

Strategic Sites

**Huddersfield Waterfront
Quarter**

Sustainability Report

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Sustainability Report

April 2008

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Executive Summary

This report provides a snapshot of the sustainable elements of the Huddersfield Waterfront Development reviewed under the following four areas of sustainability:

- Environment
- Natural Resources
- Societal
- Economic

The location and nature of the existing site helps this development to be inherently sustainable. In addition to this, the landscaping proposals, building orientations and footprints, and site accessibility contribute significantly in giving the development good potential in terms of minimising the impact on the environment and natural resources, and providing an economically and socially sustainable design.

A number of indicators, particularly in the Natural Resources and Societal sectors, relate to elements of the scheme which are as yet undefined. These will be considered during the appropriate stages in the design.

1 Introduction

The proposed Huddersfield Waterfront Development is located on the banks of the river Colne and straddles the Huddersfield Narrow Canal, which is currently covered. The site is triangular in shape and borders two busy roads, Manchester Road to the north and Chapel Hill to the east. The river Colne runs along the south side of the site. The site covers over three hectares and currently provides accommodation for Kirklees Metropolitan Council (MC) and Sellers Engineers Ltd.

The current proposals for the site redevelopment include three residential blocks on the west end of the site overlooking Manchester Road and the River Colne. Two office buildings E and M will be located on the south of the site overlooking the River Colne. Two further office buildings L and F will be located on the east of the site overlooking Chapel Hill. A central plaza will be provided leading from the river to the opened up canal in the centre of the site and a new building for Huddersfield Technical College is proposed on the north of the site.

The vision for the development is to meet and where possible exceed current good practice in sustainable design. This is especially applicable following the introduction of Energy Performance Certificates for all new buildings and the recent Government announcement that all non domestic buildings will be required to be zero carbon by 2019.

Kirklees MC, who are currently proposing to occupy Building L, also have ambitious environmental targets for new buildings that they occupy and that are built in the area. These relate in particular to carbon emissions and are summarised below:

Building Type	Carbon Emissions Reductions	Target Date
Council-occupied buildings	30% of their energy demand to be met from on-site renewable energy sources.	2010/11
Council-occupied buildings	Greenhouse gasses to be reduced by 3% each year	2005- 2020
Non-residential developments > 500m ²	10% of their energy demand to be met from on-site renewable energy sources	2010
All residential developments	Carbon emissions reduction of 25% over the target required by current building regulations (CSH Level 3)	2010
	10% of their energy demand to be met from on-site renewable energy sources	

In addition to these local requirements the development will also comply with the requirements in the relevant national planning documents listed below:

- Planning Policy Statement 1 (PPS1) – Delivering Sustainable Development 2005. This document sets out the Government's overarching planning policies on the delivery of sustainable development through the planning system.
- Planning and Climate Change Supplement to Planning Policy Statement 1 – December 2007. This document on climate change supplements PPS1 by setting out how planning should contribute to reducing emissions and stabilising climate change and take into account the unavoidable consequences.

This report considers the Huddersfield Waterfront Development in light of these requirements and reviews the sustainable aspects of the development at current planning stage. The appraisal has been carried out using SPeAR¹, a tool developed by Arup to assess and review the sustainability of designs.

¹ Sustainable Project Assessment Routine originally developed by Arup in 2000

1.1 SPeAR Appraisal

SPeAR is a flexible appraisal methodology for progressive assessments of projects. The SPeAR tool was selected for use on this project to ensure an integrated cross-discipline planning and design process in relation to sustainability.

SPeAR provides a framework that is capable of illustrating and optimising the underlying issues associated with sustainability, namely economic, social and environment (often termed the triple bottom line). This concept has been adopted in the SPeAR assessment, with the addition of natural resources as the fourth key area of sustainability.

The SPeAR diagram below summarises the assessment for the Huddersfield Waterfront Development at the current master planning stage. In order to display both negative and positive results, a median line designates good practice. Positive results (green tones) are represented from the median line towards the centre of the diagram. Negative results (red tones) are represented from the median line towards the circumference.

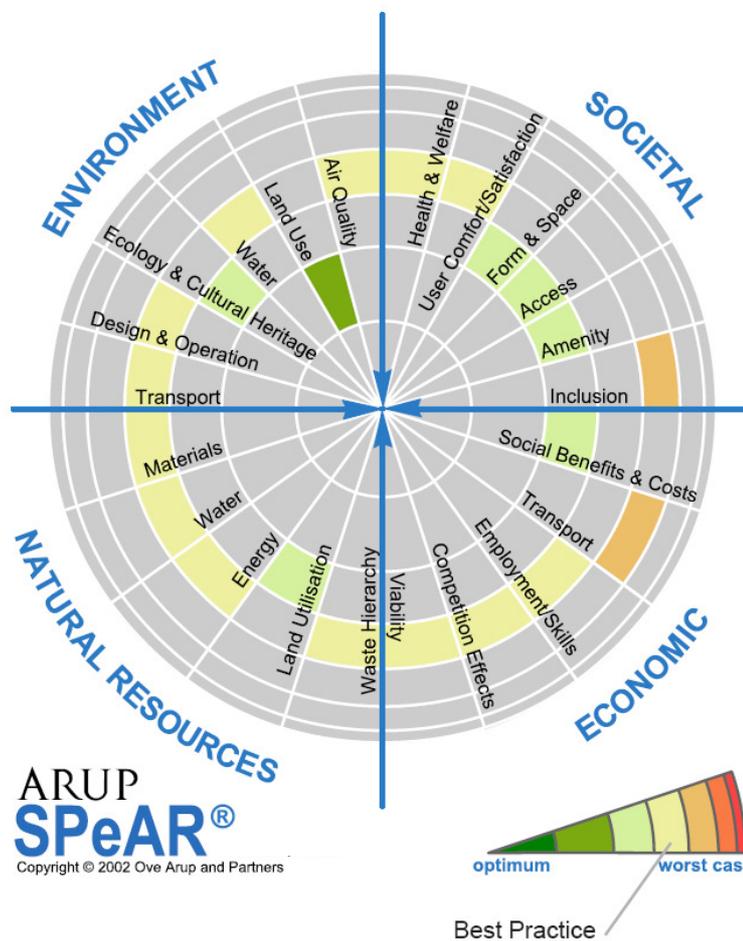


Figure 1 – SPeAR Appraisal results diagram for Huddersfield Waterfront Development

As well as providing a snapshot at a given stage in the project progress, the indicators developed during the assessment can be used to monitor performance at further stages throughout the progression of the project.

The diagram has been created only including elements that are known at planning stage. A number of indicators, particularly in the natural resources and societal sectors, relate to elements of the scheme which are as yet undefined or are in the process of being defined. The aspirations for these areas are not represented in the diagram but have been included in this report. These aspirations will be incorporated during the appropriate stages in the scheme.

The diagram indicates that at the current time the development is meeting best practice or better in the majority of areas. In the economic sector, transport is currently showing a negative result, as is inclusion in the societal sector. This is generally due to lack of information in these areas at this stage rather than these areas performing particularly poorly. These results are discussed further in the main body of this report.

It should be noted that SPeAR is not the answer to sustainability; instead it provides design and/or management information to aid decision-making. Through the SPeAR diagram important issues can be raised; however, the definitive answers are not provided.

SPeAR promotes discussion from which sustainable solutions can be derived. The following report discusses in more detail the individual indicators from the diagram. The report highlights areas where the master-plan facilitates good sustainable design and suggests opportunities for where to go next.

It is expected that as more areas of the development become defined the indicators on this diagram would tend towards the centre of the diagram.

2 Environmental



Environmental sustainability considers limiting the impact of the development on the environment, on both local and global scales, to a level which allows the affected systems to recover and continue to evolve.

2.1 Air Quality (Emissions)

Air quality is a significant aspect of environmental sustainability; this includes achieving major long-term reductions in greenhouse gas and carbon emissions on a global scale, and maintaining and improving the local air quality.

As there are unlikely to be any direct emissions from commercial or industrial processes located on the site, the main contributor to air pollution is likely to be from indirect emissions such as car exhaust and carbon and green house gas emissions generated from power stations generating the energy to operate the buildings.

Kirklees MC also have ambitious environmental targets for reducing emissions from new buildings summarised in the introduction.

Elements included in current master plan

- The baseline local air quality is influenced by the close proximity of the ring road. This has been considered in the planning of the site. The buildings will help shelter the open public spaces from road pollution and noise. Where possible to avoid potential input of contaminated air, opening windows and air intake grilles will not be located on facades overlooking the roads.
- Local emissions from transport have been considered with pedestrian access prioritised over motor vehicles within the site and good links to public transport have been provided. This should encourage people to walk, cycle or use public transport and reduce the reliance on private cars, leading to a reduction in emissions.
- Indirect emissions associated with burning fossil fuels have been discussed during the master plan process and are being considered on an individual building basis to meet the planning requirements. For the Huddersfield technical college and Building L details of the energy strategies have been developed and are described below.

Huddersfield Technical College Building

The proposed college building incorporates a number of features to meet the requirement of 10% of the annual energy demand to be met from on site renewable technologies.

To reduce the energy demand in the first instance a number of design features have been proposed including:

- Natural ventilation and cooling in the majority of rooms
- High efficiency heating delivery systems
- Heat recovery in any rooms which require mechanical ventilation
- High efficiency lighting and controls

The renewable technologies currently under consideration are:

Biomass boilers – Biomass boilers are proposed to provide the majority of the space heating load. As heating can contribute a large proportion of a buildings annual energy demand this is likely to meet the requirement for renewable provision. Cultivating and storing biomass can often be a problem, however for this development, biomass plants could potentially be cultivated and stored on a site upstream from the development and shipped to the site in a low carbon manner via the canal.

Solar water heaters - Solar hot water panels will be positioned on the roofs of buildings to preheat hot water for sinks, showers, catering, etc. Solar water panels can provide as much as 60% of the annual domestic water heating demand.

Building L

The proposed Building L is being considered by Kirklees Council as a site for their new office complex. The brief for this building was released in November 2007 and requires it to provide 30% of the annual energy demand from on-site renewable energy sources. The council also require a “Very Good” BREEAM² rating (at the BREEAM for offices system current at the time of design & procurement).

In addition to biomass boilers and solar water heaters mentioned above, the following technologies are also being considered for the energy supply for Building L;

Wind turbines – Urban wind technologies are emerging and becoming more commonplace. However, it is important to be realistic about the actual outputs of the turbines in an inner city location. A wind profile of the site would need to be undertaken to be able to determine the viability of wind turbines. A single large turbine would be more efficient than many smaller building mounted turbines, but careful consideration of the visual issues associated with locating a large turbine in a built up environment would be required.

Heat pumps – Heat pumps use electricity to upgrade heat by compression refrigeration technology techniques from a steady low temperature source, such as the ground or the river water, to useable temperatures that can be used to heat buildings. In the summer the opposite cycle can be used to cool buildings with heat being transferred back into the ground or water. Using the river or canal as the heat source and sink would be a more cost effective method than vertical boreholes however this would require liaison with the relevant water authorities to establish viability.

Photovoltaic Cells (PV) - PV panels convert sun/daylight into electricity. However, they are unable to store electricity and hence are less efficient in climates such as the UK where the majority of our electricity is required when the sun is not shining. The ease of disposal at the end of their life is also an issue because they are currently made from toxic materials. However, technical advances are rapidly improving the viability of PV. Building facades could be designed in a manner that will allow the simple addition of PV at a future date.

- The following site wide energy strategies are also under consideration:

Combined heat & power (CHP) - CHP is appropriate for developments which have a year round heating and electricity need. It reduces carbon emissions by re-using the heat generated by electricity production. CHP requires a good annual base heating load to be viable. If the offices demanded cooling, this would provide an opportunity for CHP as the cooling could be provided by absorption chillers which require an input of heat. CHP would only be viable if the phasing of the residential and commercial buildings can be coordinated, since it will rely on the different operational hours of the residential and commercial buildings to operate efficiently. A site wide or part site wide analysis of CHP to incorporate a number of buildings will be carried out.

² The BRE Environmental Assessment Method for Offices

Micro-hydro – Micro hydro is being considered to produce electricity for external lighting on the development. A viability study into micro-hydro has been carried out by RD Energy Solutions Ltd for Kirklees MC3. The Report covers a number of sites that Kirklees MC are interested in developing.

For the Waterfront site, RD Energy Solutions recommend that the two weirs alongside the site are used to create a head of water to use for generation. The weirs, which are approximately 60m apart and will give a 3.3m head (2.2m and 1.1m respectively), can generate effectively at a rated flow of 1.4m³/s. By creating the input above the upper weir with the output below the lower weir it is possible to operate generators to produce an economic level of electricity output.

The two options for generators are Kaplan or Archimedean Screw type which will generate 32kW and 31Kw respectively. The latter is recommended due to its low level of maintenance and simple operational costs. It is suggested at this stage that the system will be funded by the developer and used to feed communal and other areas of shared use on the overall development. The estimated cost is £220,000, with a payback of approximately 26years.

Future aspirations to be incorporated into next stage of the design

- The project will be registered with the Considerate Constructors Scheme (CCS). This scheme requires procedures to be in place to avoid air contamination from dust and particulate matter throughout the construction of the development with implementation dates specified and monitored.
- There will be no use of Ozone Depleting Substances (ODS). Harmful products will be named in purchasing policies and named in contracts as being banned for use. Materials with low GWP (Global Warming Potential) will be specified.
- A number of energy reducing design features will be incorporated where possible into all the buildings. These are outlined below.

Energy Monitoring – Automatic metering and targeting of energy consumption will be incorporated in all the buildings. Systems of monitoring in the UK have been shown to contribute to high savings in energy.

Flexibility – No building continues to function throughout its life time in the manner it was originally designed and the design teams will take into account flexibility in operation to accommodate such changes in practical terms, both in systems and building use.

Ventilation and cooling – Ventilation requirements can be provided by either natural means (opening windows) or by low energy mechanical means. In Huddersfield the buildings should not require cooling unless they have particularly onerous internal loads. Natural ventilation requires careful design at the early stages to ensure the geometry of the spaces facilitate sufficient air movement and that acoustic requirements are met. Natural ventilation and will always be considered as the first option for ventilating the buildings on this site.

Thermal mass – Choosing internal materials with high thermal mass such as concrete (usually in the form of exposed concrete soffits), combined with naturally ventilating the building with cool night air will act as a thermal moderator avoiding extremes in temperature. The thermal mass within the building can also be used to store heat in the winter to help improve the efficiency of the heating systems. This will be included in all buildings using natural ventilation to ventilate and cool spaces.

2.2 Land Use

This relates to the land that the project is to be built upon or will affect in any way either in planning or construction. Re-using previously developed land can protect the countryside and also encourage urban regeneration if selected appropriately.

The Environment Agency⁴ summarises the considerations when developing on brownfield site as follows.

“Developing on a brownfield site can help to make the best use of existing services such as transport and waste management. It can encourage more sustainable lifestyles by providing an opportunity to recycle land, clean up contaminated sites, and assist environmental, social and economic regeneration. It also reduces pressure to build on greenfield land and helps protect the countryside.

Some brownfield and derelict land can represent important wildlife habitat, public green space or a core part of urban green networks. These are important in providing good quality of life, and brownfield reuse must strike an appropriate balance in the interests of sustainable development.”

The context of the local environment has been considered in detail during the development of this master plan. This process is described in more detail in the Design and Access Statement.

With the increased occurrences of flooding in recent years it is becoming increasingly important to avoid locating new developments on floodplains. Locating a new development on a floodplain not only puts the buildings at risk of flooding, but decreases the available permeable surface for excess water to infiltrate which can increase flood risk (developments usually involve impermeable materials such as concrete and tarmac).

Elements included in current master plan

- The site location for this development meets all the desired characteristics outlined by the Environment Agency. It is located on 100% previously used land in Huddersfield, close to the town centre. It should provide a catalyst for regeneration in this area and avoids impacting on greenfield sites.
- Surroundings have been used positively to inform the project design, integrating and enhancing the existing environment, including opening up the canal and creating a pleasant river walk.
- To enable users to carry out ‘everyday’ tasks the development has been based around mixed-use patterns, reducing the need to travel.
- Desk studies have shown that the development is above the modelled flood level occurring during a 1 in 100 year flood event.
- The percentage of accessible open space is above the average for this type of development. The benefits of this for the site and the local community are described in more detail in the Design and Access Statement.

Future aspirations to be incorporated into next stage of the design

- Services will be provided locally to serve the new residential units, so that occupiers do not have to travel long distances to get essentials such as food, simple retail, money, leisure, schools, colleges, medical care, and other amenities.

⁴ http://www.environment-agency.gov.uk/aboutus/512398/289428/655750/?lang=_e

2.3 Water

All projects generate waste water and surface water discharges.

These may include wastewater from sanitation, cooking, industrial processes or rainfall run off from impermeable surfaces.

In accordance with PPS1 all developments are required to ensure the sustainable use of water resources; and the use of sustainable drainage systems in the management of run-off.

Elements included in current master plan

- In the new development sustainable drainage systems will be incorporated into the design to avoid adversely affecting the water flows.
- Methods of containment of runoff before it discharges into the river are being considered. This will be achieved either with the incorporation of sustainable drainage techniques or attenuation of the peak discharge.
- Surface water will be discharged to the canal, the River Colne and Yorkshire Water sewer network. Attenuation systems will be provided to minimise the risk of increased off-site flooding.

Future aspirations to be incorporated into next stage of the design

- Discharges to surface and groundwater should not reduce the quality of the receiving water. Discharge monitoring may be required to maintain the integrity of the water resource.
- There is insufficient space on this town centre development to provide sustainable drainage techniques such as reed beds for the treatment of waste water. The ground conditions are not suitable for infiltration techniques. The use of other sustainable drainage techniques will be considered during the design process.
- Measures to improve river quality and limit emissions to rivers have an important part to play in improving water quality. Water returned will be equal to or better than the water abstracted, thus minimising adverse ecological impacts and human health and need for water treatment. Acceptable levels of contaminants will be established and monitored.

2.4 Ecology & Heritage

In order to maintain a diverse ecosystem, which can support a full range of species; it is essential to protect biodiversity.

Self sustaining habitats should be encouraged. These have negligible or no maintenance, and are not dependant upon high energy input (e.g. regular mowing and input of fertilisers, pesticides and chemical pesticides).

Cultural Heritage is a resource which should be protected for both historical purposes and for the enjoyment of future generations.

Elements included in current master plan

- A preliminary Ecological Appraisal has been carried out for the site. This has considered the existing ecology on the site and will help to enhance and regenerate the existing habitat, particularly along the river side. It identified that the site had limited ecological value, however there was potential for retaining some of the trees and shrubs, thus maintaining bird life and some additional ecological species.
- The appraisal report recommends that a number of protected species surveys be carried out prior to development, including a bat and reptile survey for the grasslands within the site.
- Biodiversity has been taken into account in the landscaping of the development and is described in more detail in the landscape proposals.
- Self sustaining habitats will be incorporated into the landscaping design where possible.
- The new development takes account of the history of the site and opportunities to conserve local heritage include opening up the previously covered canal. The history of the site and its incorporation into the design is described in more detail in the Design and Access Statement.

Future aspirations to be incorporated into next stage of the design

- Local and appropriate artwork will be incorporated into the landscaping where possible. This might be achieved in association with the Department of Art & Design at the Huddersfield Technical College.
- Adequate consideration of local archaeological influence will be considered.
- Protected species surveys will be carried out prior to commencement of any development on the site.

2.5 Design & Operation

Sustainable design decisions should be considered from an early stage in the design process to be integrated into the design process in the most cost effective manner, in particular when it comes to the design of individual buildings.

An example of decisions made now that will facilitate low energy design is the orientation and footprint of the buildings. These have been designed to maximise the day-lighting and solar footprint of each building to reduce energy consumption during the full life cycle of the buildings.

Elements included in current master plan

- The master plan has been designed to facilitate low energy design into the individual buildings. The buildings are generally orientated north-south to allow for passive solar heating in winter on the south orientation, thus reducing heating loads. External shading can be incorporated easily on a south facing façade to omit high angle summer sun and reduce cooling loads in the summer. Considering orientation in this way optimises the capability of the facade to reduce the energy consumption of the building and hence reduce carbon emissions.
- Floor plates for the buildings have been designed to be narrow plan where possible to maximise the percentage of floor space within 7m of a window. This maximises the area of offices that can be naturally day-lit and also maximises opportunities for natural ventilation.
- An acoustic survey has been carried out on the site. This highlighted the need for careful acoustic design of the residential accommodation to minimise disturbance from road traffic noise from Manchester Road.
- Office buildings are located away from the busy Manchester Road to maximise the potential for natural ventilation.

Future aspirations to be incorporated into next stage of the design

- At the next stage in the design, microclimate assessments will be made where appropriate. This will ensure external cafes etc. experience low wind speeds and a high percentage of sunlight and that internal spaces are comfortable.
- Individual buildings will be designed to meet appropriate standards for BREEAM and the 'Code for Sustainable Homes'. It is anticipated that a code for sustainable homes Level 3 will be required for all dwellings on the site and that a BREEAM rating of 'Very Good' with an aspiration to achieve 'Excellent' will be required for non residential buildings.

2.6 Transport

One of the main contributors to local air quality pollution is from vehicle exhausts. To reduce this, the development will need to be designed to reduce the use of private cars, motor cycles, etc., by ease of access and good public transport links.

Elements included in current master plan

- Pedestrian access has been prioritised in comparison with motor vehicle use within the site and good links to public transport have been provided. This should encourage people to walk, cycle or use public transport and reduce the reliance on private cars leading to a reduction in vehicle emissions.

Future aspirations to be incorporated into next stage of the design

- Car parking could be reduced to further encourage use of public transport. This needs to be considered against alternatives such as pool car schemes. Lack of parking in city centre developments could have an adverse effect on the surrounding infrastructure. It is futile to remove car parking if there is not an integrated transport strategy to support it.
- An integrated transportation plan will be drawn up in order to facilitate and manage an increase in car-sharing, use of public transport, walking and cycling. A plan will exist and incentives will be provided to actively promote green travel. The plan will be reviewed regularly for opportunities for improvement; these will be ever changing and thus reviews over set periods of time are essential and should include: -
 - a. Consideration of reducing road freight, where rail or waterway transport could be considered.
 - b. Consideration of car sharing and car clubs. These may not be present initially but may be introduced to Huddersfield in the future as concern about the effects of vehicular transport increases.

3 Natural Resources



“Sustainable development means improving the quality of life whilst living within the carrying capacity of the supporting ecosystems”⁵

This section addresses the impact of the development on the natural resources available.

A number of these items relate to elements of the development which are as yet undefined. Where this is the case a brief list of items which should be considered at the appropriate stage has been included in the future aspirations section.

3.1 Materials

A key objective of sustainable development is to use natural resources more efficiently. Energy is consumed in the production of construction materials such as bricks, cement, concrete and metals and in their distribution. Aggregates form the largest tonnage of material used in construction in the UK⁶.

Reducing material waste during construction reduces material costs, landfill taxes, handling costs as well as reducing the resources used in the project.

Elements included in current master plan

This indicator relates to elements of the scheme that are as yet undefined. The proposed development has been reviewed assuming that the project will meet ‘best practice’ at the very least in these undefined areas.

Future aspirations to be incorporated into next stage of the design

Aims:

- All buildings to be constructed from a proportion of recycled materials
- All buildings to be made to be reusable or recyclable

These will be achieved by;

- Defining targets for % materials reused and recycled
- Defining a standard for all materials specified on the project from the BRE Green Guide to Specification⁷
- Including embodied energy and any energy saved in operation in the variables for selection of structural frame
- Ensuring the structure is designed to be easily dismantled and recycled
- Use WRAP⁸ to monitor material disposal and sustainable aggregate usage This is a tool developed for the construction industry to encourage and enable developers to be more efficient in their use and disposal of materials.

⁵ Definition of sustainable development adopted jointly in 1991 by IUCN - The World Conservation Union, the United Nations Environment Programme and the World Wide Fund for Nature

⁶ Mineral Planning Factsheet, Construction aggregates- British Geological Survey/DCLG February 2007 <http://www.mineralsuk.com/britmin/mpfaggregates.pdf>

⁷ The Green Guide to Specification – BRE 3rd Edition 2002 (4th Edition due to be published in April 2008 <http://www.bre.co.uk/greenguide/page.jsp?id=558>)

⁸ Waste & Resources Action Programme

http://www.aggregain.org.uk/waste_management_regulations/wmr_step_by_step_tool/index.html

3.2 Water

Water is a renewable resource, vital for public health and the environment. Safeguarding resources and ensuring affordable supplies are essential for sustainable development.

Elements included in current master plan

This indicator relates to elements of the scheme that are as yet undefined. The proposed development has been reviewed assuming that the project will meet 'best practice' at the very least in these undefined areas.

Future aspirations to be incorporated into next stage of the design

Possible aims:

- Closed loop water cycle.
- Significant reductions in potable water use.
- Use of site and location to provide alternative to mains water use.
- Reduction of energy use from treatment.

These could be achieved by;

- Defining water use targets for each building.
- Monitoring water loss on each building as well as water use.
- Locally sourcing irrigation and other non-potable water from the canal in an effort to increase site autonomy.
- Recycling grey water (from wash basins) and rainwater either on a building by building basis or as a site wide strategy.
- Specifying low water use appliances.

3.3 Energy

The impact that energy sources have on natural resources will vary depending on the timescale it takes for the fuel source to be renewed. For example, oil and coal takes millions of years whereas biomass may take 2 years and wind is constantly being renewed.

Fuel selection also has an added impact on the environment via the carbon released when burned, which is now commonly accepted as contributing to a global climate change.

Elements included in current master plan

- A number of renewable technologies have been discussed during the master plan process and will be considered on an individual building basis, these have been outlined previously in the Environment section.

Future aspirations to be incorporated into next stage of the design

- During the design process each of the low and zero carbon technologies listed in the environment section will be considered for the development and where appropriate will be incorporated into the energy strategy for the development.
- The embodied energy of materials specified will be considered by defining a standard for all materials specified on the project from the BRE Green Guide to Specification⁹
- The optimisation of the whole life environmental impact of a building could be assessed using software such as BRE 'ENVEST 2'¹⁰

3.4 Land Utilisation

This indicator considers the natural resources available on the existing site and how these might be retained or improved.

Elements included in current master plan

- The existing habitat in the area is largely neglected and in many cases non-existent. The proposed development will enhance and protect the existing habitat rather than fragmenting and destroying an existing natural resource.
- Any contamination on the site that may cause risks to the environment, including pollution of water resources, will have remediation carried out on site as opposed to off-site disposal to minimise landfill waste.

Future aspirations to be incorporated into next stage of the design

- The option of dealing with waste by sending it to landfill will be the last resort; options of reuse and recycling will be investigated and pursued first; options for disposal and end of life should be an important consideration in material and product choice.
- Soil will be treated as a valuable resource and recycled on site where possible.

⁹ The Green Guide to Specification – BRE 3rd Edition 2002 (4th Edition due to be published in April 2008
<http://www.bre.co.uk/greenguide/page.jsp?id=558>)

¹⁰ ENVEST 2 - tool developed by BRE to analyse whole life environmental impact of a building
<http://envestv2.bre.co.uk/>

3.5 Waste Hierarchy

Waste management in construction is an essential requirement to avoid environmental issues.

A failure to deal with end of life products in an environmentally sound way can pose threats to both the environment and human health.

Elements included in current master plan

This indicator relates to elements of the scheme that are as yet undefined. The proposed development has been reviewed assuming that the project will meet 'best practice' at the very least in these undefined areas.

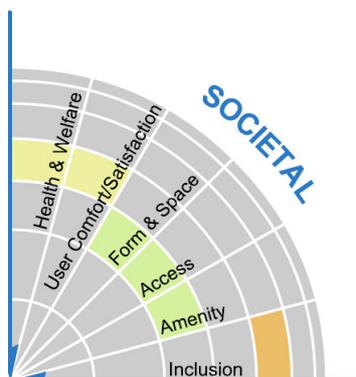
Future aspirations to be incorporated into next stage of the design

To meet & exceed best practice the following recommendations will be considered at the appropriate stage in the design.

- The buildings and the development as a whole will consider reuse and adaptability. Consideration will be made early in the design process as to whether the building is to be designed for maximum flexibility for reuse or whether it is to be designed to be easy to dismantle and recycle the individual components.
- Where disposal is unavoidable, Best Practicable Environmental Option (BPEO)¹¹ will be used. BPEO ensures that where the only option is for disposal; it is carried out in an environmentally responsible manner. In the UK there is legislation which describes BPEO for many products.
- Materials and equipment will be selected to maximise their future reuse and ability to be recycled.

¹¹ BPEO Decision Makers Guide - http://www.ehsni.gov.uk/ni_bpeo_guidance.pdf

4 Social Sustainability



Social sustainability is about improving the quality of life through an understanding of social inclusion, enhancing local amenities, improving accessibility, optimising form and space, maximising user comfort/satisfaction and consideration of health and welfare.

Everyone should share in the benefits of increased prosperity and a clean and safe environment. Our needs must not be met through decision making that does not include consideration of others, including future generations and people elsewhere in the world.

A number of these items relate to elements of the scheme that are as yet undefined. Where this is the case a brief list of items that will be considered at the appropriate stages as been made.

4.1 Social Inclusion

Including the community or users in a project can add value, enabling objectives to be achieved and is very important for the overall sustainability of a project.

Creating opportunities for people to participate in projects can add creativity and innovation and bring extra resources. Involvement also encourages ownership, which means projects are more likely to be cared for, maintained and continue to be developed. Investing in, or giving to the community, whether through financial donation, time in kind or general support can have obvious benefits for the community, and also improves corporate social responsibility.

There should also be systems in place to minimise nuisances. Nuisances could be in the form of odour, noise, vibration, airborne pollutants, and impact on traffic.

Elements included in current master plan

- Elements have been incorporated into the master plan to increase social identity and a sense of place. These are described in more detail within the Design and Access Statement but include the creation of a new public square and opening up of the canal.
- The development addresses a number of the key issues outlined by Kirklees MC in their Local Agenda 21. These include improving and protecting green spaces.
- The regional vulnerability provisions are being adopted for the development.

Future aspirations to be incorporated into next stage of the design

- Local consultations will be made throughout the design process.
- Ethical trading codes for suppliers and distributors will be built into the project.
- Environmental reporting will be undertaken and made available in the public domain with external verification where possible.
- There will be provision of a system for interested and affected parties to complain, this will be registered and responded to under a project protocol.

4.2 Amenity

Social sustainability is about creating a positive impact on local amenities. Green spaces in particular are important to people's wellbeing and have been shown to significantly enhance quality of life.

Elements included in current master plan

- The landscaping of the area has been designed to dramatically enhance the area, improving the character of the area & local environment. This is described in detail in the landscape proposals.
- Recreational facilities such as riverside walks, areas to sit and enjoy the environment and provision of cafes and restaurants have been incorporated into the design.
- This project has provided the opportunity to enhance access and the quality of green space, for both the users of the project and the community at large.

Future aspirations to be incorporated into next stage of the design

- It is recognised that construction and operational traffic can generate significant effects and impacts upon sensitive receptors. Noise surveys have been undertaken to ascertain existing noise levels and the design will strive to not exceed these in construction or operation.
- Noise and vibration can cause significant annoyance to the community and will be minimised where possible.
- The development will avoid causing land use conflicts. Activities that are undertaken will be sympathetic to adjacent activities to minimise the potential for nuisance. This will be particularly important when designing the relationship between the residential and the amenities such as restaurants and cafes where people leaving late at night could generate unwanted disturbance to the residents.

4.3 Transport

Good public transport provision enhances quality and increases opportunities for social interaction i.e. opportunities to 'get to know your neighbour'. It also reduces pollution and resource use by reducing the reliance on the private car, which could otherwise have a detrimental impact on people and the environment creating a whole series of knock on effects.

Elements included in current master plan

- Public transport has been integrated into the design by creating new bus stops and providing good pedestrian links to these.
- The design allows for good connectivity and easy access to both able bodied and physically impaired users, despite the significant level changes existing on the site. The design also opens up links, which currently do not exist, both across the site and to the riverside walk.
- Due to the central location of the site, key services such as shops and banks, etc, are readily available to the users. In addition to access to the existing facilities in the area a crèche is proposed on the site as well as cafes, restaurants and a gym.

4.4 User comfort

For projects to be socially sustainable, it is important to consider the needs of end users of a development.

Elements included in current master plan

This indicator relates to elements of the scheme that are as yet undefined. The proposed development has been reviewed assuming that the project will meet 'best practice' at the very least in these undefined areas.

Future aspirations to be incorporated into next stage of the design

To meet & exceed best practice the following recommendations will be considered at the appropriate stage in the design.

User comfort and satisfaction will be addressed on a building by building basis as the designs progress and will include consideration of the following;

- User controls
- Indoor air quality
- Comfort
- Thermal control
- Occupant feedback

4.5 Health & Welfare

It is essential that a sustainable development considers the health and well-being of all the occupants.

Elements included in current master plan

This indicator relates to elements of the scheme that are as yet undefined. The proposed development has been reviewed assuming that the project will meet 'best practice' at the very least in these undefined areas.

Future aspirations to be incorporated into next stage of the design

To meet and exceed best practice it is essential that health and welfare requirements, together with health & safety requirements are met and risk is managed. Policies and systems that aim to ensure zero fatality and injury risk will be in place and routinely monitored.

5 Economic



Economic sustainability addresses the issue of financial viability and wealth creation and its distribution within and among the affected community.

Ethical green techniques are those which demonstrate a consideration of the socio-environmental performance of the project in terms of economics.

Commercial green techniques are those which can be shown to reduce operational costs within the design life of the employed technology. This can be demonstrated by producing whole life cost models for the various buildings and

sustainable techniques adopted by the project.

5.1 Viability

To be sustainable the project must be financially viable under prevailing market conditions.

Elements included in current master plan

- High quality office accommodation, currently in short supply in Huddersfield, is proposed to attract new business investors to the area.
- The site will incorporate apartments, which will create a new market within Huddersfield potentially providing accommodation for young professionals and students who have a desire to be within close proximity of the University, Technical College and the infrastructure links associated with the site location.
- The accommodation will provide the catalyst for the redevelopment of the remainder of the site.
- Pre-lets are being negotiated for a number of the buildings on the site

Future aspirations to be incorporated into next stage of the design

- Set aside a proportion of project expenditure for investment in improving environmental and societal performance beyond best practice.
- Set aside a proportion of project expenditure for research and development activities pertaining to the inclusion of sustainable technologies on the site.
- Sole traders will be encouraged where possible to increase the local small scale economic activity in the area and to avoid displacing similar small-scale economic activity in the area.
- Service contracts will be used where possible. This refers to the trend towards increasing the service component of products, so providing a benefit without the outright purchase of a product by means of rental agreements (photocopiers, printers, telephones, carpeting and air conditioning and heating services). This generally minimises the throw away culture and instead encourages regular maintenance and re-use.

5.2 Competition Effects

Diversification can lead to a more stable economy, reducing dependency on single economic activities.

Elements included in current master plan

- The new development will support economic diversification by providing buildings for a variety of uses.
- Providing better, more widely available goods and services including good quality public space, residential and business accommodation will create a better quality of life in the area.
- The development will create a new venue within Huddersfield, increasing consumer choice locally.

Future aspirations to be incorporated into next stage of the design

- Opportunities to work with local suppliers, communities & NGOs will be sought. Goods and services will be bought from certified sources or suppliers, for example Fair Trade, where possible.

5.3 Employment Skills

Any new development should attract new businesses and create local jobs.

Elements included in current master plan

- It is envisaged that the development will provide approximately 2000 new jobs to the area.

Future aspirations to be incorporated into next stage of the design

- For a project to be sustainable the types of jobs available need to be as diverse as possible and available to people from a variety of skills bases and backgrounds. The new jobs need to compliment the current local job market.

5.4 Transport

A well planned development should provide a mixture of uses which should reduce the need to travel to and from the site.

Elements included in current master plan

- The development should reduce dependency on the need to travel. By mixing residential and commercial buildings and with the close proximity of the city centre this should reduce travel costs and time spent travelling.
- A strategy has been developed to ensure that any traffic generated by the new development does not adversely affect the already struggling infrastructure in Huddersfield.

Future aspirations to be incorporated into next stage of the design

- Sustainable development should reduce the need for freight traffic and transport of goods, thus reducing costs of transporting goods. This needs to be addressed when sourcing materials.
- The development should optimise the use of rail and water transport both at construction stage and in operation.

5.5 Social Benefits & Costs

This indicator considers the social benefits and costs of the development to the potential users.

Elements included in current master plan

The development will increase vitality to the local area and provide benefits in terms of acting as a catalyst for the improvement of other nearby redundant and derelict areas and buildings.

Future aspirations to be incorporated into next stage of the design

Publicise the social benefits during both the design and construction of the Development and at the time of handover. This will help 'kick start' nearby areas with potential development opportunities.

6 Conclusions

The development aims to minimise its impact on the environment by:



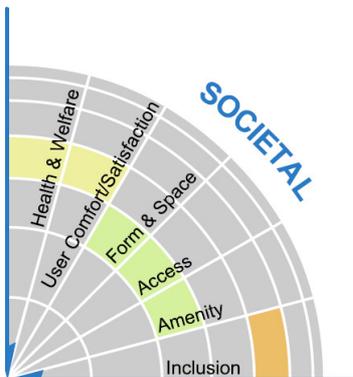
- Reducing building energy demand
- Identifying appropriate low and zero carbon technologies for energy supply
- Selecting an existing brownfield site in need of environmental enhancement.
- Addressing water drainage and flooding issues
- Enhancing the ecology and cultural heritage of the site by opening up the canal and access to the river
- Promoting less (or non-) polluting methods of travel

The development aims to minimise its impact on its use of natural resources by:



- Reducing, reusing and recycling materials
- Reducing water demand and re-using where possible
- Identifying appropriate renewable energy technologies for energy supply
- Using the existing land efficiently
- Ensuring that waste is minimised during construction and by design

The development aims to have a positive local social impact by:



- Meeting best practice in respect of the health and welfare of users of the site
- Ensuring the buildings on the development are comfortable and users are satisfied
- Creating a development that compliments and enhances its surroundings
- Providing access to all
- Providing a useful amenity to the surrounding area
- Including the local community in the design process

The development aims to have a positive impact on the local economy by:



- Providing a catalyst for the improvement of other nearby redundant and derelict areas
- Reduce travel costs to users by providing a comprehensive transport strategy.
- Creating local employment
- Encouraging local shops and services
- Negotiating pre-lets to ensure the development is financially viable