Chapter 14: Docklands, harbours and post-industrial sites

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Introduction

Many cities around the world have long functioned as ports of one sort or another – sometimes incorporating huge areas with excavated docks controlled by lock gate warehouses and transport infrastructure, sometimes comprising smaller harbours or quaysides along rivers for more limited exchange of goods. Many of these, such as the London Docks, evolved and developed over the centuries until changes in shipping technology – principally the shift to containers – rendered them obsolete. This was in part because the huge container ships could not use the docks, which were too small, and in part due to the need for extensive storage spaces and a different form of transport and loading/unloading system. This change came about following developments in the 1950s to the 1970s and largely replaced existing ports in the 1980s. The result of this was the creation of huge areas of abandoned and derelict land and water bodies, as well as de-industrialisation, unemployment and social problems among the original dockworker communities and local economic recessions. As well as container shipping, bulk carriers and enormous oil tankers led to further changes in other types of ports which handled oil or grain and where deep water and large areas suitable for manoeuvring such ships was possible.

The question of what to do with these areas – large parts of the London Docklands, Hamburg port or the Port of New York, to name but three, took some time to find answers. Once a formula was identified, many cities have now adopted a waterfront renaissance in their former dock or harbour areas (Hoyle et al., 1988; Marshall, 2001). One of the major projects of the 1980s was the redevelopment of the London Docklands into a new urban district with housing, businesses (especially the creation of a new financial district), new transport links and the re-use of the dock basins as part of the setting of these new gentrified neighbourhoods. Figure 14.1 is a map of the London Docklands in 1882 – more or less the area which has been redeveloped today.

The London Docklands had evolved over many centuries and wove a dense fabric of local communities into the busiest port in the world at the time (Rule, 2009). Once the area was abandoned following the move of the main dock activity to Tilbury further down the river, a new function had to be found for this substantial area located next to the historic heart of the City of London. The central area within the large meander of the River Thames is the Isle of Dogs (see Figure 14.1), and this is the heart of the area, now featuring the O2 Arena. While attracting mixed opinions about its direction at the time, the development has matured, and the key feature of the area from a residential point of view is the presence of and access to water – to most of the old dock basins, which are now marinas or water sports centres (apart from Surrey Dock, which is partly filled in) and to the River Thames (d'Arcy, 2012). Figure 14.2 shows a view over the Royal Victoria Dock basin towards two of the iconic – and controversial – elements: the O2 Arena to the left (formerly the Millennium Dome) and the new financial district with the then-tallest tower in the United Kingdom, Canary Wharf.

Figure 14.1

Map of the London Docklands in 1882 by Edward Weller

(Source: A Dictionary Practical, Theoretical, and Historical of Commerce and Commercial Navigation by J.R. McCulloch – Longmans, Green and Co. London, 1882, Public Domain)

Figure 14.2

A night-time view of the O2 Arena and Canary Wharf from the Royal Victoria Dock

(Source: Michael Pead: Photos of the Docklands, Creative Commons CC BY-SA 2.0)

Some of the challenges of redeveloping the territories of docklands into new city districts include polluted land; old warehouses and dock structures which may or may not have potential for renovation and re-use, for example, into apartments or offices; and retaining something of the cultural and architectural heritage, as well as social memories associated with places that often had close-knit communities. We will see later in the chapter how some of these aspects have been taken into account in projects.

Water access is also a particular challenge. Harbours, wharves and dock basins are all designed so that access to boats or ships from the land surface is several metres above the water level, allowing for vessels to tie up and also to

account for changes in water level in tidal conditions. They are also constructed with walls or other structures allowing for vessels to be moored close alongside; such walls are therefore vertical. This means that there are numerous risks to people using such spaces for recreational use – there are obvious dangers of drowning if anyone falls in, so that safety aspects are crucial when designing public spaces. Adding lower-level floating platforms can mean that access down into dock basins is possible and allows for use of boats and water craft.

In this book, we are featuring projects which are quite recent, but it is also worth looking at some other examples of dock or harbour redevelopment which have stood the test of time and are not at the same scale as the London Docklands redevelopment. The Inner Harbor in Baltimore, Maryland, United States, is an example that started life in the 1950s, with the Charles Center project (offices, hotels and shops) starting the process in 1958 onwards, and from then, the area was converted into a mixed use series of parks, cultural attractions and water use (Breen and Rigby, 1994). In the 1950s, economic changes led to the end of cargo and passenger use. The derelict old piers were demolished over time to be replaced by parkland used for recreation purposes and some events. The waterfront itself then gradually saw a number of parks and plazas set amongst new offices, hotels and leisure attractions. Further developments were added over time, including corporate headquarters and a public park and waterfront promenade, and following a gathering of tall ships in 1976 for the US Bicentennial, further attractions such as the National Aquarium, Maryland Science Center and Harborplace, which functions as a festival marketplace, were added up to the 1980s.

The Baltimore Inner Harbour was seen as a model of urban planning and waterfront development. It was cited by the American Institute of Architects in 1984 as “one of the supreme achievements of large-scale urban design and development in U.S. history”. Figure 14.3 shows the current appearance of the Baltimore Inner Harbour.

Figure 14.3
Baltimore Inner Harbour

(Source: Chris6d – Own work, Creative Commons CC BY-SA 4.0.)

The scale of redevelopment can also be much more modest, but many of the same aspects apply – managing risks, dealing with water pollution, maximising the use of cultural heritage and providing attractive and accessible waterfronts to attract people to live, work and play.

Why the cases were chosen

For the selection of cases to present in this chapter and to show the range of recent examples of the regeneration of former docklands (with post-industrial remains) and harbours, we looked for originality in concept and design, variety of location and type and something extra which makes them stand out. We also looked for examples which to some extent offer some continuity with or reflection of the culture and tradition of the port and related industrial design and material heritage, as well as unique solutions to specific problems. We consider that ports and harbours may be linked directly to the urban fabric from when they formed a central and often pivotal role in the economic life of the city, which often turned its back on the water itself. The water bodies of ports and harbours may present significant dangers through polluted, often deep water and as a result of high and vertical harbour walls. Thus, the cases present a set of different ways in which problems and opportunities have been combined in unique solutions. We have two main categories of projects: larger port and harbour complexes with associated post-industrial elements and smaller developments along old harbour-sides which are often from an earlier generation of ports but which retain the same contact with the water and some of the same challenges for planning and design.

Larger port and harbour complexes

We start with a sample of the larger sites where, as a result of new technology such as containers, the port activities moved out of central urban locations and were relocated at a distance where the huge container ships can dock and there is adequate space for handling and storing containers and suitable road and rail access. These have often formed major elements of urban renewal in a number of cities, and the examples we have selected here show particular creativity in the design of the parks and access facilities which have replaced them – sometimes a result of major reconstruction, sometimes in very imaginative solutions for technical challenges at the sites.

- The Magellan and Marco Polo Terraces in the HafenCity in Hamburg, Germany
- Carradah Park, Sydney, Australia
- Erie Basin Park, Red Hook, Brooklyn, New York, United States
- Barangaroo Reserve, Sydney, Australia
- Brooklyn Bridge Park, New York, United States

Smaller developments along harbour-sides

These projects are more modest development in terms of scale but also form a group of highly creative solutions to making old harbour edges – generally in smaller or simpler harbours or dock edges in city centres. They provide great opportunities for summer activities and socialising but do not have the larger scale of more comprehensive development that characterises the larger port redevelopment projects.

- Taranaki Wharf, Wellington, New Zealand
- Aker Brygge Stranden/Waterfront, Oslo, Norway
- Kalvebrod Waves, Copenhagen, Denmark
- Harbour Bath, Copenhagen, Denmark
- Spruce Street Harbour, Philadelphia, United States
- City Deck, Green Bay, Wisconsin

Each project is briefly described (based on information from a range of sources, often the designer or articles, as well as what the authors have seen). It is then illustrated with a photograph of a typical view, assessed for project quality based on the factors presented in Chapter 10 and illustrated using a set of sketches designed to bring out the key aspects which make the project special and inspirational. These are presented as annotated images, and they aim to complement the text visually, so there is no additional description in the text, only the captions.

Larger port and harbour complexes

The Magellan and Marco Polo Terraces

These two linked projects, completed in 2007 from the designs of the Barcelona architecture firm of EMBT for the HafenCity authority, are part of the extensive redevelopment of the old harbour and free trade zone – the “Grosser Grasbrook” area – in Hamburg, a historic port city located on the River Elbe in northern Germany which suffered heavily from Allied bombing in the Second World War. The project replaced the port structures with an extensive new complex of residential, commercial and cultural buildings set around the various harbour basins. The overall project has been several decades in the making and has provided 6000 homes, 40,000 workplaces and an open space structure based around the open water areas of the dock basins. For these, the planning included artistic content to give a clear sense of identity to the place which reflects the old industrial character while including new elements. The River Elbe has a large tidal range which was accommodated through different levels and the use of piers and pontoons to allow visitors access down to the water; ramps, stairways and terraces are used to link the water to the land and the different levels with each other. The Magellan Terraces features stairs arranged like a theatre, which focuses views down to the harbour, at the bottom of which is a 400-m-long floating promenade (Figure 14.4). The influence of the Spanish (Catalan) architects is evident in the use of Mediterranean idioms and

Figure 14.4
The Magellan Terraces at HafenCity, Hamburg
(Source: Jeroen de Vries)

elements such as large fish bas-reliefs on the walls. Free-form paving patterns and sculptural elements break the visual monotony of extensive surfaces, and the space connects with the main street running at right angles, separated by low bollards. At the Marco Polo Terraces, while the design vocabulary remains the same, there are also differences. Limited numbers of trees and patches of lawn were introduced on each terrace, although these are somewhat small for the scale of the spaces and are dominated by the buildings. The Marco Polo Terraces incorporate wooden raised platforms placed irregularly on the grass. They permit a range of informal uses and also allow good views of the water.

Project quality rating assessment

For accessibility, car parking is deliberately excluded from the project area, and due to the low level of the water compared to the dock, the interior spaces are hidden from the view of the casual observer (Figure 14.5). Design quality is generally high, although the site is expensive to maintain, due in part to its popularity but also some of the elements such as the trees set in lots of hard surfacing. The site is open to the elements and lacks shelter and shade, and there is little nature present. As a busy urban site, it does not permit much of a sense of being away or contact with nature, and the other health and well-being aspects are limited due to the inherent site character. The water connections are mainly visual due to the fact that it is a former dock, with all the challenges that creates, although access down to the water and some boat access is provided successfully. The site is not designed with lots of physical activities and is not suitable for sports of any type.

Carradah Park, Sydney, Australia

This site, close to central Sydney and with spectacular views to the Harbour Bridge and Opera House, was completed in 2004 from the designs of landscape architects McGregor Coxall for West Sydney Council. The site started life in 1920 as a set of huge tanks for the storage and distribution of oil and petroleum piped from tankers docking at the nearby wharf. These tanks were set into the rocky sandstone terrain by blasting cylindrical forms to accommodate them. In the 1980s, the site was recognised as being contaminated, and redundant structures were removed and the site cleaned up, after it closed in 1993, and a restoration project started in 1997. The voids which resulted from removal of the tanks, together with other concrete industrial remains, provided the inspiration for the design, defining space and structure (Figure 14.6). The site is surrounded by suburban development yet has a hidden, sublime quality. The park in part balances the provision of public waterfront access and also reserves part of the waterfront (0.9 ha) for future maritime use. The park is mainly used by people from the nearby residential areas and features walking trails, stairways and interpretive signs. As well as providing views across the bay, the forms and spaces of the park and the use of industrial materials for access decking across the uneven sandstone surfaces at the upper levels of the park give the site a unique character, reflecting its industrial past. The circular galvanised steel viewing deck over the cliff blasted to accommodate the biggest tank is especially spectacular. The lower levels in the former tank bases make stages and also provide views across the bay. As well as the set of walkways, there are other structures made of brick or concrete, for instance, at the entrances and in smaller spaces. Finally, native plants were used to restore the unique cliff habitats.

Project quality rating assessment

This project shows some limitations in access, mainly due to the difficult nature of the cliffs and former constructions – it is impressive how these have been overcome (Figure 14.7). The design quality is high in all dimensions. The range of facilities is limited, partly due to the nature of the site and the challenges that presents, as well as its location. It performs well for health and well-being potential, although the sense of being away and contact with nature are understandably a little weaker. Direct water connections are not part of the site design, but visual connections

Figure 14.5a-c

a) Overview of the Magellan and Marco Polo Terraces – looking into the two dock basins and showing how the two terraces provide access down into the docks and floating piers providing closer contact with the water (although nowhere is water directly accessible); b) the Marco Polo Terrace, showing the organisation of different levels and different types of seats providing views into the dock basin; c) a section through the Magellan Terrace from the dock level down to the water, showing how the changes in level are achieved

(Source: Anna Wilczyńska and Jekaterina Balicka)

Figure 14.6

A view of the Carradah Park space and steel deck in the largest void where a huge tank once stood

(Source: McGregor Coxall)

are good. It is not specifically designed with lots of physical activities in mind. This park is another example of how it is not possible to provide for everything, given the physical limitations of terrain and former use, but also how such challenges have been changed into opportunities for creating a dramatic solution with a very powerful sense of *genius loci*.

Erie Basin Park, Red Hook, Brooklyn, New York, United States

This project is a park on a former dockland area uniquely developed and completed in 2008 by a private company from designs by Lee Weintraub Landscape Architecture as part of a large IKEA retail store complex. Following the decline of the ports along the waterfronts of New York, many areas became neglected. Red Hook is the neighbourhood next to the formerly busy Erie Basin and once had a substantial community of dock workers nearby. Following the closure of the dock and general abandonment by industry, there was high unemployment, and people moved away, leaving the Erie Basin derelict. This has been redeveloped into a combined retail development (IKEA), public park and waterfront. The park has a strong concept based on the stories and artefacts associated with the history of use of the site, featuring dock cranes, dry docks and piers as well as smaller objects (Figure 14.8). A key feature of the park is its views across the water to New York City – especially to the Manhattan skyline and the Statue of Liberty. Normally, regenerated waterfronts act as catalysts for redevelopment of the surrounding areas, and in this case it was not local authorities but the private sector who was responsible. The project landscape architects developed the layout and design of the site furniture by studying New York public park seating with the aim of introducing a new way of socialising while experiencing public open spaces. The park is open to the public, and vegetation and

Figure 14.7a-d

a) General layout of Carradah Park located on the cliff and former oil tank bases, showing how the industrial origins are clearly integrated into the project; b) detail of one of the oil storage tank sites with a circular lawn area beneath the cliff and a viewing platform on the top of the cliff providing views over the park and bay; c) detail of the main path passing along the lower part and connected, via stairs, with the upper sections; d) cross-section through the site of one of the oil tanks, showing the viewing platform at the top of the cliff and the levelled oil tank base with lawn, which also provides views to the bay, and the path

(Source: Anna Wilczyńska and Jekaterina Balicka)

Figure 14.7a–d (continued)

Figure 14.8

Part of the Erie Basin park at night showing some of the main features and the use of lighting to emphasise elements such as the dockside crane

(Source: Colin Cooke)

elements such as colourful corrugated sheets visually separate the store from the park, although entry to it is also via the store. A huge gantry crane marks the entrance. The designers salvaged many industrial elements, and those which provide seating, shelter, and edge protection were inspired by the industrial heritage, while long wave-shaped benches take inspiration from water movement. Lots of found objects, such as metal sheets folded to create seats, were also used. Likewise, blue lights used under the circular tables mirror those typically used along the water edge for safety.

Project quality rating assessment

The park has very good accessibility, especially by car (given it is next to the IKEA store with a huge parking lot) (Figure 14.9). The design quality is high across all aspects, although site maintenance is considered expensive. The facilities are well provided for although the site is exposed to sun and wind and there is not so much nature present (for obvious reasons). It offers some good opportunities for promoting health and well-being – apart from the sense of being away or contact with nature – due to its setting. As a former dock, direct contact with water is a problem, and there is no direct recreational access to or from the water (there is some access by waterbus). There is no provision for formal sports on land or water – this is not relevant for the site due to its location.

Figure 14.9a–d

a) General layout of the Erie Basin park containing three main sections arranged around the IKEA store and its car park and storage yard; b) detail of the lounge seating area; c) detail of the exhibition of the old dock elements; d) cross-section showing the wave benches in more detail

(Source: Anna Wilczyńska and Jekaterina Balicka)

Barangaroo Reserve, Sydney, Australia

Barangaroo Reserve is a multi-award-winning new park completed in 2015 from designs by PWP (Peter Walker and Partners) together with Johnson Pilton Walker for the Barangaroo Delivery Authority. The 6-hectare abandoned industrial dock and shipyard area in Sydney Harbour was a flat, rectangular area created by levelling the rocky headland and filling in a small bay in the 1830s and 40s onwards. The site was originally known as Miller's Point before it was flattened to make room for wharves, containers and maritime industrialisation, which formed its function until the 1960s, when it was closed and became inaccessible. The new name is in honour of an aboriginal woman who lived and traded there in the 1830s. The project design eliminated this flat area and rebuilt the form of the headland in both plan and profile, with its lower levels covered using specially formed and laid sandstone blocks in what is called a tessellated pavement, inspired by the natural bedding and joints of sedimentary sandstone. This was used to clad the new landform, taking quarried stone (sourced from within the site when constructing underground parking) and laying it according to the natural rock bedding in the area. The result is a stepped stone surface arising out of the water (including artificial rock pools exposed at low tide) to a headland summit 18 metres above the water level offering spectacular views over the rest of Sydney Harbour. The paving does not emulate natural variability but is more formal in order to emphasise the fact that it is artificial. The use of sawn stone is the main feature of most of the elements used besides the terraces to maintain the design unity. There is also extensive planting of native species in an introduced artificial soil. Alongside the stone terraces and the public road is a promenade, which gives the form for the parallel alignment of the terraces from which access to the site is obtained down steps and along ramps (Figure 14.10). The site has also established a connection with a longer coastal walk.

Figure 14.10

A view of Barangaroo Reserve showing the stone tessellated rocky foreshore and the promenade hugging the line of the shore, as well as some of the extensive native planting

(Source: Courtesy PWP)

Figure 14.11a–d

a) General layout of the Barangaroo Reserve, which has created a new landform and as a result has provided access to a new green public space on the water; b) detail of the lower part of the park where the slope is covered with stepped rockwork providing informal seating next to the water; c) detail of the steps leading down through the rock terraces from the upper to lower paths; d) cross-section through the lower part of the park with the path and rocky shore giving access to the water

(Source: Anna Wilczyńska and Jekaterina Balicka)

Project quality rating assessment

The site has excellent accessibility, very high design quality – albeit with some expensive maintenance – and a wide range of facilities – although rather exposed to sun and wind, at least until the trees grow to a reasonable height. It also performs very well for health and well-being aspects. Direct water connections and activities are limited, but, of course, the site is strongly linked visually to the water (Figure 14.11). The physical activities possible are many and varied, apart from formal sports on land or water, these being impractical or inappropriate for the site.

Brooklyn Bridge Park, Brooklyn, New York, United States

This project occupies a substantial site along the East River in New York. The park was designed by Michael Van Valkenburgh and Associates for the Brooklyn Bridge Park Development Corporation. The land for the park was formerly an industrial stretch of waterfront owned by the Port Authority of New York and New Jersey. The objective was to transform what had been a break-bulk cargo shipping and storage complex which had become obsolete once shipping containers took over the maritime cargo trade. After the city and state signed a joint agreement in 2002, site planning and project funding went ahead. The first phase in 2007 included the demolition of a warehouse under the Brooklyn Bridge itself. Since the opening of the first phase at Pier 1, more and more sections of the park have been completed (Figure 14.12). However, there have been disputes and lawsuits over several aspects, including the construction of residential developments to help pay for the project. The site covers 85 acres/35.4 hectares and runs

Figure 14.12
Looking southeast to Pier 1 of Brooklyn Bridge Park, showing the waterside promenade and the vegetated slopes rising behind

(Source: Jim Henderson, Creative Commons CC0 1.0 Universal Public Domain Dedication)

along the waterfront for 1.3 miles/2.2 km, incorporating six old piers and two pre-existing parks (Empire–Fulton Ferry and Main Street Parks) into the whole project. The site comprises two stretches at an angle to each other, dominated at the apex by the huge tower of the Brooklyn Bridge itself. The design made use of the different dock edge conditions to create a range of settings for people to enjoy and to view the iconic cityscape of lower Manhattan to be seen across the river along a continuous promenade linking the different piers. The facilities provided include playgrounds, basketball courts, sports fields and a roller skating rink. There are also lots of food concessions on the site. In places, the park descends to the water, with rock edges and green slopes with trees behind. Each of the piers can be considered a mini-park with different designs and innovative approaches to creating spaces and adding vegetation to the elevated structures. The design made use of recycled materials, such as old beams for park benches.

Project quality rating assessment

This is a very accessible park, although less so for car access due to limited parking opportunities. It demonstrates excellent design quality and a wide range of facilities – albeit exposed to sun and wind – and provides good settings for health and well-being, apart from being able to obtain a sense of being away and close to nature, due to the site context (Figure 14.13). Water connectivity is limited, and the dock walls prevent physical contact. The site is very well equipped for land-based formal sports but not for water sports.

Smaller developments along harboursides: Taranaki Wharf, Wellington, New Zealand

This project was designed by Wraight + Associates Ltd for Wellington Waterfront Ltd and completed in 2005. The site was a wharf used by ships bringing cargoes from Tasmania from the early 20th century to the 1990s. The designers aimed to establish a strong city to sea connection and to create a new role for the dock edges as a public promenade. The idea was to maximise the interactions at the water edge to generate a rich waterfront experience for visitors. The site also strengthens the connections along the Wellington waterfront, linking Frank Kitts Park in the north to Waitangi Park in the south and at the same time establishing connections to the city centre. There are a number of old and new buildings around the site, which itself uses the wharf structures and refers to the natural and cultural heritage of the place. The surfaced areas are balanced with wet and dry gardens, and the details refer to industrial and nautical materials and finish in a palette of elements. The main focal feature which lends a unique character and animates the site is the jump platform, a twisting staircase up which people climb and then jump down into the sea, which is below the level of the wharf in a cut section of the surface, meaning that the water is hidden from the casual viewer (Figure 14.14).

Figure 14.13a–h

a) Overview of the huge Brooklyn Bridge Park, which has provided a major additional public green and blue space on this former dockland, with a focus on sport activities; b) detail of a children’s playground on Pier 5, where a hole through the dock floor gives a glimpse down into the structure; c) detail of the Pier 1 park showing the access paths and start of the artificial wetland created there; d) detail of the artificial beach providing swimming and bathing as well as access for kayaking on the site of the former Pier 4; e) detail of the water play area; f) cross-section through the artificial salt-marsh next to old Pier 1; g) cross-section showing relationship of path and beach to water at Pier 4; h) cross-section through the sunbathing and sitting area with riprap edge and then the elevated section of Pier 5 providing access to the marina

(Source: Anna Wilczyńska and Jekaterina Balicka)

Figure 14.13 a-h (continued)

Figure 14.14
The jump platform, the central unique feature at Taranaki Wharf
(Source: Bruno Marques)

Project quality rating assessment

There is excellent accessibility to the site, which generally exhibits high design quality and a good range of facilities although it is rather exposed to the wind and seems a little short on seating. Health and well-being opportunities are good, apart from the sense of being away and in contact with nature (Figure 4.15). Water connections are also good, and there is quite a lot of activity on the water – although limited in scope. The range of physical activities is also good.

Aker Brygge Stranden/Waterfront, Oslo, Norway

This project, completed in 2016 from the designs of LINK Landskap Aker Brygge, is part of the rejuvenation of the Aker Brygge, a very popular area of central Oslo situated along the western side of the Pipervika, an arm of the Oslo Fjord. It was the shipyard of the Akers Mekaniske Verksted, set up in 1854, which functioned until 1982, after which the area was gradually regenerated. The aim is to provide public access to the waterfront along a 12-km stretch from the east to the west of the city. The developer, Norwegian Property (NPRO), as well as building new residential and commercial buildings, also focused on the refurbishment of the outdoor spaces, especially along the waterfront. This first phase of the Stranden was completed in 2014. Additional phases in 2015/2016 included the new main

Figure 14.15a–d

a) General layout of Taranaki Wharf and how the project is divided into different functional and thematic zones; b) the opening through the dock surface revealing the supporting structure as well as the genius loci, featuring the jump platform; c) closer view of the section planted with trees and shrubs and displaying old dock heritage objects; d) cross-section through the steps leading down to the water, enabling both a view to the dock basin and direct contact with the water

(Source: Anna Wilczyńska and Jekaterina Balicka)

Figure 14.16

A view along the Stranden at Akerbrygge showing the granite paving, orange benches and timber decking

(Source: Aker Brygge)

square, Bryggetorget, and improved access between the waterfront and the city. The plan for Stranden was aimed to increase both visual and physical contact with Oslo's characteristic and dramatic fjord landscape setting while also encouraging a range of appropriate activities – promenading, sitting, social interactions and of course linkages with restaurants and shops located in the Aker Brygge development as a whole (Figure 14.16). The project achieved a simpler and cleaner cross-sectional reconfiguration by reorganising and consolidating the promenade, making it wider and roomier so as to cope with increased use while achieving a strong sense of design unity. The resulting space is very flexible for promenading and socialising activities as well as providing more opportunities for spontaneous and generally un-planned activities. This has resulted in more possibilities to experience the fjord landscape in different ways. The surfacing of Stranden uses granite paving throughout, with some stepped timber decking in places, especially where boats can tie up. The designers aimed to create a robust and non-directional surface, which resulted in a restrained unified surface directing the visual focus inwards to the new and historical facades and outwards to the fjord. It is complemented by a series of orange benches permitting sitting and reclining and looking at the view across the fjord.

Project quality rating assessment

The project shows some limits on accessibility due to its location in relation to the city in general. Design quality is high for all aspects (Figure 14.17). Compared to other sites, this one lacks some facilities – but this is due to the

Figure 14.17a–c

a) General layout of the Stranden promenade showing the division of the site into several zones; b) closer view of the main recreational zone featuring the sitting terraces with the wooden decking and original quayside furniture which adds to the sense of identity of the new promenade; c) cross-section through the promenade from the restaurant level to the water, showing how the design deals with the changes in level

(Source: Anna Wilczyńska and Jekaterina Balicka)

location and project brief. It is also exposed to wind and sun. Health and well-being potentials are very good, apart from being able to gain a sense of being away – this is the city centre – and contact with nature. Direct water connections are not part of the design brief so are understandably absent, nor is there any provision for formal sports for the same reasons.

Kalvebod Waves, Copenhagen, Denmark

The Kalvebod Wave project was designed by JDS/Julien De Smedt Architects and Klar and completed in 2013. It is a special project forming part of the larger Kalvebro Brygge redevelopment, which commenced in the 1990s. Sited opposite the popular summer meeting place of Islands Brygge, it is located on reclaimed land in the Vesterbro district of the city, which was used for various industries such as a timber yard, railway and gas production. This new addition to the waterfront provides opportunities for a larger range of activities. Being close to the central train station and the Tivoli amusement park, the Kalvebod Bølge, or Kalvebod Waves, provides a new connection for the inner city with the harbour. The project consists of two main differently sized three-dimensional decked areas floating on pontoons and extending directly from the water edge in front of two new buildings which dominate the area. These are connected by decking which rises and falls in its level – hence the waves used in the name (Figure 14.18). This decking extends across the water, encloses the water available for swimming and boating and is positioned to capture sunlight and provide shelter from the wind. The southern pier allows for a flexible public space on the water and includes facilities to enable events, especially those related to the creative industry, to take place. Thus an active water enclave has been created for various water-related activities. A flow of boats to

Figure 14.18

The Kalvebod Waves, showing the characteristic flowing, undulating decks and the enclosed water area as well as the accessible water's edge, with central Copenhagen behind

(Source: Naotake Murayama, licensed under the Creative Commons Attribution 2.0 Generic Licence)

Figure 14.19a-c

a) General composition of the Kalvebod Waves project with the two main sections; b) detail showing the south-western part of the site with a multifunctional play and fitness area on the top of one of the wave structures; c) cross-section through the promenade, showing the internal basin and the height differences of the wooden deck
 (Source: Anna Wilczyńska and Jekaterina Balicka)

and from the water hub of the southern segment also creates an active maritime atmosphere and maximises the connectivity of the project with the rest of the city. The northern unit provides a kind of oasis on the water, close to and accessible from the land but also somewhat away from it, which, as it includes a beach, allows people a break from hectic urban life.

Project quality rating assessment

The site has excellent accessibility and very high design quality – although it is somewhat weaker in cultural heritage values (it is an entirely new structure) and is expensive to maintain. The range of facilities is somewhat limited, mainly due to the design content, and it is exposed to wind and sun with no cover. Health and well-being opportunities are also good, apart from a sense of being away and closeness to nature. Access to and from the water and activities on it are good, although in limited ways due to the design (Figure 14.19). There is little formal physical activity but plenty of opportunities for various informal sports.

Figure 14.20

A view of the Copenhagen Harbour Baths showing the diving tower, the main pool, the lighthouse and the popularity of the project

(Source: Milsgrammer, licensed under the Creative Commons Attribution 2.0 Generic Licence)

Harbour Baths, Copenhagen, Denmark

This project, lying directly opposite the Kalvebod Waves project described previously, is another part of the Copenhagen harbour redevelopment, this time on Islands Brygge, another former industrial area. Designed by BIG/Bjarke Ingels Group, JDS/Julien De Smedt Architects and PLOT, it was completed in 2003 and has been an exceptionally popular place to go for sunbathing and swimming, among other activities, every summer since then. It extends the adjacent park and promenade over the water by incorporating the practical needs and demands for water accessibility, safety and programmatic flexibility. People use it in the same way they would use the beach rather than indoor swimming baths – not just to exercise but mainly to socialise, play and enjoy the sun. The design consists of a large floating timber-clad series of decks raised above the water (Figure 14.20). It is divided into three separate water pools equipped with ladders for access. The smallest one has a sloping floor for gradual access and shallow water, and the biggest has a diving tower shaped like the prow of a ship and is much deeper, linked to the harbour water. A red-and-white striped building resembles a lighthouse used for storage. The whole complex can be secured and closed. It is also fenced off along the outer waterfront sides to prevent access by boat – it is therefore a completely enclosed type of floating lido. Next to the baths is the park noted previously, with grassy areas used for sunbathing, and the promenade, thus offering easy access and a range of activities linked to the baths, making them part of a larger recreational complex. Generally, the water in the Copenhagen canals is clean, thus permitting the harbour baths to function as a

Figure 14.21

The design of the Copenhagen Harbour Baths project provides opportunities for bathing and swimming where it was not possible before

(Source: Anna Wilczyńska)

safe bathing area (it also applies to the Kalvebod Waves). Occasionally, however, as a result of strong rains, sewage may spill into the harbour and cause *E. coli* bacteria pollution, closing the harbour baths temporarily.

Project quality rating assessment

The site has excellent accessibility – apart from car parking – and very good design quality, although it is expensive to maintain (Figure 14.21). The range of facilities is limited (compared to other sites) due to the fact that it has a primary function as swimming baths (it is also exposed to sun and wind), and the health and well-being aspects are lacking a sense of being away or being in contact with nature, also due to its location and design. Water connections and physical activities are also strong, though limited due to its main swimming function.

Spruce Street Harbour, Philadelphia, United States

This project by the Groundswell Design Group was commissioned by the Delaware River Waterfront Corporation to create a new summer attraction at a tired and underused riverfront park located between the edge of the Delaware River and a four-lane highway in Philadelphia, Pennsylvania. The resulting park, set within an enclosed marina where pleasure boats and some museum ships are moored, is small and open seasonally – not quite a pop-up park, as it is

Figure 14.22

A view from the Spruce Street Harbour promenade out over the enclosed water garden at Spruce Street Harbour Park, surrounded by the three moored barges populated by trees, containers and seating

(Source: Mike Barone)

Figure 14.23a–d

a) General layout of the Spruce Street Harbour project showing its vivid, multi-functional character with many opportunities for family recreation close to the water; b) closer view of the platforms constructed on top of the old barges with decking, seating and net hammocks suspended over the water; c) cross-section from the recreational part on the upper levels through the steps to the water area enclosed by the barges; d) section across one of the barges with seating, beach and net hammocks

(Source: Anna Wilczyńska and Jekaterina Balicka)

sometimes described, because it is permanently there – but it becomes very busy in the summer period. The main element of the park is an enclosed floating garden which replicates a natural wetland (Figure 14.22). This has been formed by connecting three old barges which were towed 20 miles up the river from Chester, Pennsylvania, and six shipping containers. Within the space formed from the barges, which makes up three sides of a square, the other side being the river edge promenade, there are seven islands made of recycled plastic that draw water and nutrients to the wetland plants – which are also very colourful and ornamental. Two of the shipping containers are used as a bar and restaurant, continuing the incorporation of elements of the working waterfront into the design. Quite large trees have been planted on the barges, which are illuminated at night. The park is provided with many elements to allow people to congregate and enjoy the summer weather – as well as to make it comfortable in the heat or in the evenings, such as a cantilevered “net lounge” out over the river, a hammock garden and a fire pit. There is also a boardwalk along the water’s edge with pipe-fitted trees designed by local artists, which are equipped with LED lights and misters to create a Mist Walk that leads to an urban beach. Facilities for recreation, relaxation and food and drink consumption are also integrated into the spaces, including painted wooden Adirondack chairs and umbrellas. Many activities, events and performances take place in the park hosted by local artists, vendors, face-painters and musicians. The site also benefits from its marina location, permitting access and activities on the water nearby, which can be considered part of the whole experience.

Project quality rating assessment

The site has excellent accessibility and great design quality – although it is somewhat expensive to maintain. The facilities are good, and the structures provide shade and shelter, which not many sites of the type reviewed in this chapter seem to do (Figure 14.23). There is good health and well-being potential, apart from the sense of being away. Water connections are strong – in part due to facilities nearby which give access – and physical activities are also good, also due in part to the possibilities of the setting within which the park is located.

CityDeck, Green Bay, Wisconsin, United States

This project was completed in 2012 from the designs of Chris Reed, Stoss Landscape Urbanism, and Ed Weisner for the City of Green Bay, Wisconsin, United States. The project transformed a brownfield site on the city centre riverfront into a focus of civic life. This included the restoration of an old harbour site. The surrounding area had, in common with many places, turned its back on the river. Before the project, neighbouring areas consisted of many empty spaces often used for car parking and frequently only used during business hours. The elevated walk running along the existing river retaining walls prevented direct access to or from the river. The contaminated site presented various challenges, as it had a high groundwater table, and in winter, ice floated down the river. The design includes a number of different elements organised spatially along the site. These take into account the different heights of the embankment wall and unify them using a folded wooden surface which also created spaces for dramatic views at the northern end (Figure 14.24). Other elements include an open space for vendors and festivals and an informal outdoor theatre. A play fountain marks the southern end. The CityDeck has many events programmed there, such as “Fridays on the Fox” during the summer and “Dine on the Deck” Wednesday lunches. The project has been a catalyst for the further construction of residential and retail units and a bank headquarters and has much mixed-use development nearby, which has brought this part of the city back to life. The design of the main deck starts as a simple boardwalk following the edge of the city and river, which later changes its form by undulating to meet different spatial requirements. The benches incorporated into the deck are designed to take into consideration the scale of the human body; folds in the deck structure create a range of different seats, benches, and *chaises longue* permitting a choice and flexibility for users. This varied seating was arranged in different configurations: some were placed in close proximity to the water’s edge; some further away, which commanded a view of the river; some close to the water, others further back but overlooking it; some were grouped together, providing points for socialisation; and some in rows or on their own for opportunities more suited to quiet reflection. Lower-level decks and jetties connected by ramps allow access to and from boats.

Figure 14.24

A view along the CityDeck at night showing how the connections to the river are made and how lighting complements the design

(Source: City of Green Bay)

Project quality rating assessment

The site is in a generally highly accessible location – though not so well served by public transport. The design quality is high, apart from inclusion of cultural heritage values in the project. The overall design quality and number of facilities are very good, apart from the site being exposed to sun and wind (Figure 14.25). The health and well-being potential is good, apart from the sense of being away and for contact with nature. Water access is good, as are general water connections, though activities on the water, apart from boating, are limited; nor are there any formal sports activities and only limited informal sports, due to its location and primary function.

Comparison of projects in terms of different aspects

General design aspects

The projects presented in this chapter were chosen because they represent two major divisions of the subject – the larger port or dock developments, where significant territories have been re-developed following industrial decline, and the move of ports away from inner cities and the smaller-scale addition of functions and features into generally smaller-scale harbour locations. As in the other chapters, in this section, projects were chosen to show the diverse range and originality of concepts among the best projects, and they also display many unique qualities. Owing to the specific context, the larger-scale sites, especially, contain the remains of major engineering structures – some intact, such as docksides, others removed, such as oil storage tanks or cranes. Thus they each contain, to different degrees,

Figure 14.25a–c

a) The CityDeck project as a whole, emphasising the different platforms enabling closer contact with the water; b) close-up of one of the platforms featuring different seating elements on the promenade, the sitting terraces and access to the small dock; c) detail of the decking with lounge seating and lower level access to the water; d) cross-section through the whole promenade showing the means of descent to the water

(Source: Anna Wilczyńska and Jekaterina Balicka)

impressive built heritage, necessitating a sensitivity to context combining much imagination in terms of dealing with the challenges such sites present in order to meet the various project briefs. That many were competition winners also demonstrates that new and innovative solutions are not only possible but positively invited by the challenges of such sites. These have provided some of the biggest and most exciting challenges to designers in recent years. One aspect which tends to stand out from all projects is the importance of referring to the historical and cultural heritage. This may be quite direct – such as using artefacts within the structure or displaying different engineering elements – or indirect such as referring to forms of demolished structures in the design.

Potential for enhancing health and well-being

Almost all projects display many opportunities to improve health and well-being but within certain limitations and challenges. Owing to problems of water pollution, while in-water physical activities are possible in some locations, new solutions have had to be introduced in others – such as providing special pools for bathing and swimming such as in Copenhagen (see the following). Owing to the very urban character of many of the projects, it is understandably difficult to obtain a sense of getting away from the stresses of city life, but some of the larger projects, especially, offer plenty of opportunities for physical exercise on land, with promenades for running, walking and cycling. A key aspect of many projects is also the chance for relaxing and sunbathing in inner-city locations, although, in many cases, due to the very urban and built form with limitations on planting large trees, the sites tend to be very exposed to the sun and wind, with little shade provided by many of the projects, which could pose risks for skin cancer, sunburn and so on. Where projects such as Hafen City incorporate a lot of housing and businesses, then well-being can come about through the proximity to water and views of it.

Accessibility

Given that all these projects are former ports and harbours, then clearly use of water by boats is a major possibility, with many of the projects incorporating marinas or places to moor boats. This is not always as easy as it sounds due to the height of some of the dock walls, meaning that special structures can be needed to make them practical for smaller pleasure craft.

Accessibility to the dock edges and quaysides is usually very straightforward, and the majority lead directly from streets. Then they may require ramps in order to descend down to be closer to the water. In one or two specific cases, the terrain is more of a challenge – such as Carradah Park in Sydney, Australia – where the cliffs are then used for elevated decks giving spectacular views. Floating structures are also used in places – such as Spruce Street Harbour Park – to provide easy access.

Interaction with water

Given that the projects reviewed here mainly involved ships and transfer of cargo or passengers, it would seem ironic that interaction with water can prove very challenging. In part it is because the dock edges or walls can be very high, since they were designed with large ships in mind – especially the more recent larger ports as opposed to the older, smaller harbours. So, for many projects, the main interaction with water is visual. Nevertheless, ways to interact have been developed in several projects – whether the floating harbour baths, the ramps leading down to the water at Copenhagen or even the jump platform in Wellington at Taranaki Quay. Boats can tie up at many projects once the problem of the dock level has been solved. Pollution remains an issue in many settings, restricting what is possible.

Seating and opportunities for socialising

Owing to the inner-city context of all of these projects, one of their main goals has been to create places for people to meet and socialise. There is often a connection between the quay edges, seating and local cafes and restaurants – especially at the Spruce Street Harbour and Oslo's Aker Brygge or Green Bay City Deck. Decking, steps and ramps are

often used in multi-functional ways to provide both access and seating. The larger projects such as Brooklyn Bridge Park include mini-parks on different piers, each with different opportunities for forms of socialising and participating in group activities. The Magellan and Marco Polo terraces in Hafen City also incorporate combinations of elements with different affordances for socialising.

Microclimate amelioration

Many of the projects are in quite exposed places, while others are set amongst built forms. If the harbour is wide and exposed, then shelter is a problem, and even where there are nearby buildings, the wind can gust around them, making it uncomfortable. Given the inner-city locations and engineered structures, it may be that heat collects and is radiated from the many hard surfaces, although the water bodies should ameliorate the urban heat island effect. Nevertheless, sun exposure and lack of shade is something that designers have tried to deal with using tree planting where possible, such as at Erie Basin. Buildings probably also offer shade in some places. However, this is an aspect worth further consideration. With many references to ships at most sites, materials and forms inspired by sails could be used more to provide both shelter and shade.

Use of materials

The materiality of many of the projects is dictated by the presence of dock walls, harbour surfacing, steel decking and timber piling or decks and concrete in recent docks. Dressed stone edges are commonly a distinctive feature, such as at Hafen City and Erie Basin. The projects are often dominated by the use of hard materials, and this is continued as part of the design language. At Barangaroo, stone is used extensively to restore the landform, and at Carradah Park, the remains of excavated cliffs where the oil storage tanks were located also features heavily. Timber decking was also a feature of many harbours or docks and is also used widely, notably at Kalvebod Waves and the CityDeck. At Spruce Street Harbour, old barges are used as floating decks, which is very innovative. The craftsmanship of the stonework of the older dock walls was often of a very high order, and this attention to detail is key for ensuring design unity between old and new elements in most projects.

Use of vegetation and ecological aspects

Given the former uses of most of the sites, the opportunities for increasing vegetation can be extremely limited, requiring imaginative solutions for establishing trees on hard surfaces, using raised planting sites, for example, or even floating artificial islands for aquatic plants such as at Spruce Street Harbour. A number of sites have no vegetation – such as Kalvebod Waves, Copenhagen City Baths or Aker Brygge – and are none the worse for that. On some larger sites, there is scope, and restoration of vegetation at Barangaroo, Carradah Park and Brooklyn Bridge Park has been successful. In some places, such as at Marco Polo Terraces in Hafen City, the trees appear to be struggling in difficult conditions.

Site management and maintenance

All the projects are well maintained – and in many, the fact that original materials and particularly robust construction have been used has made it easier for maintenance generally. However, the widespread use of timber for decking in a number of projects leads to a need for constant checking and repair, since it can react to different weather conditions even if it does not rot. The sites also appear to be free from vandalism and are kept very clean, which helps to maintain them as welcoming places.

Conclusions and implications for practice

This chapter has reviewed the history and importance of former harbours, docks and post-industrial waterfront sites which have been reimagined and redeveloped to provide either mixed-use development with some recreational public spaces or else parks and public attractions. The opportunity to use the extensive inventory of such brownfield

sites has been a major feature of urban planning and landscape design and has provided tremendous possibilities to designers to apply their imagination in challenging locations. The selection presented here all have their strengths and weaknesses according to a number of factors such as scale, previous uses, physical limitations, site conditions and water quality. Each designer has taken something unique from the historical conditions, material remains and significant site constraints while producing multi-purpose solutions which not only often celebrate the cultural history but also rehabilitate the difficult sites and provide many opportunities for use by people. Achieving direct interaction with water is one challenge that is not always solvable under the circumstances, but otherwise, there are many rich opportunities for obtaining health and well-being benefits.

There are several specific aspects we wish to draw attention to:

- Increasing the availability of shade and shelter in urbanised and exposed locations also dominated by built forms and hard surfaces in order to ameliorate wind exposure and turbulence and to reduce the risks of skin cancer.
- Making use of original structures and materials which balance longevity and low maintenance with cultural historical associations.
- Including more vegetation in projects where this can be achieved, perhaps using more innovative approaches to overcome the problems of hard surfaces, poor or polluted soil and lack of water infiltration into the soil. However, there are places which do not need vegetation just for the sake of it, so this fact should not be ignored.
- To celebrate the maritime and mercantile heritage usually associated with ports and harbours by examining the history – economic and cultural – and building it into the project as much as possible.
- To ensure that connections to the sites from nearby residential areas are strong and that links to the water are also maximised, subject to the limitations noted previously.

Finally, we can note that the selection of projects presented here reflects the variety of types and scales of site which have been developed. The largest sites, in particular, represent significant public or private investments and, if the latter, expect a reasonable return on capital, perhaps in the form of enhanced property values. Nor are they cheap to maintain, with significant safety aspects to manage and infrastructure which can suffer from immersion in salt water. The challenge of providing the best access possible to water that may be polluted, if not all the time then certainly at some times, must also be recognised. Nevertheless, as major polluted brownfield sites, the scale of improvement and re-development as well as the ambitions shown in many of the projects deserve to be celebrated as one of the major achievements of urban planning of recent decades.

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