GENERAL INFORMATION

PETUS description of tool in use	
Name of the case	Baglan Energy Park Phase 2
Name of the tool	• Constructing Excellence Movement for Innovation (M4I) Sustainability Project Performance Indicator Assessment Tool, • Partnering scheme, • Key Performance Indicators (KPIs), • Dispute Resolution Ladder, • Environmental Impact Assessment (EIA), • Environmental management system: ISO 14001, • Hochtief/Griffiths QUENSH (Quality, Environment, Safety and Health) plan
Country	Baglan, Neath Port Talbot County Borough Council, South Wales, UK
City / region Total area (km2) Population, Density (people/km2)	A 70 hectare site. The population of the Baglan ward is 6,654. However the impact of the development will influence the county as a whole whose resident population of Neath Port Talbot County Borough Council, as measured in the 2001 Census, was 134,468.
Tool user's profile a. Organization name (municipality, NGO, national or regional department, company, etc.) b. Field of activity *c.* Detailed contact/feedback (project website, e-mail, address, tel., fax)	a. The steering group for the project consisted of Neath Port Talbot County Borough Council (NPTCBC), BP, a multinational petroleum company and the Welsh Development Agency (WDA). b. NPTCBC is the local municipality, BP, WDA is the economic development agency for Wales. c. Geoff Marquis, Policy and Strategy Manager, Technical Services Directorate, NPTCBC. Tel: 01792 512756 G.marquis@npt.gov.uk. The website for Baglan Energy park can be found at: http://www.baglan-energy-park.com/the_energy_park.htm
Reviewer, date	AL/JP Visit date: Tuesday 6th April 2004

Short description of the case

Baglan Energy Park Phase 2 is part of the Baglan Bay redevelopment scheme, one of the largest redevelopment sites in Western Europe. The Baglan Bay site occupies 500,000 hectares and was previously occupied by a chemical works and steelworks, where infrastructure had to be demolished and the land cleaned of any contamination once operation ceased. This case study looks at the process involved with preparation of the 70 hectare site for future use i.e. land reclamation and installation of basic infrastructure.

£9 million has been spent to carry out the work including landscaping to provide high quality environment for future works. The area of land is currently vacant however is due to be developed to include plots for factory developments and bespoke construction projects.

Selection of tools was focussed around good site practice which it was hoped would generate a sustainable working mechanism. A number of the tools were selected to encourage working together between the team which it was hoped would generate a sustainable project.

Sector	Waste	Energy	Water	Transport	Green/blue	Building & Land Use
						X

Scale of project	Component	Building	Neighbourhood	City	Region
			X		

Status of project	Starting up	Ongoing	Finished	Start date	End date (exp.)
			X	January 2000	August 2002

Key words

Regeneration, reclamation, chemical works, steelworks, waste, site preparation, partnering, infrastructure, brownfield.

Project a. Object (building, park, etc.)	a. Parcel of land previously occupied by chemical and steel works. b. Reclamation.

b. Type of activity (regeneration, renovation, new development) c. Type of product (plan, scheme, design project, etc.)	c. Scheme.
Tool a. Character (according to WP3final0704.doc) b. Benchmarks (qualitative or quantitative) c. Availability (paid/ free)	*Constructing Excellence Movement for Innovation (M4I) Sustainability Project Performance Indicator Assessment Tool;* This is a self assessment tool using indicators and monitoring. The tool creates a project profile and compares project performance against a set of sustainability issues. The tool is freely available on line on the Constructing Excellence website. *Partnering scheme* This is a management guidance concept to assist partners to work together to share information and a more open form of working practice. The concept has a number of qualitative aims rather than benchmarks. It is freely available with guidance from Constructing Excellence, a UK Government supported organisation. *Key Performance Indicators (KPIs)* The UK Construction Industry's Key Performance Indicators a national set of data against which a project or company can benchmark its performance. This tool involves a score sheet consisting of 10 items including, for example, communication, maximising the skills of the team and creating a pleasant working environment. This score sheet allows continuous assessment to rectify problems. Data is freely available from Construction Excellence. *The Dispute Resolution Ladder* This is a flow chart designed to prevent disagreements between partners holding project progress up. The format of the Dispute Resolution Ladder is agreed upon by all partners which then becomes a mechanism to enable decisions to be taken quickly and effectively. The ladder ensures that minor problems do not escalate into damaging disputes. Benchmarks are qualitative; time deadlines are set in order for problems to be solved rapidly. It is freely available with guidance being available from Constructing Excellence. *Environmental Impact Assessment (EIA);* The generic tool, EIA, is designed to identify the potential environmental impacts of a project prior to development, thereby reducing the cost and time of project implementation and design therefore achieving environmental, social and economic benefits. EIA, is a statutory process in Europe that is a result of Directive 85/337/EEC introduced in 1985 and since reinforced by amendments in 1997 and 2003. *Environmental management system: ISO 14001;* This generic tool is used to document how the environment has been considered through a company. It includes items such as competence of actors in ensuring environmental policies and how the organisation ensures that actors have the relevant environmental knowledge and skills, the environmental impacts of its activities and how they are monitored and evaluated. EMS standard has to be purchased and can be implemented in house or by a consultant. Certification of the system is then a further cost.

	Hochtief/Griffiths QUENSH plan This is a process tool, covering Quality, Environment, Safety and Health issues. Benchmarks are likely to be qualitative and quantitative – as there are a range of requirements to fulfil. This is an internal tool which is not publicly available.
Decision-making process a. Stage of the tool implementation (preliminary, midterm, etc.) b. Level (political, technical, etc.) c. Public participation	*Constructing Excellence Movement for Innovation (M4I) Sustainability Project Performance Indicator Assessment Tool,* a. Implemented during construction as pilot project for tool testing. Should be implemented from design stage. b. Technical level to illustrate to political. c. The tool asks whether the local community has been consulted, a higher score is awarded for projects that actively try to involve the public at each stage of the project. *Partnering scheme,* a. This is implemented from design stage. b. Technical level implementation. c. No public participation involved. *Key Performance Indicators (KPIs)* a. Implemented from construction phase. b. Technical level implementation. c. No public participation involved. *Dispute Resolution Ladder,* a. Implemented from construction phase. b. Implemented at all levels where necessary – the longer a dispute is left unresolved, the higher the level of decision makers who become involved which is costly and time consuming. c. No public participation. *Environmental Impact Assessment (EIA)* a. Implemented at design stage only. b. Implemented at a technical level. c. Impact on the public is considered. *Environmental management system: ISO 14001,* a. Implemented at design stage only. b. Implemented at a technical level. c. Consideration of public impact but no participation required. *Hochtief/Griffiths QUENSH plan* a. Use of the tool begins as soon as the project starts. The plan is a live document that is implemented and updated on a three monthly basis. b. Implemented at the technical level with input from others. c. The tool ensures that for large development schemes, a public information and liaison service is undertaken.

DETAILED INFORMATION

A. Detailed description of project and tool	
1. Description of context (existing strategies, laws, policy, action plans, etc.): EU, national, regional, municipal	• Section 121 of the Government of Wales Act made it a legally binding duty for the National Assembly for Wales to pursue sustainable development in all it does. • Neath Port Talbot County Borough Unitary Development Plan – Deposit Draft (January 2003) identifies that the Baglan Bay Development (of which Baglan Energy Park Phase II is a component) is part of the Objective 1 strategic site known as Swansea Bay Arc of Opportunity. Neath Port Talbot have an initiative to regenerate the area and communities as a growth point which it hopes will act as a stimulus to the whole of South West Wales. The aim is to create "a thriving high quality sub-region with an emphasis on raising the quality of life through the area and key regeneration sites".

	(http://www.npt.gov.uk/udp/index.cfm). • Neath Port Talbot County Borough Unitary Development Plan – Deposit Draft (January 2003) states one of the Community Plan Objectives and Targets for employment in the area is: "..large scale employment opportunities will be concentrated on the coastal belt e.g. Baglan Energy Park (providing 3,600 jobs by 2012) …." • Neath Port Talbot County Borough Unitary Development Plan (UDP)– Deposit Draft (January 2003) allocates the Baglan Bay Development as sites for " ..business, industry, storage, distribution and offices (financial and professional services). Development that would lead to the loss of the land is either allocated for business development in this plan or has the benefit of planning permission for other uses will only be permitted in exceptional circumstances". The UDP allows the following uses only on the Baglan Bay Development: Financial and Professional Services, Business, General Industry, and Storage and Distribution.
2. Description of project **a.** Background (What caused the initiation of the project?; What was the problem? Who initiated the project?); **b.** Objectives/aims (sustainability statement – what issues of sustainability were attacked); **c.** Time interval and stages of project realization; **d.** Financing – amount, sources, institutions involved, partnerships, levels. **e.** Other sectors involved in the particular project/problem (conflicts and/or links)	a. The site was formerly occupied by BP Chemicals and DuPont Steelworks, the site therefore required clean up of contamination and demolition of existing infrastructure before further development could occur. The site is located on the coast close to Port Talbot and Swansea and is easily accessible by sea and road making it a good location for future development. Baglan Energy Park is being developed in two phases. Phase 1 is suitable for light manufacturing and service industries. Phase 2 is suitable for both light and heavy manufacturing industries. This case study involves Phase 2 development of Baglan Energy Park which includes land reclamation and installation of essential infrastructure on an 70 hectare site in preparation for occupation. £9 million has been invested in the remediation work including the installation/repair of basic infrastructure such as transportation facilities, urban drainage system that is considered by the UK Environment Agency as a technique to manage surface and groundwater regimes in a sustainable way to providing a high quality environment. Phase 2 is currently being marketed as "Offering a rolling programme of advanced factory developments and a choice of plots suitable for bespoke construction projects, Baglan Energy Park provides a wide range of manufacturing and office developments" (Baglan Energy Park).  *Figure 1 – Aerial photo of the Baglan Energy Park site* Baglan Energy Park Phase 2 development took place between

January 2000 and August 2002. The steering group for the site comprised Neath Port Talbot County Borough Council (NPTCBC), BP and the Welsh Development Agency (WDA). Phase 2 also involved the contractor Hochtief/Griffiths, an independent consultant, EC Harris (a global consultancy in real estate, infrastructure, industrial and construction sectors), and ARUPS, a building, engineer and infrastructure consultancy.

Figure 2 – Remediation works underway

b. The aim of the project is to produce an area of land that is ready for development including decontamination, structural landscaping and the provision of basic infrastructure for future development. Considerations made include:

1.Transportation of products/waste on and off site during site works to minimise disposal and use of raw materials, including:

- rubble from three cooling towers demolished on site was used to create a protective sea wall,
- waste materials on site such as rubble was used for remediation and structural landscaping and was not therefore sent to landfill.
- the site, because of its size, was divided into sections. Waste material including slag, clinker and ash, was collected from different sections of the site, mixed together and then replaced to disperse contamination problems to acceptable levels,
- a 10m high by 30m wide landscaping bund was created along the southern edge of the site to accommodate materials unsuitable for site filling.
- the minimal amount of special waste was taken off site in oil drums,
- waste material from the reconstruction of the nearby motorway was used as a sub-base for footpaths on site.

2. Drainage mechanisms appropriate to the site were incorporated, in an effort to be more environmentally friendly. 'Swales', which are grassed depressions directing surface water overland from a drained surface to a discharge system, have been used. These collect surface water run-off which would usually go into the water treatment system but now soaks into the ground reducing the volume of water to be treated. A brook that runs across the site was cleared out and landscaped to add to the visual attractiveness.

3. Transportation – Road provision has been installed onto site in preparation for future construction. This includes a 1km access

	route from local main roads. Utilisation of previous transportation infrastructure has been attempted where possible. An existing railway link has been retained to provide a transportation option for future developments.  *Figure 3 – Energy Park Access Road* An existing road bridge did not have sufficient carrying capacity for road traffic and pedestrians/cycles. The existing bridge will be used for vehicles with a smaller second bridge being constructed for pedestrians and bicycles and to carry new service pipes and cables to prevent the expense of removing the old bridge and building a large new one. A nearby dock has been opened with a viewing platform and cycle track to encourage modal shift from car to bicycle. A 7 hectare area has been allocated for lapwing mitigation, nesting is being stopped in other areas to prevent future disruption. A survey of breeding birds has been carried out annually since 2000, and this will continue to 2007. A Nature Conservation Document has been used to illustrate to developers what should be done with regards to the environment and biodiversity. During redevelopment indigenous plants were moved to a translocation area and the approach to landscaping for phase 2 has involved the use of indigenous species only. c. The project began in January 2000, and the land reclamation and installation of essential infrastructure was completed in August 2002. During the project a survey of breeding birds has been carried out annually since 2000, and this will continue to 2007. d. The total cost of the scheme was £9 million with £3 million from European Regional Development Fund (ERDF), £3 million from the Welsh Development Agency (WDA), £2 million from BP and £1 million from NPTCBC.
3. Description of tool a. Character (according to WP3final0704.doc) b. Availability of the tool (web-based / paper, paid / free, etc.) c. Based on existing tool or newly elaborated, d. Adaptation of the tool to the local context (are there local experts involved in tool's development?) e. Other tools implemented to support the project development	*Constructing Excellence Movement for Innovation (M4I) Sustainability Project Performance Indicator Assessment Tool;* a. This is a self assessment tool using indicators and monitoring to evaluate change. The tool is in two parts: i) project profile – completed once for a project. Collates details about the project such as type of project and site and location ii) projects performance - measures against a set of sustainability issues, while steering the project towards sustainability. Should be completed on a quarterly basis and considers issues such as water saving measures incorporated, material chosen on best value. b. The tool is available for free download from the Constructing Excellence website http://www.constructingexcellence.org.uk/resourcecentre/publicatio

	ns/toolkit.jsp?toolkitID=29 upon free registration of the site. c. This tool was created by Constructing Excellence in response to the Egan 'Rethinking Construction' targets published in 1998 which was commissioned by UK government. This project was part of the tools pilot testing, the tool is now under review. d. The tool ~~did~~ does not require adaptation to the local context. *Partnering scheme;* a. This is a management tool. The concept is fairly general but Constructing Excellence outlines it as: (i) commitment to the concept (ii) self-assessment of the project prior to the partnership (iii) selection of partners (iv) the mutual objective of all the partners (v) agreement on a project resolution mechanism (vi) agreement of key performance indicators for assessment of continuous improvement (vii) contractual agreements for the partnership and procurement procedures (viii) an agreement of risks and rewards related to the projects development e.g. targets may relate to KPIs, cost, time etc. b. This is not a web based tool, but an informal concept. Constructing Excellence have produced a recent paper outlining the concept (http://www.constructingexcellence.org.uk/pdf/fact_sheet/partnering.pdf) c. It is an existing process developed by Constructing Excellence, a government supported organisation working to achieve a step change in construction productivity through focus in Innovation, Best practice knowledge, productivity and enlargement. d. The concept applies to all development programme management. *KPIs* a. KPIs consist of indicators and monitoring. The Construction Industrys Key Performance Indicators are national sets of data against which a project or company can benchmark its performance. Key Performance Indicators were included in all monthly meetings attended by all organisations within the project partnership. This tool involved all partners separately completing a score sheet consisting of 10 items including, for example, communication, maximising the skills of the team and creating a pleasant working environment. This score sheet allowed the project to be continuously assessed throughout the project on a monthly basis allowing any problems to be rectified quickly. b. Data required for KPIs and comparisons is available for download from the website (www.dti.gov.uk/construction/kpi/). c. KPIs are constantly updated to allow the data sets to contain the latest recorded information. d. Different KPIs will be appropriate to different projects, it is for the projects to identify suitable KPIs for the context. *Dispute Resolution Ladder;* a. The Dispute Resolution Ladder exists in the form of a flow chart designed to prevent disagreements between partners holding project progress up. The format of the Dispute Resolution Ladder needs to be agreed upon by all partners. It then becomes a mechanism to enable decisions to be taken quickly and effectively. The ladder ensures that minor problems do not escalate into damaging disputes.

The concept involves quick identification of a conflict and parties involved to solve the problem in order to maintain project momentum. The steps agreed for the Baglan project were:

- level 1 - 4 hours to agree on the dispute,
- level 2 – Project Manager and contract agent - 24 hours,
- level 3 - General Manager and people outside situation to become involved,
- level 4 - Steering group,
- level 5 - Adjudication.

A standard version of the tool (a Problem Resolution Flow Chart) has been produced by Constructing Excellence, a UK Government funded organisation working to improve the construction industry.

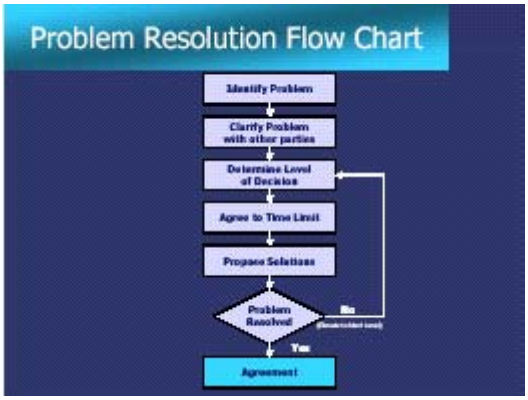

Figure 4 – Problem Resolution Flow Chart used to produce the Dispute Resolution Ladder

Environmental Impact Assessment (EIA);

a. This generic tool is a statutory process in Europe that is a result of Directive 85/337/EEC introduced in 1985 and since reinforced by amendments in 1997 and 2003 to assist with transparency, public participation and scope.

The key elements of an EIA are Scoping (identifying key issues and concerns of interested parties); screening (decide whether an EIA is required based on information collected); Identifying and evaluating alternatives (list alternative sites and techniques and the impacts of each); Mitigating measures dealing with uncertainty (review proposed action to prevent or minimise the potential adverse effects of the project) and Issuing environmental statements (report the findings of the EIA).

b. This is not a web based tool, but the general concept is available from reports, and the directive on EIA: Directive 85/337/EEC.

c. This is a generic tool. Two EIA's were carried out at the site. The first was undertaken by ExCal and covered the outline planning application for reclamation and remediation of Phase 2. The second was by Chapman Warren and covered the planning application for development of the site. The two EIA's were complementary to avoid duplication of effort.

d. There is not one set method for EIA, components of EIA can be adapted to the local context. However this adaptability is often criticised as it prevents comparisons between EIAs.

Environmental management system: ISO 14001;

a. A generic tool, an environmental management system (EMS) defines, explains and documents: the environmental policies, objectives, programmes, procedures and legal requirements to be

	adhered to; The roles, responsibilities and competence of actors in ensuring that environmental policies, objectives, programmes, procedures and legal requirements are adhered to; Internal and external environmental communication measures; How the organisation ensures that actors have the relevant environmental knowledge and skills; The environmental impacts of its activities and how they are monitored and evaluated; How the organisation ensures and checks that its environmental policies, objectives, programmes, procedures and legal obligations are adhered to and what is to be done if they are not; It is the organisational context within which environmental performance can be improved on a continuous basis. The most prominent framework for EMS is the ISO 14000 series. EMS's can be implemented according to the ISO 14001 standards, or the European Community's EcoManagement and Audit Scheme, EMAS, or alternatively companies can implement their own EMS developed for their specific operations and processes b. The EMS standard has to be purchased at a cost and then can either be implemented in house or a consultant employed to implement it. Certification of the system is then a further cost. c. This is a generic tool. d. The tool is adaptable to different types of projects. *Hochtief/Griffiths QUENSH plan*; a. This process tool was created to ensure that all the *QU*ality, *EN*vironment, *S*afety and *H*ealth regulations were adhered to and considered for each project. b. The tool is an internal Hochtief/Griffiths tool only and not publicly available. c. The tool is based on a) the BSI Accredited Quality Management system which forms the basis of the QUality part of the report and b) BSI Accredited ENvironmental Management System. The tool is constantly being updated and reviewed as it is used on new projects. The tool is also based on Construction, Design and Management (CDM) Regulations which is the Health and Safety Executives (HSEs) to assist with Health and Safety performance. d. The tool is designed to be flexible allowing adaptation to the local context. The tool is used from the outset of a project and consists of approximately 30 procedures. Procedures are rejected if not relevant for a particular site, for example procedures relating to the management of a water course are not followed if a water course is not present on site. For each site, the tool also includes new requirements that might be specified by the client. e. The tool is implemented at the managerial level by a number of people including the Project Manager, Construction Manager and Quality Manager, and the processes are then disseminated to the construction level through the use of Toolbox talks and training videos. The QUENSH plan is followed by the preparation of Method Statements that include the outcomes of QUENSH together with findings from the EIA. Method statements are written for each aspect of the work. They are produced by the Contractor and approved for use by the Client.
B. Tool implementation	
1. Argumentation for choosing	*Constructing Excellence Movement for Innovation (M4I)*

the tool a. What were the reasons for the implementation of the tool? (voluntary or requested by what local, national, etc regulation) b. Who took the initiative for choosing /elaboration the tool? c. What were the criteria for choosing the tool? d. Was there knowledge of other tools and were they considered?	*Sustainability Project Performance Indicator Assessment Tool;* At the initial stages of Phase 2, NPTCBC were approached by Constructing Excellence to test the Sustainability Indicator Assessment Tool in its pilot stage. This was completed by the lead consultant at the design assessment stage of the project and taken to group meetings for discussion. Sustainability considerations were made throughout the planning stage of the project, so when the Indicator tool was applied, a high score was achieved. The tool produces a radar diagram indicating scores for design, economic, construction and environment. A benchmark is provided for previous projects which can be compared to the projects final score. As the tool had not formally been used to guide planning of the project these results were not submitted for endorsement. Examples of questions asked include: 'has a target for water consumption been set for the construction phase?' positive points are obtained for yes. This is then followed by 'Is consumption better than the last quarter?' where on target or better than set targets achieve additional points. Points are accumulated and a final score is accumulated which is compared with benchmark projects. *Partnering scheme* The project believed that partnering promotes improved performance through collaborative business relationships based on best value rather than lowest cost. The decision to implement 'partnering' was taken by the Baglan Energy Park Steering Group following suggestion by NPTCBC. A detailed report was procured from the site Cost Consultant and a detailed strategy determined and agreed. *KPIs* KPIs are part of the partnering process. KPIs used in this project assessed issues such as dispute resolution monthly comparison, partnering charter scores covering issues such as 'communication openly and honestly', 'having a "no blame" culture', 'maximising the skills of the team' 'creating a pleasant working environment' 'through being creative and innovative' etc.. The use of KPIs allowed the performance to be monitored regularly and responded to immediately. KPI's were of two types: • Firstly the industry standard as given by the M4I. • Secondly, local KPI's determined by the partners at a partnering workshop at the start of the contract. The KPI's reflect those issues highlighted as important by the 'Partnering Charter' and that would give added value and/or early warning of 'soft' issues to the team. Responsibility for monitoring was given to the cost consultant who sent out monthly score sheets to the team members. The scores/trends were debated at every monthly progress meeting which was attended by the site team, partner organisations, client and project managers. *Dispute Resolution Ladder;* The use of the ladder ensures that minor problems do not escalate into damaging disputes, through the following of a previously agreed process.

	The dispute resolution ladder was developed at the partnering workshop and then written by the Neath Port Talbot Borough Council Environmental Consultant working on the project. The ladder was then signed up to by everyone who signed the charter. This was the outcome of a debate on dispute resolution so other initiatives were considered. *Environmental Impact Assessment (EIA);* The implementation of an EIA is a statutory requirement for projects of a certain type and size which this project is included. *Environmental Management System: ISO 14001;* The EMS and the Hochtief Griffiths system had been used on previous projects that members of the team had been involved in. The use of ISO 14001 was identified as a plus point in the contractor selection process. The use of the HGJV system was agreed at the tenderer selection stage subject to verification by the client. There was felt no need to have two quality systems on a 'partnering' site. The client felt the HGJV system was more than adequate to ensure a good finished product. The alternative would have been two systems, the second being the NPTCBC system. This was considered unnecessary. Responsibility for implementation of the EMS lay with the Contract Manager although the Construction Supervisor who was an employee of the Client operated the system on site. *Hochtief/Griffiths QUENSH plan* Implementation of the QUENSH plan is voluntary but ensures that various legal requirements were met including ISO 9001, ISO 14001 and Construction Design and Management Regulations. The plan has been used on collaborative Hochtief (UK) Construction Ltd and Alun Griffiths Contractors Ltd projects. Hochtief (UK) Construction Ltd have a number of procedures in operation which have helped to develop QUENSH plan. Other construction firms have similar systems in place covering the same legislation. However most systems/tools are internal and are not shared between companies.
2. Barriers for the tool implementation What were the main problems in the tool implementation? (Regulation, information available, public awareness, lack of clear SD definitions and benchmarks, communication etc.)	When the Baglan Phase 2 experience was presented at a conference in Wales many local authorities attending suggested that procedures currently in place within local authorities for legal and financial reasons would prevent partnering from being used. This has however changed and Partnership is now widely used within Welsh local government. No barriers have been highlighted by the municipality or contractor working on the development.
C. Influence of the tool on the decision-making process	
1. Description of the decision-making process/ procedures a. Stages b. Levels (political, technical, etc.)	Decision making was at three levels 1. Partnership Board, where the political dimension was paramount. Project implementation was agreed here following work by the: - 2. Site Project Management Group where overall spending and

c. Sources of information used during the dmp; d. Who are the decision-makers? e. Who made the final decision for the project implementation? Was it political or technical decision?	direction were determined. This involved debate between partners and Contractor. 3. Site Team where the decisions were specific to the works.
2. Tool in decision-making process a. At what stage was the tool implemented? By whom? (experts, politicians, etc.) b. How did the tool output influence the process (added or skipped levels/stages in the existing decision-making process, etc.)? c. Quantitative goals or benchmarks defined? (If YES, which – and what were they compared to?) d. Was the tool used to support argumentations?	*Constructing Excellence Movement for Innovation (M4I) Sustainability Project Performance Indicator Assessment Tool;* The tool whilst the project was ongoing. This tool is designed to be used at any stage of the project. The results of the tool showed that the project when measured against a number of set sustainability issues a high score was achieved (i.e. consider economic, environmental and social issues). It is believed that the tool made the group think about sustainability issues in more detail. As the tool was introduced later on in the project and was only a pilot full benefit of using the tool throughout the project was not experienced. When used as intended the tool would help measure project performance against a set of sustainability issues to help project managers: • with a guide towards making a project more sustainable; • ask the right questions of themselves and others in the running a project; • with a measure of what is being done in sustainability terms; • provide a route to continuous improvement. The Sustainability Indicator Assessment Tool provides benchmarks to allow a project to be compared with others. The benchmarks in the tool were based on the analysis of 30 projects during 1999/2000. *Partnering scheme* The partnering approach used throughout the project was essential for the projects success. The approach relied on an integrated project team who shared site accommodation and duties, thus reducing overheads and duplication of work. An open door policy was used to encourage input of ideas and alternative approaches to all issues, as well as the whole project team dealing with and discussing what to do with problems that arose, thus the team worked as one. NPTCBC, as part of the partnering agreement, controlled the developers Quality Control. The partnering scheme facilitated workshop techniques to give all team members a thorough understanding of the project objectives, partnering strategy and protocols for working together. This was a very full two day workshop covering many areas but included risk management, communications, dispute resolution, identifying and signing up to individual's/organisational aims and objectives. *Key Performance Indicators (KPIs)* Use of the KPIs was a continuous process, and completion of score sheets took place in every monthly meeting by all partners separately. Through the use of the KPI score sheet, the project was continuously assessed on a monthly basis allowing any problems

	to be rectified quickly, for example, if the results of a montly indicator score sheet revealed that morale was low and changes could be made to return morale to previous levels. The benchmarks used in the KPIs originate from other projects. KPI results are fed back to Constructing Excellence who use the information to benchmark with other projects throughout the UK. In doing so the Baglan Energy project could be compared with other projects throughout the country. KPIs therefore provide direct evidence through lower longitudinal scores that changes are required to improve site workings. *Dispute Resolution Ladder;* The steps of the dispute resolution ladder were agreed at the outset of the project, and the ladder was used a number of times through the projects life. By using the tool disputes within the project were preventing from lasting longer than 24 hours – which was Level 2 of the steps. Level 2 was reached 3 times throughout the duration of the project. The higher the level reached the less agreeable the partnering process. The five steps act as a form of benchmark: level 1 - 4 hours to agree on the dispute; level 2 - PM and contract agent - 24 hours; level 3 - General Manager and people outside situation to become involved; level 4 - Steering group; level 5 - Adjudication. The tool was used to support argumentations and solve disputes to ensure maintenance of progress. *Environmental Impact Assessment (EIA);* a. The EIA was as required by law, carried out prior to starting the project. The EIA did have an influence over the Phase 2 of the Baglan Project. *Environmental management system: ISO 14001;* An EMS is used continuously through a project. EMS and Hochtief Griffiths Management System influenced the process through quality of administration and final outputs. The goals or benchmarks for the project were to produce a high quality environment with 'no harm to people, animals or the environment' on a project produced to time and budget. *Hochtief/Griffiths QUENSH plan* The tool was used continuously throughout the project from the initial stages. The tool is implemented at the managerial level by a number of people including the Project Manager, Construction Manager and Quality Manager, and the processes are then disseminated to the construction level. The Quensh plan provide information for the method statement which in turn supplies information for toolbox talks and training videos to provide information to on site workers. The tool acts as a form of decision making – identifying issues that must be considered and incorporated into a development project,

	therefore prevention of overlooking of important issues. The legal requirements and specifications from a client would act as goals and benchmarks for each project.
3. Transparency of decision-making process e. How was the information of the dmp disseminated? - directly (decision makers – public) or indirectly (decision makers - NGO, PR company, etc. - public); sources of dissemination used (mass media, internet, brochure, etc.) f. How was the public involved? g. Was there a public discussion over the project and at what stage of the project development?	Public consultation took place through the planning process. Information about the project was disseminated by both the project team to the public and via a PR company particularly through presentations to local student groups.
D. Expert assessment/analysis/comment of the tool effectiveness	
1. Assessment by tool users a. Were there measurable improvements as a result of the tool implementation? If YES, what? If no: why not? b. Were there any spun-off's or unintended consequences? c. General view on the tool? Lessons learned? d. Potentials for further use of the tool? e. Will the actors recommend it or use it in other cases - why / why not?	The project manager was positive about the *Constructing Excellence Sustainability Indicator tool,* believing that it is a useful tool to ensure that all aspects of sustainability are considered. A criticism of the pilot tool is that some of the questions were subjective, and as a result were difficult to measure. Other comments include that by fulfilling the indicator criteria the organisation undertaking it has the desire to strive towards sustainability, rather than to achieve a 'badge' for sustainability. This tool is therefore only likely to be used by those who are genuinely concerned to be sustainable. Although the Constructing Excellence Sustainability Indicator is a transferable tool, it has not been implemented again within NPTCBC as it is only a small municipality with few projects large enough in which to implement tools such as the Constructing Excellence Sustainability Indicator Tool. Since its use in Baglan Energy Park, the Partnership Scheme is now widely used within Welsh local government. NPTCBC recommend 'partnership' as a useful tool and are supportive of a change in council practices to allow the partnership approach to continue. The *Hochtief/Griffiths QUENSH plan* has provided a process to for the project to follow. However the tool at present doesn't provide a formal plan for waste and recycling, although since the tool is constantly being redeveloped and improved it is likely to formally include such issues shortly. Although created for this one-off joint partnership project, the Hochtief/Griffiths QUENSH tool has been used on 3 to 4 other projects due its success and clarity. Although the tool is not available to the public, the tool concept could be developed and implemented.
2. Reviewer's assessment of the tool (usefulness, sustainability relevance, who are the actors	*Sustainability Project Performance Indicator Assessment Tool* is a straightforward tool with clear layout. Further explanations are available through the questionnaire, and the end results are well presented in graphs and on a radar type chart.

excluded? etc.) Suggestions and needs for further development of the tool	*KPI's* have a number of positive features: • The construction industry regularly uses KPIs which therefore makes comparison straightforward and reliable. • ensures that attention is regularly focused on the relevant points e.g. on clients specifications or on environmental targets. • KPIs can show past performance and allow assessments to be made about what needs to be done to improve the situation. • The continuous use of KPIs, including the sharing of information, keeps people informed. • KPIs allow performance to be continually observed, e.g. if accidents happen continuously month after month, KPIs call help reveal a pattern. However there are also a number of negative features: • It can be easy to make KPIs too complicated and therefore not followed, • KPI information can become out of date if not regularly updated, • If there are problems on site it is often hard to remember to do a KPI assessment. • Need a committed person on site to ensure that KPIs are ongoing. With regards to an *Environmental Management System* the structure of the tool already exists and the stages to develop an EMS are well defined. The *Hochtief/Griffiths QUENSH plan* is a valuable tool to have in place for those working in industries with a lot of legislation. The adaptability of the plan ensures that the tool is applicable to a range of projects and that all aspects can be considered.
E. Additional information on the case study available	
Websites	http://www.constructingexcellence.org.uk/bpknowledge/details.jsp?pID=226 Constructing Excellence Baglan Energy Park Phase 2 http://www.constructingexcellence.org.uk/pdf/fact_sheet/partnering.pdf http://www.constructingexcellence.org.uk/resourcecentre/kpizone/ http://www.dti.gov.uk/construction/kpi/ http://europa.eu.int/comm/environment/eia/eia-legalcontext.htm http://www.hochtief.co.uk/profile-baglan.html
References *concerning the case but also the key words or problem* (papers, articles, reports, etc.)	Baglan Energy Park *Baglan Energy Park* Marketing Brochure, Neath Port Talbot County Borough Council, BP Chemicals Ltd and the Welsh Development Agency.
Other sources (Interviews, conferences, discussions, etc.)	Meeting between Welsh School of Architecture staff, Joanne Patterson and Anna Lermon and Geoff Marquis, of Neath Port Talbot Borough Council on the Tuesday 6th April 2004. Meeting between Welsh School of Architecture staff, Joanne Patterson and Anna Lermon and Alun Smith, Construction Manager, and Baddie Al-Timimi of Hochtief Griffiths and Pat Bloomfield of Neath Port Talbot Borough Council on Thursday 4th

	February 2005.