

# **REGENERATION IN EUROPEAN CITIES:** **Making connections**

## **Case Study of** **NORRA ÄLVSTRANDEN, GOTHENBURG (Sweden)**



**Project funded by the Joseph Rowntree Foundation**

**URBED (Urban & Economic Development) Ltd**

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Figure 1: *Regeneration in European Cities* project: the locations of the case study cities and the 'UK Partner' local authorities

## About the project

This case study of the regeneration of the Norra Älvstranden district of Gothenburg in Sweden forms part of a research project carried out by URBED (Urban and Economic Development Group) ([www.urbed.co.uk](http://www.urbed.co.uk)) for the Joseph Rowntree Foundation ([www.jrf.org.uk](http://www.jrf.org.uk)). The project, entitled *Regeneration in European Cities: Making connections*, investigated how urban regeneration schemes have been used to transform three former industrial cities in northern Europe and what conclusions for UK policy and practice might be drawn from them. The research was based primarily on case studies of projects in Gothenburg, Rotterdam and Roubaix which, like many industrial towns and cities in Britain, have had to deal with the collapse, or wholesale relocation, of their principal industries. The Joseph Rowntree Foundation has supported this project as part of its programme of research and innovative development projects, which it hopes will be of value to policy makers, practitioners and service users.

The project was carried out by a team from URBED (Nicholas Falk, Christopher Cadell, Vassiliki Kravva, Francesca King, and Anne Wyatt) assisted by a team of local researchers. Christopher Cadell was the principal author of this case study and Professor Lisbeth Birgersson of Chalmers University of Technology acted as local researcher in Gothenburg. She made an invaluable contribution to the research. However, the facts presented and views expressed in this case study are entirely those of the author. Nor do they necessarily reflect those of the Joseph Rowntree Foundation. The final report for the *Regeneration in European Cities* project is available as a free download from the Joseph Rowntree Foundation website ([www.jrf.org.uk](http://www.jrf.org.uk)). A four page Findings, also entitled *Regeneration in European Cities: making connections*, was published in April 2008 and it too can be obtained from the Joseph Rowntree Foundation.

## About the author of the case study

As well as being a founder director of URBED (Urban and Economic Development Group) Christopher Cadell MA, MBA has worked extensively as an international business strategy consultant. Over the past 30 years he has been responsible for many of the URBED's projects in the fields of urban regeneration and small business development. His previous publications include *Managing Urban Change*, *Re-using Redundant Buildings* and *Living Places: Urban Renaissance in the South East*. He was also the principal author of the main report for this project.

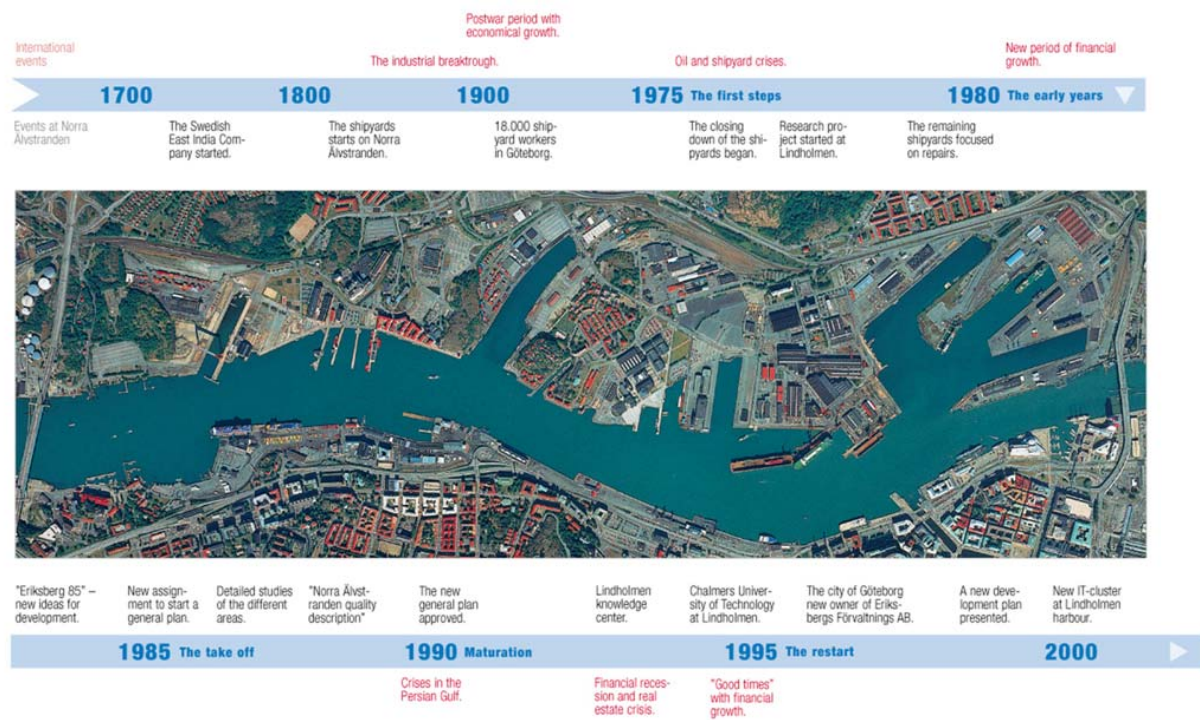


Figure 2: Norra Älvstranden and its development over time

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# Norra Älvstranden





## BACKGROUND

This is one of three case studies written for *Regeneration in European cities: Making connections*, a research project carried out by URBED for the Joseph Rowntree Foundation. The aim of the research is to investigate how people issues have been integrated into major urban regeneration schemes in various European cities and the lessons that might be learned for the UK. This case study focuses on the regeneration of the Norra Älvstranden (Northern Riverside) district of Gothenburg in Sweden following the collapse of its shipbuilding industry. It examines what led to the success of the scheme to redevelop the area, how it has contributed to the development of the city as a whole, whether the people who lost out when the shipyards closed benefited from the regeneration, and what lessons from the scheme might be particularly relevant for urban policy in the UK. The full report of the research can be found at [www.jrf.org.uk](http://www.jrf.org.uk).

## Acknowledgements

In writing this case study the author was greatly assisted by Lisbeth Birgersson, Associate Professor in the School of Architecture at Chalmers University of Technology, Gothenburg, who not only lives in Norra Älvstranden but is also a member of the University Board at Chalmers and in touch with many of the key players in the regeneration scheme, including some of those who previously worked in the shipyards. She kindly arranged and attended many interviews and organised a two-day workshop to discuss the preliminary findings of this case study. Her contribution is gratefully acknowledged, as are those of her colleague at Chalmers University, Saddek Rahel and of Trad Wigglesworth.

The workshop in Gothenburg was also attended by a councillor and two officers from Gateshead Metropolitan Council<sup>1</sup> (Cllr. John McElroy, Peter Udall and Alan Jones) who were able to provide insights from the viewpoint of a British local authority which had faced many of the same challenges. Again their contribution is gratefully acknowledged.

Much of the factual background information about the development process at Norra Älvstranden is drawn from the booklet *Norra Älvstranden – The Process* which was prepared by a working group led by Hans Ander (Gothenburg City Planning Authority) and Johan Ekman (Norra Älvstranden Utveckling AB) and published by these two organisations.

## Credits for illustrations

The photographs and other illustrations in this case study were provided by Gothenburg City Planning Authority, Lisbeth Birgersson, Trad Wigglesworth, Nicholas Falk and Christopher Cadell. The photograph on the front cover was taken by Trad Wigglesworth.

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<sup>1</sup> The 'UK Partner' local authority for this case study.





## 1. OVERVIEW OF REGENERATION SCHEME

Norra Älvstranden (Northern Riverside) is an area of approximately 290 hectares (1 square mile) which runs for about 5 kilometres (3 miles) along the north bank of the Göta Älv river, opposite Gothenburg's historic city centre. Up until the 1970s Norra Älvstranden (NÄ) was the site of Gothenburg's three world famous shipyards, and it also contained cargo handling and port facilities. About 15,000 people were employed directly in the yards, and there were perhaps another 30,000 who worked elsewhere in the city in other firms which supplied the shipyards as their main customers. However foreign competition was growing, and the oil crisis of 1973 not only caused an international recession but also led to a change in the size and type of ships that were in demand. Gothenburg's yards were hit hard. They started merging and cutting down their workforces, and within less than ten years all shipbuilding had ceased in Norra Älvstranden. The area became virtually derelict, and many of the buildings that remained were huge and difficult to re-use. It was a forbidding place that nobody went to and an eyesore (Ander and Ekman, 2001).

The closure of the shipyards was a very major blow for Gothenburg. NÄ's yards dominated the skyline and gave Gothenburg its image, both locally and internationally – just as 'Sheffield steel' once characterised one of Britain's famous industrial cities. They were one of the city's most important industries. When they closed, not only did many jobs disappear but a very visible area of dereliction was created in full view of the city. Fortunately few people lived in Norra Älvstranden as it was an enclosed dockyard area, but it drew its workforce from all over the city and the effects of the closures were widely felt. The city, however, responded in a concerted way. New jobs were created in other sectors (including, for example, car manufacturing and the public sector) and extensive use was made of government-funded retraining schemes. As there are much lower wage differentials between different types of employment in Sweden than in most countries, there was less reluctance to change jobs. The regeneration of Norra Älvstranden, therefore, became chiefly a long-term, strategic development challenge. Short-term employment and housing issues, which are often seen as the overwhelming priorities in urban regeneration schemes, were largely taken care of by separate, well-developed systems.

After a slow start, the redevelopment and regeneration of the area is now well under way. NÄ is being transformed into a high quality, mixed-use district within easy reach of the city centre, with stylish apartments, high-tech industries, educational facilities (including two university campuses) and an accessible waterfront. Some ship-repair and port activities remain, but on a minor scale. The quality of design and the standard of building are high. The area is well planned and the housing in particular is in high demand. The area has all the hallmarks of a successful large-scale waterside redevelopment scheme. Already as many people as used to work in the shipyards are employed in NÄ, and when the scheme is complete, in about 2025, it is forecast that some 40,000 people will work there. The area is also already home to around 6,000 residents and to 9,000 students. In time each of these is expected to rise to 13,000<sup>2</sup>.

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<sup>2</sup> Current figures from [www.stadsbyggnad.goteborg.se](http://www.stadsbyggnad.goteborg.se). Future estimates from Norra Älvstranden Utveckling AB.



**Figure 3: Norra Älvstranden is being transformed into a high quality mixed-use waterfront district**

However, what is especially significant about the regeneration scheme is that (following careful thought about the way in which a city like Gothenburg can flourish in an increasingly competitive post-industrial world) it is being carried out in a way that makes a central contribution to the city's overall economic strategy for its future. This has required serious commitment from and collaboration between leading individuals and organisations in many different sectors – local government, industry, education, trades unions etc. – in the Gothenburg city-region. The way in which they have managed to work together for the long-term good of the city has had a crucial impact, as has the way that the city authority itself is funded. While the City of Gothenburg has taken the overall lead, the private sector has made a major contribution to the way that the plans for the area have developed, and to the success of the scheme and the city as a whole. The universities, too, have played a key role, especially through their links with major employers. These are themes from which lessons for the UK can potentially be drawn.

It must also be borne in mind that Sweden is a very different country from the UK. Although they are both successful, advanced democracies and face many of the same challenges, there are important differences between the systems that operate in the two countries. It is important to keep this different context in mind when considering what has happened in Norra Älvstranden and what might be learned from it.

## 2. CONTEXT

### 2.1 Sweden

Compared with Britain, Sweden is a large country with a small population. It is almost twice the size of the UK, but its population – just over 9 million – is less than one sixth of that of Britain (see Table 1). Both countries are well established parliamentary democracies with advanced economies. Both have long histories as trading nations. Like Britain, Sweden is a member of the European Union but retains its own currency (the Swedish krona or SEK) as it has not joined the ‘eurozone’. It has an outstanding natural environment, with lakes, mountains and forests dominating the countryside, although its winters are harsh, especially in the north.

**Table 1. Some basic statistics for Sweden and the United Kingdom**

	Sweden	United Kingdom	Source
Size of Country	450,000 sq km	244,800 sq km	CIA World Handbook
Population (2007)	9.2 million	60.8 million	Eurostat
GDP/head (2007) (purchasing power parity)	US\$ 36,700 (16th highest in world)	US\$ 35,000 (20th highest in world)	www.economist.com
GDP Growth Rate (2003-07)	3.2% p.a.	2.8% p.a.	www.economist.com
Unemployment Rate	7.1% (2006)	5.3% (2006)	Employment in Europe
Competitiveness Ranking	4th highest in world	9th highest in world	World Economic Forum

#### 2.1.1 Social democracy

Sweden follows a classic (albeit dwindling) social-democratic model characterised by cooperation; consensus; neutrality; equal rights; narrow economic and social differentials; high taxation; a generous welfare system; good public services; high wages; and a high standard of living for all. It pays particular attention to the environment, sustainability, health, education (especially technical education), efficiency and good design; social responsibility; civic pride; and participation in public affairs. In the past the population was highly uniform, but recently there has been a substantial inflow of immigrants, especially to urban areas. Even so, economic and social differences are lower than in most countries, including the UK<sup>3</sup>.

<sup>3</sup> For a description (albeit a highly personal one) of life in Sweden in the 1970s, when the social democratic system was in full swing, see for example *Fishing in Utopia: Sweden and the Future that Disappeared* by A. Brown (Granta Books, 2008).

### 2.1.2 Economy

Sweden transformed itself from a country of poor subsistence farmers into an affluent modern economy in a relatively short period of time. Although late to industrialise, it was able to draw on abundant supplies of raw materials, notably iron ore, trees and water power, and since the late nineteenth century it has built up and maintained a strong manufacturing base. (Famous companies include: Volvo, SKF, Saab, Ericsson, IKEA, Astra-Zeneca, Electrolux, Hasselblad). Industry still accounted for 23% of total employment in 2003. Labour costs are high, but levels of economic activity and productivity are also very high, and there is heavy investment in capital equipment and R&D. Exports amount to about 30% of Gross Domestic Product (GDP), which adds to prosperity but makes Sweden vulnerable to swings in world trade and to competition from developing countries.

For a long time after World War II Sweden's economic growth rate was second only to Japan's and it became one of the most prosperous countries in the world. The 1973 oil crisis hit its industry hard and precipitated the collapse of the shipbuilding industry, which again had been second only to Japan's. However, the growth of the automotive sector (Volvo, Saab), the construction industry and the public sector, as well as other measures (see below), provided new jobs and kept unemployment down. In the 1980s economic growth slowed down and Sweden started losing international market share. Its 'high wage, high public spending' model could not be maintained especially during the world recession that followed the stock market crash at the end of the 1980s. Unemployment soared in the early 1990s and the property market fell sharply. The banking and financial services sector came close to collapse. Public spending was cut back and the krona had to be devalued by over 20%. In recent years, however, economic growth, led by a push into IT and other high-tech industries, has picked up again. Income inequality is still much lower than in the UK, although changes have been made to the tax system to provide more encouragement to entrepreneurship and wealth creation. Efforts have also been made to diversify the economy into specialised, higher value-added products and to expand the service sector. But the manufacturing and export sectors still remain strong – and vulnerable to fluctuations in global trade.

### 2.1.3 Employment

Sweden is committed to full employment and the country has a strong work ethic. The Constitution states that it is incumbent upon the public administration to secure the right to work, housing and education. In spite of high benefit levels, Swedish people overwhelmingly want to work and they are expected to do so. In 1990 nearly 82% of people of working age (15-64) were economically active and 80% were actually in employment, with under 2% unemployed and virtually no long-term unemployment. Even though economic activity has fallen back to 77% it is still well above the EU average and slightly above the UK figure of 75.6% – although this difference is more than accounted for by British women being able to retire at 60. In spite of public spending cut-backs in the 1990s about one third of all employment is still in the public/social sector.

Both central and local government put great stress on preparing people for work through education and training (including language and other special training for immigrants) and they have strong incentives to maintain a high level of employment. In Sweden there are sophisticated mechanisms for labour market planning and for helping unemployed people back into work (see below). These were clearly successful in the 1970s and unemployment in Gothenburg remained below 4% throughout the period of the shipyard closures. It was only in the early 1990s, when the whole economic system reached breaking point, that unemployment spiralled upwards, reaching almost 10% nationally in 1997. By that time, however, the effects of unemployment in the shipbuilding industry were long gone (although the economic crisis in the 1990s did have a big impact on the property development side of the regeneration of NÄ). One of the key issues at the 2006 general election (which the Social Democrats, the traditional ruling party in recent decades, lost) was the 'true level' of unemployment. Official figures put it at around 6% nationally, but many people claimed that it was in fact very much higher when all those on government training schemes and other programmes were included.

#### **2.1.4 Labour market planning**

Sweden pursues an active labour market policy through its Labour Market Board (AMS) – on which Britain's short-lived Manpower Services Commission was based. It is funded nationally but has a regional and local operating structure. It tries to foresee what jobs will be available (and/or which should be encouraged) in the future, and it organises and pays for 'labour market schemes', such as training and job-creation schemes, which are designed both to alleviate unemployment and to prepare people for the kinds of jobs that will be available in their areas. It is meant to focus particularly on vulnerable groups such as the long-term unemployed, people with disabilities, immigrants and young people.

For many years Sweden and Gothenburg had enviably low rates of unemployment. In order to maintain economic growth more people, especially women, were encouraged to join the workforce and immigration was encouraged too. Virtually full employment was maintained throughout the period of the shipyard closures.

#### **2.1.5 Urban regeneration**

Sweden remained a predominantly rural country until well into the 20th century. It therefore avoided developing the large 19th century industrial towns which have been the focus of so much urban regeneration in Britain and the United States in recent years. However, as more and more people have moved into the urban areas (Gothenburg's population grew by 14% in the 1960s) there has been a need to expand and upgrade the quality of Sweden's towns and cities. This has mainly involved public investment in improving the housing stock, public services and the environment. Thus in Sweden, urban regeneration has been a long-term, on-going process aimed at accommodating urban growth and meeting rising expectations rather than a series of sudden reactions to industrial closures and unemployment crises, as in some other countries including Britain.



However, Sweden had also become much more industrialised by the end of the ‘30 glorious years’ of European economic growth that followed the end of World War II, and it did suffer the same crisis that affected so many of the traditional industries in other developed nations during the 1970s. The demise of the shipbuilding industry gave Sweden its first taste of large-scale urban dereliction and the redevelopment of NÄ has been Sweden’s largest urban regeneration scheme.

### 2.1.6 Housing Policy

Housing policy has been a central component of Sweden’s comprehensive welfare system. It is considered that one of the basic responsibilities of the State is to ensure that all its citizens have a good home at an affordable price. This means providing housing for everybody, not just the less well-off or those with the greatest need. One of the high-water marks of this policy was the aptly named *One Million Homes Programme*. After World War II, as industrial growth gathered pace, there was a general housing shortage in Swedish towns and cities and much of the existing stock was judged to be below the desired standard. The government therefore devised – and, more remarkably, implemented – a housebuilding programme that created one million new dwellings within a ten year period (between 1965 and 1974) at an average rate of 12 units per thousand inhabitants per year<sup>4</sup>. The new housing was heavily subsidised and had to comply with strict planning rules. Much of it was in large multi-storey ‘suburban’ estates (or, more accurately perhaps, ‘satellite townships’) on the edge of existing urban areas. Some, but by no means all, of it was ‘system built’, with prefabricated modules being fitted together on site to form long straight, monolithic blocks of flats. Nevertheless, the individual units were designed, built and fitted out to high standards, giving Sweden a high quality, modern housing stock.



Figure 4: *One Million Homes Programme* housing in Gothenburg’s ‘suburbs’

<sup>4</sup> The equivalent of this in Britain would be to build over 700,000 new dwellings a year for a whole decade. In practice the maximum number of completions achieved in a year in the UK was just over 400,000 in 1968, and in recent years the level has been well below 200,000 units per year. (Chart 2a *Housing Statistics 2006*, DCLG 2006.)

By the time of the shipyard closures in the mid 1970s the housing shortage had been eliminated. Indeed there was (temporarily) a housing surplus in Gothenburg. However, the new housing was mainly in the outskirts of the city, and much of the older stock in and around the city centre had been eliminated. Both these factors had an impact on the redevelopment of Norra Älvstranden.

The intention was that the new developments should have a broad socio-economic mix of residents. In practice, however, some places proved more desirable than others and the economic downturn led to a reduction in subsidies. As there was room to move, differentiation and segregation gradually increased with some estates gaining a poor reputation. These emptier areas became the natural places in which to house the immigrants (mostly refugees after the 1970s) to whom the country continued to open its doors. So an indirect result of the *One Million Homes Programme* is that there is now much more segregation in Swedish cities than before. In recent years combating segregation and integrating non-Swedish – and more particularly non-Swedish-speaking – newcomers into the wider community has become a major policy focus. Also the policy of getting rid of sub-standard accommodation was not always popular and subsequently there has been much more emphasis on refurbishing old properties<sup>5</sup> and on improving the local environment, facilities and support services in residential areas.

### 2.1.6 Local government

Sweden is a much more decentralised country than Britain, and local government has a very strong tradition. The country is divided into 20 counties/regions and 290 municipalities, each with an elected council. Between them they are responsible for providing a major part of all public services, and under the Swedish Constitution they have a substantial degree of autonomy – including independent powers of taxation – and a great deal of freedom to organise their activities as they see fit.

Municipalities (such as the City of Gothenburg) are responsible for “matters relating to their inhabitants and the immediate environment”. By law they must provide certain basic services (such as schools, care of the elderly, planning, social services, environmental protection, water and sewage etc.) but under the ‘Self-government Principle’ they are also entitled to decide on matters of common concern to their residents and so have considerable latitude over what other services they offer and activities they undertake. County/regional councils have responsibility for services that require coordination across a wider area, principally healthcare and regional transport. Central government is also represented at the regional level by separate county administrative boards (SALAR, 2007).

Both the municipalities and the county/regional councils have the power to charge for the services they provide (but only at cost) and to levy income tax (see below). Central government has a right to require local authorities to take on new responsibilities, but if it does so it must by law provide them with the full amount of funds needed to cover their additional costs (the ‘Funding Principle’).

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<sup>5</sup> Including, for example, the refurbishment of traditional working class housing in the Slottsberget district of Norra Älvstranden in which much of the work was done by the residents themselves.

### 2.1.7 Taxation

Sweden is a high-tax country. According to Eurostat, the statistical arm of the European Union, 49% of the country's GDP was taken in taxes in 2006, and this figure has been over 50% in recent years (Eurostat, 2008). The equivalent figure for the UK is 37%. However, public services in Sweden are of a very high standard. Furthermore, taxes are raised very differently in Sweden than they are in the U.K. Most significantly, basic rate income tax – in its entirety – is a local authority tax. It is set locally (within limits laid down by central government) at rates that range from about 30-35% of a resident's earned income and retained by local authorities. This is far more than the 'local income tax' that some in Britain suggest should replace Council Tax.

Corporate taxes, property taxes and higher rate income tax (at another 20-25% on taxable earnings above about £27,000) go to central government which, among other things, pays normal unemployment benefit (for up to around one year) and for 'labour market schemes'. However, the municipalities are responsible for social security payments to the long-term unemployed. Thus, in Sweden, local authorities have a strong incentive to support their local economies so that they can generate well-paid jobs and associated income tax, as well as to reduce long-term unemployment and associated welfare payments. (This is in sharp contrast to Britain where virtually all funding comes from central government, based on local needs, so that local authorities are motivated to demonstrate as much need as possible.) In Sweden, approximately two thirds of a local authority's income comes from local income tax. Furthermore this tax has a natural buoyancy (as it rises automatically with rising incomes) and it gives local authorities a great deal of autonomy (Swedish Institute. SALAR, 2007).

## 2.2 Gothenburg

### 2.2.1 A sophisticated industrial city

Gothenburg (Göteborg in Swedish) has a population of 500,000. It is strategically located on Sweden's west coast, providing open access to the North Sea and the world beyond, which was vital for the country's development. It lies at the mouth of the Göta Älv river – which at one time used to form the border between Denmark and Norway. The Göta Älv flows down from Lake Vänern, one of Europe's largest lakes, through which it is possible to reach the Baltic Sea on an internal route via the Göta Canal (except in winter). Gothenburg is Sweden's second city (after Stockholm, the capital) and Scandinavia's chief port (although it is only one tenth the size of the Port of Rotterdam). It is the dominant, stand-alone centre of its region (which has a total population of around 900,000) and is one of only six major conurbations<sup>6</sup> in all of Scandinavia. It has good road and rail connections with Oslo (Norway) and Copenhagen (Denmark) (both 300kms away) as well as with Stockholm (500kms), but in European and global terms it is a long way away from the main centres of population.

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<sup>6</sup> Urban Areas with over 250,000 inhabitants. There are 28 in the UK, many of which are close to each other.



**Figure 5: Gothenburg's historic city centre on the south bank of the Göta Älv river**

Gothenburg is Sweden's main industrial city with extensive automotive and other engineering production as well as oil refineries, shipping and port operations. But it has a very different feel to any British industrial city. Its historic core, on the south bank of the river, is spaciouly laid out, with broad avenues, fine institutional buildings, canals and parkland. It has museums, fashionable shops and restaurants, and an opera house. It is an important cultural centre and has extensive sports, leisure, and conference facilities. Education is a major focus. It has the largest student population (60,000) in Scandinavia, with two universities (the University of Gothenburg and Chalmers University of Technology, one of Europe's leading technical institutes) located close to the city centre, and housing in the inner areas is in high demand. There are no run-down 'inner-city' districts. The city is clean, well maintained, prosperous and sophisticated.



**Figure 6: A city of culture and sophistication**

### 2.2.2 Housing and environment

Much of the industrial land lies along the river, particularly on the north bank and to the east of the centre. Away from the river the land is more hilly, with rocky outcrops, and most of the population live in ‘suburbs’ – residential housing estates made up of mainly walk-up apartment blocks on the outskirts of the city, but connected into it by an efficient tram and bus system. Many of these apartments were built as part of Sweden’s *One Million Homes Programme* (see above) to replace older, city centre housing and to accommodate families that were still, as late as the 1960s, moving away from rural areas to find better paid work in town and cities. While they have local shopping and service centres built into them, they are not at all like British suburbs with their individual houses, front gardens and separate town centres.

As well as migrants from the countryside Gothenburg has attracted many foreign immigrants. About 21% of the population of Metropolitan Gothenburg is of non-Swedish background (Wikipedia, quoting data for 2006 from *Statistics Sweden*). Some districts, such as Angered (in the north of the city) and Biskopsgården (to the west), contain substantial concentrations of immigrants, and this has led to fears that Gothenburg is becoming “a clearly segregated city” (City of Gothenburg Annual Report 2004)<sup>7</sup>. However, although some of the suburbs can seem rather soulless, the housing is of high quality and the surroundings are scrupulously clean. Litter, graffiti and vandalism are virtually unknown, and there is none of the dereliction that is still found in some residential areas in British industrial cities

Gothenburg prides itself on its fine setting and on its commitment to promoting environmental sustainability. For example, the city awards a prestigious annual international prize (the Göteborg Award) for sustainable development. It seriously aims to be carbon-free by 2050 and the City Council has recently organised a highly participative exercise to enable people throughout the city to join in planning how to bring this about. Already over 90% of all apartment blocks in Gothenburg are heated through the city’s district heating network, which distributes hot water from a combined-heat-and-power plant to domestic and commercial buildings throughout the city. And as the result of another major engineering investment, the busy main road along the south bank of the river now runs underground in a mile-long tunnel which allows pedestrians to have direct and safe access from the city centre to the waterfront.

However, given the city’s attractive surroundings there is also now a growing trend among people with well-paid jobs to move out to smaller communities in the surrounding area, especially along the coast or by one of the nearby lakes, and to commute in to work. Nevertheless the city itself still remains the central focus of economic and cultural life and the hub of the wider ‘city-region’ (see below).

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<sup>7</sup> The full text of the relevant paragraph reads: “**Differences within the city:** Göteborg is a clearly segregated city. There are large differences between groups of people and between areas in the city as regards important living conditions such as the frequency of gainful employment, income, the proportion of children in families with income support, the level of education and the ill health rate. A cautiously positive trend can be discerned in some respects in recent years but differences are still very large.” (Administration Report, City of Göteborg Annual Report 2004, [www.goteborg.se](http://www.goteborg.se)).



### 2.2.3 Gothenburg City Council

The City Council is the body responsible for running Gothenburg and for the future development of the city. It is made up of 81 members who are elected by proportional representation every four years, on the same day that the national parliamentary election takes place. The City Council is mainly concerned with major decisions, such as setting overall objectives, deciding on the local tax rate, approving the city's budget and authorising large investments. It also appoints the members of the City Executive Board which oversees the detailed administration of the municipality and whose Chairman, Göran Johansson, is in effect the "Mayor of Gothenburg". He has been in office almost continuously since 1988, thereby giving strong continuity of leadership.

The Council works both through council committees – which are either district-based (covering local schools and social and cultural services in an area) or functional (e.g. environment, planning and building, water and sewage etc.) – and through a range of operating companies (including Port of Göteborg AB, Älvstranden Utveckling AB and Göteborg Energi AB) which it owns either wholly or partly. It is far more than just a provider of local services; it is undoubtedly Gothenburg's main driving force. To get things done, it works closely with other key bodies in the city and its wider region, such as the universities, trades unions and major companies. There is an acknowledged sense of local pride and a commitment among all sectors and their leaders to work together for the good of the city – the so-called "Gothenburg spirit", which the Council strives to foster. Furthermore, as Gothenburg is a comparatively small city, all the key players know each other, and many of them play more than one role in the life of the community. In the 2006 elections the coalition led by the Social Democratic Party retained control of the City Council, against the national trend.

### 2.2.4 Gothenburg's city-region

Even though its boundaries have been extended several times over the years, the City of Gothenburg does not in fact cover the entire conurbation. Indeed as commuting distances have increased, and business activities in areas outside the city centre have grown, so has the size of Gothenburg's economic and social footprint, or 'city-region'. Although Gothenburg is also the capital of the Region of Västra Götaland, this next official level of government covers a large area of western Sweden (approximately 24,000 square kilometres or 10,000 square miles) and includes 49 municipalities (or local authorities). The immediate 'metropolitan area' of Gothenburg, sometimes referred to as Greater Gothenburg, is considered to be made up of the 13 municipalities immediately around the city, including one which is actually part of a different region (Halland). This is an established statistical area (although its size has been increased by the addition of two of its constituent municipalities quite recently). It has also begun to develop into an active grouping of local authorities<sup>8</sup> which work collaboratively together on issues of sub-regional planning, further education and other shared interests.

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<sup>8</sup> The Göteborg Region Association of Local Authorities (GR). See [www.grkom.se](http://www.grkom.se).

In parallel, the City Council has established Business Region Göteborg AB, a non-profit company which collects and analyses economic information for the same sub-region and promotes inward investment on behalf of all 13 municipalities. One of its key tasks is to help diversify the sub-region's economy so as to ensure that it will never again so dependent on a single industry as it was on shipbuilding, thus reducing its vulnerability in the case of a downturn. Although the company is wholly owned by the City Council it operates as a joint partnership between all 13 municipalities. While the city is recognised as being the “engine of growth” of the entire sub-regional economy and the main cultural centre, all the municipalities accept that they are part of a city-region and that it is in all their interests – including the City of Gothenburg's – to work together for mutual benefit.

Working together for mutual security and benefit is a firmly entrenched characteristic of Swedish society, and under Swedish law local authorities are able, on their own initiative, to form joint organisations which they can authorise to carry out particular functions over a wider area. The City Council makes use of this power whenever it appears that the city will benefit and in doing so it tries to avoid domination and emphasise collaboration. Where possible it likes to have less than a 50 per cent stake in the management of such organisations. In other words, the City recognises that it is part of a city-region and that it does not have to have control over all of it. What is important is to develop shared goals and interests, so as to be able to work together for mutual benefit.

### **2.2.5 A successful city**

Gothenburg is an impressive and an attractive city with an air of confidence, and it appears to have a clear vision and strategy. Time alone will tell if it will remain truly successful over the longer term but, in spite of its peripheral location, there are several positive indicators for the future:

- It is a place where people with choice want to come and live. (Its population has increased steadily for decades – except for a pause between 1970 and 1985).
- It has a growing and diversifying economy, with particular strengths in high technology, even though they are not immune from international cycles. It is a place where businesses want to invest, and it retains the headquarters functions of several important companies. It is a city in decision makers live.
- It is a major centre for education and technical innovation.
- It has a positive, widely-shared sense of community in which people from different walks of life are prepared to work together. It is committed to being a people-friendly city.
- It has effective local government which provides clear leadership and has a broadly-agreed long-term strategy with access to the financial resources to make it happen.

It is not clear whether, before the shipyards were forced to close, the City of Gothenburg had an explicit vision and strategy for its future – expect perhaps to continue to be a successful industrial

city, known all over the world for its shipbuilding industry. What is clear, however, is that the regeneration of NÄ, particularly when the municipality became actively involved in planning for the area in the late 1980s, was seen to provide the opportunity to develop and start implementing a new vision for the city as a whole. This aims to combine the civic values of being a people-friendly city with the economic requirements for remaining prosperous in an increasingly competitive world. It involves changing Gothenburg from an 'industrial city' to a 'knowledge-intensive city' and diversifying the local economy while still insisting that all new development is of high-quality, sustainable and on a human scale and that the city's amenities are accessible for all. It was the redevelopment of Norra Älvstranden, which is described in the following sections, which brought about the development of that strategy – not just for NÄ but for the benefit of the whole of Gothenburg and its city-region as well.



### 3. THE REGENERATION SCHEME

#### 3.1 Case Study Area

Norra Älvstranden (NÄ) runs along the north bank of the Göta Älv river opposite Gothenburg city centre. It is some 5 kilometres long and 0.6 kilometre wide, covering an area of 290 hectares (1 square mile) including 40 hectares of water. The river is 300 – 400 metres wide and there are bridges at each end of the site, which together with river buses provide connections to the city centre. The north bank used to be predominantly industrial, and the railway lines to the main Port of Gothenburg, which is just downstream of NÄ at the mouth of the river, run behind the site, effectively cutting it off from residential areas beyond. NÄ used to be the home of Gothenburg's world-famous shipyards, along with some cargo handling and port facilities. There are still several large dock basins and jetties which give the area a special, historic character and provide many potentially spectacular waterfront sites.



**Figure 7: Aerial view of Norra Älvstranden, across the river from Gothenburg city centre**

The collapse of the Swedish shipbuilding industry in the mid-1970s had a dramatic effect on Gothenburg as a whole and, of course, on NÄ in particular. By the end of the decade the three main shipyards (Götaverken towards the east of the site, Lindholmen in the centre and Eriksberg in the west), which between them used to employ around 15,000 people in the area, had ceased to operate. By the beginning of the 1990s about 14,000 workers had left the industry altogether, and only one small ship-repair yard now survives in NÄ. The redeployment of the workforce took a long time and required a series of special measures, but Sweden already had a well developed labour planning system and redundancies were almost entirely avoided. However, dealing with a large area of derelict land and huge abandoned buildings, in a highly visible position close to city centre, became a major challenge. Fortunately fewer than 400 people lived in NÄ at the time, but the task of redeveloping the area, and replacing an industry that had been so fundamental to the life of the city, has been immense.

It is now 30 years since the regeneration of Norra Älvstranden started and more than enough progress has been made for the area to be counted as a successful new part of the city. However, the redevelopment of the area is not expected to be fully completed for another 20 years or so. Thus the regeneration process will have taken 50 years – or about two generations. It is important to keep this timescale and its implications in mind. 50 years is a very long time from a property development perspective and more than a lifetime to anyone looking for a new job, but it is only a short period in the lifespan of a city. The development process and the principal projects that have been undertaken have been well documented, especially in *Norra Älvstranden – The Process* (Ander and Ekman, 2001) and many of the specific actions that need to be taken to regenerate an area will depend on the specific circumstances of the site and its context. They may not be particularly relevant to other situations. This case study, therefore, only summarises what has been done but seeks to draw out and explain certain key aspects of the scheme which appear to have a much wider significance.

### 3.2 A Series of Different Visions

When the shipbuilding industry failed in the 1970s the Swedish state took over the redundant yards through a company named Swedeyard, which therefore became the major landowner in NÄ. Most of the rest of the site was owned by the City of Gothenburg through its wholly-owned Harbour Authority. Since that time the ownership of the site and the vision for its regeneration have changed several times, depending on who was responsible at the time and on wider economic realities. It was only after the City of Gothenburg took full charge of the scheme that a sustainable strategy emerged.

The fact that the vision kept changing over a comparatively short time might be thought to be fatal for a regeneration scheme, but in this case it was one of the keys to its eventual success. Finding the right strategy for such a large site in the face of changing economic circumstances was far from easy. But it proved better to wait until a realistic and well thought through vision, with support from many important interests in the city, had been developed rather than to try to find a quick fix to a crisis.

Initially (in the late 1970s) the principal aim was to ‘revive full employment in the area’ – by creating industrial jobs similar to those that had been lost (e.g. related to offshore oil platforms). This tied in with the fact that the land was zoned for industry, and was owned by the nationalised shipbuilding company Swedeyard. It was also very much in line with the government’s commitment to full employment and to a widely shared feeling of responsibility for those who had lost their jobs. Despite the good intentions, it eventually became clear that new industry on the site was not going to provide new jobs for the people who had worked in the shipyards. The new markets did not appear and the only jobs that remained were in the ship repair yard and a few small businesses.



The next version of Swedeyard's vision (in the early 1980s) focused on housing. Proposals were put forward for a whole new town of 20,000 residents with 20-30 storey tower blocks. One argument for this was that it would provide jobs for "one thousand building-construction workers...for ten years". In principle the site is very suitable for housing. It is on the waterfront, close to the city centre and, because it is south facing, it catches a great deal of sunshine. However, Sweden's *One Million Homes Programme* had already created a housing surplus in Gothenburg and so these plans were rejected by the municipality. Efforts instead went into making environmental improvements and to trying to attract more small firms into some of the empty buildings on the site, such as those of the former Götaverken yard at LundbyStrand. This project drew on experience from the UK, including work by URBED. The emphasis was on the re-use of existing buildings and the provision of support for entrepreneurs. Little new construction took place.

It was not until the second half of the 1980s that the municipality started to work on a new structure plan for the area. The city, led by the Council, was then thinking about its future as a whole, based on the perceived need to turn Gothenburg from an 'industrial city' to a 'knowledge-intensive city'. The vision for the future which emerged and was confirmed by extensive public consultation, included:

- Making Gothenburg 'the Friendly City', by for example:
  - creating a vibrant, diverse, mixed-use area that complemented the city centre
  - building at a human-scale
  - promoting sustainability and a high-quality environment
  - making the riverfront open to all
  - encouraging visitors and creating natural meeting points
  - taking a long-term view
- Diversifying and modernising the city's economy, by for example:
  - developing clusters of IT and other high-tech industries and services
  - promoting the city as a centre of education, particularly technical education
  - ensuring that the local economy had at least 'a dozen legs to stand on' (to help withstand the fluctuations in different sectors of the international economy).



Figure 8: The emerging strategy for the 'Friendly City'

Clearly NÄ could have a role in this, and the City Planning Authority was asked to “investigate in a long-term perspective the criteria for linking NÄ to the present city centre” within this overall strategic framework. It started to work on creating a new structure plan for the area, asking such questions as:

- How do we make the best of the small projects that are now established in NÄ?
- What are possible uses for the big buildings?
- How can the history that is embodied in the site be taken care of?
- How can NÄ and any activities there be linked in to the city centre?
- What should the future of NÄ be?

It was concluded that the regeneration of NÄ provided an ideal opportunity to put the principles behind the new vision for the city into operation, for the long-term benefit of Gothenburg as a whole – as well as to create an exciting new area, with a series of distinct quarters, in its own right. Interestingly, having looked at the regeneration of redundant port areas in other cities, one of the specific conclusions of the Planning Authority was that NÄ “*should be a vibrant quarter that would not be similar to the London Docklands*” (Ander and Ekman, 2001). It needed to be an integral part of the Friendly City.

A comprehensive masterplan, with detailed plans for each quarter, was completed in 1989, but neither the City Council nor Swedeyard had the resources to implement it. Furthermore, Swedeyard (and its successor the state-owned investment company Celsius) viewed NÄ as just a potential property development, and was reluctant to start investing in an area which had a poor reputation and which most Gothenburgers had not even set foot in.



Figure 9: Comprehensive plan 1989

Over the following years, therefore, a campaign was mounted to change the image of the area, and to encourage people to visit it and see how close it was to the city centre, by holding pop concerts, exhibitions and sports events there. It was fortunate, perhaps, that in 1985 Ullevi Stadium, Gothenburg's main venue, was severely shaken by overenthusiastic Bruce Springsteen fans and had to be closed for structural repairs. An alternative performance space had to be found, and in 1986 a U2 concert on part of the site of the old Eriksberg shipyard was attended by over 50,000 people (more than the capacity of Ullevi) and "all seats had a view of the river". Other events followed and gradually NÄ became a more familiar and accepted place.



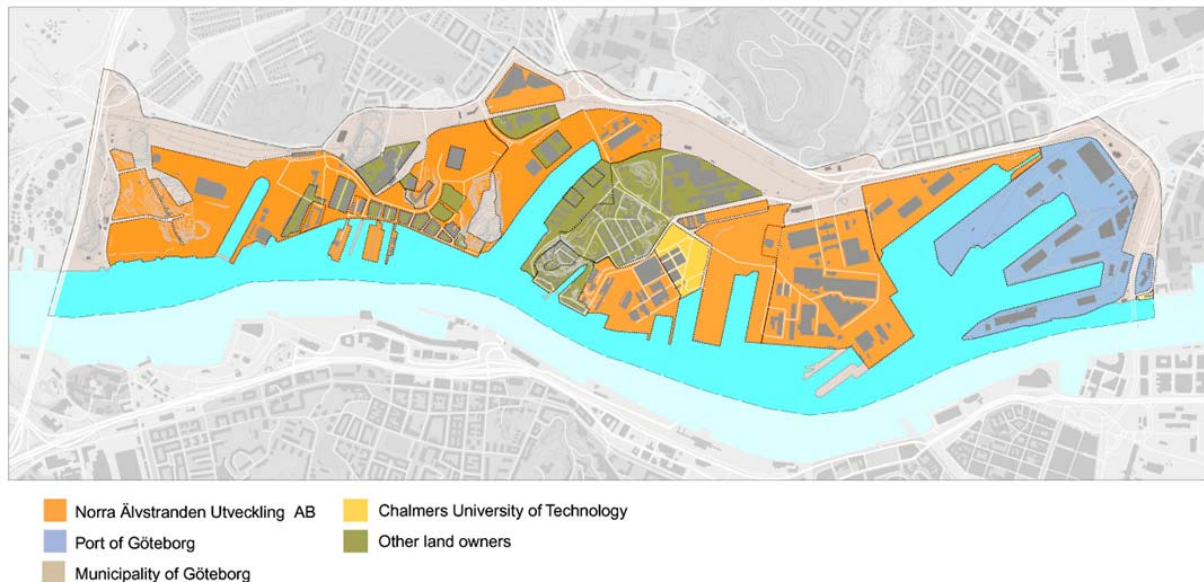
**Figure 10: A Madonna concert in Norra Älvstranden in 1990**

In the early 1990s, however, Sweden suffered a severe banking and financial crisis, and in 1996 Celsius agreed to transfer its land in NÄ to the City of Gothenburg for a nominal sum. The City now owned the entire site (although it was split between three separate subsidiaries) and was in a position to start implementing its vision for as a quarter that would play an important part in the repositioning of Gothenburg as a knowledge-intensive city for the future.



### 3.3 Land Ownership

The planning perspective is not necessarily the same as the landowner/developer's, even when the latter is state-owned. Celsius needed to make year-to-year profits out of the development of NÄ, and when the financial and property crisis made this seem entirely unrealistic it agreed to transfer ownership of the land it held in NÄ to the City of Gothenburg for a nominal sum. The municipality then had complete control of Norra Älvstranden and could ensure that it was regenerated as a long-term 'city development' scheme, and not just as a 'property development' project. However, in practice, the ownership of the site was still split between three separate, although wholly owned, subsidiaries. Each had its own objectives and incentives, and it was not until 1998 when Virtually all the land was brought under the ownership and control of a single Council owned development corporation (that shortly became known as Norra Älvstranden Utveckling AB, or NUAB) that the overall vision and strategy for NÄ could be pushed forward.



**Figure 11: Land ownership of Norra Älvstranden**

Economic realities still had to be faced. NUAB had to pay its own way, but it had obtained the site for almost nothing and was not under pressure to pay immediate dividends to its owner, which had its own substantial sources of income (e.g. local income tax). Although there were delays, because of the property crisis and the cancellation of some planned developments, the municipality was in a strong position to take forward the step-by-step regeneration of the area, especially after the economy recovered again in the second half of the 1990s. In the last ten years the vision for NÄ (and for Gothenburg as a whole) has started to come to fruition. It is no longer a matter of just having to react to events; the development of the area has acquired a real momentum.

### 3.4 Management

Since the end of the 1990s Norra Älvstranden Utveckling AB (NUAB)<sup>9</sup> has been in charge of the scheme. It owns the land. It is fully owned by the City of Gothenburg but has its own board of directors. NUAB has the clear objective of bringing about the redevelopment of NÄ, and doing so in such a way that does not cost the City any money. It is able to borrow money commercially in order to finance its projects, and, although it works within the framework set by the City Council, it is a market-led, consumer-oriented organisation. It operates very much like a private sector company.

When it was set up NUAB insisted upon three conditions that would apply to its relationship with the City Council:

- It would be free of party politics, regardless of whoever controlled the City Council
- It would be free to reinvest all its profits back into the scheme
- The City's Planning Authority would agree to work cooperatively and flexibly with it.

Bringing in a private sector approach was quite a change. In Sweden, the public sector had become used to planning projects and then just delivering them according to the plan (a 'linear approach' to development). This was the case, for example, with the *One Million Homes Programme* which had led to the building of high quality apartments, but too many of them and not necessarily in the right places. However, after Sweden's financial crisis, it was recognised that future developments would have to be far more market-oriented, especially if private sector investment was to be attracted in. In NÄ this has led to a different type of relationship between the development agency and the Planning Authority. Much more of the pre-planning work is done by NUAB. The rigid overall masterplan no longer applies. Instead the Planning Authority has provided a set of overall guidelines. (For example, residential buildings in certain areas have to be designed to allow for retail uses on the ground floor. However, these spaces do not necessarily have to be used for retailing initially, but this may be required later.) The Planning Authority and the development agency have a permanent joint working group which discusses all planning issues, but the Planning Authority still has to give its formal independent approval to development proposals in the normal way.

In addition to working closely with the Planning Authority and other City Council departments, NUAB also works collaboratively with developers and prospective developers, and with potential end users of sites in NÄ (see 'Developing an IT Cluster' below). In this way it has been able to move the development forward in a pragmatic way, taking advantage of changing market conditions, but always keeping in mind the overall aims of the scheme for Gothenburg as a whole. The planners call this a 'non-linear approach' because a complicated path, involving many interests, often has to be taken to reach the desired objective.

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<sup>9</sup> Recently the company's remit has been expanded to include responsibility for redevelopment of land on the south side of the river too, and its name has been changed to Älvstranden Utveckling AB.



### 3.5 Actions and Achievements

The regeneration of NÄ has now acquired a real momentum. As of 2006, some 6,000 people live in the area. Over 400 businesses, with about 15,000 employees, operate there, and around 9,000 students are taking courses there. Different parts of the area have predominantly different uses and have been developed at different stages. Some parts of the site are quite densely built up, but others are still quite empty. Furthermore it is not just the physical development that is important. There is more to the development of NÄ than meets the eye.

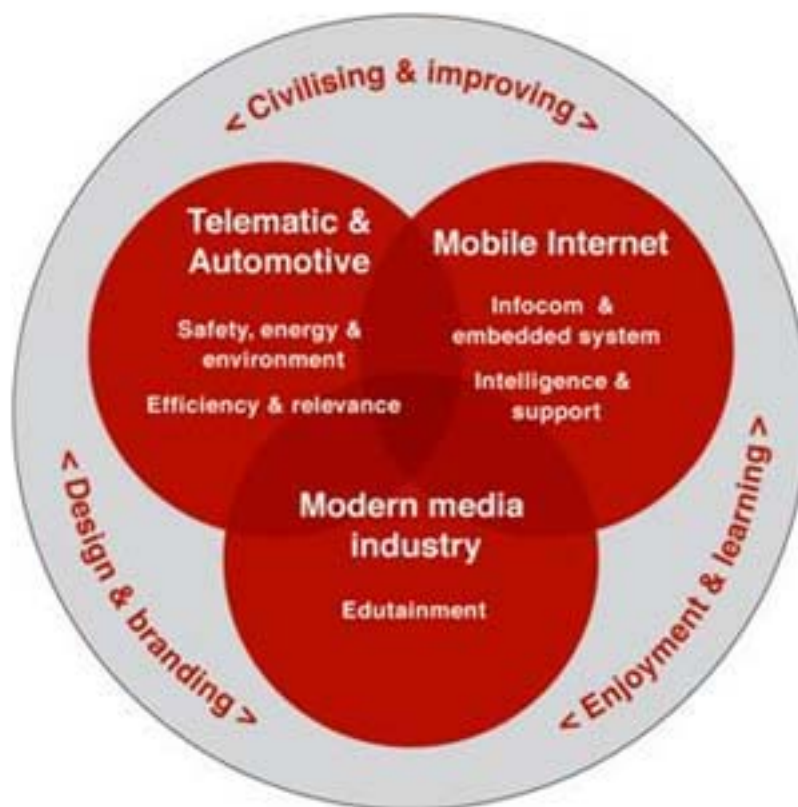


Figure 12: There is more going on in Norra Älvstranden than meets the eye

#### 3.5.1 Early actions

While initial efforts to find new industrial uses for the shipyard sites were not successful, other actions were taken early on which have had an important impact on the redevelopment of the area. Work was undertaken to clean up the site and improve the environment, and some of the large buildings were converted to provide premises for small businesses and studio space for artists. Above all, efforts were made to change the image of the area in the minds of the people of Gothenburg by providing reasons for them to visit NÄ. This was a slow but necessary process which eventually led to people becoming interested in living there and private investors being prepared to invest there.

### 3.5.2 Knowledge Centre

One of the crucial factors in the subsequent development of NÄ was the decision, or decisions, to locate a whole series of educational and training facilities there. When the shipyard crisis began, the Swedish Government reacted by establishing a health and safety research and training establishment at Lindholmen (the first of the shipyards to close). Then the City Council decided to locate several 'upper secondary' technical schools and vocational training establishments in the same area, even though almost nobody was living there at the time. Its intention was that the area was to become, in part, a centre of learning, or 'knowledge centre', and a regular – and frequent – bus service was laid on to bring students and staff to and from the site. Thus the City Council was using mainstream investment programmes to help kickstart the redevelopment of the area. In tune with this move, Chalmers University opened a new campus in 1994, in spite of the difficulties and extra costs of having to operate on two sites. More recently Chalmers and Gothenburg Universities have jointly set up an IT University in the same part of NÄ, Lindholmen, which has indeed become an important 'knowledge centre' for the whole city-region.



**Figure 13: The Knowledge Centre at Lindholmen**

In Sweden, education is held in high regard, as well as being seen as the foundation of future prosperity. These investments would no doubt have taken place somewhere in Gothenburg anyway. However, the fact that they were all located together in one part of what was then a derelict site not only confirms the city's commitment to a knowledge-intensive future but also illustrates its belief in education-led regeneration. It shows, too, that the leading universities were prepared to go out of their way to support an initiative that was considered good for the city as a whole, even though it was a burden for them. It must also be stressed that these developments would not have been viable without Gothenburg's excellent public transport system (tram and bus) which enabled students from all parts of the city to reach the comparatively isolated area without difficulty.

A business incubator unit and a science park have also been established in the knowledge centre, but it was the decision of a division of Ericsson, the Swedish electronics giant, to move to Lindholmen Pier and form the nucleus of an 'IT Cluster' next to the knowledge centre that was a turning point for NÄ and for Gothenburg's development strategy.

### 3.6 Developing an IT Cluster

The IT Cluster which is growing in Lindholmen/LundbyStrand shows that the knowledge centre concept is indeed paying off for both NÄ and Gothenburg (over 15 years after it was first put forward in 1988). Technical education has always had a high priority in Gothenburg, and the fact that there is a large pool of well-qualified IT staff in the area was a key reason why ERV (the Mobile Data Design division of Ericsson) decided to move to NÄ<sup>10</sup>.

ERV played a leading role in the creation of the IT Cluster. It had very specific requirements for its new space when it outgrew its existing premises in eastern Gothenburg in 1998. It needed space for about 1,200 of its own employees with room for expansion. And in particular, it wished to be within walking distance of a 'critical mass' of other knowledge-based companies which together employed at least 10,000 IT and other technical staff (so that it would be easier for ERV to recruit – or lay off – employees as its needs fluctuated in a volatile business). It believed that a place with attractive spaces and buildings, a stimulating environment and high quality services and infrastructure would be needed to attract the right sorts of companies and people. Initially, even though it was planning an investment of about 1 billion krona (£75 million), ERV could not find a suitable site in Gothenburg and was threatening to move out of the city altogether. The Chief Executive of ERV met the Chairman of the City Council (who was also on NUAB's board) and explained the position to him.

There was space in NÄ, but nothing on the scale required for the IT Cluster (around 300,000 square metres of floorspace) that had planning permission. The best site was owned by the Harbour Board and had a listed building on it. It was reckoned that it would take about four years to sort the site out, but ERV wanted to start building within a year and it also had an extensive list of other requirements for the cluster. While these were basically in line with the City's overall strategy they involved taking on substantial responsibilities (such as finding a large number of suitable tenants, providing a range of ancillary facilities – including a ferry stop, car parking, a marina (for employees' yachts) and a British pub – agreeing not to charge high rents, and demolishing the listed building). In other words, the City Council needed to take on considerable risks and jump through a series of hoops if it wanted the IT Cluster in NÄ. It jumped. This also led to the restructuring of its land holdings and to the redefinition of the role of the development agency, which now became more proactive in bringing forward projects within the City's overall objectives, the planning and urban design framework and its own financial constraints. It became more in tune with the needs of potential users and investors, while still adhering firmly to the long-term objectives of the City, including that of making NÄ a place where local firms might build international competitive advantage.

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<sup>10</sup> The establishment of the IT Cluster is described in detail in *Urban Processes and Global Competition* (Öhrström, 2004). The importance of business clusters has been set out by Michael Porter of Harvard Business School (e.g. Porter, 1998).



**Figure 14: Part of the IT Cluster and its stimulating environment**

The two initial drivers behind the IT Cluster, which now has many participants, occupies a growing amount of space in NÄ and is becoming one of the mainstays of Gothenburg's economy, were Chalmers University and ERV. Chalmers is an old and respected institution based in Gothenburg, and ERV (although only a division of Ericsson, which is based in Stockholm) has senior executives based in the city. Not only was there overlap between the boards of these organisations (the Chief Executive of ERV was on the board of Chalmers Lindholmen, and both the Dean of Chalmers Lindholmen and the Chief Executive of ERV were on the advisory board of the Lindholmen Science Park) but there was also a clearly perceived and shared interest in making Gothenburg a successful high-tech city. This shared vision was also at the heart of the City Council's vision for NÄ, and it enabled all the parties to 'work together' very effectively in developing the IT Cluster and science park (Öhrström, 2004).

Another important supporter of the IT Cluster has been Volvo, the car maker whose headquarters are in Gothenburg. In the late 1990s it was taken over by Ford and, although successful, found itself a small part of a global company. It had to justify why investment should be made in Gothenburg, rather than in Germany, which was seen as the centre of automotive development in Europe, or even in the Far East. Local management successfully argued that



there were certain specialist technologies, including safety and telematics (where telecommunications and computing overlap), in which Volvo could be a world leader, and that there were resources and ancillary services in Gothenburg (specifically within the emerging IT Cluster in NÄ) which made it the ideal location to develop them.

Again, close collaboration between leading industrial companies, the technical universities and NUAB has helped to turn a tentative vision into economic reality. Indeed it is now possible to talk of the development of ‘safety and telematics clusters’ in NÄ, and these in turn attract highly qualified specialists and further investment to the city, as well as keeping the jobs of many important Volvo (and other company) executives in Gothenburg. NÄ not only provides an attractive and congenial working environment for those involved in knowledge industries, but its residential areas are designed to attract them too – and in doing so they have proved to be highly attractive to others as well. Consequently NÄ is becoming a highly sought after part of Gothenburg in which to live, and the sale of housing brings in the funding that is required to continue the development of the area without drawing on public funds.

### 3.7 Other Parts of the Site

As well as the developments in and around the knowledge centre, other parts of the site are being developed too, particularly for housing. In part this is due to people wishing to live near where they work, but because NUAB has paid attention to what the market wants, it has found that there is a strong demand for stylish housing close to the city centre – in a fine, waterside location on the sunny bank of the river. It is filling a gap that the *One Million Homes Programme* ignored.

- Eriksberg (in the western part of NÄ) has been developed with over 1,000 exclusive flats and more are under construction and being planned. Several of the huge machine shops and other buildings have been converted to new uses ranging from a hotel and exhibition halls to offices and premises for small firms.



Figure 15: Old shipyard buildings converted to a hotel, an exhibition hall and a restaurant



Figure 16: New riverside housing at Eriksberg



Figure 17: Eriksberg's old gantry crane still dominates the western end of Norra Älvstranden



Landscaping along the river front is of a high standard and some of the shipbuilding heritage has been retained, including the giant gantry crane which used to dominate the Eriksberg yard and is still a major feature today. The area also contains NÄ's principal shopping centre, although at present there is not much retailing space in the overall development.

- Lindholmen, in the centre of NÄ, is not only the site of the knowledge centre, the IT Cluster and other office space but it also contains a substantial amount of housing. A sizeable number of old working class tenements and cottages have survived in Slottsberget a hillside area where the houses were originally built by the shipyard workers themselves in a semi-rural setting during the second half of the 19th century. Some of the early buildings have been refurbished including the old community centre, and sensitively designed modern flats have been added, giving one small part of NÄ the air an established community.



**Figure 18: Restored housing in Lindholmen Slottsberget**

Again, special efforts have been made to retain, and celebrate, the heritage of the shipyard at Lindholmen and traces of the slipways and some of the old shipyard buildings can still be seen among the new office and educational buildings.

- LundbyStrand, in the centre-east of NÄ on the site of the old Götaverken yard, is developing as a business area, partly due to the conversion and re-use of large buildings – for industry, offices, workspace for small firms, sports facilities etc. – and partly as an extension of the IT Cluster from Lindholmen next door. The remaining ship repair yard (Cityvarvet) continues to operate at LundbyStrand. Its large dry dock, jutting out into the river, provides a reminder of the city's industrial heritage.
- Frihamnen, the harbour area at the east end of the site is still partially used for port operations. These may increase and become more fully integrated into the NÄ development in the future.

### 3.8 Overall Success of the Scheme

Although it is far from complete, the regeneration of Norra Älvstranden is undoubtedly a success – both visibly and invisibly. Over 11 billion krona (£1 billion) have been invested in the area – and none of it new money from the public sector (apart from the Government’s initial subsidies to Swedeyard and its investment in a research facility). Already it is a ‘triple win’ development in that there are now more jobs, more housing and a much better environment than there were in the area in its industrial heyday. It is undoubtedly a place that people with choice now wish to live in (and are prepared to pay to do so), and a place that businesses (including very large businesses) wish to invest in. It has become an accepted new quarter for the city – although it is nothing like as lively as the city centre itself – and property values there have risen substantially since the development began. As well as the many new buildings and facilities that have been created, several old buildings (some of them of monumental scale) have been converted to new uses, all to the customary high standards of Swedish design. A new ferry service connects the two sides of the river and the area is being linked in with the city’s extensive public transport system. The old dereliction has gone and the environment has been greatly improved. The northern riverside has been opened up and made accessible as never before, so that Gothenburg is well on the way to having a world class waterfront.



**Figure 19: From engine factory to hotel – the restoration and re-use of an enormous building**

On the invisible side, NÄ also appears to be succeeding in terms of its contribution to the drive to diversify the city’s economy in ways that can help it to remain prosperous in a highly competitive world. It is, of course, impossible to say whether the particular niches (safety, telematics etc.) in which the city is aiming to grow strong will in fact prove to be defensible. However, the City Council, and the other key players in Norra Älvstranden, including the major businesses, share a vision and plausible strategy for the economic development of Gothenburg, and are working collaboratively together to use the redevelopment of NÄ to help achieve it. This involves

strengthening the city's high-tech economy and attracting more firms to invest in the city-region, which in turn will provide good jobs for the future and attract more people to live in and around the city – and the incomes that they earn will generate the taxes needed to continue to finance the municipality. Gothenburg's future seems very promising.



**Figure 20: The transformation of Norra Älvstranden – from redundant shipyards to driver of a thriving modern economy**



Nevertheless there are some unresolved issues to be tackled. NÄ is still relatively inaccessible compared with the city centre. In particular, a way of crossing the railway and main roads at the back of the site needs to be found. This will enable the site to be socially and economically linked to the rest of Hisingen, the island on which it lies, and where a sizable proportion of the city's population live and work. (There is also talk of building another bridge across the river, but as yet only talk.) Then there is the issue of broadening the range of people living and working in the area, to include all sections of the community including immigrants. NUAB does not receive any public subsidy, and yet has had to invest in infrastructural and environmental improvements. As a result there is little 'affordable' housing and workspace in the area at present, although there are plans for more social housing in the future to help create a more 'balanced' community. There has also been a concern that investment in NÄ is taking away resources and attention away from other areas of the city. However, NUAB stresses that the City has not spent any extra resources on NÄ; the scheme has been financially self-contained. Furthermore the company's remit is to be expanded so that it can focus on other parts of the city too. This is a strong endorsement of the success of its approach and a way of harnessing the experience and expertise that it has developed for the good of the city as a whole.

## 4. IMPACT ON VULNERABLE GROUPS

### 4.1 Identification of Vulnerable Groups

NÄ was a shipbuilding and harbour area. The collapse of Sweden's shipbuilding industry took place very quickly. The tonnage built fell by 90% between 1975 and 1980. In Gothenburg around 15,000 people out of a total workforce of around 220,000 lost their jobs. While many thousands worked in NÄ, very few people lived there. Thus it was the shipyard workers who were the ones most directly affected by the run down of the yards – the 'vulnerable groups'. However the closures were a blow for the entire city too, as the shipyard workers came from all over the city, and it was for the shipyards that Gothenburg was known around the world. There was thus a shared feeling of responsibility which, together with the ideals of social democracy, led to immediate and sustained efforts to help the shipyard workers overcome the problems that they faced. Coping with the physical problems of the site took much longer. Furthermore, in the intervening years a new set of vulnerable groups have come to the fore. These are the many refugees who have been allowed to settle in Gothenburg and other Swedish cities on humanitarian grounds, and who for the most part come from countries with cultures that have little in common with Swedish traditions.



Figure 20: Around 15,000 shipbuilding jobs disappeared from NÄ in the late 1970s

### 4.2 What was Done for the Vulnerable Groups?

Right from the start the shipyard workers were identified as a high priority group in relation to the regeneration of NÄ. Swedeyard and the municipality's first intentions were to bring new



industrial employment to the area and to find new businesses to fill the large, vacant buildings. Particular attention was paid to the potential for building platforms for offshore oil industry, as the work was somewhat similar to shipbuilding and should provide jobs for the NÄ workforce. Furthermore the redevelopment of the site could provide new jobs for those who had previously worked there. However these jobs never materialised, and it soon became clear that the changes that were taking place in the world economy were so drastic that entirely fresh thinking – about the future of an industrial city with a high standard of living, like Gothenburg, as well as about the NÄ site – was needed. Furthermore the timescales were not realistic. The redevelopment of a former shipyard area would take many years. (The NÄ scheme will have taken around 50 years by the time it is complete.) On the other hand, people whose jobs disappear need to have their problems addressed very quickly. It was not the redevelopment of NÄ that addressed the needs of those who lost their jobs.

Amazingly, perhaps, redundancies from the shipyards were avoided, and unemployment in the city only rose from 2% to 4% during the whole of the 1970s. The issue of the workforce was entirely de-coupled from the redevelopment of the site, and the problems were solved in a way that seems typical of Sweden and Gothenburg – by collaboration. The trade unions took the lead, but the City, the employer (Swedeyard), the Labour Market Board, local businesses and others were all involved. The yards were merged and closed sequentially, keeping people on for as long as they could. Some new work, on oil platforms and the like, was found but it was carried out at a more modern yard at the mouth of the river, to which some of the workforce was transferred (and which itself had to close some years later when its principal customer went bankrupt). A technical consulting company was established to sell shipbuilding and business experience to overseas customers, and many engineering staff were transferred to it.

The pension age for shipyard workers was lowered to 58½, and so about one-third of the workforce took early retirement. Younger people were helped to find new jobs in other companies. For example Volvo, which was expanding rapidly at the time, made special efforts to find positions for former shipyard workers, and other companies did so too. Finally training schemes were organised by the Labour Market Board to enable people to gain new skills, and those who could not find work immediately were paid generous benefits and taken back on to new programmes if they were not back in work within a maximum of six months. Many people were also helped to return to education and to gain new qualifications, especially if they had missed out earlier. The universities and colleges created special courses for them where necessary.

It was stressed by the dozen or so former shipyard workers who were interviewed or attended the case study workshop that everyone was treated as an individual, and a solution that was right for them was sought. It was also stressed again and again that everybody worked together. Everyone saw the demise of the shipyards as a shared problem and was willing to help deal with the consequences. However, it was also said that because Sweden is now part of the European Union, which has strict rules concerning public sector support for businesses, it would no longer be possible to do all that was done at that time.

### 4.3 Who has Benefited Most from the Regeneration of NÄ?

Participants at the case study workshop in Gothenburg, including people who had worked in the yards, were asked to sum up their reactions to the closures and to the way the area had been redeveloped. There was a broad consensus that although it was a shock and a very sad event Gothenburg was a better place now, and the redevelopment of NÄ would make the future better too.

- *‘All the future people of Gothenburg have gained. The city is more diversified now’.*
- *‘It is all to the good. If the yards were still there the young people of today would not want to work in them. And there are now more people working in NÄ with good jobs than worked there ever before’.*
- *‘The young people who have been educated there have gained most. But most of the people in Western Sweden have gained too because it is a driver of the economy of the region’.*

Criticisms of the scheme were few and mostly concerned the high cost of housing, which was making NÄ an area for the privileged rather than a balanced community. There was also felt to be a lack of emphasis on and support for local cultural activities. However, it was agreed that it would take time for a new area like NÄ to mature. 3,000 affordable housing units were due to be built in Eriksberg, and NÄ was certainly becoming a new quarter that the people of Gothenburg felt proud of.

It must also be added that the regeneration of NÄ has not been seen as requiring the incorporation of specific efforts to assist Gothenburg’s new vulnerable groups, the refugees. Helping them to integrate into Swedish society – including learning the accepted national language – is regarded as a city-wide issue and responsibility (and one which is taken very seriously). However, none of these later arrivals have specific ties to NÄ.





## **5. CONCLUSIONS AND POTENTIAL LESSONS**

### **5.1 Key Factors in the Success of the Scheme**

All major urban regeneration schemes require good development, planning, management, architectural, design, marketing, co-ordination, financial and other operating skills, and all these are present in the case of Norra Älvstranden. But they are probably not the factors that set really successful schemes apart from run-of-the-mill developments and from which important policy lessons might be learned. Furthermore each large scheme is unique, so that trying to copy actions directly from one situation to another may not be wise. Nevertheless there do seem to be some key factors which were important in the overall approach to regeneration and contributed to its success, and which may be applicable more widely:

#### **5.1.1 Approach to Urban Regeneration**

- A major regeneration scheme should be planned for its effect on the whole city – or wider city-region – and not seen just as a property development. The local authority (or grouping of local authorities) which is responsible for the city and its future success should therefore be directly responsible for the scheme.
- Although urban regeneration needs to address a range of needs, economic success is critical as it is this that generates the resources that are needed to carry through all the other aspects. In other words, sustainable regeneration cannot take place in isolation from successful economic development.
- Education, skills and innovation are vital for economic success. Educational, training and research establishments must be closely involved in the strategy for regeneration and economic development. They must share the vision, and ensure that their actions reinforce it.
- Economic success is delivered by businesses. Business leaders must also be at the core of regeneration and economic development.
- Urban regeneration is a long-term process and is ‘non-linear’. The strategy must be capable of being modified in line with changing external forces. It must have flexibility.
- Successful regeneration and economic development require many agencies and individuals to work constructively together over a long period. In Sweden, working together for a common goal is a well established practice.

#### **5.1.2 Strategy, Organisation and Funding**

- Cities (or city-regions) which do not have specific strategic advantages are in direct competition with each other. They all need to attract knowledge-intensive businesses, people to work in them and long-term investment. As well as being attractive and friendly, such cities also need to develop niche activities in which they can maintain a competitive advantage.

- The strategy eventually arrived at for NÄ is based on creating defensible niche business areas in which firms based in Gothenburg can be world leaders.
- The strategy needs to be clearly understood and accepted by all the key interests in the city.
- The image of the city and the regeneration area is vital in attracting and retaining high-calibre employers and workers and in bringing in private investment.
- High quality services, including good public transport and a well designed public realm, can also help to attract and retain investors, businesses and workers.
- A dedicated and committed development and marketing organisation is essential for driving a scheme through. There appear to be benefits from this being an agency of the responsible local authority (in order to ensure that it pursues the same overall strategy) and not a separate quango.
- The development agency needs to be proactive in seeking out projects, investment and end users, but also to work within strategic parameters set by the responsible local authority.
- In Sweden, local authorities have a substantial tax base of their own. Basic rate income tax is a local tax. This gives a strong incentive to make sure that the local economy flourishes, as well as providing a predictable source of finance.
- Ownership of the entire site makes regeneration easier and provides an increasingly valuable asset.

### **5.1.3 Mechanisms for Overcoming Obstacles**

- The main mechanism for overcoming problems is to work cooperatively with all the parties involved, including educational establishments and key businesses.
- It is important to maintain flexibility of action (within an agreed strategic framework) in order to be able to seize opportunities and to react to circumstances that inevitably change over time.
- Building on local strengths, and retaining links with past successes, can reinforce the identity of an area and help to make it distinctive.

### **5.1.4 Spreading the Benefits**

- In NÄ addressing the needs of the vulnerable groups (e.g. those who worked in the shipyards) was de-coupled from the issue of regenerating the site, due to Sweden's advanced employment policies and the people of Gothenburg's willingness to help each other.
- All the people of Gothenburg have access to the jobs being created in NÄ, which spreads the benefits of the scheme widely. The jobs include not only those that require advanced qualifications but also a whole range of ordinary jobs in supporting services.
- The wide range of educational facilities in NÄ will help ensure that very many people in Gothenburg and its wider region will benefit from the scheme.

### 5.1.5 Future Proofing

- Making Gothenburg attractive to people with choice, and developing ‘defensible niche business areas’ which Gothenburg can dominate, are basic ways of ensuring that the city will remain competitive in the future. Success attracts success.
- The investment in educational facilities will raise skill levels, especially in knowledge-based fields, and help the city to retain and attract the firms that are needed for its continuing prosperity.

## 5.2 UK Partner’s Reaction

The UK Partner for the Norra Älvstranden case study is Gateshead. Gateshead is a former mining and industrial town on the south bank of the River Tyne (once a great name in shipbuilding) directly opposite Newcastle, the regional capital. The town of Gateshead has a population of 78,000 compared to Newcastle’s 190,000. The river is not wide and is spanned by several bridges, including the spectacular Gateshead Millennium Bridge (the winner of the RIBA Stirling Prize in 2002). Gateshead and Newcastle are even joined by one of the few Metro systems in Britain outside London. Together with adjacent towns they form part of a conurbation of nearly 1 million people (Tyneside), which is similar to the size of Gothenburg’s city-region. Both Gothenburg and Tyneside are comparatively isolated from other commercial centres and both are a long way from the main economic centres of Europe.

The last coal mine in the borough closed in the 1970s and activity on the Tyne moved towards the mouth of the river. Buildings along the quays became derelict and the centre of the town suffered a big decline following the opening of the Metrocentre, England’s first out-of-town regional shopping centre. However, just as Norra Älvstranden has been the focus of recent regeneration, so has the riverside in Gateshead, and Gateshead Quays is regarded as a great success story too.

Although Gateshead’s regeneration started with concerted efforts to achieve high standards in all the services it provides as a local authority, it is best known for its culture-led regeneration strategy and improvements to the public realm along the riverfront. Major projects have included the Gateshead International Stadium (for athletics), the Angel of the North (a landmark sculpture on the site of a former pithead baths) and, along the quays, the BALTIC Centre for Contemporary Arts, The Sage Gateshead (a highly acclaimed music venue) and the Millennium Bridge. Unusually, Lottery funding has been a major source of finance for this regeneration programme (which perhaps indicates that ‘culture’ is not yet fully accepted as a basis for urban regeneration). In Gateshead, culture is seen not just as providing an avenue for raising people’s aspirations, increasing their self-esteem and improving their quality of life, but as also leading to economic development as well.

This strategy is seen as complementing the primarily economic strategies of other parts of the conurbation, and Newcastle and Gateshead, although ancient rivals, are increasingly working

together at an official level. They recently put in a joint bid to become European Capital of Culture in 2008, which was one of the front runners although it did not finally win.

The officers and councillor from Gateshead who attended the case study workshop in Gothenburg were impressed by the quality of the development that was taking place at Norra Älvstranden and by what had been achieved. They liked the city as a whole and the stress given to the physical environment. They noted the way that the heritage of the area was retained and incorporated into the development. They were also impressed by the comprehensiveness of the underlying strategy for NÄ, particularly on the economic side, and by the close involvement of both the universities and leading businesses. They admired the way that the City Council's development agency, NUAB, worked with potential developers and potential end users of development sites and the way that it worked closely with the Planning Authority. Above all they felt that Gothenburg had much more autonomy and freedom to control its own destiny than was the case for a British local authority.

On the other hand they noted that NÄ did not yet have great vitality (particularly when compared to the centre of Gothenburg) and that the cultural side of the regeneration of NÄ appeared to be a low priority – which seemed like a missed opportunity.

### **5.3 Potential Lessons for UK Policy**

Although the regeneration of Norra Älvstranden is far from complete it is clearly a success in terms of creating a new high quality mixed-use quarter close to the city centre. It is already a 'triple win' development in that it provides more jobs, more housing and a much better environment than it did in its industrial heyday, even though there is more to be done to make it a complete community. Furthermore, since the City Council obtained ownership of the entire site, there has been the additional aim of using the regeneration of Norra Älvstranden to help reposition Gothenburg in an increasingly competitive world. This is the same underlying task which so many of Britain's industrial towns and cities still face, and there are several features of the approach that has been taken in NÄ that should be relevant for UK policy, especially:

- The strategic economic view taken by the City Council in conjunction with other key players, especially major businesses and the universities
- The decisive role of the City Council in leading the economic development process, which depended upon having real powers – enshrined in Swedish law – to 'control its own destiny'
- The way in which all the parties were prepared to work together for a common long-term goal, although this was not always in their short-term interest (as in the case of Chalmers University agreeing to operate on two separate campuses). This includes the involvement of leading Gothenburg companies, and the lengths that the development agency was prepared to go to ensure that their needs were accommodated
- The strong incentive for the City Council to promote the economic success of the city as most of its income is derived from a tax that is directly linked to local prosperity

- The realisation that making the city attractive and user-friendly was an indispensable part of the regeneration and economic development strategy
- The importance attached to quality in all aspects of the development including the business environment (for example in the provision of attractive open-air meeting places where people from different companies located nearby can gather and perhaps exchange ideas)
- The commitment to education and job-related training, so that all the city's residents would have access to good jobs
- The wisdom of having social and employment planning systems in place to cope with unexpected plant closures etc, which meant, in this case, that the decline of the shipyards did not lead to mass unemployment and that in time their closure could be seen as a good thing for the future, even by people who worked there.

## 5.4 Conclusion

The significance of the regeneration of Norra Älvstranden is that it shows how a medium-sized city is using an urban regeneration scheme to push forward a long-term economic strategy for the whole city and its city-region. While the strategy is economic-driven it also pays great attention to other factors (such as education, environment, connectivity, quality of life and collaboration) which not only help to create an immediately attractive development but also aim to ensure that the people who will be needed to sustain the success of the city in the future will continue to be attracted to it. The economic side of the strategy revolves around creating and supporting 'critical masses' of expertise in a limited number of fields in which Gothenburg can reasonably expect to remain a major player on the international stage, but it is also sufficiently flexible that changes – which are inevitable in a competitive world – can be accommodated. The fields (clusters) that have been chosen have been carefully selected in line with the city's current strengths and analysis of future trends.

Only history will show whether the fields have been well chosen and how far the strategy succeeds. However the crucial point is that Gothenburg as a city (and with the support of local leaders in many sectors) recognises that it is in competition with other cities around the world and is pursuing a purposeful strategy that aims to ensure that it remains successful and attractive relative to them. Other cities (including British ones) – whether they realise it or not – are undoubtedly in competition with Gothenburg and other places, if only indirectly, because they need to attract resources – investment, businesses, talented people – from the same international pool. (Football provides an analogy. The major teams need to focus on more than just winning current matches in their particular league, but also on developing talented players and the facilities needed to support them and attract new supporters and investors in the future. Thus they are actually competing with many other leading teams internationally, and indeed with other sports.) It therefore makes sense to take note of and learn from what Gothenburg is doing through the redevelopment of Norra Älvstranden – to look beneath the surface and understand the extent of the competitive focus that cities need to have. Furthermore for British policy makers in particular, one of the main lessons must be that it would not be possible for Gothenburg to have developed and implemented such a strategy without the wide powers and the source of independent finance that it has.

## BIBLIOGRAPHY AND MAIN SOURCES OF INFORMATION

Ander, H. and Ekman, J. (2001) *Norra Älvstranden: The Process*. Gothenburg City Planning Authority and Norra Älvstranden Utveckling AB

Ander, H. and Ekman, J. (2001a) *Norra Älvstranden: The Guide*. Gothenburg City Planning Authority and Norra Älvstranden Utveckling AB

Brown, A. (2008) *Fishing in Utopia: Sweden and the Future that Disappeared*. Granta Books

Business Region Göteborg (2005) *Facts and Figures 2005*. ([www.businessregion.se](http://www.businessregion.se))

Eurostat (2008) *Taxation Trends in the EU 1995-2006*. Eurostat ([ec.europa.eu](http://ec.europa.eu))

Falk, N. (2005) *Norra Älvstranden: notes following visit to Gothenburg in September 2005*. URBED

Gothenburg City Planning Authority (2001) *Norra Älvstranden: Planning Conditions – Utilisation of Land*

Göteborgs Stad (2004) *City of Göteborg Annual Report 2004*. Göteborg City Office ([www.goteborg.se](http://www.goteborg.se))

Martinson, L. (2001) *Segregation and Social Exclusion in Sweden – A Case Study*. Young Housing Researchers' Conference, Warsaw

Öhrström, B. (2004) *Urban Processes and Global Competition*. Chalmers University of Technology

Porter, M. (1998) *On Competition*. Harvard Business School Press

SALAR (2007) *Levels of local democracy in Sweden*. Swedish Association of Local Authorities and Regions ([www.skl.se](http://www.skl.se))

Swedish Institute *Fact Sheets on Sweden* (various titles and dates) ([www.sweden.se](http://www.sweden.se))

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