



revitalising industrial sites

Torfaen County Borough Council

A Review of Sustainable Brownfield Revitalisation Approaches

November 2004

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Torfaen County Borough Council
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REVIT:



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1 Introduction

1.1 Client Brief

- 1.1.1 Jacobs Babtie (JB) has been commissioned by Torfaen County Borough Council to undertake research that will contribute to a trans-national European project titled: "Towards More Effective and Sustainable Brownfield Revitalisation Policies (REVIT)",
- 1.1.2 The commission has been undertaken in accordance with Jacobs Babtie Tender Document dated 16 July 2004, which was produced in response to the Brief for Consultants dated 24 June 2004 and Jacobs Babtie's confirmation of scope of works dated 31 August 2004 (Ref 14021/1/JS/JM/CR/01). The commission focuses on two key aspects of this European project, which are:
- The conservation and promotion of industrial heritage; and
 - Sustainable principles and methodologies when re-developing Brownfield sites.
- 1.1.3 These aspects of have been presented within two separate reports. This document presenting the information collated with respect to sustainable principals for Brownfield site development.
- 1.1.4 The findings of the review of conservation and promotional industrial heritage are present in the following JB report.
- REVIT a Review of Conservation of Cultural Heritage Assets of Brownfield Sites. Ref:14078 /JM/001 dated November 20004.

1.2 Background to the Commission

- 1.2.1 The REVIT project is an INTERREG IIIB project that aims to develop joint approaches to the development, management and promotion of Brownfield sites. The project has six partners in four European countries and two main parts these are Area Specific Projects and Common Co-operation Initiatives. The two parts are discussed below: Table 1 summarised the partners.

Table 1 REVIT countries and their partners

Country	Partner
France	Communaute Urbaine de Nantes
Germany	The City of Stuttgart
The Netherlands	The City of Tilburg
	The City of Hengelo
United Kingdom	Torfaen County Borough Council (Wales)
	Medway Council (England)

Area Specific Projects (APPGs)

- 1.2.2 APPGs comprise the planning, development and implementation of projects specific to each partner, for example the physical redevelopment of a disused railway terminal in Stuttgart.

Common Co-operation Initiatives (CCIs)

- 1.2.3 The CCIs relate to Brownfield site development. The CCIs, aim to enable partners to share best practice, learn from one another and develop joint

approaches on the themes of Community, Consultation, understanding options and opportunities for financing, conserving and promoting the natural and built environment. CCIs are based on workshops, secondments and working groups.

- 1.2.4 Torfaen County Borough Council (TCBC) is the lead for CCI 3, promoting and conserving the natural and built environment. CCI3 is split into two distinct elements that are referred to as Joint Pilot Projects (JPPs), and are described below;

JPP1 - Joint Promotion of Industrial Heritage Potentials in Partner Areas

- 1.2.5 This JPP focuses on the conservation and promotion of industrial heritage and is expected to:

- create a register of potential industrial heritage assets in all REVIT areas;
- promote partner heritage industrial assets;
- begin to include industrial heritage assets into national or European tourist routes;
- raise awareness of the need to carefully manage industrial heritage assets to stimulate indirect economic benefits, e.g. tourism
- develop specific policy guidelines for preservation and re-use of industrial heritage potentials in Brownfield Regeneration.

JPP 2 - Testing a Model Concept for a Sustainability Checklist of Brownfield Reclamation/Revitalisation

- 1.2.6 This JPP focuses on researching and agreeing a set of sustainable principles and methodologies when re-developing Brownfield sites and is expected to:

- create a list of local sustainability checklists in the partner areas;
- improve/refine a “Model of Concept” of a jointly agreed sustainable checklist during Phase II of the project;
- promote the use of Research and Activities to use the results for local and or international marketing of partner Brownfield sites;
- seek to improve the awareness of sustainable Brownfield regeneration and increase the willingness of potential investors to locate themselves on regenerated Brownfield sites; and
- develop specific sustainable policy guidelines for a multi-functional transformation of Brownfield sites.

1.3 Project Aim

- 1.3.1 The aim of this research commission, as detailed in the consultants brief, is to capture information in relation to the two JJP’s in order to create a framework for the project partners to understand the current status of individual policy and legal frameworks. It will also research new developments that are related to the partner areas in respect of conserving the natural and built environment in relation to Brownfield Site developments.

2 Sustainable Indicators and Best Practice

2.1 Introduction

2.1.1 This aspect of the commission relates to the JPP 1 “testing a model concept for a Sustainability checklist of Brownfield Reclamation/Revitalisation”. The consultants brief describes the aim of this JPP 1 as:

“To develop a set of jointly agreed sustainable indicators to apply to partner redevelopment projects, taking account of local needs and legislation and to evaluate the practical application of these and write up as case studies related to best practice.”

2.1.2 Following the award of this commission, Jacobs Babtie liaised with the TCC. As a result of which a number of deliverables were agreed. These are detailed in JB’s letter of correspondence dated 31 August 2004 (Ref: 14021/1/JS/JM/CR/01). The deliverables agreed included:

- Summarise the legal and policy frameworks in each of the partner countries in relation to sustainable development and Brownfield regeneration;
- Where available, list local sustainability indicators from each of the REVIT partner areas; and
- Produce a list of guidelines that could be applied to sustainable mixed use development in the partner areas Brownfield Sites.

2.2 Extent of Brownfield Land Across Europe

2.2.1 It is difficult to accurately assess the level of Brownfield land across Europe due to the lack of a common definition of the concept of ‘Brownfield’ and also the fact that the concept is not legally defined in any of the European countries (Ferber and Grimski, 2002). The OECD defines urban Brownfield sites as “vacant, derelict, underused lots in urban areas, with actual soil contamination or risk of soil contamination” (Urban Brownfields NL).

2.2.2 Most European countries cannot provide estimates on the level of Brownfield land. Even where countries can provide figures – for example, Germany (about 128 000 hectares), the Netherlands (between 9000 and 11 000 hectares), Belgium/Wallonia (about 9000 hectares) (Ferber and Grimski, 2002) – it is clear that the data are not directly comparable, and include different kinds of sites. However, in almost all European counties, Brownfield problems are identified as serious and need some political and methodological solutions (Grimski and Ferber, 2001).

2.3 Study Approach

2.3.1 Research has been undertaken in order to facilitate the deliverables outlined above. This has focused on the legal and policy framework in partner countries in relation to sustainable development as well as sustainability indicators and guidelines used in partner countries for regeneration of Brownfield sites.

2.3.2 The results of this research are presented below followed by a discussion, although the latter is limited given the nature of the brief (i.e. that currently the objective is to obtain and consider available data and identify any gaps or

obstacles in the area). The discussion section has been undertaken with the objectives of the JPP in mind and the issues raised should feed into phase two of this research commission.

2.4 Legal and Policy Framework*

2.4.1 This section of the report focuses on the legal and policy framework aspects across Europe (as established by the European Union) and subsequently considers the legal and policy frameworks in each of the partner countries in relation to Brownfield sites and sustainable development. The objective is to consider what institutional guidelines and legislation are in place to promote the sustainable development of Brownfield sites.

2.5 Europe

2.5.1 Typical instruments of the European Union include:

- Directives;
- Analysis and recommendations on policies;
- Research; and
- Financial.

2.5.2 All of these instruments have been used to a greater or lesser extent in relation to the promotion of regeneration of Brownfield sites.

2.5.3 An example of financial instrument is the European Regional Development Fund (ERDF). This is intended to compensate the greatest regional imbalances within the Community. For target regions this in general comprises funds for the rehabilitation and revitalisation of derelict industrial sites under different programmes. The ERDF is the main instrument currently used for the financial support of projects involving the revitalisation of derelict industrial sites.

2.5.4 Another example of an EU instrument was the adoption in October 1998 by the European Commission of the Communication *Sustainable Urban Development in the European Union: A Framework for Action*, this sets out objectives for urban areas and a range of existing and proposed actions to address these.

2.5.5 Specifically in relation to the partner countries, since the beginning of the 1980s, initiatives have been developed in the UK, France and Germany, which favour a regional derelict land policy and create specific derelict land recycling programmes. These initiatives were triggered on the one hand by increasing awareness of the negative economic and ecological effects of the derelict sites and on the other by the recognition of the positive development potential for such sites. Regional, national and European funding was provided to initiate derelict land recycling programmes in traditionally industrial areas – projects effectively being funded by tax revenues. As it was clear from the beginning that immense financial means would be required for a long period of time to overcome the scale of the problems, funds had to be concentrated on ‘pump-priming’ initiatives, which would have the effect of promoting subsequent private sector investment (Grimski and Ferber, 2001).

* It should be noted that unless otherwise specified, the CLARINET Report on “Brownfields and Redevelopment of Urban Areas” (Ferber and Grimski, 2002), has been used as a reference for this section.

- 2.5.6 Although there is increased political awareness of Brownfield issues, to date many European countries and regions do not have any specific programmes supporting Brownfield redevelopment. Although funding from economic, environmental or urban programmes is generally available, it often has had to be integrated into a land management policy at a local or regional level.
- 2.5.7 Specific schemes for Brownfield rehabilitation exist in France (Nord-Pas de Calais, Lorraine), Germany (Northrhein-Westphalia), the Netherlands and the United Kingdom. Schemes in preparation are registered in Spain and Flanders.
- 2.5.8 European research initiatives, best practice programmes and networks include the following:
- The Contaminated Land Rehabilitation Network for Environmental Technologies (CLARINET)
 - A Concerted Action of the European Commission's Environment and Climate Research and Development Programme. Its primary objectives are to develop technical recommendations for sound decision making on the rehabilitation of contaminated sites in Europe and to identify research and development needs (www¹). One of the research studies in relation to this body has been the previously mentioned report on *Brownfields and Redevelopment of Urban Areas*" (Ferber and Grimski, 2002).
 - The Network for Industrially Contaminated Land in Europe (NICOLE) This is a leading forum on contaminated land management in Europe, promoting co-operation between industry, academia and service providers on the development of sustainable technologies (www²).
 - The Regeneration of European Sites in Cities and Urban Environments (RESCUE). A research project for which the underlying principle is the development of a precise definition of sustainability in terms of criteria and indicators related to urban planning and Brownfield regeneration (www³).
 - Concerted Action on Brownfield and Economic Regeneration Network (CABERNET). A European multidisciplinary expert network that aims to facilitate new practical solutions for urban Brownfield's. This network is EC Concerted Action funded through the Fifth Framework Programme as part of the City of Tomorrow Key Action. The CABERNET Network's vision is to: 'Enhance rehabilitation of Brownfield sites, within the context of sustainable development of European cities, by the provision of an intellectual framework for coordinated research and development of tools. (www⁴).

2.6 European Spatial Development Perspective (ESDP) (Potsdam, May 1999)

- 2.6.1 The ESDP is legally a non-binding policy framework for better co-operation between Community sectoral policies with significant spatial impacts and between Member States, their regions and cities. The responsible authorities for spatial planning at the national, regional and local levels have important tasks in two respects. The first by reflecting the ESDP in planning and implementing cross-border, transnational and interregional co-operation measures; and the second by taking the ESDP into account in the formulation of spatial development policy related to their territory.

- 2.6.2 The integration of cultural aspects in the action of the European Commission is enshrined in Article 151 of the Treaty which stipulates that “the Community shall take cultural aspects into account in its action under other provisions of this Treaty, in particular in order to respect and to promote the diversity of its cultures”.
- 2.6.3 In conclusion, the questions addressed by ESDP are closely connected to the cultural domain. Hence, it is important to reconcile the objectives specific to each community policy with those of culture, by integrating them into the Community policies concerned, such that community policies reflect and enhance the site specific culture.
- 2.6.4 The Community measures in favour of European tourism aim at:
- stimulating the quality and competitiveness of tourism in Europe in order to contribute to growth and employment;
 - promoting tourists interest and sustainability in tourism; and
 - contributing to a balanced development of the regions of the European Union.
- 2.6.5 In its Framework for action the EU indicated that sustainable urban development was to be a key in EU policies from the point of view of their urban impact and to improve policy integration at urban level. Four interdependent policy aims were identified and are detailed below:
- strengthening economic prosperity and employment in towns and cities;
 - promoting equality, social inclusion and regeneration in urban areas,
 - protecting and improving the urban environment, including energy
 - contributing to good urban governance and local empowerment.

3 France

3.1 Background

- 3.1.1 France considers that Brownfield's are different from contaminated sites. The French definition of a Brownfield site is: space previously developed (agricultural, port, industrial, service, processing, military defence, storage or transport); that has been temporarily or definitively abandoned following the cessation of activity; and needs to be reclaimed for a future use. They can be partially occupied, derelict, or contaminated.
- 3.1.2 Brownfield sites include about 200,000 former industrial and service sites and about 200 former mines. The stock of industrial Brownfield's is estimated at about 20,000 ha. This is concentrated in the traditional industrial areas of the northern and eastern part of the country, especially in the region of Nord-Pas de Calais (9.400 ha) and Lothringen (2.500 ha). Most of these are large sites (more than 10 ha) in suburban or periurban locations. The stock of Brownfield's has not decreased in the last decade despite considerable reclamation activities.
- 3.1.3 Since the 1970s Brownfield sites have been of considerable interest in some former industrial French regions (in particular, Lorraine and Nord – Pas de Calais), and more recently in other regions because of extensive urban development (Paris and Île de France, Rhône–Alpes).

3.2 Policies and Programmes

- 3.2.1 In France long-term policies and programmes exist in the traditional industrial regions such as those piloted in Lorraine Region. Since the 1980s, and in the context of the national “contact de plan” – (funded by the state, region and the EU) specific Brownfield reclamation programmes have been developed by the Lorraine Region. Programme priorities have been based on:
- The first, and simple priority of rapid identification of derelict land;
 - The establishment of a regional development agency;
 - A clear and comprehensive methodology;
 - Adequate and regular funding;
 - a partnership of all parties involved; and
 - Support for the preparation and development of derelict land for the implementation of leading projects with regard to the development of the agglomeration.
- 3.2.2 By 1997, 3.350 ha of derelict land had been treated. One third of the money for this came from the European Union. Two thirds of the money came from the Lorraine Region, the French State and the Establishment Public Foncier de la Métropole Lorraine (EPML).
- 3.2.3 The strategy chosen was exemplary as it succeeded in linking the interests of the private property owners, the community and other actors in the framework for a co-ordinated regional master strategy. The regional stakeholders are co-operating in a common network with research activities and international services.

3.3 Legal Framework

3.3.1 No special legal regulations for Brownfield redevelopment exist in France. Legal aspects are instead covered by:

- Law on environmental permits for industrial sites,
- Mining Code, for the former mines (Code recently modified to take into account the cessation and the abandonment of mine sites),
- Civil Code (liability on harm caused by owned properties),
- Urban Planning Code for the redevelopment of Brownfield sites, in the urban context,
- Some specific regulations on historical building preservation and requalification.

4 Germany

4.1 Background

4.1.1 In the last decade or so considerable efforts have been made to solve the environmental problems arising from contaminated sites and a high scientific and technological standard has been achieved in this field. However, bringing the land back into economic use is still a primary task for the future. Presently there are about 362,000 suspected contaminated sites nation-wide. The total resource of Brownfield's is projected to be 128,000 hectares across the country. As in other countries, the presence of Brownfield's hamper the economic development in the affected regions as its negative appearance and the risks associated with the environmental hazards are major obstacles for investment. However, at the same time land consumption is increasing and is presently at a rate of 129 hectares per day – (presumed to be non-Brownfield land). This area of land is sealed every day for building purposes. This indicates that there is competition between Greenfield's and Brownfield's with respect to attraction of investors for the development of land.

4.2 Policies and Programmes

4.2.1 In 1998, the Federal Ministry for the Environment in Germany published the Draft Environmental Programme and set the following objectives for Brownfield redevelopment:

- a) Rehabilitation of industrial sites and elimination of hazards to human beings and the environment;
- b) Reintegration of rehabilitated sites into the economic cycle;
- c) Reduction of land consumption from 120 hectares per day (status 1998) to 30 hectares per day by 2020.

4.2.2 No specific information relating to Baden-Württemberg has been provided. However figures for Stuttgart Region in the 2010 Land Use Plan indicate a total of approximately 153 hectares of Greenfield for development and 405 ha of development land within the existing fabric which is anticipated to comprise predominately of Brownfield.

4.2.3 Since the reunification specific Brownfield problems have emerged in the new German states. High Greenfield consumption with tax incentives meant the decline of industry and military conversion. The high stock of Brownfield's - e.g. 18.000 ha in Saxony became a major handicap for the urban and economic restructuring. In 2001, the State of Saxony started with a new integrated and interdepartmental Brownfield redevelopment program funded by the European Regional Development Fund (ERDF) of the European Commission.

4.3 Legal Framework

4.3.1 There is no special legislation for Brownfield redevelopment in Germany. Legal aspects are covered by:

- The Federal Soil Conservation Act;
- Regional Planning Acts and the Building Code; and

- The Federal Soil Conservation Act.
- 4.3.2 The Federal Soil Conservation Act came into force on 1st March 1999 with requirements for contaminated land remediation in terms of defining country wide standards for risk assessment and clean-up. The Regional Planning Acts and the Building Code include regulations for the unsealing of surfaces, for the restriction of Greenfield development and define basic guidance for the careful handling of soil.
- 4.3.3 Regional planning laws of strictly regulate land-use changes and the conversion of fallow, agricultural and water catchment's areas into urban uses, and thereby control urban growth.

5 The Netherlands

5.1 Background

- 5.1.1 Similarly to other countries, exact figures for the size of the Brownfield problem are difficult to find as this is highly dependent on the definition of Brownfield, but the issue of Brownfield sites is considered to be a significant one.
- 5.1.2 In the Dutch context, urban Brownfield sites are areas in towns and cities where in the past industrial activity has taken place but which have since fallen into disuse. These are mostly sites which have become obsolete or undergone radical change. This includes industries such as: textile, mining, metals, tobacco, paint and printing industries. There are also (former) gasworks, shipyards and (obsolete) dockyards in Amsterdam, Rotterdam and Zaanstad.
- 5.1.3 The number and scope of the Dutch Brownfield sites, is in comparison with other countries, much more restricted. This is mainly due to the long planning tradition and the relatively high demand for space in urban areas in the Netherlands. According to a recent study commissioned by the Ministry of Economic Affairs, between 9,000 and 11,000 hectares of industrial sites are obsolete in the Netherlands.
- 5.1.4 As space is scarce in a crowded country like the Netherlands there is on the other hand considerable pressure to redevelop the land. Use of Greenfield is not possible in many cases because there is no suitable space, but this is also due to the Dutch spatial planning system and policies like "the compact city".

5.2 Policy structure

- 5.2.1 In solving problems related to urban Brownfield sites the Netherlands has chosen an integrated approach. This means that efforts are made to produce a coherent solution drawing from various policy sectors and from different administrative levels. The result is a veritable policy patchwork quilt, in which central government, the provinces and the municipalities have very different responsibilities and tasks.
- 5.2.2 Central government policy concerning the restructuring of towns is a matter for, the Ministry of Housing and Spatial Planning and the Environment ('VROM'). Urban regeneration policy, which originated from housing and spatial planning policy, is now supported by the environmental policy. The Ministry of Transport, Public Works and Water Management ('V&W'), the Ministry of Economic Affairs ('EZ') and the Ministry of the Interior ('BIZA') now also greatly contribute to the Urban Regeneration policy. Their policies are set out in a number of policy documents, many of which are drawn up jointly. This helps foster integration in policy development and implementation.
- 5.2.3 The main national policy guidelines relevant for urban Brownfield sites are set out in:
- The policy document 'Housing in the 1990s',
 - The supplement to the Fourth Policy Document on Spatial planning (VINEX),
 - The VINEX update,

- The National Environmental Policy Plan 3,
- The plan 'Space for the regions'; and
- The 'Second Transport structure plan',

5.2.4 These plans are at the national level. They provide the basis for further plans at the provincial and municipal level and give rise to subsidies and a number of financial schemes. More information is given in a document prepared by the Dutch ministry for an OECD study on policies for urban Brownfield sites.

5.3 Legal Framework

5.3.1 The principal Dutch legal regulations are:

- The Urban and Rural Regeneration Act 1985;
- The Soil Protection Act 1987 extended with a soil clean up paragraph in 1994;
- The Law on Housing;
- The Spatial Planning Act and
- The Environmental Protection Act.

5.3.2 The Netherlands formally launched its urban approach with the Urban and Rural Regeneration Act in 1985. The policy, which originated mainly from the housing and economic departments, was aimed at urban renewal. The aim was to bring about the physical improvement of the built environment. Formally its purpose was to eliminate the quality deficits of the residential, working, production and living environments in area built before 1970. 1970. During the 1990's this policy was widened into one of urban regeneration.

5.3.3 The 1987 Soil Protection Act (SPA) lays down the statutory requirements for the clean-up of contaminated land. This Act established and defined a duty of care for the soil, imposing a statutory clean-up requirement for contamination resulting from certain industrial activities. The party responsible for causing the contamination is liable for the costs of clean-up, in accordance with the polluter pays principle. In 1994 further regulations were drawn up for cases of contaminated soil. The regulations make a clear distinction between cases where remediation is conducted by the party concerned, and where the authorities have the responsibility.

5.3.4 The Dutch central government reviewed its soil contamination policy (the "BEVER" project) in 1997/1998 with the aim to revise it to be integrated, decentralised and offer a larger role to the private sector. This change of policy is intended to increase both the social and environmental benefits, the intention being that the future remediation of contaminated land will be adapted to the future land-use. This will allow a more environmentally sound clean-up-process, while minimising the costs. In addition, the government intends to take financial, legal and fiscal measures to make it more attractive for the private sector to invest in the remediation of contaminated land.

5.3.5 Specific initiatives include the Belstato urban renewal fund (approximately 363 million Euro per year available over the period 1990-2005); the Intrafunds of the Ministry of Transport, Public Works and Water Management, and the VINEX covenants (approximately 408 million Euro budgeted for 1995-2005 for contaminated land). In total a sum of 34 million Euro was available over the

period 1996-1999 for the Netherlands as a whole, of which one-third was for the four large cities.

6 United Kingdom

6.1 Background

6.1.1 Across the UK, Brownfield sites result from a wide range of former industrial activities. These include mineral extraction, coal and steel production, gasworks, electrical generation, traditional engineering-based activities, transport infrastructure and chemical production as well as a wide range of more minor industrial activities.

- The underlying policy aims for promoting Brownfield redevelopment include:
- The economic and social regeneration of the surrounding areas;
- The environmental improvement of the sites themselves; and
- The reduction in "development pressure" on Greenfield sites.

6.1.2 These aims are reflected in the headline land-use policy objective for the national Government in the UK, which is "to promote a sustainable pattern of physical development and land and property use in cities, towns and the countryside". This objective is backed up by specific "Public Service Agreement" (PSA) targets for 60% of new housing to be provided on previously developed land or through conversion of existing buildings, and for Brownfield land to be reclaimed at a rate of over 1,100 hectares per annum by 2004, reclaiming 5% of current Brownfield land by 2004 and 17% by 2010 (DETR, 2001 as cited in Grimski and Ferber, 2002). This land-use objective is also specifically linked to a further objective "to enhance sustainable economic development and social cohesion through integrated regional and local action, including the promotion of an urban renaissance"

6.1.3 It should be noted that the UK Government's PSA target of 60% of new homes to be built on Brownfield sites was achieved eight years earlier than predicted (Office of the Deputy Prime Minister (ODPM), 2002). Latest Land Use Change Statistics show 67 per cent of all new dwellings in England were built on "Brownfield" sites in both 2002 and 2003, compared with 56 per cent in 1997. They also show new dwellings in England were built at an average density of 33 dwellings per hectare in 2003, compared with 27 dwellings per hectare in 2002 and only 25 in 1997. There may be potential to seek more appropriate regional targets that recognise the different economies of the Regions, and to promote the use of Brownfield land for suitable sustainable uses rather than focus solely on building. The Environment Agency recommends that such regional targets should be enshrined in Regional Spatial Strategies ([www⁵](#)).

6.1.4 The Government set out a framework of policies and programmes in an Urban White Paper, *Our towns and cities: the future – towards an urban renaissance* (DETR, 2000). This included what was described as a "new vision of urban living", including:

- "People shaping the future of their community, supported by strong and truly representative local leaders";
- People living in attractive, well-kept towns and cities which use space and buildings well;

- Good design and planning which makes it more practical to live in a more environmentally sustainable way, with less noise, pollution and traffic congestion;
- Towns and cities able to create and share prosperity, investing to help all their citizens reach their full potential; and
- Good quality services – health, education, housing, transport, finance, shopping, leisure and protection from crime – “that meet the needs of people and businesses wherever they are.”
- In the detail of the White Paper were specific proposals to “use the tax and planning systems to bring previously-developed ‘Brownfield’ sites and empty property back into constructive use, turning eyesores into assets”.

6.1.5 The redevelopment of Brownfield sites in many urban areas is largely private-sector led. A very significant proportion of projects take place with very little direct involvement from public bodies and government agencies, except in their roles as “regulators” issuing and enforcing necessary approvals and legal permissions (such as town and country planning). However, there are also significant government programmes to promote and support Brownfield redevelopment, further details of which are provided below.

6.1.6 The system of “town and country planning” promotes Brownfield redevelopment largely by inhibiting or preventing development projects on Greenfield sites, and by making Brownfield land available for development. This is brought about by a hierarchy of:

- National planning policy (set out by national government in Planning Policy Guidance notes),
- In Wales the Planning Policy Wales set out the National Planning policy. The purpose of Planning Policy Wales is to set the context for sustainable land use planning policy, within which local planning authorities, statutory Unitary Development Plans (UDPs) are prepared and development control decisions on individual applications / appeals are taken. It is supplemented by a series of Technical Advice Notes (TANs).
- There are currently 20 topic based TANs several of which make reference to sustainable development.
- The Learning to Live Differently scheme set out by the Welsh Assembly Government provides an overarching framework in which the TANs and Planning Policy Wales document work. It is also the driving force behind “Wales Spatial Plan”.
- Regional planning policy (set collectively by local government bodies in the region, and the Regional Development Agency), which also includes overall “structure” planning for the region,
- Local structure and development plans (set by the country and district councils) which make zoning decisions for the future use of particular areas of land in the area,
- Individual decisions on applications for planning permission (made by local planning authorities) which normally should conform to the relevant development plan.

- 6.1.7 This structure of guidance cascades the national PSA target for housing to be on previously-developed land or in converted buildings of 60% into more detailed regional and local targets. These reflect different local circumstances, such as the availability of Brownfield land suitable for redevelopment. To promote the achievement of these targets, there is a requirement, set out in Planning Policy Guidance Note 3 *Housing* (DETR 2000c), for a “sequential test” for new developments. This test means that a local planning authority must first satisfy itself that there are no suitable and available sites which have been previously developed before it can allocate any Greenfield sites for new housing projects.
- 6.1.8 Technical support for the redevelopment of Brownfield sites is provided at a number of levels. National government and other private sector led groups fund research and development and the development of “best practice” advice to assist the development and construction industries in working on Brownfield sites. Other activities focus on removing factors that might inhibit Brownfield redevelopment. This work includes:
- Research and development on the application of new remediation techniques and technologies,
 - Confidence-building initiatives with the financial and property sectors,
 - Setting out a system of liability for contaminated land,
 - Reviewing the licensing system for land remediation activities; and
 - Wider policy development on issues such as “land assembly” for larger development projects, and changes to the system of compulsory purchase by public authorities.
- 6.1.9 Financial support for Brownfield site development is provided via a number of mechanisms. Brownfield redevelopment is eligible for direct public sector financial support where this is necessary to achieve social and economic policy objectives. In some regions, public sector intervention is essential to ensure redevelopment.
- 6.1.10 Direct funding is generally provided by national government through arm’s length public sector regeneration agencies – English Partnerships and the network of Regional Development Agencies in England; the Welsh Development Agency; and Scottish Enterprise. In some cases, the funding is provided through local authorities, either directly from national government or via the national or regional regeneration agencies. In addition to these national sources of funding, other projects receive support through Objectives 1 and 2 of the European Regional Development Fund and other structure funds.
- 6.1.11 The public sector regeneration agencies and local authorities also carry out “direct development” projects of the following kinds:
- Fully worked-up developments,
 - Preparing “development platforms” for subsequent development by the private sector,
 - More simple “site clearance” projects; and
 - Providing roads and other infrastructure on or near potential redevelopment sites.

- 6.1.12 In 2002 the UK Government responded to a Select Committee report (Transport, Local Government and the Regions Select Committee) on the need for a new European regeneration framework. The response outlined the Government's commitment to work towards the adoption of a regeneration framework which would permit the payment of State aid for the regeneration of areas, throughout the European Union, characterised by market failure. The Government believes that payment of State aid for regeneration should be permitted where this would improve efficiency and productivity and contribute to the wider goals of the Community, and also enable Member States to more fully engage with the private sector.
- 6.1.13 There are a number of different terms and definitions which are used to describe land available for regeneration and often there is confusion over the correct term to be used. There are three main terms which can be applied to sites in the UK available for regeneration, some of the definitions overlap to some extent (Land Regeneration Network, 2003).
- 6.1.14 Brownfield land is the common term for "Previously Developed Land". Previously developed land is defined as land which is, or was, occupied by a permanent structure (excluding agricultural or forestry buildings), and associated fixed surface infrastructure.
- 6.1.15 Brownfield land can consist of:
- previously developed land which is now vacant;
 - vacant buildings;
 - derelict land and buildings;
 - other previously developed land or buildings, currently in use, allocated for development in the adopted plan or having planning permission for housing;
 - other previously developed land or buildings where it is known there is potential for redevelopment.
- 6.1.16 Derelict land can be defined as land so damaged by industrial or other development that it is incapable of beneficial use without treatment. Treatment includes demolition and levelling. The definition includes abandoned and unoccupied buildings (including former single residential dwellings) in an advanced state of disrepair i.e. with unsound roof(s). Derelict land is often associated with redundant coal mining areas and railways.
- 6.1.17 Data on derelict land from 1998 onwards is taken from the National Land Use Database (NLUD) which is a partnership project between the Office of the Deputy Prime Minister, English Partnerships, the Improvement and Development Agency (representing the interests of local government) and the Ordnance Survey. The first results from the National Land Use Database were published in May 1999. They provide a consistent assessment of previously developed vacant and derelict land and other land that may be available for redevelopment. They are based on returns from local planning authorities.
- 6.1.18 Contaminated land is land which fulfils the definitions given in the Environmental Protection Act (1990); although land may be polluted, it cannot be classified as Contaminated unless it fits the Environmental Protection criteria.

6.1.19 The act defines contaminated land as "any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

6.1.20 Under the act there are four possible grounds for determination of land as Contaminated Land, namely that:

- Significant harm is being caused.
- There is significant possibility that significant harm is being caused.
- Pollution of controlled waters is being caused; or
- Pollution of controlled waters is likely to be caused.

6.1.21 The EPA (1990) came into force in Wales in July 2001 via the Contaminated Land (Wales) Regulations 2000, introducing a new regulatory regime for the identification and remediation of contaminated land.

6.1.22 Vacant land is a further category which can be described as land on which some previous productive use has ceased for a significant period of time and also land which would benefit from development or improvement.

6.2 Legal Framework

6.2.1 The main legal control on any development is the system of land-use planning set out in the *Town and Country Planning Act 1990*. Any development requires specific "planning permission", which may control not only the location of development, but also the nature of that development and the way it is carried out. Specifically in the context of Brownfield redevelopment, the planning permission may contain specific conditions relating to site investigation and assessment and, where appropriate, remediation of contamination. Guidance to planning authorities on "contaminated land" aspects of planning is set out in Planning Policy Guidance note PPG 23.

6.2.2 It should be noted that Planning Policy Guidance Notes (PPGs) are shortly to be replaced by Planning Policy Statements in England and by the Planning Policy Wales and TANs in Wales.

6.2.3 *Planning and Pollution Control* (DOE, 1994 as cited in Grimski and Ferber, 2002). This guidance is being revised, with a view to the publication of specific planning guidance on developments on land which may be affected by contamination. The status of this review is not known at the time of writing. Brownfield redevelopment projects above a certain size also require *environmental impact assessments* as part of the planning approval process.

6.2.4 In addition, the *Building Regulations* impose a system of controls over the details of construction of any building. These cover a range of issues from the integrity of the foundations, through to issues such as disabled access to public buildings. They include specific requirements to ensure that buildings and building services are protected from the effects of any contaminants in the ground under the building.

6.2.5 Land remediation activities may need prior regulatory approval under the *waste management licensing system* under Part II of the Environmental Protection Act 1990 (which implements the European Waste Framework Directive) or the system of *Integrated Pollution Prevention and Control* (which implements the directive of the same name). Some remediation processes are defined (under the Directive) as "waste disposal" or "waste recovery"

operations, and therefore have to be licensed to ensure that they are carried out without risk to human health and the environment.

- 6.2.6 Other licensing regimes may also be relevant in some cases. The Government is currently reviewing the operation of waste management and other controls as they apply to land remediation projects, and may introduce a more specific form of regulatory control in the future.
- 6.2.7 Although the focus of the main contaminated land regime (Part IIA of the Environmental Protection Act 1990) is on the current use of land, and may not therefore be directly relevant to the redevelopment of land (which is about introducing new uses of land), it does have an indirect relevance. It sets a reference standard both in technical terms (defining the circumstances in which future regulatory intervention might be needed) and in legal terms (defining who would be liable to pay for any further remediation) (DETR 2000b). This regime is intended to be complementary to the regime already in existence to protect water resources.
- 6.2.8 Uniquely among EU Nations, the National Assembly for Wales has a binding legal duty to pursue sustainable development in all it does. This is built into its constitution through section 121 of the Government of Wales Act 1998.

6.3 Legal and Policy Framework Discussion

- 6.3.1 The project brief requires the identification and ranking of sustainable policy guidelines for mixed use development.
- 6.3.2 The details presented above suggest that whilst there are differences of detail in each of the partner countries on the definition, management and aspirations for Brownfield sites, there are common threads which emerge. At a strategic level the countries are working towards similar goals, i.e. sustainable regeneration. Generally, there is a legislative focus on establishing relevant technical levels of achievement for the 'quality' of land that is to be regenerated, i.e. an appropriate level of soil or land quality. This is in essence establishing requirements once a decision has been made on 'doing something' with the Brownfield site.
- 6.3.3 The ranking exercise outlined above is not considered to be a valuable exercise that would add to the development of improved policy guidelines. Instead, a more valuable exercise is considered to be the identification of key themes within the policy guidelines and legislative frameworks of partner countries.
- 6.3.4 There are a number of key themes that run across the partner countries with respect to policy, programmes and legislative frameworks concerning the redevelopment of Brownfield sites. For the purposes of this report these themes are summarised below, however, further investigation of the issues identified is recommended for the next phase of this research commission.
- 6.3.5 Various countries have different precise/specific definitions of Brownfield sites, though the aspirations for regeneration of the spectrum of sites identified are generally considered to be comparable between countries.
- 6.3.6 None of the partner countries have a specific programme or legislation targeting the redevelopment of Brownfield sites *per se*. In essence many countries have measures in place to suppress development on Greenfield land such as the Planning Guidance in the UK, but aside from specific project level economic drivers to meet specific needs, i.e. the need for housing in deprived

areas, there does not appear to be a holistic/whole-scale approach to the management of Brownfield sites.

- 6.3.7 All partner countries recognise that there are a number of drivers for development of Brownfield sites, including environmental, community and economic aspects, but these drivers are to meet other objectives which can be fulfilled through the regeneration of Brownfield sites.
- 6.3.8 Policy and legislation is generally used to control how redevelopment takes place on Brownfield sites but not to force it to happen.
- 6.3.9 Similarly, there are limited legislative drivers against the use of Greenfield sites for development, though in most countries the 'political' repercussions of such development often render it very difficult to progress this.
- 6.3.10 All partner countries are however aiming for the similar goals of sustainable regeneration of Brownfield sites, to meet social, economic and environmental goals.

7 Brownfield Indicators

7.1 Introduction

7.1.1 Specifically in relation to this section of the report, the project brief requires the following to be considered:

- Identification of the sustainable indicators currently being applied by each of the partner areas in relation to Brownfield site redevelopment,
- Review and rank simplified list of key indicators; and
- Identify and rank sustainable policy guidelines for mixed use development on Brownfield sites. This aspect has been considered in the previous section.

7.2 Definitions

7.2.1 It is essential to firstly establish definitions for the aspects that are being considered. As shown earlier there is no universally accepted definition of what actually constitutes a Brownfield site. On that basis the CLARINET definition is being used. Brownfield sites are those that are considered to have the following attributes:

- Have been affected by the former uses of the site and surrounding land;
- Are derelict or underused;
- Have real or perceived contamination problems;
- Are mainly or partly in developed urban areas;
- Require intervention to bring them back to beneficial use.¹

7.2.2 Prior to considering the project requirements, it is also essential to identify definitions for both sustainable development and indicators.

7.3 Definition of Sustainable Development

7.3.1 The most commonly used definition of Sustainable Development is that presented by the Bruntland Report (Our Common Future), 1997:

“development which meets the needs of the present without compromising the ability of future generations to meet their own needs”.

7.3.2 In the context of Brownfield development, the above definition of sustainable development leads onto the premise that Brownfield development is considered to be more sustainable, due to the fact that the focus of development is on a site that has already been used for a specific purpose, it is now redundant in that original use(s) and is therefore considered to be available for alternative uses. This is in contrast to a Greenfield site (that has not been previously developed) and that is commonly accepted to be something more “worthy” of keeping (though this is not necessarily always the case), this is considered below.

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- ¹ Urban Brownfields in Europe, Detlef Grimski and Uwe Ferber, Land Contamination & Reclamation/Volume 9 / Number 1 / 2001

7.4 Sustainability Indicators

7.4.1 The United Kingdom has developed a Strategy for Sustainable Development, which provides a set of sustainable development indicators of which there are 147 indicators. These are presented in the Quality of Life document, and are based on the direction in which the UK government wants to improve. The series of indicators include 15 headline indicators which come under the topic areas of economic, social and environment. This in essence establishes the foundation for the development of indicators for Brownfield development (in relation to the United Kingdom) and this is discussed further in this report.

7.5 Greenfield Versus Brownfield Development

- 7.5.1 The hierarchy of sustainability assessment is based on the starting point of whether Brownfield development is preferred to Greenfield development. I.e. can the objective/aim of any development be met by developing on a Brownfield site, to the same level that it would be met by developing the Greenfield site (and thus meeting the objective of “protecting” what is considered to be the natural source).
- 7.5.2 The starting point with regards to sustainability is that the presumption should be for development where possible, on a Brownfield site. With respect to housing, in the United Kingdom (as previously highlighted) Planning Policy Guidance Note 3 Housing presents a “sequential test” for new developments. This test means that a local planning authority must first satisfy itself that there are no suitable and available sites which have been previously developed before it can allocate any Greenfield sites for new housing projects. If this is taken as the starting point then a process needs to be identified which provides differentials between the two i.e. a series of indicators needs to be established to allow for differentials between sites, with the aim of identifying the one or more which could be developed “more sustainably”.
- 7.5.3 This is due to the fact that whilst on the surface the re-use of an existing Brownfield site maybe preferable, just this fact alone does not take into account all aspects of sustainable development. Sustainability indicators (for example UK governments Headline Indicators) take into account the three areas of economic growth, social progress and environmental protection. Arguably the straight decision between Brownfield and Greenfield only really takes into account environmental protection (though not even this is straightforward, as Brownfield site may for example be an important resource for scarce flora and fauna whilst the Greenfield site - that has not been built on - may be of “lesser” environmental value), but it does not really take into account the social and economic aspects of sustainable development. For example, the cost of developing on a Brownfield site may be so much as to potentially prohibit the development project from going ahead, and meeting a social aim. I.e. “clean-up” costs for the site may match or be even more than the actual cost of development. These associated costs are also important in that in the general the research has indicated that the cost of “clean-up” is the responsibility of the developer, whether they be a private company who are seeking profit from a development or local or central government bodies with limited funds. On this basis the economic arguments may not lead it to be wholly sustainable.

8 Case Studies

8.1 Sustainable Indicators in Wales

8.1.1 In the Welsh Assembly Government's (WAG) "A Sustainable Wales - Measuring the Difference: Indicators for Sustainable Development in Wales" the desirable characteristics of an indicator or suite of indicators are described as (WAG, 2003):

- Measures what we want to know, or is an acceptable proxy for it,
- Scientifically valid,
- Simple and easy to interpret,
- Show trends over time,
- Sensitive to the changes it is meant to indicate,
- Reliable/stable/reproducible, i.e. comparable information is obtained when a measurement is repeated,
- Capable of extrapolation or use for prediction, because the processes it reflects are well-enough understood,
- Based on readily available data or be available at reasonable cost,
- Based on data adequately documented and of known quality,
- Capable of being updated at regular intervals; and
- Have a target level or guideline against which to compare it.

8.1.2 As part of this study WAG are seeking a set of national sustainable development indicators for Wales to provide useful and transparent links between the national set of indicators and local, sectoral and programme indicators. In this respect indicators and targets from industry, local authorities (Best Value and Local Agenda 21), EU Structural Fund programmes, the voluntary sector and the Assembly's own policies and strategies are considered to be of particular significance in providing a true picture of progress which helps inform policy decisions.

8.1.3 Section 4 (1) of the Local Government Act now requires every county and county borough council in Wales to prepare a 'community strategy' to promote economic, social and environmental wellbeing of its area, and to contribute to the achievement of sustainable development. Community Strategies are intended to be complementary with the Unitary Development Plans (UDP) each area.

8.1.4 The WAG document provides one indicator relating to regeneration of Brownfield sites. Although the precise indicator will be defined after the feasibility study, its draft form is:

"Previously developed land will be used to support regeneration or preserve biodiversity and pressures on undeveloped land".

8.1.5 This indicator will measure the number of new homes built on previously developed land. The aim of this is that by re-using previously developed land, it will protect the countryside and encourage urban regeneration.

8.1.6 Although data to measure the number of houses on previously developed land is not presently available for Wales, a feasibility study for establishing a monitoring system is in progress. In addition, housing is not necessarily considered the best use for all Welsh Brownfield land.

Table 2: Table showing WAG indicator for Sustainable Brownfield Regeneration, 2003

AIM <i>- as stated in 'a better quality of life'</i>	BETTERWALES.COM PRIORITY / VISION: <i>"We want Wales to be..."</i>	UK INDICATOR	COMMENT	PROPOSED WELSH INDICATOR
Re-using previously developed land, in order to protect the countryside and encourage urban regeneration (3.25)	A better stronger economy, better quality of life / "prosperous.. environmentally rich.."	H14: New homes built on previously developed land	Data not presently available for Wales. A feasibility study for establishing a monitoring system is in progress. Housing is not necessarily the best use for all Welsh brown-field land.	Previously developed land used to support regeneration or preserve biodiversity, and pressures on undeveloped land. Precise indicators To be defined after feasibility study.

8.1.7 The Landmap initiative in Wales is co-ordinated by the Countryside Council for Wales, which is the WAG statutory adviser on sustaining natural beauty, wildlife and the opportunity for outdoor enjoyment in Wales and its inshore waters.

8.1.8 Since its start in 2001, Landmap has been utilised in 15 unitary authorities within Wales and contains landscape and environmental data under five categories that are recorded in a Geographical Information System (GIS). However, not all local authorities in Wales have decided to participate in the project, and to assess their landscape character using the Landmap methodology.

8.1.9 Whilst Landmap already contains much detailed information about the landscape, social and economic data available for rural areas is generally collated on a broader basis and can seem to have little relevance in site-specific decisions. This will be expanded over time cover all of Wales and may include datasets on previously developed land or contaminated land. The new Landmap extension project will have the objectives of:

- Gathering and utilising environmental, economic and social data in a manner that is useful to sustainable development decision-making;
- Testing the data to see how it can assist in ensuring that decisions relating to land use can be more sustainable; and
- Compiling and presenting the data in a GIS format.

8.1.10 However, the WAG considers that there are significant gaps in existing planning data, which respond to new requirements (e.g. housing needs, Brownfield land or contaminated land data sets). Less than half of Welsh authorities are collecting these data sets. There are, however, several initiatives for data collection underway or planned by local authorities which will increase the coverage of these data sets. Generally, however, undertaking a comprehensive countywide survey represents a significant strain on the limited resources of many local authorities.

8.2 Rochester Riverside Medway

- 8.2.1 Rochester Riverside is located on the north eastern boundary of the historic town of Rochester. It has a 1.6 km long frontage to the River and is enclosed on its western and southern boundaries by a railway line.
- 8.2.2 Largely industrial but now vacant, being the original site of the towns gas works, the area is awaiting regeneration following land assembly through the use of Compulsory Purchase Order (CPO)¹ powers by the council. Although the area is hidden from view from the adjacent highway, to those using the train it presents a very poor image of the heart of the waterfront area.
- 8.2.3 Rochester Riverside offered an opportunity to create a new riverside community at the heart of the waterfront that complements historic Rochester and opens up a significant length of the river frontage to public access.
- 8.2.4 Medway Council propose to develop Rochester Waterfront for mixed use including housing, school, offices, hotels and local leisure activities. The development will contain open areas of public space and a riverside walk. The project will create a prestige riverside development that retains and enhances the setting of existing local business areas whilst improving the gateways to Rochester. The area will contain distinct areas connected and integrated within the area by opening it up to historic Rochester. The project will create 1,500 to 1,800 new homes and up to 800 new jobs.
- 8.2.5 During the development of the proposals for Rochester Riverside, Medway Council have applied South East England Development Agency Sustainability (SEEDA) checklist in its appraisal of the development. One SEEDA's core objective's is to reclaim and re-use Brownfield land to support sustainable and cohesive communities.
- 8.2.6 The SEEDA checklist is divided into ten sections. Each section contains information and a set of structured questions addressing the particular sustainability issue. Guidance on answering the questions allows the user to determine what level of sustainability the development is achieving. The ten sections of the checklist are outlined below:

Outward Focus – impact on the wider community

- 8.2.7 Outward focus considers the developments impact on the surrounding community. It is stated that this should not only consider development's impacts on the immediate community, but also how the development impacts on the wider community. Considerations include:
- 8.2.8 How the development will impact on the existing infrastructure, including major roads, water supply and sewerage;
- 8.2.9 The impact on local services, e.g. public transport, schools, medical and social services provisions etc; and
- 8.2.10 The ability of existing local facilities to accommodate additional load and maintain acceptable service.

• ¹ Current Compulsory Purchase Order (CPO) powers give local authorities the ability to acquire land that is 'suitable for or required for developing, redevelopment and improvement of any land which is required to achieve the proper planning of the area.

Land use urban form and design

- 8.2.11 Current policy guidance notes and the DETR/ODPM Good Practice Guides suggest that developments which attract a large number of people should be concentrated in or on the edge of an existing towns or suburban centres.
- 8.2.12 The Government's planning guidance notes set out the policy framework within which local planning authorities are required to draw up their development plans and take decisions on individual applications to secure these objectives. Where new government guidance has been issued since the relevant local and development plan, the latest guidance will take priority. Each region has regional planning guidance, which is currently being revised, and regional spatial strategies are also being developed.
- 8.2.13 There are also environmental constraints to be considered, which will affect the choice of site, or the way the site might be developed. Examples include:
- Flood risk, which in some areas is a key factor in deciding the location of development;
 - Potential impacts on the development of climate change, such as rising sea levels, change in land conditions (e.g. effect of drought on clay soils), and local wind effect; and
 - Brownfield / Greenfield - some Brownfield sites have a high ecological value and / or provide an open space (valued by residents) in a densely built up urban environment. The 'value' of the Brownfield site should therefore be considered in any decision to redevelop. This can be achieved by consulting with the local community, and investigating the ecologic value, initially through desk research.
- 8.2.14 Once an appropriate site and has been chosen it is important to ensure that the development is making the best use of the available site, and that urban spaces are well designed. Creating quality urban spaces that people enjoy living and working in, and which will stand the test of time, requires considerable skill.

Transport

- 8.2.15 Transport is responsible for environmental, social and economic impacts. Locally it results in pollution, and congestion; and it can either prevent or provide access. Good transport can facilitate access to jobs, shopping, leisure facilities and services, both in the development and in the wider community. It can significantly affect the community dynamics, making the difference between a vibrant community and a more staid one. Transport is also one of the critical factors in enhancing inclusion and social cohesion.
- 8.2.16 The way that we position buildings has a strong influence on how fully they will be used and the amount of energy used to transport people between them. In general, planning guidance advises local authorities to encourage development in areas that are well served by public transport. Where new areas are proposed, regional and local plans should focus development around public transport nodes and corridors. Residential development density should be kept high around railway stations etc. For new settlements, such as Urban Villages etc., it is important to have good public transport links to existing major employment centres, as even with mixed use development, many new residents will not be able / willing to work locally.

- 8.2.17 The Checklist assumes that facilities must be within 1 km for people to walk or cycle to them regularly (this is equivalent to about a 15 minute walk, or a 4 minute cycle ride). In addition, pedestrian footpaths and cycle lanes linking the key parts of the development must be provided if environmentally friendly forms of transport are to be encouraged. In exceptional cases it may be appropriate to give credit to facilities that are further away than 1 km, this will happen when frequent cheap public transport is available.
- 8.2.18 Consideration should be given to the financial viability of operating a public transport service. By placing major travel generators (like hospitals) at either end of the transport corridor, the two-way flow of traffic along a corridor can be increased, making a public transport service across the whole length of the corridor sustainable. To serve a new development successfully, public transport provision must be available from the beginning of the development's life. Otherwise, car use patterns will become established and will be difficult to influence subsequently.
- 8.2.19 Accessibility is also important in encouraging the development of a 'community'. The design of cycle ways and footpaths must consider personal safety; they will only be used if people feel safe.

Energy

- 8.2.20 Many environmental specialists consider the burning of fossil fuels to be the most serious environmental concern currently facing the world. The full effects of global warming are not known but are likely to result in rising sea levels do to melting ice caps.
- 8.2.21 Servicing buildings accounts for approximately 50% of the UK's total energy consumption. The need to reduce the consumption of fossil fuels must be central to any policy on sustainability. In terms of construction, energy is used in the following ways:
- To manufacture and transport building materials and products ('embodied energy');
 - On site to create the structure;
 - To operate the building/structure throughout its lifetime - ('in-use energy');
 - To transport people and goods between the buildings ('transport energy'); and
 - To demolish and transport demolition waste.
- 8.2.22 Energy from renewable sources (wind, hydro, solar etc) does not add to climate change and has the benefit of being infinitely available. At the site / development level, many of the renewable/alternative energy sources become more viable.

Impact of Buildings

- 8.2.23 In order to build in a sustainable manner, it is necessary to minimise any negative impacts. The main impacts attributed to the construction of individual buildings are:
- Energy in use
 - Embodied energy and environmental impacts of building materials

- Water consumption
- Health and wellbeing of occupants – indoor air quality/day lighting/noise
- Transport and access impacts of occupants and users; and
- Air pollution, ozone depletion.

8.2.24 The impacts of individual buildings are assessed by setting a target using a proprietary quality assured rating scheme like BREEAM (Building Research Establishment Environmental Assessment Method). The use of a rating system like BREEAM enables all the above issues to be addressed in one target. It also allows a degree of flexibility in the way that the 'sustainability' target is met. For planning authorities and developers alike it gives an independent way of 'telling the time' so that all development standards can be judged on a level playing field.

Impact on Infrastructure

8.2.25 In order to build in a sustainable manner, it is necessary to minimise any negative impact, both in terms of construction and use. The main environmental impacts which can be attributed to the construction and use of infrastructure are:

- Embodied energy and environmental impacts of the materials used to build and maintain the infrastructure,
- Energy and water in use,
- Pollution to air, water and land; and
- Impacts of the construction practice.

Natural Resources

8.2.26 The natural resources used in construction in the UK are usually:

- Construction materials,
- Waste,
- Energy; and
- Water

8.2.27 The UK construction industry uses approximately six tonnes of building materials per person each year. Of this, 20% is for infrastructure, while the remainder is for buildings. 250-300 million tonnes of material is extracted from quarries each year for aggregates, cement and bricks. Many other materials and components are used by the construction industry; each has a range of environmental consequences arising from its position, use maintenance and final disposal.

8.2.28 In addition other natural resources can be damaged by construction resulting in:

- Air pollution,
- Water pollution,

- Noise pollution, and
- Land pollution.

8.2.29 Landfill sites and quarries for example normally cause all four types of pollution. By reusing (reclaiming) and recycling building materials and choosing those with low environmental impacts, it is possible to minimise harmful environmental effects. By designing and building to minimise waste (known as 'lean construction') it is possible to reduce the amount of new building materials wasted on site (currently 13 million tonnes of this goes straight to landfill sites).

Ecology

8.2.30 The adverse impact of construction on wildlife and their habitats can be severe, sometimes wiping out whole species. This effect is usually a local one unless rare and endangered species are affected and then it can be considered to be national or global.

8.2.31 The conservation of biodiversity and wildlife habitats in the South East of England is at the heart of the Regional Sustainable Development Framework and the region's strategy for development. In this the planning system is of key importance.

8.2.32 The ecological value of any site is established by a survey carried out by a recognised expert. Measures to enhance the ecological value of a site can then be proposed in the development.

Landscaping

8.2.33 The focus of this aspect is on protecting the most important ecological attributes.

8.2.34 Such features can provide pleasant amenity and leisure spaces for residents and enhance the quality of life.

Community

8.2.35 In the White Paper *Our towns and cities*, the UK Government sets out its vision for the urban areas of the future. In section 3, the paper outlines how this can only be achieved by allowing the local people to influence and inform the development process. Paragraph 3.1 states '*people have a right to determine their future and be involved in deciding how their town or city develops*'.

8.2.36 The planning system obviously has a large part to play, but developers should get involved as early as possible, continuing their commitment throughout the construction/refurbishment phase and beyond if appropriate. The Considerate Constructors Scheme provides a credible scheme and guidance on community affairs during construction.

8.2.37 In terms of design, there are well researched standards that have been proven to reduce crime and foster better social relations. The UK police have developed Secured by Design, a system that can be used to rate components, buildings and developments. A more general example is the Urban Design Compendium that gives advice on more thoughtful design.

8.2.38 Community management is a complex issue, with many factors having a role to play. The Social Exclusion Unit at the UK Government's Cabinet Office have issued *A new commitment to neighbourhood renewal*, which highlights new policies and practices which aim to improve community functioning.

Business

8.2.39 One of the statutory purposes of SEEDA is to further economic development and regeneration, as well as to contribute to sustainable development. To that end they are required to produce a regional strategy detailing the economic prospects for the region and the type of investment it needs to attract. Such strategies may also specify the area(s) earmarked for development in order to meet specific investment needs. In the regional strategy the Agency must also consider the four themes of sustainability covered in the UK Strategy for Sustainable Development:

- Maintenance of high and stable levels of economic growth
- Social progress which recognises the needs for everyone
- Effective protection of the environment; and
- Prudent use of natural resources.

8.2.40 During the development of their strategies, Regional Development Agencies must consider the Regional Planning Guidance, Regional Transport Strategies, Supplementary Planning Guidance and Local Plans. Economic strategies should complement the work of the local Government Offices (GO) and local authorities in the area.

8.2.41 RDAs, GOs and local authorities also have a vital role to play in terms of training opportunities. Using resources provided by the New Deal for Communities, the Department for Education and Skills (DfES) Neighbourhood Support Fund and Single Regeneration Budgets and the powers and duties associated with, for example, life-long training and promoting community well-being, many opportunities for providing local training and employment can be exploited.

8.2.42 It is essential that activities arising from this area are well integrated with the social and environmental issues. Integration ensures 'win-win' situations, for example, when the solution for an environmental or social concern has economic benefits.

8.3 Regional Industrial Area Twente, Tilburg

8.3.1 The third case study is in the Netherlands and is based on the Regional Industrial Area Twente at Tilburg.

8.3.2 In summary, in order to attract international companies to the area of Tilburg a Programming Overlog (PO) Twente' was created and it comprised of the local council, provincial council and local business. The PO proposed to sustainably develop a Regional Industrial Area Twente' (RBT) to encourage inward investment.

8.3.3 The RBT will concentrate on large scale high quality logistics or production companies. The proposed developed area has good infrastructure links being close to road rail and waterway links.

8.3.4 The Tilburg 'agenda' set out 6 main indicators for sustainable spatial development over a 10 year period. There were:

- Increase of natural surface,
- Less water use per household,

- Less electric power use per household,
- Waste-reduction per head,
- Increase of sorted waste; and
- Use of knowledge about sustainable products.

8.3.5 Specifically, it is understood that the following indicators were applied during the planning of the RBT.

- Does the development improve planning on a regional scale,
- Does the development encourage multiple uses and activities,
- Does the development encourage large high quality business; and
- Does the development compliment the surrounding ecological zones in the area.

8.3.6 The indicators outlined above for the planning stage could in effect be applied to the planning stage of any development and are not particularly focused on sustainable development. In general they can be deemed to be developmental drivers that seek to achieve other goals.

8.4 Stuttgart Land Use Plan 2010 – A Step towards Implementing Sustainable Urban Development

8.4.1 Under the German constitution and federal system, many functions of government are devolved from the Federal Republic of Germany (Bundesrepublik Deutschland or BRD) to the 16 individual federal states (Bundesländer) that are responsible for adopting and executing their own laws. The Stuttgart Region forms part of the Federal State of Baden-Wuerttemberg. The Stuttgart Region consists of six state districts (Kreise, NUTS3) called Boeblingen, Esslingen, Goepfingen, Ludwigsburg, Rems-Murr and the City of Stuttgart with a total of 179 (Gemeinden, NUTS5) communities.

8.4.2 The federal state government of Baden-Wuerttemberg has drawn up an environmental plan with an inventory of the status of environmental protection and conservation. The environmental plan which was started in 1994 formulates specific objectives by 2010 in various environmental areas.

8.4.3 The Stuttgart 21 Plan, published in 1994, aims at rebuilding the Stuttgart – Ulm – Augsburg rapid rail line, comprising improvements in regional and long-distance transportation and the development of new urban neighbourhoods in the city centre; enlargement of park areas and creation of new jobs at the centre of the Stuttgart region. This aim will be achieved by rerouting a part of the tracks through underground tunnels and lowering the station, it is possible to significantly reduce the inner-city area required for tracks. This opens up urban development opportunities and space for new development of about 1 km² right in the heart of the city.

8.4.4 The Stuttgart 21 regeneration projects, focused especially on the re-use of former military sites and are also a factor determining the formation of new 'gravitational centres' for urban growth. However in the last years the infilling processes characterising the growth of suburban areas have been mostly unplanned and attempts to convey the most part of new developments along the transport infrastructure have failed.

8.4.5 A draft urbanization town development concept (STEK) has been produced. This looks at the economic, social, ecological and sustainable future for Stuttgart. The STEK was compiled under the leadership of the office for town planning and urban redevelopment as well as numerous offices of the city administration. In addition the STEK presents four master projects. These are:

- Residential and public areas with emphasis on the attractive city centres places
- Redevelopment of Industrial sites with emphasis on Stuttgart north;
- Long term plans for riverside landscaping and redevelopment emphasised on Stuttgart Neckartal;
- New technology and research parks with emphasis on Vaihingen and Filderebene.

8.4.6 The Sustainable Brownfields Development of Stuttgart (NBS) is one project which is aimed at developing a set of innovative strategies and tools designed to promote the inner development of existing urban areas. The project lasted for two years and finished in 2003. It was divided into three main parts.

8.4.7 The first part was dedicated to site inventory and to data compilation. Altogether 350 sites covering altogether 550 ha were inventoried in Stuttgart; most sites are smaller than 5 ha. This data included activity profiles for each site, which can be regularly updated (www⁶). Within the Stuttgart region the ratio of building land development on Greenfield sites to Brownfield sites is estimated at 1:4.

8.4.8 Of the Brownfield sites available in Stuttgart, around 200 sites (approx. 290 ha) are available at short notice. A total of 200 ha of existing Brownfield sites are located in industrial and commercial areas and only 80 ha are in residential areas. Many of the potential sites are focused on railroad area and the old industrialised areas of Vaihingen, Weilimdorf and the Neckar Valley.

8.4.9 There are also a number of other Brownfield sites within the Stuttgart-Zuffenhausen for regeneration. These include: the Kreidler Werk II, a leather company, copper processing, and vehicle production site; the Grenadierkaserne, a former military barracks; and the Waggon-Metzger site, former railway-car production and cleaning site. The Waggon Metzger site has now been partly absorbed by Porsche's Zuffenhausen site to increase its production areas.

Table 3: Table showing Brownfield sites within the Stuttgart-Zuffenhausen

	Kreidler Werk II	Grenadierkaserne	Waggon-Metzger
Area in m ²	33.200	83.000	61.500
Implementation period	1983-1993	1998-2003	1997-2000
Costs in Euro	35 Mio.	27 Mio.	33 Mio.
financing	unknown	22,9 % communal 50,9 % private 20,9 % federal republic 5,3 % state	100 % private
goal	Residential use	Residential use	New jobs and enlargement of production
surroundings	Residential, mixed uses	Residential, mixed uses; special uses and exterior	Commercial and mixed uses
Traffic infrastructure	Good/very good	Very good/average	Very good

	Kreidler Werk II	Grenadierkaserne	Waggon-Metzger
Pre usage	Leather company, copper processing, vehicle production	barracks	Railway-car production and cleaning
Re-use	Residential use	50 % Residential use 28,3 % green area 14,7 % parking/traffic offices and others	83 % traffic, stock ground 17 % offices
Planning law	New land-use plan	New land-use plan	Old building ordinance
Environmental restrictions	soil	Soil, groundwater, biota	Climate, soil, groundwater, building ground/geology
Other restrictions	Superior planning law, land servitude	Superior planning law, emission control act	Superior planning law,
contamination	Soil, landfill, buildings	Soil groundwater, landfill, buildings	Soil, groundwater
Contamination investigation	Remediation, safety	Detailed investigation	Remediation planning
Realisation	good	average	good
Potential of area	utilised	Partially utilised	utilised
Problems in the project	contamination	Contamination, financing problems	contamination

8.4.10 In the second part, ten sites were selected for test implementation aimed at exploring alternative uses and at identifying a set of strategies designed to promote the revitalization of these properties. The results of these test implementations formed the basis for the focus of part three which aimed at specific policies for promoting sustainable urban development in Stuttgart.

8.4.11 To measure progress toward sustainability, adequate economic and ecological information, the Status report for Sustainable development in Baden Württemberg suggests that indicators must:

- Give an indication of whether or not an environmental goal can be reached,
- Provide sufficient information about the entire system of interest,
- Be of a quantitative nature,
- Be understandable for non-scientists, and
- Include parameters that are usable in the long run.

8.4.12 In addition, the German Experts' Council for Environmental Questions, (Der Rat von Sachverständigen für Umweltfragen), listed the purposes of environmental indicators as follows:

- Description of the environmental situation,
- Diagnosis of existing environmental problems,
- Prediction of environmental trends,
- Setting goals for the quality of the environment,
- Information for the public,
- Facilitation of political decision making,
- Test of strategies for environmental protection,

- Success control for environmental protection policies,
 - Existence of reference values and sustainability thresholds; and
 - Adequate representation of reversible and manageable processes.
- 8.4.13 For monitoring in terms of Agenda 21 a number of sustainability indicators have been gathered for Baden-Wuerttemberg some of which are applicable to sustainable regeneration. These are:
- Land utilisation,
 - Preventing climate change,
 - Preventing air pollution,
 - Protection against noise,
 - Water resources protection,
 - Soil protection,
 - Conserving biological diversity,
 - Waste management; and
 - Technology and precautions against risks.
- 8.4.14 The intention of the Land Use Plan was to demonstrate how its overall view of community planning, landscape planning and infrastructure planning can contribute to a sustainable and environmentally appropriate development. Specifically the project aims are to:
- Support commerce with a view to promoting small businesses;
 - Provide traffic calming measures;
 - Provide green areas in residential districts;
 - Secure socially compatible planning and urban development; and
 - Develop a socially integrated city.
- 8.4.15 Again, the above can be classified as developmental aspirations or drivers.
- 8.4.16 As part of the process seven 'investigation reports' were presented to the local council in 1995 to serve as a basis for initiating resolution to draw up the 2010 Land Use Plan.
- 8.4.17 In Investigation report 2a 'Urban development/potential sites for building development', potential areas for re-use (Brownfield sites), for increased density and for new development (Greenfield sites) were investigated.
- 8.4.18 The resolution for confirmation was made on 1st July 1999. The 2010 Land Use Plan – Guideline Scheme for Sustainable Urban Development. As part of this, the intention to promote sustainable and environmentally appropriate urban development, also in the meaning of Local Agenda 21, is expressed particularly in the following guiding principles, with the following one, being directly related to Brownfield development:

- 8.4.19 Priority for Brownfield site development i.e., avoiding major new developments on Greenfield sites and giving clear priority to mobilising potential building development areas in the existing fabric.
- 8.4.20 This guiding principle of avoiding major developments on Greenfield sites means placing a clear priority in the mobilisation of potential building development areas within the existing fabric. This concerns in particular those areas for business use freed up by the change in economic structure, but also the military areas and not least the urban building project Stuttgart 21 as a model example for sustainable Brownfield site development.
- 8.4.21 The urban building project Stuttgart 21 has development potential which extends to beyond 2010. In 'compensation' for the new development areas on the railway land comprising approximately 65 hectares, 62 hectares of planned Greenfield site developments in peripheral locations have up to now been de-zoned. The future fate of Stuttgart 21 does not hinge primarily on the railway question, but concerns the principles of urban development.
- 8.4.22 It is understood that due to the above, it was possible to reduce the proportion of Greenfield development sites within the local authority boundaries from 6% (in the 1990 land use plan) to 1%.
- 8.4.23 The above case study is an example of specific local authority level sustainable development objectives.

8.5 Île de Nantes Project

- 8.5.1 This case study is focused on a large and diverse area of development close to the Loire River. The first phase of the project (2002-2007) focus of the project consists of considering the entire island. The urban regeneration project must look the Île as a whole, with each section and boundary conceived based on a global view.
- 8.5.2 Development will involve a large number of projects with the following general aims:
- To develop the urban landscape, the natural environment and the diversity of species that it harbours;
 - To provide a large proportion of social housing (at least 20%);
 - To enhance the green environment and minimise traffic;
 - To reduce pollution (noise, atmospheric emissions, water, quality);
 - To encourage various forms of transport, bikes, trams etc; and
 - To integrate the industrial architecture as far as possible.
- 8.5.3 The environmental issue for the project should be seen as a cross-disciplinary requirement offering improvements in quality of life and protection for the environment. The focus is on the following:
- Reduce pollution (noise, atmospheric emissions, water quality);
 - Improve energy efficiency for new or existing buildings, whether residential or in the service sector;
 - Choice of materials and construction methods, for both public spaces (with an emphasis on restoration) and buildings;

- Organisation and management of demolition and building sites;
- Waste management and household waste collection; and
- Develop the urban landscape, the natural environment and the diversity of species that it harbours.

9 Key Considerations from the Case Studies

- 9.1 It appears that the focus from the case studies is on establishing objectives for what the development on a Brownfield site should achieve. This in effect is mirroring the legal and policy drivers in partner countries, as discussed in the early section. The onus is on whether it should have a certain level of social housing or provide for a defined number of job opportunities. These are objectives which can be applied to any development, not just specifically a Brownfield site development. The drivers are focused on local authority development plan objectives.
- 9.2 In some respects these objectives can be considered to be an indicator, i.e. the assessment is based on whether a specific objective can be achieved, but there does not appear to be any mechanism used by any of the case studies for measuring this, either on a qualitative or a quantitative basis.
- 9.3 The focus does not appear to be on establishing either European, national, regional or local policies for differentiating between Brownfield sites. The starting point is that Brownfield site development is good (the converse being that Greenfield site development is bad). This is obviously due to the fact that research has shown that regions with extensive areas of Brownfield sites are deemed to have greater social issues (both real and perceived), such as unemployment and poor housing, and authorities are seeking to address these issues. The Medway Council Case Study illustrates this effectively in that the regeneration serves the dual purpose of regenerating a visually poor area and seeking to address issues associated with lack of employment opportunities and housing, with readily available vacant land, the development of which will not in general have the negative issues associated with Greenfield development.
- 9.4 The case studies have served to highlight that whilst in various European countries it is accepted that the development of Brownfield sites is a positive thing, there is a need to have an accepted way of quantitatively assessing differentials between Brownfield and Greenfield and more importantly between Brownfield sites to assess which ones can be developed in a more sustainable manner. That sustainable manner needs to take account of environmental, social and economic factors and as a starting point this should take into account national definitions of sustainability. For example in the UK, the Quality of Life is the key document and this presents key sustainable development objectives. These are:
- Social progress which recognises the needs of everyone;
 - Effective protection of the environment;
 - Prudent use of natural resources; and
 - Maintenance of high and stable levels of economic growth and employment.
- 9.5 Specifically in relation to previously developed land, in the UK there is a headline indicator in relation to new homes built on previously developed land. Indicators such as these could be refined or others added which further reflect the potential for Brownfield sites to be regenerated.
- 9.6 Following on from this the Welsh Assembly are currently in the process of developing this indicator to consider previously developed land and to use it to support regeneration or preserve biodiversity and to reduce pressures on

undeveloped (non-Brownfield land). It is understood that precise indicators will be considered following a feasibility study. This to some extent is tied in with the Welsh statutory duty (devolved to the Assembly) to promote sustainable development.

- 9.7 It is expected that other European countries would have similar definitions and objectives and that on this basis each could develop a series of indicators for Brownfield site development which strives towards the national sustainability indicators.
- 9.8 The Brownfield's and Redevelopment of Urban Areas – A Report from the Contaminated Land Rehabilitation Network for Environmental Technologies, states the following in relation to sustainable development indicators for Brownfield sites:
- 'On-going discussions about regular measurement of sustainability using indicators point out the appropriateness of the development of benchmark indicators for Brownfield redevelopment. Regular measurements of such indicators assist policy making on the national and regional level. Indicators to be investigated for their appropriateness, particularly in terms of the availability of background data are:
 - Ha/annum for development for each country or region, normalised by population density;
 - Costs/ha for different categories of Brownfield remediation including indicators for Brownfield land restored for environmental benefit; and
 - Use of Brownfield for development: ha/annum/million population.
- 9.9 The above proposed indicators however need to be established at a national level, with the exception of the second indicator which could be used as a quantitative measure for different Brownfield sites and could be used at a project level.
- 9.10 To date the work has shown that consideration needs to be given to what levels of indicators are applied and what is the actual objective of that application.
- 9.11 Different levels of indicators need to be considered at the following levels:
- Political Decision Making Level;
 - Project Management Level; and
 - Technical details level.

- 9.12 It can be argued that to a lesser or greater extent the first point above has and is being progressed as identified in the legal and policy section of this report, and through inspirational documents such as the Quality of Life. Indicators at the project management level are being developed and promoted by organisations such as SEEDA and through the development of sustainability indicators and the final level is being considered by the application of processes such as BREEM.
- 9.13 Specifically then in the context of the project brief and producing a simplified list of indicators the following are initial thoughts and are based on the above three categories as main indicator headings

Political Decision Making Level:

- Nationally what proportion of Brownfield land is being developed (as a percentage rather than an absolute number);
- Does the development in general comply with the broad categories of social, economic and environmental progress (the detail of this would be considered in the technical level)

Project Management Level:

- Does the development of Brownfield land meet development planning objectives as defined at the regional and/or local level;
- Does the development allow for the application of technical guidance i.e. SEEDA guidelines or BREEM?
- Does the project offer opportunities for saving energy and water, integration of green spaces?

Technical Management Level:

- Application of a Technical Standard such as BREEM or SEEDA guidance;
- The above would encompass aspects such as ability to re-use materials i.e. recycling on-site.

10 Conclusions

- 10.1 In conclusion it can be said that whilst there have been key initiatives in promoting the redevelopment of Brownfield sites, and significant sites have been developed, there is still a need for a co-ordinated approach at various levels to bring about the sustainable development of such areas. Key obstacles that have been identified include:
- The contradictory practice of permitting Greenfield development whilst attempting to redress the serious environmental, economic and social problems associated with urban Brownfield's;
 - The inflexibility of policy and legislation which inhibits the redevelopment of Brownfield sites; and
 - Insufficient information is concerning the number and size of Brownfield development land, including previously developed but now vacant buildings, sites in cities, and about the economic, social and environmental outcomes of redevelopment.
- 10.2 On a more positive note, the research and case studies to date have shown that the topic is being progressed both in terms of discussion and action on the ground, with sites being remediated and significant areas being regenerated with associated economic, social and environmental benefits².

• ² Urban Brownfields in Europe, Detlef Grimski and Uwe Ferber, Land Contamination & Reclamation/Volume 9 / Number 1 / 2001

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12 Glossary

APGs	Area Specific Projects
BEVER	Dutch Government soil contamination policy
BIZA	Ministry of the Interior (Netherlands)
BREEAM	Building Research Establishment Environmental Assessment Method
CABERNET	Concerted Action on Brownfield & Economic Regeneration Network
CCIs	Common Co-operation Initiatives
CLARINET	The Contaminated Land Rehabilitation Network for Environmental Technology
CPO	Compulsory Purchase Order UK
DETR	Department of Transport and the Regions UK
DfES	Department for Education & Skills
EPML	Establishment Public Fancier de la Metropole Lorraine
ERDF	European Regional Development Fund
ESDP	European Spatial Development Perspective
EU	European Union
EZ	Ministry of Economic Affairs (Netherlands)
GIS	Geographical Information Systems
ha	Hectare
JPP	Joint Pilot Projects
LPA	Local Planning Authorities UK
NICOLE	Network for Industrially Contaminated Land in Europe
NLUD	National Land Use Database UK
NBS	Sustainable Brownfields Development of Stuttgart
OECD	Organisation for Economic Co-operation and Development
OPPM	Office of the Deputy Prime Minister
PPG	Planning Policy Guidance Note
PO	Programming Overlog
PSA	Public Service Agreements (OK)
RBT	Regional Industrial Area (Twente)
RESCUE	Regeneration and European Cities and Urban Environments
SEEDA	South East England Development Agency
SPA	Soil Protection Act (Netherlands)
STEK	The draft urbanisation town development concept Stuttgart
TANs	Technical Advice Notes (Wales)
TCBC	Torfaen County Borough Council
UDPs	Unitary Development Plans
VCRM	Ministry of Housing and Spatial Planning and the Environment (Netherlands)

VINEX	Fourth Policy Document on Spatial Planning (Netherlands)
WAG	Welsh Assembly Government
W & W	The Ministry of Transport Public Works and Water Management (Netherlands)