

4. Environment

Introduction and Overview

4.1 As part of the baseline study, there is a need to consider the environmental issues that may be associated with transformational change at Birkenhead Docks, both beneficial and detrimental. An initial review of environmental issues has therefore been undertaken. The main purposes of this review are to:

- Understand the existing baseline environment and its wider context;
- Commence the identification of environmental assessment criteria, to inform future impact assessment work;
- Set out the intended approach to procedural requirements of environmental legislation;
- Identify initial constraints and opportunities that will inform the Masterplanning process and future detailed proposals.

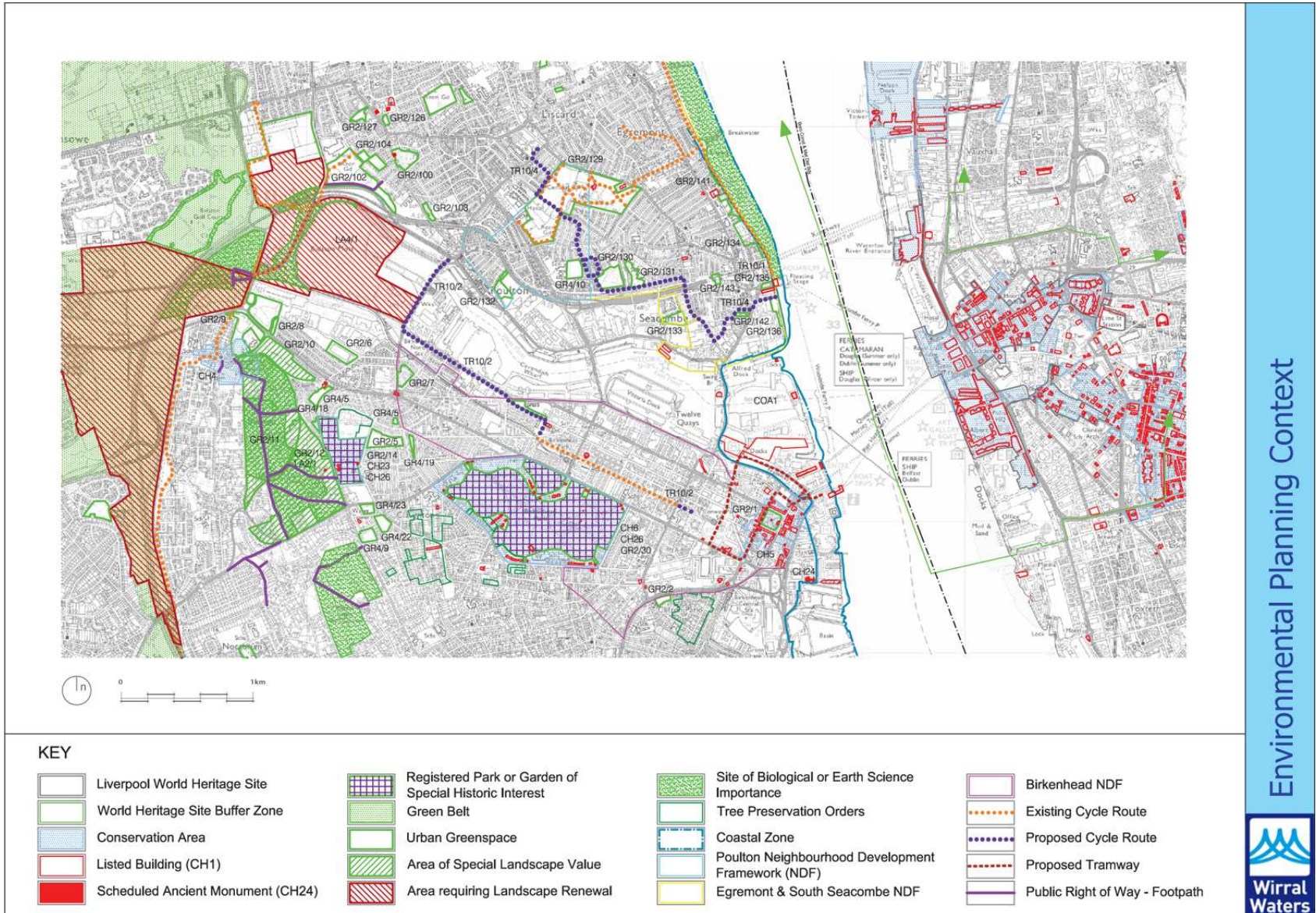
4.2 At present, parts of the Docks provide a very extensive, run down, post-industrial, man-made environment of some 200 hectares. The opportunity is of regional significance, given its scale and will have the potential to influence the socio-

economic as well as natural environment at the site, and within the wider surrounding area including the Wirral Peninsula and the north west region. Such potential effects are explored elsewhere in the Baseline Study. This section considers the effects on the natural and man-made environment.

4.3 The review of environmental considerations has highlighted a number of potentially significant issues that would need to be properly assessed through the evolution of Wirral Waters. An important aspect of this is the various environmental planning designations that affect the Wirral Waters area. These are shown overleaf in **Figure 4.1 Environmental Planning Context**.

4.4 These are reviewed in detail through this section, in reference to the various environmental interest/subject areas. From the outset, it has been evident that numerous environmental issues are appropriately considered by looking at both the Birkenhead Docks area (including hinterland north at Wallasey, south at Birkenhead and west at Bidston) and Liverpool City Centre. The concentration of heritage assets in Liverpool City Centre and parts of Birkenhead are evident from **Figure 4.1**.

Figure 4.1 Environmental Planning Context (Peel Holdings - OS licence 100037579)



- 4.5 While development on a major scale will always have the potential for significant impact on the natural environment, the development process proposed, comprising visioning, existing baseline assessment, spatial masterplan development and more detailed Environmental Impact Assessment (EIA), for this stark, man made environment, could also result in considerable environmental benefits.
- 4.6 Well managed high quality development can incorporate major opportunities for local environmental enhancement and improvements. They can seek to provide sustainable communities where people may live, work and play, such that the overall impact of the scheme may be beneficial not only economically, but also in terms of biodiversity.
- 4.7 A key finding of this review is the need to consider how Wirral Waters will influence local strategic plans and programmes, given its scale and lifetime. Regeneration on this scale and over the proposed timeframe will influence local development strategy and so will need to be integrated into the development plan.
- 4.8 As part of the Wirral Core Strategy and subsequent Development Plan Documents, it will be possible to assess the potential environmental impact of the whole scheme, through Sustainability Appraisal incorporating Strategic

Environmental Assessment. As the masterplanning process develops through this SRF, the wider context of the overall development can be appropriately considered through statutory and informal appraisal work, consultation with statutory and other bodies and testing options as the project evolves. The impacts of phasing, sustainability credentials and project infrastructure needs are good examples of items that will need to be managed, monitored and reassessed over the lifetime of this regeneration programme.

- 4.9 The sub-sections below set out an issue-based approach to the baseline assessment.

Ecology and Biodiversity

- 4.10 The Mersey Estuary is recognised as one of the most important marine ecosystems in Europe, and warrants several international and national nature conservation designations. The mosaic of marine, inter-tidal and terrestrial habitats are key to the Mersey Estuary's biodiversity importance, which supports a range of flora and fauna, most notably birds.
- 4.11 The extent of the statutory Special Protection Area is shown below in Figure 4.2, with a close view of Birkenhead in 4.3.



Figure 4.2 The Mersey Estuary Special Protection Area (Peel Holdings – OS licence 100037579)
Figure 4.3 Mersey Estuary Special Protection Area (Birkenhead view) (Peel Holdings – OS licence 100037579)



4.12 The catchments of the Mersey Estuary comprise one of the largest urban areas in Europe, the development of which has reduced opportunities for wildlife in these areas. Although the Birkenhead Docks area is not within the statutory SPA, terrestrial habitats in areas surrounding the Estuary form part of the overall estuary ecosystem. The potential for direct and indirect impacts on habitats and wildlife are wide ranging and complex. As a result depending on the nature, scale and location of development along or close to the Estuary, significant impacts on the estuary as a whole are possible.

4.13 ‘Appropriate Assessment’ may be required under The Habitats Regulations 1994 ((Regulation 48(1)) if any development is likely, either alone or in combination with other plans or projects, to have a significant effect on the Mersey Estuary European SPA; the proposed Liverpool Bay and Mersey Narrows / North Wirral Foreshore SPAs; or the Dee Estuary Candidate SAC. Although the development site is remote from the mid estuary SPA, the complex dynamics and integrated dependencies of the estuary system and its associated wildlife is such that there is potential for activities both up and downstream to impact on the designated area. The general categories of impact relevant to the Estuary, which will need to be considered are: physical loss, physical damage, non-physical disturbance, toxic contamination, non-toxic contamination and biological disturbance.

- 4.14 Consultation with Natural England and the Merseyside Ecological Advisory Service is underway in order that the appropriate scope for ecological appraisals and assessment work is identified early in the spatial masterplanning process. This will include screening whether an Appropriate Assessment will be needed and if it is, the undertaking of a scoping process.
- 4.15 The resourcing of water for the proposals may raise ecology issues within the Dee Estuary SAC. This issue is mentioned in the Secretary of State's Proposed Changes to RSS and will require further consideration.
- 4.16 The key issues which must be satisfied in regard of international designations (Special Protection Area (SPA) and 'Ramsar' (Ramsar Convention on Wetlands) are:
- No loss in quality of bird feeding and roosting sites (extent, distribution or access to including interference with flight paths);
 - No substantive increase in levels of bird disturbance associated with Liverpool Bay and the Dee Estuary;
 - No reduction in water quality (biological and physical) in Liverpool Bay; and
- No adverse impact on saltmarsh habitat due to alterations in salinity gradient.
- 4.17 Any development will need to demonstrate no significant loss of the key habitats associated with internationally designated sites. The Mersey Estuary is of international and national importance for populations of certain wildfowl and wader species. Therefore development should not significantly impact on internationally important numbers of Dunlin, Redshank, Pintail, Ringed Plover, Shelduck, Teal, and Redshank; and similarly not significantly impact on nationally important numbers of Wigeon, Grey Plover, Black-tailed Godwit, and Curlew. Where potential impacts are identified through the detailed assessment process, mitigation may be required as appropriate.
- 4.18 Care will need to be given to ensure effective integration of new development at Bidston Dock with the adjoining Bidston Moss. The scale and longevity of the scheme will bring experience gained from other national and international dock restoration schemes to ensure the scheme manages appropriate biodiversity within the Strategic Regeneration Framework.
- 4.19 Natural England's 'Liverpool Bay' Natural Area key habitat, which is currently provided within the existing Birkenhead

Dock system as 'Artificial habitats', includes seawalls and docks. Many of these man-made structures support a plant and animal community similar to that of rocky shores, tending to be dominated by encrusted mussel, barnacle and algae communities. There may be opportunities for significant improvements of these habitats through an integrated approach to land and water interfaces.

- 4.20 Consideration will be given to enhancing the value of the current docks for birds, most notably waterfowl, whilst providing interest and education for residents and visitors alike. A number of possible options to enhance the biodiversity at the site can be considered at the masterplanning stage, including the creation of (or complementing existing) nature reserves, nesting sites, feeding areas for example by the creation of reed beds and 'greening' the margins. Due consideration will be given to water quality issues following a programme of water and sediment sampling and analysis. Consideration will also be given to ensuring the requirements and safety of the operational port, and also the Liverpool John Lennon Airport, are not compromised when developing such proposals.
- 4.21 On the landward side, 'Bidston Moss' Local Nature Reserve (LNR) is strategically located to the west of Bidston Hill. This former landfill site is managed by Groundwork Wirral and is currently subject to significant environmental improvement

investment through 'Newlands' funding. The development of this important reserve to its full potential has been limited as public access is restricted. However, with careful consideration of appropriate green links to the reserve, balancing land use, commercial, transportation and drainage considerations with ecological and landscape design objectives, the nature reserve could be integrated into a wider network of features of nature conservation value and incorporate wildlife into any new urban infrastructure.

- 4.22 The following principles to retain or enhance the nature conservation value and biodiversity are considered appropriate, and should be considered as part of future masterplans and associated landscape design strategies:
- Retain existing, trees, hedgerows, watercourses, ponds, and other established habitats, where possible;
 - Where the loss of existing habitat features is unavoidable suitable mitigation should be considered including provision for replacement of habitats and features;
 - Provision of new wildlife habitats and green corridors;
 - Incorporate the greatest possible proportion of appropriate native planting in any landscaping or planting schemes; and

- Consider reopening culverted watercourses in order to provide 'new' river corridor habitats.

Archaeology and Cultural Heritage

- 4.23 An Archaeology and Cultural Heritage Appraisal (ACHA) has been undertaken, a full copy of which can be found at **Appendix 4**. The Appraisal has been completed in accordance with relevant policy and legislation identified in **Appendix 1**.
- 4.24 The aims of the Appraisal are to assess the potential nature, importance and survival of archaeological and cultural heritage remains within the area of potential development. The archaeological background has been assessed using the Merseyside Sites and Monuments Record (MSMR), which holds records relating to known monuments, chance discoveries and archaeological site works.
- 4.25 The history of the site has been documented by a study of historical maps, plans, books, and articles held at the Wirral Archives and in the local studies collection at Birkenhead Central Library, as well as at the National Monuments Record (NMR) in Swindon. The Merseyside Maritime Museum has produced several publications of particular relevance to the site, which have also been consulted.
- 4.26 The site would seem to have witnessed relatively little activity prior to the 19th century. Furthermore, the construction of the docks involved the reclamation of a large amount of land, a large portion of which constitutes the potential site. This area is unlikely to contain evidence of previous activity. Elsewhere in the site, it is probable that any such evidence will have been truncated or completely destroyed by subsequent development.
- 4.27 There is potential for palaeo-environmental remains in the area of Bidston Moss and the discovery of archaeological material, in the form of a Roman bridge to the south east of the site, beneath significant depths of alluvial material, confirms a potential for the preservation of deposits across the site, at depth, especially in those areas of the site that were not reclaimed in the 19th century. Further archaeological investigation will be required where proposals would destroy potential deposits of nineteenth century or earlier activity. However, it is very unlikely that remains of greater than local importance survive within the area of interest.
- 4.28 Along with three listed buildings there are several structures that survive from the 19th and 20th century development of the docks, including dock bridges, and storage and ancillary structures including parts of the dock wall. The listed buildings will need to be retained, and the systematic survey

of the other surviving 19th century structures occupying the site, the Canada Works in particular, will be required.. More detailed assessment will inform proposals for other fabric, with the more important elements retained, but more fragmentary remains recorded in advance of removal.

- 4.29 Also assessed is the impact of development upon designated areas retained within the site and the wider study area. Whilst the secluded and introspective nature of the two registered parks is likely to shield these areas from any effect on their setting, the intentionally prominent location of the Hamilton Square conservation area makes it vulnerable to impact upon its setting. Related to this assessment is the effect of development on views to and from these areas.
- 4.30 The buffer of the Liverpool Maritime Mercantile City World Heritage Site has been defined as running along the middle of the River Mersey. This area is not infringed upon by the proposed development. Nevertheless, a consideration of the setting of these sites and also retained listed buildings within and close to the development itself, to inform sensitive design, is paramount. This approach may be informed by historic landscape characterisation.

Landscape, Townscape & Visual Amenity

- 4.31 A Landscape, Townscape and Visual Appraisal (LTVA) has been undertaken. It is contained at Appendix 3. The Appraisal has been completed in accordance with relevant policy and legislation identified in Appendix 1.
- 4.32 It is a 'working document' that analyses the current character and visual context of the dock estate and wider study area. The content at this stage is not finalised, and is dependant upon input from consultees and principal stakeholders.

Study Area Context

- 4.33 Wirral is located on a peninsula formed by the Mersey and Dee Estuaries. The peninsula is divided by a sandstone ridge resulting in two widely differing areas with a predominantly pastoral landscape to the west and the more industrial urban area centred on Birkenhead to the east.
- 4.34 The site area itself is located to the rear of the Wirral waterfront off the Mersey basin. The Dock Road provides a direct link to the M53 motorway to the west and to the Mersey Tunnel (Kingsway) to the east. The area includes Bidston Dock, the Great Float of Birkenhead Docks, and adjacent dockland, and covers a total area exceeding 500 acres.

Scope of Appraisal

4.35 The initial stage of any landscape (or townscape) and visual appraisal is to review the existing landscape and visual resource in the form of the baseline landscape and visual conditions (from a strategic to local, or site specific level). The data collected is then used to inform the design process for any future development and ultimately assist with the estimation of the resulting landscape and visual impacts.

Appraisal Definitions

4.36 To assist the reader in understanding the distinct difference between landscape, townscape and visual elements of a baseline appraisal, definitions are as follows:

4.37 **'Landscape'** is defined as the human perception of the land conditioned by knowledge and identity with a place. 'Landscape Character' is the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It also creates the particular sense of place of different areas of the landscape.

4.38 **'Townscape'** comprises the physical and social characteristics of the built and urban environment and the

way in which we perceive those characteristics. It is this mix of characteristics and perceptions that make up and contribute to both landscape and townscape character and give a 'sense of place' or identity. Characteristics may be commonplace and make a significant contribution to local distinctiveness or they may be individual, eye-catching and prominent or have strong local, cultural associations.

4.39 **Visual amenity** is defined as the value of a particular area or view in terms of what is seen. A visual envelope is the extent of potential visibility to or from a specific area or feature.

4.40 **Landscape/Townscape and Visual Assessments** are independent but related issues. 'Landscape and Townscape Assessments' deal with the analysis and classification of the landscape/townscape, its character and quality, while a 'Visual Assessment' relates to the appearance of those characteristics and the resulting visual amenity.

Approach and Methodology

4.41 The townscape and visual baseline appraisal has been undertaken with reference to a wide range of documentation and sources of information relating to policy and planning advice, legislation, guidance on assessing both townscape character and visual amenity, and other background material for the region and local study area.

4.42 As background to any baseline townscape and visual appraisal it is important to have an understanding of the policy context. Whilst other technical studies will provide focused analysis of overall planning framework and subject related policy, a review has been undertaken relevant landscape and townscape policy – see Appendix 1.

4.43 The principal landscape / townscape planning issues relevant to the site relate to its rich commercial history and maritime heritage, as well as its prominent position adjacent to the Wirral waterfront, within view of the Liverpool waterfront. Important considerations include:

- The proximity of the Liverpool World Heritage Site and associated buffer;
- The location of the site adjacent to a number of designated Conservation Areas (including Bidston Village, Birkenhead Park, Flaybrick Cemetery and Hamilton Square);
- The study area comprises the setting of several Listed Buildings and structures (including the Twelve Quays Pumphouse, East Float Corn Warehouses); and
- The proximity of a historic park of national significance (Birkenhead Park).

4.44 The review of the policies which encompass the above designations, together with analysis of associated guidance has enabled four principal landscape planning issues to be determined. These issues are identified and their importance set out below:

- Impact of any development and in particular tall buildings on character and views to and from ‘Liverpool – Maritime Mercantile City’ World Heritage Site;
- Impact of any development upon views and character of Birkenhead Park;
- Impact of any development upon views and character of Hamilton Square; and
- Impact on skyline views and character from Bidston Hill - Area of Special Landscape Value.

4.45 **Landscape** means more than just ‘the view’. It is the physical and cultural (i.e. its use and management) characteristics of the land itself. The character of a landscape can be defined as a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another.

4.46 **Townscape** comprises the physical and social characteristics of the built and urban environment and the way in which we perceive those characteristics. It is this mix of characteristics and perceptions that make up and contribute to both landscape and townscape character and give a 'sense of place' or identity. Characteristics may be commonplace and make a significant contribution to local distinctiveness or they may be individual, eye-catching and prominent or have strong local, cultural associations. It is important to recognise that both the characteristics of the landscape themselves and the way in which we perceive those characteristics may well change over time.

4.47 The local **landscape character** of the area under consideration has been largely obscured by the urban sprawl associated with the Merseyside Conurbation although a number of landscape features are still discernible including the mid-Wirral sandstone ridge, the gently rolling landform associated with the River Birket valley and individual features of the coastline. For the purposes of this report, the appraisal of **townscape character** is a particularly important part of the baseline process, and helps to ensure that certain key issues are addressed, including:

- The understanding of how and why urban landscapes are important;

- The promotion and appreciation of townscape issues and a thorough understanding of the local urban context;
- The successful accommodation of new development within the urban environment, including the capabilities of the local townscape to absorb change; and
- The establishment of townscape enhancement and management principles aimed at reinforcing the urban environment.

4.48 In terms of **regional landscape character**, the Wirral peninsular is split into two main character areas as identified within the Countryside Agency's Character Map of England. The presence of a dramatic sandstone ridge running through the peninsular has resulted in the two widely differing Character Areas of 'Wirral' (Character Area 59) to the west and 'Merseyside Conurbation' (Character Area 58) to the east. The boundary between the character areas largely follows the line of the M53 motorway and runs from Bidston Hill in the north, through Noctorum and Mountwood, to Storeton in the south. To the south-east, Character Area 58 abuts Character Area 60 'Mersey Valley' which is a distinctive river-valley landscape focusing on the Mersey, with its estuary and associated tributaries and waterways.

4.49 In stark contrast to Character Area 59 which is more rural, the site itself falls within Character Area 58 'Merseyside Conurbation', which is located to the east of the Wirral peninsular. This character area incorporates the City of Liverpool and its environs in addition to the urban/industrial areas of Birkenhead which lie to the north-east of the mid-Wirral sandstone ridge.

4.50 The principal features/elements of the study associated with the local townscape context can be summarised as:

- Hamilton Square and environs;
- Birkenhead Park;
- The River Mersey waterfront, Liverpool City and associated inter-visibility;
- Birkenhead and Liverpool docks including the Wirral Waters site; and
- Scattered historic buildings and landmark elements (including the context of the World Heritage Site).

4.51 As part of the baseline appraisal process, the study area and its immediate environs have been classified into 10 **Townscape Character Areas** (TCA). This characterisation

assists in defining the capacity of the townscape to accommodate new development or redevelopment:

- TCA1: River Mersey Corridor
- TCA2: Dock System/Lower River Valley
- TCA3: Structured Parkland
- TCA4: Landscape Edge/M53 Corridor
- TCA5: Structured Industry
- TCA6: Fragmented Industry
- TCA7: Laird Town Plan Residential Neighbourhood
- TCA8: Birkenhead Town and Waterside Environs
- TCA9: Northern Neighbourhoods
- TCA10: Southern Neighbourhoods

4.52 In assessing the level of **sensitivity of a landscape/townscape receptor**, a judgement needs to be made on the importance to society of the landscape or townscape under consideration. This will be based on and take into account views of consultees about what is important in the landscape/townscape and the reason for its importance. When describing landscape/townscape sensitivity, it is important to identify the people or groups who could be affected by the proposals because the landscape is valuable to people in different ways.

4.53 The appraisal of the importance and sensitivity of townscape character and townscape features is based on a set of criteria

developed from the Landscape Institute and the Institute of Environmental Management and Assessment (IEMA). The main townscape receptors likely to be affected by any development proposals (subject to consultation) are likely to include the following:

- The setting of the Conservation Areas;
- The setting of scattered Listed Buildings;
- The low Wirral skyline punctuated only by occasional historic buildings and structures;
- Views across the River Mersey to the Liverpool skyline and World Heritage Site;
- The Wirral Waterfront; and
- The local Townscape Character Areas identified above.

Visual Appraisal

4.54 The primary objective of the visual appraisal work is to assess the current 'Strategic Views' policy and guidance available, and assess how it serves the study area. In association with this, the types of view experiences particularly appropriate to Merseyside and the Wirral will be reviewed, and a range of

suitable visual receptors (photoviewpoint locations) will be selected. Both 'Strategic' and 'Local' views will be appraised, as well as the visual context of the Merseyside and Wirral peninsulas.

4.55 The work requires the analysis of the site area itself, the visual relationship with existing land use and the inter-visibility with local visual receptors. For the purpose of this baseline study, the following criteria has been utilised to appraise views and visual amenity:

- A 'Viewing Place' which should be established, accessible and distinctive;
- The 'View' which requires value, composition and landmark elements; and
- The 'View Experience' such as a wide, linear or changing view.

4.56 In terms of context, visual connections and linkages, the geographical prominence of the Wirral peninsula provides a unique identity in terms of visual reference when viewing the North West coast at a national scale. When appraising the visual context of the study area, it is important to acknowledge the visual dominance of the surrounding water. Despite the physical separation of the River Mersey corridor,

the proximity of the Liverpool and Birkenhead conurbations offers a great degree of inter-visibility. This is accentuated by the local topography, which provides a subtle visual backdrop to both urban areas.

4.57 In order to assess the visual interest of the study area and the context of the two adjoining conurbations, it is important to have an understanding of the current skyline and the landmark elements that are associated. The location and visibility of landmark elements is a crucial part of determining strategic and local view corridors, as well as reinforcing legibility and 'sense of place' in our urban and rural environments.

4.58 The **principal landmark elements and skyline features** associated with both the Wirral and Liverpool study areas include:

- Bidston Hill Observatory;
- Wallasey Town Hall;
- The Three Graces – The Royal Liver Building, Cunard Building, Mersey Docks and Harbour Company Building;
- The Albert Dock; and

- Liverpool Anglican Cathedral.

4.59 **Strategic views** are defined as 'the line of sight from a particular point to an important landmark or skyline'. Most emergent guidance considers that a strategic view should seek to frame a local icon to the exclusion of all else in the town/city; and, that any strategic view should provide a visual link to the heart of a town/city from surrounding environs. Other examples of strategic view criteria focus upon a skyline as a whole, rather than individual landmarks which make a view distinctive.

4.60 The following strategic viewpoints have been identified:

- Woodside Ferry Terminal;
- Everton Hill;
- Albert Dock; and
- Bidston Hill.

4.61 In addition to the identification of relevant strategic views, **other principal views** have been identified that require analysis as part of this baseline appraisal. The views have been selected to further acknowledge the availability of local panoramas, vistas, prominent landmark elements and designated land. The local views do not just focus upon the Mersey Corridor (unlike the Strategic Views), but encompass

the visual setting of the wider study area. The local visual receptors selected at this stage include:

- Rock Park;
- Flaybrick Hill Cemetery;
- Hamilton Square;
- Birkenhead Park;
- St. Mary's Tower / Birkenhead Priory;
- Bidston Moss;
- Liverpool Anglican Cathedral entrance;
- Otterspool Promenade;
- St Hilary's Church, Wallasey; and
- St Nicholas Church Gardens.

4.62 **Sequential or transitory** views occur when an observer moves along a linear route, as a series or continuum of points. The

principal movement / transport corridors to be considered will include:

- Mersey Ferry routes and associated arrival nodes;
- The M53 corridor;
- The Wirral Dock system;
- The local rail network; and
- The local highway, cycleway and pedestrian network.

4.63 As part of the baseline visual appraisal process, **distant viewpoints** have also been identified. It is acknowledged that, subject to favourable weather conditions, the study area does have the potential to be visible over considerable distances, due to the openness of the Wirral peninsular. The principal distant visual receptors include:

- Eastham Country Park;
- Thurstaston Hill;
- Winter Hill / Pennine foothills; and

- North Wales coastline and Snowdonia National Park.

Implications and Issues for Wirral Waters

4.64 This appraisal has identified those key aspects of the landscape and townscape character which future proposals must consider as part of the design process.

4.65 The townscape character appraisal has highlighted a series of features which are unique to this location, including:

- The size, scale, visibility and nature of the inland docks;
- The scale and importance of the Laird Town Plan and Birkenhead Park;
- The north-south divide between urban areas of differing townscape character;
- The distribution of high quality Conservation Areas (Hamilton Square) and Listed Buildings linked to the historical development of the area; and
- The scale of the Liverpool/Birkenhead conurbation focused on the Mersey waterfront (World Heritage Site).

4.66 Any redevelopment proposals should preserve and enhance attractive character areas, improve areas which are run down

(Character detractors), and strengthen the vitality and viability of the town centre as focal points for cultural, leisure, commercial and retail activities. In assessing the relationship between any future development and the existing environment, attention should be given to height, scale, density and layout and the relationship to surrounding areas, established views and landmark buildings.

4.67 The local topography and subsequent intensive development of the wider study area has resulted in limited ground level views, with many linear/axial view corridors dissected by transport routes and built development. The topography does however, provide a sense of visual enclosure and inter-visibility between the Birkenhead and Liverpool conurbation. Wider views are consequently limited to elevated locations including Bidston Hill and more open locations such as the Mersey river frontage.

4.68 The consideration of strategic views along the River Mersey has highlighted the imbalance between the skyline and waterfront characters of Liverpool and Birkenhead, as well as the presence of many landmark elements. Views have been analysed from previous studies and the work undertaken by Entec to assess the sensitivity and relevance of strategic views into and across the study area. Further to this, a series of local views appropriate to the Wirral peninsular have also been selected for consideration with relevant consultees.

4.69 Wirral Waters provides an opportunity to establish new landmarks and strengthen the skyline of the Birkenhead area, having regard to valued receptors, strategic and local view corridors and landmark elements. There are opportunities to create landmark development in order to raise the profile of Wirral, to complement and balance the rapidly developing waterfront and skyline of Liverpool. Consultation is required with CABE and English Heritage, to consider the implications of Wirral Waters for the wider visual context.

Ground Conditions

4.70 Due to the nature of the docks area, its current and historical uses, it is anticipated that elevated levels of potential contaminants are likely to be encountered during any ground works associated with any redevelopment. Initial consultation with the Environment Agency and Wirral MBC and limited constraints analysis work indicates that particular consideration will be required with regard to any proposals on or adjacent to a number of sites, particularly the former Mobil site in the West Float and the former Bidston Moss and Cross Lane Landfills. It has been identified that whilst further investigation works are required, the East Float area is the least constrained with regard to current ground conditions.

- 4.71 Further work to be undertaken at the spatial masterplanning stage will include a Ground Conditions Constraints Map, which will provide a guide as to the anticipated levels of potential contaminants across the area, in order to inform spatial masterplan development. This exercise will identify sites that are considered most straight forward and those which will be difficult to redevelop in terms of ground conditions, and whether certain areas would be most suited for either a low or high risk land use type.
- 4.72 Significant data is available relating to the construction, maintenance and condition of the dock walls, and the underlying geology at the site. It is understood that the docks area is underlain by sandstones, forming a major aquifer, at a depth of approximately 12m below ground level, with alluvium, clays and made ground forming the surface horizons. Further investigations are required to provide further detailed geological information, particular with regard to variations across the area. However, it is anticipated that the underlying geology, which is very similar to that of Liverpool, does not represent a significant constraint. Prior to the submission of planning application(s), a full Risk Assessment will be carried out, given the potential for the development site to be affected by contamination from previous industrial and / or maritime uses.

4.73 The Wirral Waters project will deliver significant environmental benefits through the removal, management or treatment of potentially contaminated materials. This lasting legacy of the development will serve to minimise future risks to the built and natural environment, reversing the detrimental impacts of the former industrial uses at the Site.

Noise and Vibration

4.74 The existing noise environment at the boundaries of Birkenhead Docks is dominated by road traffic. This particularly the case along access routes to the Ro-Ro terminal at Twelve Quays, which are trafficked by relatively high levels of heavy goods vehicles. Inside the Dock, major noise sources will be those associated with ships engines and mechanical equipment, the loading and unloading of ships, industrial processing (metals fabrication) and traffic movements associated with the import and export of goods.

4.75 At this time, there are few existing noise sensitive receptors within or in proximity to the existing dock estate at Birkenhead. Consultation with Wirral MBC has identified no significant noise sources in the dock estate that have resulted in noise nuisance complaints.

4.76 Baseline noise surveys will be undertaken, using appropriate noise monitoring equipment and agreed methodologies, to

identify the level, tone and frequency of noise generating activities within the Dock and their potential for nuisance. Noise-sensitive locations will be identified and a day and night-time baseline noise monitoring exercise will be undertaken to establish the suitability of areas of the site under existing conditions for its intended use in accordance with PPG24. The noise environment, and the potential for introducing noise sensitive uses, will affect building design and layouts, and hence will need to feed into the Masterplanning process. For example, a key location will be Duke Street, if West Float continues in operation and residential uses are proposed on Vittoria Dock.

4.77 Existing activities with the potential to generate nuisance will be identified, and mitigation strategies developed. The Dock is reliant on 24 hour operations. The movement of shipping, and loading and off-loading of those ships needs to meet the demands of the tide. Night-time operations have the potential to impact on sensitive receptors. The quality of life both during the day (amenity) and more particularly at night (sleep disturbance) can affect residential areas and will need to be considered in detail through the masterplanning process, and be the subject of detailed assessments.

4.78 Noise and vibration impacts associated with any demolition, excavation, piling, plant and construction vehicle and lorry movements have the potential to be long term. These

activities will have the potential not only to impact on existing receptors, but also those sensitive receptors introduced to the site during any phased development.

Air Quality and Health

- 4.79 The Wirral Waters area is not located within, or in proximity to, an Air Quality Management Area. However, it is in proximity to major thoroughfares (M53, Mersey Tunnel access, Ro-Ro HGV routes) and large industrial and commercial operations with the potential to influence local air quality.
- 4.80 Additional traffic and its associated increased congestion on restricted road access in this area could give rise to localised breaches in existing air quality standards and increasingly stringent air quality objectives. Opportunities for sustainable transport will need to be taken up for a number of reasons explored elsewhere, however this will also ensure that traffic emissions are minimised.
- 4.81 Current baseline air quality will be informed by the Local Air Quality Management website, the Automated Urban Network (AUN) monitoring station located at Victoria Park, Tranmere the national network smoke & sulphur dioxide (SO₂) site at West Kirby Girls Grammar School, and the 38 NO₂ and 6 benzene monitoring sites operated by WMBC.
- 4.82 Following further consultation with WMBC, it may also be necessary to undertake limited air quality monitoring at 'hot spots' at and in proximity to the site and its access routes. Air quality modelling is likely to be required at the planning application stage to enable an assessment to be made of the air quality impacts of the proposals. The scope of such modelling would be agreed pre-application with relevant environmental health officers at WMBC.
- 4.83 Wirral's latest review of air quality, the Updating & Screening Assessment (USA) undertaken in 2006 for nitrogen dioxide, the major pollutant of concern within the borough and closely related to road traffic, confirmed that no air quality management areas need be established in Wirral. No Detailed Assessment for any pollutants was required following this assessment.
- 4.84 Any demolition, excavation and construction operations will require careful management to minimise the impact of dust on existing sensitive receptors bordering and within the site and any new sensitive receptors introduced by the scheme.
- 4.85 Although there are currently no nuisance complaints as a result of the port and industrial operations at Birkenhead Docks, any redevelopment should carefully consider, at the Masterplan stage, the location of new potentially sensitive

receptors, particularly if residential uses are brought closer to port activities than they are at present. Existing site operations from plant, processes or shipping could result in nuisance generation resulting in detrimental air quality (smoke, dust, odour) or breaches of air quality standards and objectives.

- 4.86 Major economic redevelopment will increase not only traffic, but also the requirements for solid waste and waste water management and energy usage. New infrastructure (such as treatment plants or power generation facilities) required for solid waste, waste water or energy may well generate emissions to atmosphere, whose impacts on local air quality will need to be assessed and, where necessary, mitigated. The provision and location of services and their potential to impact on local sensitive receptors must also be considered at the Masterplan stage. The need to introduce additional waste/waste water treatment facilities or electricity generating plant on site may have implications for development opportunities and will be addressed through Masterplanning. It is understood that power supply constraints are already a factor at Twelve Quays.
- 4.87 Increased energy usage will also have the potential to increase greenhouse gas emissions, and so the significance of those changes, in both in local and national context will need to be considered. There will be a need to demonstrate

climate change impacts have been taken into account, and a commitment to minimising those potential impacts through reduced energy usage associated with location, design and the promotion of renewable energy sources.

- 4.88 Whilst the air quality issues at this time are not considered to represent a significant constraint, it will be necessary to ensure that air quality in the wider surrounding area is not subject to significant deterioration.

Hydrology and Hydrogeology

- 4.89 Birkenhead Docks are designated by the Environment Agency as being within Flood Zone 3, an area where there is a high risk of flooding (a 1 in 200 chance of coastal flooding annually). However, the majority of the wider area is generally located within an area of low risk, designated by the Environment Agency as Flood Zone 1, although as would be expected there are small intermediate areas within Flood Zone 2 (a 1 in 100 chance of coastal flooding). Given the potential scale of development and the flood risk associated with the docklands, Flood Risk Assessments (FRA) will be required in accordance with the recently published PPS25 for any future planning application and EIA. FRA work for Wirral Waters will also be advanced within the context of the Strategic FRA for the Borough commissioned by the Council.

- 4.90 Consideration of surface water drainage issues will need to be included in depth within any FRA. This should address the River Birkett Culvert prior to its discharge into West Float, due to historical drainage issues in the wider River Birkett catchment, due to poor maintenance and blockages. Further detailed discussions are to be undertaken with the Environment Agency and Wirral MBC's flooding and drainage engineers to identify at an early stage constraints associated with building over or adjacent to the River Birkett Culvert. Current Environment Agency Guidance has a presumption against culverts, and where possible recommends the opening up of culverted watercourses.
- 4.91 Whilst the River Birkett and the culvert could represent a constraint, the removal of the culvert could provide a significant opportunity, introducing a new habitat corridor, in addition to reducing future maintenance and operational liabilities.
- 4.92 The first stage of the FRA, a flood risk scoping study has commenced, and following the completion of the desk study elements, detailed consultations with the Environment Agency will identify the required scope of the PPS25 FRA, or assessments required to support the Masterplan process and any subsequent planning applications. A review of the information collected to date indicates that the FRA will be focussed on flooding as a result of surface water drainage issues, as the docks are maintained at a static level by an existing impoundment and discharge regime operating in parallel with the lock gates at the connection with the Mersey Estuary. Due to the locks system, a flood risk from the Mersey would only be an issue if there were a catastrophic failure of both sets of lock gates simultaneously. An assessment of flood risk to any below ground structures, such as car parking, and consideration of the impact of sea level rise associated with global warming on the current flood defences, may also be required.
- 4.93 A number of abstractions are currently present in the dock estate, including an impoundment of the River Mersey into Birkenhead Docks. It is unlikely that any development in the area will impact on these abstractions, particularly those relating to ongoing port operations at Twelve Quays.
- 4.94 The site currently has no designated bathing water. Should it be anticipated that the Masterplan proposals incorporate a beach, or similar, then maintaining the operational port activities and meeting the stringent requirements of the Bathing Waters (Classification) Regulations (England) 2003 could be a challenge, and if possible will inevitably require significant mitigation/management measures.

Lighting

- 4.95 Current industrial and port operations are limited in terms of their external lighting by Mersey Docks and Harbours Company.
- 4.96 Key principles for future lighting schemes can be identified through the Masterplanning process, both in terms of creating character and security of place through lighting schemes, and in terms of highlighting the most sensitive and least sensitive areas for lighting. This will enable Spatial spatial masterplans to be developed minimising the risk of any impacts on shipping by locating land uses appropriately.
- 4.97 Additionally, the area is within the Liverpool John Lennon Airport consultation zone, and it will be necessary to consult the airport safeguarding officer. Given the distance of the site from the airport it is not anticipated that there will be any undue constraints imposed upon lighting at this stage. The Masterplanning and design team should refer to relevant guidance within BS5489 Part 1 2003 and CAP 738 Safeguarding of Aerodromes 2006.
- 4.98 Artificial lighting is an essential element of the development of vibrant and vital 24 hour communities. Lighting should be considered as an integrated element of Spatial spatial masterplans. A high quality of design and equipment is necessary to provide a safe and welcoming environment,

whilst obtrusive and unnecessary lights, as well and energy use.

- 4.99 The impacts of visible light will also be considered within the Landscape, Townscape and Visual Amenity assessment work described above. Ecological receptors to lighting may also need to be assessed in depth, particularly with regard to birds using the site. A review of existing literature relating to the impact of lighting on the species using the site and surrounding area will be undertaken.
- 4.100 Initial consultations with Wirral MBC have however identified that significant nuisance as a result of existing or future lighting installations is not anticipated. Any new lighting may be controlled by suitable planning conditions to ensure appropriate design and installation standards are adopted.

Sunlight, Daylight and Overshadowing

- 4.101 The potential for overshadowing impacts will need to be considered during the development of the Spatial spatial masterplans, in particular to determine the interdependent relationship between any tall buildings and the individual and cumulative impacts on the existing environment, to ensure that adverse impacts on existing developments are minimised. As part of the Refreshed an Expanded Vision, an initial study will identify parcels of the

Masterplan areas where tall buildings can be considered and those where overshadowing impacts are likely to occur.

- 4.102 Additionally, consideration will be given to the availability of sunlight to open spaces in order to maximise sunlight within these locations, which can significantly enhance the amenity value of such locations throughout the year.

Wind

- 4.103 A wind design review is to be undertaken. This will be based upon local Met Office data and information held by the Mersey Docks and Harbours Company. Due to the open nature of docklands, including large expanses of water, wind can significantly impact on pedestrian amenity; this is of particular relevance with changes in land uses to leisure, residential or office, where there are significantly more people walking and using open spaces, and on pedestrian / cycle bridges.
- 4.104 The identification of prevailing wind direction and speeds will enable masterplanners, architects and wind specialists to determine design guidance for proposed buildings and open spaces in order to minimise adverse impacts on pedestrian amenity through design. The incorporation of specialist design advice throughout the masterplanning process will maximise the use and value of the site to pedestrians.

Services and Capacity

- 4.105 Any major development emerging in the Wirral Waters area may have significant impacts on the existing infrastructure network and require additional services/capacity. Particular issues are likely to relate to the provision of water, sewerage, electricity and gas, due to the potentially significant increases in demand for these services.
- 4.106 Current and predicted future available capacities in these utility networks require significant liaison with the utility undertakers and will be advanced through the Masterplanning process. The next stage will be necessary to produce a load appraisal for the existing site and Masterplanning areas. At this stage it will then be possible to work with the relevant utility companies to undertake an in depth load assessment that will identify the required scale of network upgrades necessary to deliver the development and safeguard its long term success.
- 4.107 Where significant off site upgrading and reinforcement works are required, it will be necessary to consider the environmental impacts of these schemes as part of any EIA process, as these will be considered intrinsic to the overall scheme.
- 4.108 Given the limited capacity within the local electricity infrastructure in the vicinity of Birkenhead Docks, an

upgrading for Wirral Waters could have significant synergies with the ongoing operations of the Docks, providing a significant advantage to existing and future port uses.

- 4.109 Wirral Waters is located with excellent transport connections that may make it particularly suitable for the inclusion of sustainable, renewable and low carbon energy sources. Appropriate low carbon / renewable energy sources will be incorporated into the masterplanning process. Additionally, Peel Holdings has its own network of existing and planned environmental technologies schemes, which Wirral Waters could benefit from.

Strategic Environmental Assessment (SEA)

- 4.110 Strategic Environmental Assessment is similar to EIA, but applied at a higher level in the decision-making tree. SEA in the UK is required by an EU Directive (2001/42/EC) implemented through the Environmental Assessment of Plans and Programmes Regulations 2004. SEA involves an assessment of the effects of certain plans and programmes on the environment (which includes population and human health). SEA is mandatory for plans and programmes for various sectors, including town and county planning and land use, which set the framework for future development consent (for projects listed in Annexes I and II of the EIA Directive).

- 4.111 Sustainability Appraisal (SA) is a process developed in the UK to appraise the sustainability of land use plans. It covers economic and social effects in addition to environmental issues, and should give them equal weight. Its requirement was formalised in 2004, under the Planning and Compulsory Purchase Act, and SA is now mandatory for all Local Development Documents (LDDs) and RSS revisions.
- 4.112 Government guidance (ODPM, November, 2005) on Sustainability Appraisal of RSSs and LDDs advocates a combined approach of SA and SEA, which ensures that the SA also meets the requirements of the SEA Directive. The guidance states that RSS revisions and DPDs are likely to require SEA, but that SPDs may not. An SPD requires SEA only where it is determined to be likely to have significant environmental effects.
- 4.113 The SRF, as a non-statutory framework, does not require SEA. Through the Wirral Core Strategy and other DPDs, Wirral Waters will be subjected to SEA. However, as the Wirral Waters SRF may be progressed in advance of the Core Strategy and other DPDs, it may be necessary to undertake SEA and SA for Wirral Waters. This will be determined as the Stage 3 Framework evolves. Regardless of any undertaking of SEA and SA, Stage 3 will incorporate a significant amount of environmental appraisal, consultation and options testing.

Sustainability and Climate Change

4.114 In December 2007, Planning Policy Statement: Planning and Climate Change was published. This PPS sets out how planning, in providing for the new homes, jobs and infrastructure needed by communities, should help shape places with lower carbon emissions, with a target of zero carbon development being achieved by 2016. This document requires sustainability issues such as carbon emissions and water use to be considered at the regional and local plan making stage, and at planning application stage, for all development.

4.115 In order to ensure that Wirral Waters sits at the leading edge of sustainable urban development, it will be necessary to incorporate sustainability through all aspects of future development, in order to maximise the benefits to the scheme and its future occupiers. In order to manage the developing aspirations of local, national and European governments it will be necessary to continually review legislation and policy, to ensure the Wirral Waters development has the flexibility to meet and exceed sustainability requirements as the project develops.

4.116 This will particularly apply to material usage, waste minimisation, water use, use of renewable energy and carbon emissions. In order to facilitate this, a sustainability checklist will be developed, which can guide the development of

spatial masterplans, ensuring that sustainability issues are considered holistically within the project design. Such a checklist would be built on with a sustainability workshop, held with the design team, to identify all areas of the design which are contributing towards the objectives of sustainability, and any areas where sustainability objectives are not being met.

4.117 Further sustainability tools may be identified to aid the development of Wirral Waters, for example Waste Management Plans (demolition, construction and operational wastes), guidance for selecting materials that are of a lower environmental impact, targets for carbon reduction and how to meet the requirement for renewable energy sources, which is currently 10% but likely to increase over the life of the project.

4.118 Key principles and options for achieving sustainability will be explored through the Stage 3 Framework stage, which will incorporate a **Sustainability Strategy**. Alongside the submission of individual planning applications, detailed appraisals of the sustainability of projects will then be undertaken and reported in **Sustainability Statements**. It will detail, inter alia, the initiatives proposed to reduce carbon emissions, maximise energy efficiency and generate energy from renewable and low carbon sources.