room Heaters/Stoves 		public building with
Biomass Boiler 		
Biomass Combined Heat and Power (CHP) 		
Biodiesel Combined Heat and Power (CHP) 		
Gas Combined Heat and Power (CHP) 		
Tri-generation 		

Ground Source Heat Pumps 	Assess
Air Source Heat Pumps 	Assess
Water Source Heat Pumps 	
Geothermal Heat Pump 	

4.4 LZCT Conclusions and Recommendations

The final recommendations are as follows:

Table 3: Summary of system recommendations

LZC Technology	Recommendation	Reason
Photovoltaic (PV) Panels	Potential Supplementary Technology	The station building has a pitched roof which faces North West and South East which would provide a good location for PV. Due to the size of the development, PV is a better used of roof space than solar thermal as the building has very small domestic hot water load. As the development is small, a significant proportion of the building’s energy could be produced this way.
Ground Source Heat Pumps	Not recommended	GSHP provides a reasonable amount of energy and the carbon reduction is also significant. However, they would require a large amount of bore holes. The initial capital cost of such a system are significantly high, so are not recommended for a development of this size.
Air Source Heat Pumps	Recommended	Utilising ASHPs to provide all the space heating provides a significant contribution to the energy generated by LZC. This provides a significant carbon reduction as well as a low capital cost. The payback period is also favourable. ASHPs would be recommended for this project.

The conclusions of this assessment recommend that air source heat pumps should be used for the generation of space heating. Should the client wish to further decarbonise the development, Photovoltaic panels could be considered as a supplementary carbon reduction technology.

4.5 Policy Appraisal

Policy Ref.	Response	SDG Goal(s)
Knowsley Local Plan: Core Strategy Policy CS2 : <i>Development Principles</i>	The station building services will be designed to reduce carbon emissions and meet all required minimum standards, such as building regulations. Air Source Heat Pumps will be used to generate heat for the building, providing lower carbon emissions than traditional gas boilers. Natural ventilation will be adopted where applicable. The energy consumption is also minimised by fabric improvements reducing the heating demand. Systems have been designed to be simple for ease of maintenance and to enable systems to run optimally, not inefficiently.	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 11 SUSTAINABLE CITIES AND COMMUNITIES 12 RESPONSIBLE CONSUMPTION AND PRODUCTION 13 CLIMATE ACTION
Knowsley Local Plan: Core Strategy Policy CS19 : <i>Design Quality and Accessibility in New Development</i>	The development integrates sustainable design principles and energy and resource efficiency to address the challenges of climate change. Systems have been designed to sufficiently meet building demand while minimising energy consumption.	11 SUSTAINABLE CITIES AND COMMUNITIES 13 CLIMATE ACTION
Knowsley Local Plan: Core Strategy Policy CS22 : <i>Sustainable and Low Carbon Development</i>	The building will meet demands by supplying energy efficiently and incorporating decentralised energy systems, using renewable and low carbon energy where feasible. The ventilation strategy will incorporate natural ventilation in the booking hall and high efficiency mechanical ventilation in the office areas.	11 SUSTAINABLE CITIES AND COMMUNITIES 12 RESPONSIBLE CONSUMPTION AND PRODUCTION 13 CLIMATE ACTION
Knowsley Local Plan: Core Strategy Policy CS23 : <i>Renewable and Low Carbon Infrastructure</i>	The development will use low and zero carbon technologies. Heating and cooling will be generated by heat pumps and the use of PV could be explored to generate energy.	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 13 CLIMATE ACTION

5 Water Consumption

CS8: Green Infrastructure
CS22: Sustainable and Low Carbon Development

Water is set to become an important and valuable resource as climate change alters summer weather patterns. Even now, longer periods of drier conditions are becoming more frequent. The water consumption hierarchy sets out the order in which water-saving measures should be prioritised.

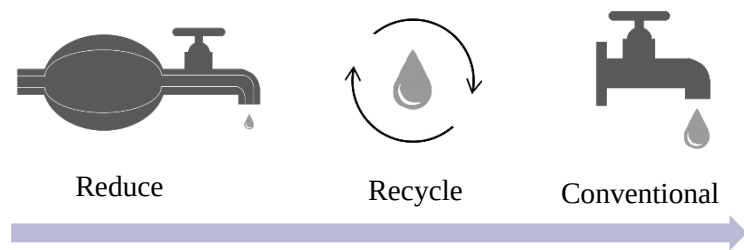


Figure 8: Water consumption hierarchy

5.1 Reduce

5.1.1 Efficient Fittings

The installation of low flush volume toilets and low flow rate taps (3.7 L/minute) and showers (6 L/minute) will be considered to reduce the amount of water consumed.

5.1.2 Leak Detection

Reducing leakage and removing inefficiencies can help to reduce potable water consumption. Leak-detection systems and flow-control devices is proposed to minimise the risk of water leaks from sanitary fittings. Sanitary supply shut-off devices are being proposed to be installed on the water supplies to the toilet areas.

5.1.3 Metering

Water metering systems enable water consumption to be monitored and managed, and therefore encourage reductions. Water metering systems are being proposed, providing the owners with a clear indication of their water use.

5.1.4 Construction Water

The main contractor will be required to operate an environmental management system and monitor, record and report water consumption and data resulting from all on-site construction processes. This will be detailed in the Construction Environmental Management Plan.

5.2 Recycle

Promoting alternatives sources of water, such as rainwater harvesting or greywater reuse, for purposes that do not require drinking water quality, such as irrigation, can help to reduce the demand for potable water and reduce the volume of water discharged to sewage systems.

However, it is unlikely that water reclamation will be feasible for the proposed station and car park as there is limited roof space available for harvesting and the need for reclaimed water is reduced due to a lack of significant water demand for the building.

5.3 Policy Appraisal

Policy Ref.	Response	SDG Goal(s)
Knowsley Local Plan: Core Strategy Policy CS8: Green Infrastructure	See section 5.1.4 The development will mitigate water pollution into the nearby watercourse, during both construction and operation.	 
Knowsley Local Plan: Core Strategy Policy CS22: Sustainable and Low Carbon Development	See Section 5.1.1, 5.1.2 & 5.1.3 The development will make the most effective and sustainable use of water. The building is designed to be water efficient through responsible consumption of resources, with metering to allow end users to manage their consumption. Efficient fittings will be used in toilets, taps and showers.	  

6 Materials and Waste

CS19: Design Quality and Accessibility in New Development

CS22: Sustainable and Low Carbon Development

CS25: Management of Mineral Resources

CS26: Waste Management

Policy WM 8 Waste Prevention and Resource Management

Policy WM 9 Sustainable Waste Management Design and Layout for New Development

Policy WM 11 Sustainable Waste Transport

A building's environment impact can be divided into two categories:

- Operational impacts (carbon emissions, waste produced etc.)
- Impacts of construction (material consumption, construction emissions etc)

The impacts caused during construction and are often overlooked. As operational energy consumption begins to reduce, the relative importance of construction impacts increases. A key component of the construction impacts are those caused by the manufacture and transport of materials used on site.

Ensuring the legal and sustainable origin of materials is key to reducing the impact of construction, particularly in terms of social sustainability and environmental performance.

6.1 Local Sourcing of Materials

Many of the materials selected are common and as such there will likely be a number of potential suppliers, allowing local firms to be prioritised. A Sustainable Procurement Plan will be detailed in the Construction Environmental Management Plan. Sourcing materials locally has numerous sustainability benefits:

- Reduction of transport impacts
- Reduction embodied carbon as a result of reduced transportation distances
- Support of the local economy
- Creation of local jobs

6.2 Responsible Sourcing of Materials

Ensuring the legal and sustainable origin of materials is key to reducing the impact of construction, particularly in terms of social sustainability and environmental performance. The social, ethical and environmental impacts of the sourcing and supply of raw materials will be considered as part of the material selection process.

All timber and timber-based products used for the development will be legally harvested and traded timber. New timber will be supplied with a Chain of Custody (CoC) from Forest Stewardship Council (FSC), Programme for Endorsement of Forest Certification (PEFC) or Grown in Britain (GiB). This will help to reduce the environmental impact of forestry by ensuring timber originates from sustainable sources.

6.3 Robustness and Durability

Elements of the building and the development that will be subject to wear will be designed to increase durability and limit material degradation. This will help minimise the frequency of replacement of building components (reducing waste) and optimising material use.

The design and choice of external materials will consider protection from degradation due to environmental factors such as solar radiation, temperature variations, extreme weather conditions and pollutants.

Internally, in areas of high traffic (WCs, stairs, etc.), elements such as hard-wearing floors and door kick plates will be used to aid reduced material consumption.

6.4 Waste Prevention

The world has a finite capacity to absorb and deal with the waste society produces. Our current rates of consumption and waste production are exceeding the capacity of the natural environment. This poses significant long-term threats to the world's economy, communities, and environment.

The most significant opportunities for designing out waste are in the early stages of the design process. The actions undertaken throughout the evolution of design will determine the levels of materials consumed and waste generated during the construction as well as maintenance and the end of life phase of a project. The design team will consider materials and waste throughout the design of the development and investigate opportunities to avoid, reduce and re-use excavated materials on-site.

The use of tools such as Waste & Resource Action Program (WRAP) will be employed to increase the levels of recycled materials and reduce the amount of waste generated.

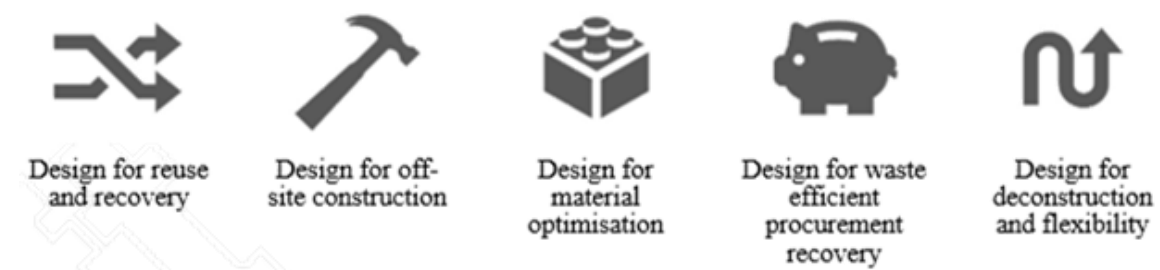


Figure 9: The 5 WRAP principles

Significant design interventions at present include:

- The primary structural frame is of steel construction and will therefore be able to be disassembled for future re-use/recycling. Sections will be hard stamped with section sizes/codes to facilitate this.
- The structural design is optimised to take into account specific imposed conditions (including accidental load cases) and therefore reduces material consumption and excavation requirements.

6.5 Construction Waste Management

The contractor will prepare a Material Management Plan and a Site Waste Management Plan which will set targets to reduce the amount of waste generated. Targets will also be set for the amount of waste diverted from landfill. Initiatives will be considered to aid the reduction of waste generated during the construction process, such as:

- The contractor will be required to operate an Environmental Management System which will involve monitoring, recording and reporting energy use, water consumption and transport data as a result of on-site construction.
- Waste segregation at source or the use of an off-site material recovery facility.
- Re-use of materials on-site where possible including soil and hard-core in landscaping and sub-bases.
- Agreements and partnerships with suppliers such as packaging and material take-back and waste return for re-use.
- Materials handling processes designed to avoid losses due to damage.

These initiatives are likely to both reduce wastage on site and save money for the contractor, making it more likely that they will be effective.

6.6 Policy Appraisal

Policy Ref.	Response	SDG Goal(s)
Knowsley Local Plan: Core Strategy Policy CS19: Design Quality and Accessibility in New Development	To address challenges of climate change the development should integrate resource efficiency. The structural design considers specific imposed conditions, and therefore reduces material consumption.	  
Knowsley Local Plan: Core Strategy Policy CS22: Sustainable and Low Carbon Development	Promote sustainable waste practices. See section 6.5 for the Construction Waste Management that will be adopted by the contractor.	  
Knowsley Local Plan: Core Strategy Policy CS25: Management of Mineral Resources	Construction and demolition wastes will be managed sustainably in accordance with the waste hierarchy. See section 6.5 for the Construction Waste Management that will be adopted by the contractor.	
Knowsley Local Plan: Core Strategy Policy CS26: Waste Management	Sustainable forms of waste management will be adopted. See section 6.5 for the Construction Waste Management that will be adopted by the contractor.	
Merseyside and Halton Joint Waste Local Plan Policy WM 8 Waste Prevention and Resource Management	Efficient use of resources will be considered throughout the design and development. The structural design considers specific imposed conditions, and therefore reduces material consumption.	  
Merseyside and Halton Joint Waste Local Plan Policy WM 11 Sustainable Waste Transport	The design of the development will consider access for sustainable waste transportation from the site. There are sustainable choices of travel from employees (rail, cycling walking). See section 6.5 for the Construction Waste Management that will be adopted by the contractor.	 

7 Health, Safety and Wellbeing

CS7: Transport Networks

As the majority of people's lives are spent indoors, the design and quality of the buildings can directly contribute to the health and wellbeing of the residents and other building users. Designing buildings, developments and spaces, which have comfortable internal environments that maximise good daylighting, with local facilities and open space, helps to enhance the health and wellbeing of the building's occupants and visitors.

7.1 Visual Comfort

Visual comfort is a significant contributor to overall health and wellbeing. The design of the proposed station and car park will consider several factors which will improve the overall visual comfort, including:

- Controlling the glare of sunlight – glare, which can be discomforting and distracting to building users, will be controlled via roller blinds. This will increase productivity and user satisfaction.
- Maximising the daylight factor and providing views out – the booking hall is predominantly glass, with full height glazing. This increases occupants' exposure to natural light and provides external views, enhancing their connection to nature, thereby improving mental wellbeing through improved moods, reduced symptoms of depression and support of circadian rhythms.
- Internal and external lighting zoning and control – the lighting controls provided to occupants will allow for zonal control of the indoor lighting. This has been shown to improve user satisfaction and mental wellbeing.

7.2 Thermal Comfort

Extreme indoor temperatures are linked to an increased risk of illness and have a direct effect on health and wellbeing. Measures will be taken to reduce extreme winter and summer temperatures; dynamic thermal analysis will be completed for the building ensuring comfortable indoor temperatures across the year. Future weather scenarios will also been considered, improving the climate resilience of the building.

The mechanical cooling and heating system for the office and back of house areas, will consider zoned control which can improve occupant comfort through localised control of the indoor environment to specific user preference.

7.3 Accessibility

The building has been designed to be inclusive to all ages and levels of mobility, ensuring the widest mix of users and uses are achievable on site. The accessibility measures include:

- Accessible toilets will be provided.
- Level thresholds will be incorporated throughout the building.

- The use of tactile paving being used to indicate steps, ramps, and roads around the site.
- Paving finishes being flush without any trip hazards.
- Well defined planter edges.
- There will be ramps and lifts throughout the development to provide access.
- Access gradients throughout the site to ensure suitable access is provided for wheelchair users.
- 1010mm wide doors will be used across the building.
- Designated disabled parking bays will be made available to the desired standard set.
- Grassed public amenity areas having points of flush threshold access to allow ambulant and non-ambulant disabled access.

7.4 Acoustic Quality

Noise can have a major impact on the mental and physical wellbeing of neighbours and cause disruption to wildlife. The impact of external noise pollution from the development will be considered and minimised by a professional acoustician.

A noise survey will be undertaken to assess daytime and night-time ambient noise levels around the site of the proposed new building, car park and platform and to establish background noise at nearby receivers. For further details see the 170248 Headbolt Lane New Station GRIP 4 Chapter 6: Noise and Vibration (170248-ARU-REP-EEN-000007).

Mechanical systems within the station building will be designed to not exceed the required noise ratings for the areas they are in thereby providing an acoustically comfortable office and retail environment.

Acoustic testing before and after construction will confirm that the targeted acoustic levels have been achieved.

7.5 Inclusive Design

The development will aim to be inclusive and accessible for all, incorporating the principles of inclusive design set out by the Commission of Architectures and the Built Environment (CABE):

- Inclusive – so everyone can use it safely, easily and with dignity.
- Responsive – taking account of what people say they need and want.
- Flexible – so different people can use it in different ways.
- Convenient – so everyone can use it without too much effort or separation.
- Accommodating – for all people, regardless of their age, gender, mobility, ethnicity or circumstances.
- Welcoming – with no disabling barriers that might exclude some people.

- Realistic – offering more than one solution to help balance everyone’s needs and recognising that one solution may not work for all.

The design of the buildings and external areas within the development will reflect the diversity of people that live, work and access the spaces. Inclusive design principles have been considered within the design.

7.6 Safety and Security

The safety and security plays an important role in the overall positive wellbeing of the staff and building users and will be addressed through the following measures:

- The Station Building will incorporate access card entry to staff and landlord areas as a measure to secure the building and to prevent unauthorised entry.
- CCTV will be provided throughout the car park, station building and station platforms.
- An intruder alarm will cover the internal perimeter of the station building.
- Adequate lighting will be provided to carpark and platform areas. Ticket vending machines and electric vehicle parking will be in areas that are well lit.

7.7 Amenities

The development consists of a railway station, station building and car park. The station offers connection to the city centre which offers a wide range of local amenities such as gyms, retail, commercial, café and theatres. A large number of scientific studies have demonstrated the positive physical and mental health benefits which come from access to these amenities. **Outdoor Space**

A large number of scientific studies have demonstrated the positive physical and mental health benefits to be gained by spending time in natural and green environments.

The current landscaping proposals (see *Figure 9: Landscaping proposals for the proposed station and car park*) include outdoor amiable space for social gathering and recreational activities. This includes several seating areas.



Figure 9: Landscaping proposals for the proposed station and car park

7.9 Biophilic Design

The presence of nature or nature-derived patterns can support occupant emotional and psychological wellbeing by improving occupant experience, mood and happiness.

The landscapes in the outdoor space and proximity to the watercourse will provide building users and visitors with a connection to nature.

7.10 Community and Wellbeing

The design of the development can influence the way the community functions and engages with one another. Providing spaces and facilities within the development can help to create an integrated community.

7.11 Pollution

Air quality can impact on the health of humans, plants and wildlife. The design of the proposed station and car park has considered both internal and external air pollution, with the aim of helping to improve air quality and minimise air pollution.

7.11.1 External Air Quality

A significant proportion of the building’s needs for thermal energy are met through variable refrigerant flow (VRF) heat pump systems which use only electrical energy. As there is no gas fired boiler, there is no boiler flue in the building emitting CO₂ and NO_x to the atmosphere.

The proposed station and car park looks to directly reduce traffic from combustible modes of transport, by encouraging the use of Electric Vehicles and providing cycling and walking facilities (see Section 9). These measures will reduce levels of air pollution. Traditionally-fuelled motor vehicles produce pollutants such as particulates, nitrogen oxide and carbon monoxide, so any reduction will have a positive effect on air quality.

The use of clear and consistent signage throughout the car park and efficient entry and exist systems, will help to reduce queuing and idle engine time, helping to improve the car park air quality.

7.11.2 Indoor Air Quality

Poor standards of indoor air quality can have a negative effect on occupant health, these effects can be immediate such as throat, nose and eye irritation, headaches and fatigue, or be longer lasting and more serious. Long term health issues arising from poor indoor air quality include asthma, heart disease and cancer.

An air quality impact assessment will be carried out. The assessment considers the existing air quality conditions in the vicinity of the site and along roads which experience a significant change in traffic. The assessment reviews the potential effects from both the construction and operation of the proposed development. The air quality report identifies the impacts from the construction and operational phase and recommends mitigation where necessary.

The buildings will be designed to minimise indoor air pollutants by considering the following:

- Providing adequate ventilation rates in accordance with the latest standards that will limit the carbon dioxide levels with the building to a comfortable level.
- Designing ventilation pathways that minimise the ingress and build-up of air pollutants.
- Providing suitable filters on the air ventilation systems to remove indoor and outdoor airborne contaminants to improve air quality.
- Providing sensors that monitor CO₂ and particulates.

7.11.3 Light Pollution

Measures will be taken to reduce light pollution to minimise the disruption to wildlife. For energy efficiency purposes and to reduce impact of obtrusive light, the car park and platform lighting luminaires shall be dimmable to 50% output when there is no pedestrian activity in the external spaces and shall be respond to available daylight.

7.11.4 Water Pollution

Measures will be taken to prevent watercourse pollution. For example, the surface water captured from the car park will be drained into an attenuation tank which will include a petrol interceptor, to ensure this will not enter Kirkby Brook.

7.12 Construction Stage Impacts

The contractor will be required to make efforts to reduce the disruption experienced during the construction process. The following measures will be used:

- Dust generating activities will not be located close to site boundaries to sensitive receptors.
- Erect barriers around dusty activities.
- Minimise unpaved haul roads and hard surface all major haul roads.
- Damping down haul roads inside and outside the site.
- Wash and clean vehicles leaving the site.
- Limit the use of stockpiles and enclose where used.

The list is not exhaustive, and a more detailed strategy will be produced by the contractor. Other construction impacts such as noise and traffic disruption will also be limited. Measures to control noise include carefully control vehicle movement and erecting acoustic screens. Traffic disruption can be limited by appropriate routing of construction traffic.

7.13 Policy Appraisal

Policy Ref.	Response	SDG Goal(s)
Knowsley Local Plan: Core Strategy Policy CS7: Transport Networks	The addition of the station and expansion of the rail networks will improve the health and wellbeing of local people. The new development will be easily accessible by cycle ways and by foot.	

8 Climate Resilience

CS8: Green Infrastructure
CS22: Sustainable and Low Carbon Development

8.1 Surface Water and Flood Risk Management

Under Environmental Agency (EA) Guidance, a flood risk assessment is required as the proposed station and car park is in Zone 3. This means there is a high probability of flooding, areas within flood zone 3 have been shown to be at a 1% or greater probability of flooding from rivers based on data provided by the EA. However, this does not take into account any allowance for climate change.

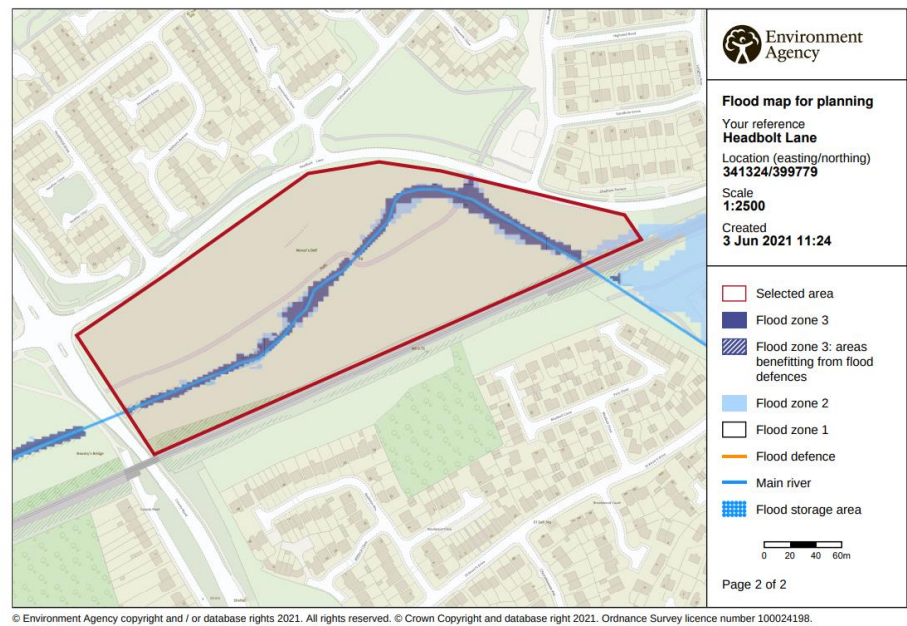


Figure 10: Flood Risk Map from the Environmental Agency

A Site-Specific Flood Risk Assessment is required to accompany any planning application for the site and has been conducted to establish:

- whether the proposed development is likely to be affected by current or future flooding from any source
- whether it will increase flood risk elsewhere
- whether the measures proposed to deal with these effects and risks are appropriate
- the evidence for the local planning authority to apply (if necessary) the sequential test
- whether the development will be safe and pass the Exception Test, if applicable

For details of the full Site-Specific Flood Risk Assessment, refer to document 170248-ARU-REP-ECV-000003.

8.1.1 Surface Water Run-Off

Surface water run-off shall be collected, conveyed, treated (where appropriate) and discharged in accordance with the following hierarchy:

1. Infiltration to ground,
2. Discharge to watercourse,
3. Discharge to surface water sewer,
4. Discharge to combined water sewer.

Although some infiltration may be possible, it is anticipated that an outfall will still be required into Kirkby Brook. The surface water peak discharge rates will be restricted to Greenfield run-off rates (5 l/s). Restricting the discharge to a Greenfield run-off rate will reduce the impacts that the site will have on flood risk in the local area.

The northern catchment of the site containing the car park will be drained to an attenuation tank beneath the car park, discharging into Kirkby Brook via a flow control device and petrol interceptor, maintaining a maximum discharge rate of 5l/s.

The southern catchment will utilise an under-track crossing (UTX) to connect the southern Merseyrail platform into the downstream drainage network.

For details of the surface water run-off strategy, refer to document 170248-ARU-REP-ECV-000003.

8.2 Overheating

An overheating assessment using projected future weather files will be undertaken to ensure buildings are designed to be thermally comfortable and be easily adapted to meet future climate conditions.

As the booking hall will be naturally ventilated, utilising high and low level openable windows or vents to provide ventilation to occupants and to allow a sufficient air exchange to prevent overheating. The full-height glazing in this area will increase solar gain to the space, so thorough overheating analysis will be carried out at subsequent design stages to ensure sufficient openings are provided to prevent overheating considering future climate conditions.

8.3 Policy Appraisal

Policy Ref.	Response	SDG Goal(s)
Knowsley Local Plan: Core Strategy Policy CS8: Green Infrastructure	Design will be completed to mitigate the effects of climate change and flood risk. Future climate conditions will be utilised to assess the suitability of natural ventilation to prevent overheating.	11 SUSTAINABLE CITIES AND COMMUNITIES 15 LIFE ON LAND
Knowsley Local Plan: Core Strategy Policy CS22: Sustainable	Natural systems will be used where possible to avoid internal overheating and excessive heat generation. For example, the booking hall utilizes natural ventilation to provide adequate fresh air and prevent overheating, reducing the need for mechanical measures.	11 SUSTAINABLE CITIES AND COMMUNITIES 15 LIFE ON LAND

and Low Carbon Development		
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9 Sustainable Transport

CS1: Spatial Strategy for Knowsley
CS2: Development Principles
CS5: Green Belt
CS7: Transport Networks
CS8: Green Infrastructure

9.1 Travel Plan

A Travel Plan (TP) has been produced by Arup for Headbolt Lane, to help the occupants travel to by sustainable, affordable and convenient modes of transport and achieve the overarching aim of reducing the amount of traffic created as a result of the site. A summary of the measures is given below.

9.2 Pedestrian Access

The town centre location of the site and its pedestrian accessibility from a number of directions are key factors in encouraging walking to and from the site. The new station access junction includes signalised pedestrian crossings on all arms of the crossroads. Pedestrian footways are to be provided within the site on key desire lines. A series of zebra crossings are included within the design to facilitate safe and convenient pedestrian movements through the site.

Existing footways connect the site to Headbolt Lane, and a secondary access footway is proposed from the residential estate to the south of the station.

9.3 Cycle Facilities

A 3m wide bi-directional cycleway is proposed alongside the vehicle access road. This will provide a continuous off-road cycle route between Headbolt Lane and the station cycle parking, which will provide parking facilities for 100 cycles.

9.4 Public Transport

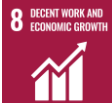
Public transport measures include the proposed new bus facilities and services at Headbolt Lane Station. The use of public transport will be further encouraged through bus-rail interchange facilities at the station. The bus stops will be designed to latest standards and include enclosed passenger waiting shelters.

9.5 Electric Vehicle Charging

The car charging facilities will enable a significant proportion of a car’s charging capacity to be achieved over a short stay period. Installing electric vehicle charging points can help

promote the use of electric cars as an alternative to traditionally fuelled cars and therefore help to improve the local air quality. There will be a number electric vehicle charging bays provided on site, in line with Knowsley Council’s policy.

9.6 Policy Appraisal

Policy Ref.	Response	SDG Goal(s)
Knowsley Local Plan: Core Strategy Policy CS1: Spatial Strategy for Knowsley	The development of the new station and car park enhances the local transport networks and provides improved connection to the major commerce hubs from the Tower Hill area.	   
Knowsley Local Plan: Core Strategy Policy CS2: Development Principles	Providing another train station encourages the use of the network and promotes safe and sustainable access for all, particularly by promoting the use of public transport.	 
Knowsley Local Plan: Core Strategy Policy CS7: Transport Networks	New sustainable station will support a sustainable and integrated transport system. Several footpath and cycle routes provide access to the station from a range of transport modes. The incorporation of the large car park and good connections for both pedestrians and cyclists promotes the use of the rail network and makes it accessible for all.	 
Knowsley Local Plan: Core Strategy Policy CS8: Green Infrastructure	Station provides sustainable transport linkages between residential neighbourhoods and easy access to employment and services. The new station connects the local area with larger commerce hubs such as Liverpool, Bolton and Manchester.	    

10 Economic Benefits

SD1: Sustainable Development
CS2: Development Principles

The construction of the development will play a significant role in the creation of new jobs and generate employment opportunities. The effects would not just be limited to those employed by the client and contractor but could also benefit other businesses within the supply chain and the local businesses near the development.

10.1 Job Creation

The unemployment levels in Liverpool are slightly lower than the national average. The proposed development will not only create jobs during the construction period but will create a number of jobs within the station.

Once the station is operational, a number of permanent jobs will be created through the train station, site maintenance and security.

10.1.1 In Construction

During the construction phase, a number of jobs will be created for local businesses and contractors that are likely to have a high level of local employees. This means that much of the economic benefit of the construction will stay within the local Liverpool area.

10.1.2 In Operation

In operation, when the proposed station and car park is completed, the connection between the local area and major commerce hubs will be further enhanced. This will improve the attractiveness to business, providing more jobs and higher quality jobs to Liverpool and the surrounding areas, and also enhanced influence further afield due to rail links.

10.2 Supporting Local Businesses

The site is located in the Northwood area of Kirkby with local businesses. The proposed development is expected to bring further footfall through the town centre, which in turn will support local businesses and economy. The development also provides enhanced links between Northwood and surrounding areas.

The development is expected to attract local people and visitors from beyond. By enhancing links and connectivity between the proposed station and car park and the town centre, additional footfall will occur within the town which is expected to support the local community.

10.3 Apprenticeships and Work Placement Opportunities

The proposed development presents an opportunity to partner with local colleges and suppliers. This will be explored within the early stages of the project but expected to include the creation of apprenticeship opportunities

As part of the construction process, a significant number of apprenticeships will be created. Efforts will be made to encourage applicants from a wide variety of backgrounds to continue the construction industry’s work towards a diverse workforce. Buckingham Group Contracting Limited will work with our construction contractor partners to ensure the maximum benefit to the local area of Liverpool.

By enhanced connections between the Northwood area of Kirkby and major commerce hubs Liverpool, Bolton and Manchester provides more opportunity for local residents to seek opportunities further afield.

10.4 Fair Payment

Clauses will be included within the contract to ensure there are conditions of employment (and sub-contracting) to ensure fair dealings and living wages and the safety of those constructing and maintaining designs. This will form part of the Sustainable Procurement Plan.

10.5 Local Labour

The project will use local labour and SMEs to support the local economy. This will help to upskill the local communities and enhance future job opportunities.

10.6 Policy Appraisal

Policy Ref.	Response	SDG Goal(s)
SD1: Sustainable Development	This development will be a healthy, safe, high quality environment for all, offering new jobs and economic activity into the area. There will be jobs created in both the construction phase and in operation. It also improves peoples job opportunities, by better rail connection to the local areas.	 
CS2: Development Principles	A new station helps to reduce the economic, environmental, education, health and other social inequalities between Knowsley and other parts of the UK. By having improved transport links that the new station will offer, residents of the local area can seek improved job or educational opportunities in destinations along the railway line that were previously not accessible to them.	   

11 Social Benefits

SD1: Sustainable Development

CS1: Spatial Strategy for Knowsley

CS2: Development Principles

11.1 Construction Stage Impacts

The Considerate Constructors Scheme is a national incentive set up to monitor companies against a Code of Considerate Practice and encourage best practice. The main contractor for the development will be required to register with the Considerate Construction Scheme.

The main contractor will be required to monitor, record and report energy use, water consumption and transport data resulting from all on-site construction processes.

The contractor will be required to make efforts to reduce the disruption experienced during the construction process.

Examples of potential measures that can be adopted for the development include:

- Reducing noise disturbance - by carefully controlling vehicle movement and erecting acoustic screens.
- Minimising dust generation - by damping down during dry weather, using dust screens and running extractors where appropriate.
- Limiting traffic disruption - by appropriate routing of construction traffic.

11.2 Local Identity

The design of the proposed development has been developed to enhance the local area through providing a gateway to the city centre. Throughout the site there are large communal spaces for social interaction.

11.3 Safety and Security

Creating a safe place for all to enjoy is a priority for the proposed station and car park. Safety and security play an important role in the overall wellbeing of the all visitors and building users. The project team have consulted with Merseyrail and will provide access control as directed by SIDOS rail guidance.

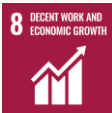
Passive surveillance measures have also been considered, which include the visibility of people around the buildings and the location of building entrances. The design will ensure all routes are clear, spaces are usable and ensure there are no dead-ends. Lighting will be carefully designed, ensuring that all bicycle parking and pedestrian routes are lit during night-time.

12 Conclusion

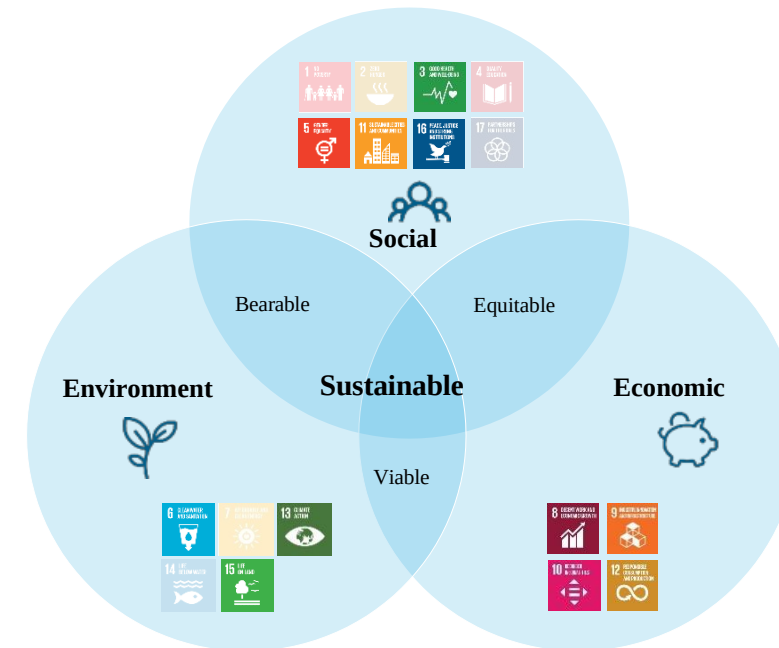
This report has highlighted how the development responds to the various Core Strategy Policies as set out by Knowsley Council. This summary section highlights the exact responses to each of the Policies which have been referred to throughout this report.

Policy Ref.	Response	SDG Goal(s)
Knowsley Local Plan: Core Strategy Policy CS2 : <i>Development Principles</i>	The station building services will be designed to reduce carbon emissions and meet all required minimum standards, such as building regulations. Air Source Heat Pumps will be used to generate heat for the building, providing lower carbon emissions than traditional gas boilers. Natural ventilation will be adopted where applicable. The energy consumption is also minimised by fabric improvements reducing the heating demand. Systems have been designed to be simple for ease of maintenance and to enable systems to run optimally, not inefficiently.	   
Knowsley Local Plan: Core Strategy Policy CS19 : <i>Design Quality and Accessibility in New Development</i>	The development integrates sustainable design principles and energy and resource efficiency to address the challenges of climate change. Systems have been designed to sufficiently meet building demand while minimising energy consumption.	 
Knowsley Local Plan: Core Strategy Policy CS22 : <i>Sustainable and Low Carbon Development</i>	The building will meet demands by supplying energy efficiently and incorporating decentralised energy systems, using renewable and low carbon energy where feasible. The ventilation strategy will incorporate natural ventilation in the booking hall and high efficiency mechanical ventilation in the office areas.	  
Knowsley Local Plan: Core Strategy Policy CS23 : <i>Renewable and Low Carbon Infrastructure</i>	The development will use low and zero carbon technologies. Heating and cooling will be generated by heat pumps and the use of PV could be explored to generate energy.	 
Knowsley Local Plan: Core Strategy Policy CS8 : <i>Green Infrastructure</i>	See section 5.1.4 The development will mitigate water pollution into the nearby watercourse, during both construction and operation.	 
Knowsley Local Plan: Core Strategy Policy CS22 : <i>Sustainable and Low Carbon Development</i>	See Section 5.1.1, 5.1.2 & 5.1.3 The development will make the most effective and sustainable use of water. The building is designed to be water efficient through responsible consumption of resources, with metering to allow end users to manage their consumption. Efficient fittings will be used in toilets, taps and showers.	  

Knowsley Local Plan: Core Strategy Policy CS19 : <i>Design Quality and Accessibility in New Development</i>	To address challenges of climate change the development should integrate resource efficiency. The structural design considers specific imposed conditions, and therefore reduces material consumption.	  
Knowsley Local Plan: Core Strategy Policy CS22 : <i>Sustainable and Low Carbon Development</i>	Promote sustainable waste practices. See section 6.5 for the Construction Waste Management that will be adopted by the contractor.	  
Knowsley Local Plan: Core Strategy Policy CS25 : <i>Management of Mineral Resources</i>	Construction and demolition wastes will be managed sustainably in accordance with the waste hierarchy. See section 6.5 for the Construction Waste Management that will be adopted by the contractor.	
Knowsley Local Plan: Core Strategy Policy CS26 : <i>Waste Management</i>	Sustainable forms of waste management will be adopted. See section 6.5 for the Construction Waste Management that will be adopted by the contractor.	
Merseyside and Halton Joint Waste Local Plan Policy WM 8 <i>Waste Prevention and Resource Management</i>	Efficient use of resources will be considered throughout the design and development. The structural design considers specific imposed conditions, and therefore reduces material consumption.	  
Merseyside and Halton Joint Waste Local Plan Policy WM 11 <i>Sustainable Waste Transport</i>	The design of the development will consider access for sustainable waste transportation from the site. There are sustainable choices of travel from employees (rail, cycling walking). See section 6.5 for the Construction Waste Management that will be adopted by the contractor.	 
Knowsley Local Plan: Core Strategy Policy CS7 : <i>Transport Networks</i>	The addition of the station and expansion of the rail networks will improve the health and wellbeing of local people. The new development will be easily accessible by cycle ways and by foot.	
Knowsley Local Plan: Core Strategy Policy CS8 : <i>Green Infrastructure</i>	Design will be completed to mitigate the effects of climate change and flood risk. Future climate conditions will be utilised to assess the suitability of natural ventilation to prevent overheating.	 

Knowsley Local Plan: Core Strategy Policy CS22 : <i>Sustainable and Low Carbon Development</i>	Natural systems will be used where possible to avoid internal overheating and excessive heat generation. For example, the booking hall utilizes natural ventilation to provide adequate fresh air and prevent overheating, reducing the need for mechanical measures.	 
Knowsley Local Plan: Core Strategy Policy CS1 : <i>Spatial Strategy for Knowsley</i>	The development of the new station and car park enhances the local transport networks and provides improved connection to the major commerce hubs from the Tower Hill area.	   
Knowsley Local Plan: Core Strategy Policy CS2 : <i>Development Principles</i>	Providing another train station encourages the use of the network and promotes safe and sustainable access for all, particularly by promoting the use of public transport.	 
Knowsley Local Plan: Core Strategy Policy CS7 : <i>Transport Networks</i>	New sustainable station will support a sustainable and integrated transport system. Several footpath and cycle routes provide access to the station from a range of transport modes. The incorporation of the large car park and good connections for both pedestrians and cyclists promotes the use of the rail network and makes it accessible for all.	 
Knowsley Local Plan: Core Strategy Policy CS8 : <i>Green Infrastructure</i>	Station provides sustainable transport linkages between residential neighbourhoods and easy access to employment and services. The new station connects the local area with larger commerce hubs such as Liverpool, Bolton and Manchester.	    
SD1 : <i>Sustainable Development</i>	This development will be a healthy, safe, high quality environment for all, offering new jobs and economic activity into the area. There will be jobs created in both the construction phase and in operation. It also improves peoples job opportunities, by better rail connection to the local areas.	 
CS2 : <i>Development Principles</i>	A new station helps to reduce the economic, environmental, education, health and other social inequalities between Knowsley and other parts of the UK. By having improved transport links that the new station will offer, residents of the local area can seek improved job or educational opportunities in destinations along the railway line that were previously not accessible to them.	   

By looking again at the three pillars of sustainability, it can be seen that the proposals at the proposed station and car park consider all three pillars: environmental impact, economic impact and social impact. The diagram below highlights which have been met.



12.1 Summary

This document summaries how the proposed station and car park development has approached and will approach its sustainability commitments through conception, design and implementation.

The approach has included a full UN SDG review of the sustainability opportunities at an early stage, full review of LZC technologies, use of a suite of fabric-first passive design and low carbon technologies where required.

Climate adaptation measures have been planned in at an early design stage, putting in place passive and active infrastructure to enable the building to be a useful and healthy environment for years to come.

Some of the key sustainability features already identified are:



Fabric improvements to minimise energy consumption



Low and Zero carbon technologies adopted where appropriate



Improves public transport links in the area to local commerce hubs



Creation of jobs through construction and operational phases



Encouragement of pedestrian and cycle modes of transport



Climate adaptation measures incorporated



Reducing water consumption through the use of low flow fittings