

ESTA



Environmental Sustainability
Technical Assistance

Strategic Growth Sites:
Assessing Climate Risk and Opportunities

Summary Report



The purpose of this summary document is to outline the rationale and methodology undertaken in the ESTA funded 'Climate Risks and Opportunities' project. The project was delivered on behalf of both Cumbria and Liverpool City Region Local Enterprise Partnerships (LEPs). The detailed findings, conclusions and recommendations have been provided to the participating LEPs.

Rationale

There is a growing awareness amongst businesses of emerging climate risks. Identified early in the design process, risks can be overcome and opportunities maximised. Defra's Climate Change Risk Assessment (CCRA) for 2012 identifies the main climate challenges to businesses as: flooding and coastal erosion; increased competition for water, energy and materials; and the disruption of transport networks and communication links. These risks particularly affect businesses that rely on large fixed assets (especially near main rivers or the coast); have 'at risk' access routes (both road and rail); have complex supply chains; or rely substantially on natural assets.

At the same time, LEPs recognise that climate-related activities can also bring about opportunities for enhancing the investment attractiveness of strategic sites and in improving the profitability of the companies that occupy these sites, for example through exploring the suitability for integrated energy networks, deployment of small-scale renewables or green infrastructure provision.

Aim

In 2014, the ESTA project commissioned Quantum Strategy & Technology and CAG Consultants to strategically assess current and future climate risks and opportunities for key strategic employment sites and sectors across both Liverpool City Region (LCR) and Cumbria.

The value from this piece of work is in pulling together information from a range of sources to give an overview of the opportunities and risks across a number of sites and sectors in a given LEP area. Reviewing the sites in advance of more formal processes of planning and consenting enables issues to be addressed at the design phase, reducing costs and enabling a smoother permissions process.

The project methodology followed a 2013 Defra-funded climate risk assessment pilot, which was carried out in Cheshire and Warrington and was developed to be replicable across other areas. Details of the Cheshire and Warrington pilot and how this was developed into a further programme of work can be found in [Appendix 1](#).

The project was split into three stages, comprising:

Stage 1: Identification of key sites/sectors

Stage 2: Identification and collation of existing baseline data

Stage 3: Development and application of a risk and opportunity assessment methodology

STAGE 1: IDENTIFICATION OF KEY SITES/SECTORS

Liverpool City Region

Twenty-one key employment sites for Liverpool City Region (LCR) were selected from the Spatial Investment Plan, which was jointly commissioned by the City Region Planning & Spatial Group and the LEP. This comprised sites designed to be implemented over many phases and over a long time period (at least 10 years), and medium to large sites that are capable of hosting economic activity of a distinctive nature. GIS mapping information was obtained for each site and initial master maps were created.

Local Authority	Multi-Phase Investment Sites	Investment Opportunity Sites
Liverpool	City Centre SIF Knowledge Quarter Edge Lane Liverpool Waters	Port of Liverpool Stonebridge Park Estuary Commerce Park
Wirral	Wirral Waters	Wirral International Business Park
Sefton	Dunningsbridge Rd East	Atlantic Park, Senate Business Park, Pleasureland
Knowsley	Knowsley Industrial Estate	Huyton Business Park
St Helens	Parkside	Haydock Industrial Estate
Halton	Daresbury Sci-Tech	3MG, Widnes Waterfront, Ineos The Heath

The key sectors identified for LCR were those identified in the LEP Business Plan:

Superport; Advanced Manufacturing; Knowledge Economy & Innovation; Visitor Economy; and Low Carbon Economy (including Offshore Wind).

Cumbria

Meetings were held with key staff from the LEP, the Managing Authority and the Environment Agency (EA) to define the scope of the strategic sites in Cumbria. Twenty-one shortlisted sites were identified. GIS mapping information was obtained for each site and initial master maps were created.

Cumbrian strategic sites:

Lillyhall Industrial Estate	Mainline, Milnthorpe
Port of Workington	Barrow Waterfront
Corus Sites	Kingmoor Park
Whitehaven Commercial Park	Morton, Carlisle
Leconfield Industrial Estate	Carlisle Airport
West Lakes Science & Technology Park	Durranshill Industrial Estate, Carlisle
Mirehouse Valley	Caldew Riverside, Carlisle
Whitehaven Town Centre	MoD Longtown
Land at Scroggs Wood, Kendal	J42, Carlisle
South Ulverston	Penrith Employment Sites
Kendal Fell	

As well as assessing the climate risks and opportunities to strategic sites, this study also highlights the key risks and opportunities relating to Cumbria LEP's strategic objectives: Advanced Manufacturing Growth; Nuclear and Energy Excellence; Vibrant Rural and Visitor Economy; and Strategic Connectivity of the M6 Corridor.

STAGE 2: IDENTIFICATION AND COLLATION OF EXISTING BASELINE DATA

For each LEP area, a desk-based study was undertaken to collate existing climate change adaptation research and evidence to establish a knowledge bank of relevant climate change risks and opportunities, as well as potential adaptation measures for strategic sites and sectors within the selected locations.

The primary sources of national level information were the UK Climate Impacts Programme (UKCIP), whose latest predictions of climate impacts were made in 2009 – commonly referred to as UKCIP09 – and Defra’s Climate Change Risk Assessment (CCRA) for 2012.

This stage of the project involved liaising closely with the Environment Agency, in order to produce a number of different maps covering fluvial

and tidal flood risk; location of flood defences; areas susceptible to surface and ground water flooding; flood warning areas; and flood maps for surface water rainfall.

Other information was obtained from relevant Local Authorities, which have a number of sources of information covering their areas including:

Strategic Flood Risk Assessments (SFRAs)

Local Climate Impact Profiles (LCLIPs) – prepared according to the UKCIP methodology

Strategic Management Plans (SMPs) for coastal flooding

River Catchment Flood Management Plans (CFMPs)

General Risk Registers

Information was also gathered on key infrastructures that support the identified sites and sectors, for example utilities (electricity, gas, water) as well as road and rail links, and further information was gathered through engagement with local stakeholders.



Climate change does not necessarily create ‘new’ risks for the business sector; rather it represents a change to existing risks, and in some cases opportunities.

‘UK Climate Change Risk Assessment’
(CCRA) 2012

STAGE 3: DEVELOPMENT AND APPLICATION OF RISK AND OPPORTUNITY ASSESSMENT METHODOLOGY

Building on the Defra pilot methodology developed for Cheshire and Warrington, an assessment framework was created to assess the climate change risks and opportunities for the key sites and business sectors. This also provided recommendations for action to address the risks and opportunities identified.

The assessment methodology used was based on UKCIP09 projections, methodologies and tools. The risks considered and the sources of information used were as follows:

Fluvial and tidal flooding¹ – EA flood risk maps, EA historic flood event maps plus any additional information from SFRAs, LCLIPs, SMPs etc.

Surface water flooding² – EA surface water flood risk maps plus any additional information from SFRAs, LCLIPs, SMPs etc.

Low adaptive capacity – information on presence of SMEs from intelligence gathering.

Supply chain and/or distribution vulnerability – information on types of businesses on the strategic sites to identify those with complex or international supply chains and/or distribution systems³.

Reliance on ‘at risk’ infrastructure – information obtained from the utility companies and infrastructure operators (including Defra Adaptation Reports) plus information from Local Authority teams and from LCLIPs about past disruption.

A ‘heat map’ matrix was developed for each site to include a risk score for each of the above, with scores of 1 to 4 for ‘impact’ and ‘likelihood’. This was colour coded to enable a quick visual impression of the highest risk areas.

The ‘impact’ score was based on the area of the site affected, the numbers employed on the site and the numbers of businesses likely to be disrupted.

The ‘likelihood’ score depended on information from the above sources (e.g. for any site with areas in flood zone 3⁴, the highest risk level, the ‘likelihood’ was scored as 4).

Likelihood	Very likely				
	Likely				
	Unlikely				
	Very unlikely				
		Minor	Significant	Serious	Major
		Impact			

A range of opportunities were also assessed for each site, including:

On-site energy generation – e.g. planned district heating/cooling systems for development sites; heat/electrical integration for existing sites with big process energy users; and renewable energy schemes on individual buildings.

Green and blue infrastructure – mainly planned into development sites but may be opportunities on some existing sites.

The opportunity scores were calculated from a combination of the ‘impact’ and the ‘resources’ needed to achieve the impact, again on a 4 x 4 matrix.

¹ Fluvial flooding occurs when rivers overflow or burst their banks, usually because of high or intense rainfall that flows into them.

² Surface water flooding (sometimes called pluvial flooding) is surface water accumulating from intense rainfall.

³ This was a general assessment, as it is difficult to assess the nature, complexity and vulnerability of a company’s supply chain without discussions directly with the company.

⁴ Flood Zone 3 is land assessed, ignoring the presence of flood defences, as having a 1% or greater annual probability of fluvial flooding or a 0.5% or greater annual probability of tidal flooding.

CONCLUSIONS AND RECOMMENDATIONS

This piece of work has shown that, although there is a good understanding of climate risks – especially flooding – at local site level across both Cumbria and Liverpool City Region LEP areas, there is an opportunity for a more strategic approach at LEP level to effectively manage both the risks and opportunities arising. This includes, for example, exploring the potential for decentralised energy generation and on-site renewables schemes on a portfolio basis rather than on site-by-site basis to align resources and funding opportunities in a strategic way.

On a generic level, the project identified the need for LEPs and their stakeholders to ensure strategic dialogue is continued with site developers, land owners, statutory organisations and utilities providers so that appropriate climate mitigation and adaptation measures are considered early in the design and development stage to reduce exposure to risk.

There is also a need for strategic engagement with businesses on specific risks and opportunities of relevance to them – particularly those located in or accessed through areas deemed to have higher levels of flood, or those likely to face supply chain risks – to ensure they are considering risk management and resilience planning in their decision-making processes. Useful local and national tools are available to assist with this and consideration should be given to involving local business intermediaries. This was an approach taken in Phase 2 of the pilot delivered by Cheshire and Warrington (see Appendix 1).

The project has identified that there is recognition by utilities, transmission and distribution companies and statutory organisations of potential climate change effects as well as a level of preparedness to tackle the issues that may arise. The actions being taken range from improved asset planning and use of modelling tools, to physical work such as improved flood defences at vulnerable sites. Several of the utilities point out that they need agreement from their regulators for expenditure on some of the work that is outside of normal operational maintenance.

The individual site and sector profiles, together with the detailed findings, conclusions and recommendations have been provided by the ESTA team to the relevant LEPs involved in this project.



There is an opportunity for a more strategic approach at LEP level to effectively manage both risks and opportunities arising.

APPENDIX 1: ASSESSING CLIMATE RISKS & OPPORTUNITIES FOR CHESHIRE AND WARRINGTON GROWTH SITES

The ESTA-funded climate projects in Cumbria and Liverpool City Region LEP areas were modelled on a pilot delivered by the Cheshire and Warrington Local Enterprise Partnership (LEP).

The aim of the Cheshire and Warrington pilot was to ensure that key strategic employment sites and business sectors in Cheshire and Warrington are resilient to the potential impacts of climate change and to identify opportunities for on-site generation, green infrastructure and renewable energy.

The study was divided into three phases:

Phase 1 was delivered as one of three pilot projects from across the country (Cheshire and Warrington, Association of Greater Manchester Authorities (AGMA) and Gloucestershire). This involved defining key sites and sectors and assessing the climate risks and opportunities associated with these sites and sectors by developing an assessment methodology.

Funded by Department for Environment, Food and Rural Affairs.
Timescales: December 2012 to March 2013.

Phase 2 of the project concentrated on engaging with developers of the strategic sites and large businesses on potentially vulnerable sites to encourage them to undertake adaptation actions. This involved raising their understanding of climate change risks and opportunities and identifying areas of action to manage these risks, including discussions to understand what measures they have taken or are planning to alleviate flood risks, and to discuss potential opportunities for energy networks, renewables and green infrastructure. This phase also included the development of more detailed information on the sites identified during Phase 1 through meetings with the Environment Agency and the Economic Development teams from the three Local Authorities.

Funded by Cheshire West and Chester, Cheshire East and Warrington Borough Councils. Timescales: April 2013 to March 2014.

Phase 3 of the project focused on improving climate resilience amongst small and medium enterprises (SMEs), key environmental sectors and large company supply chains. This included the delivery of a launch event for business intermediaries such as trade bodies, Chambers of Commerce and Local Authority Economic Development teams together with a Cluster Meeting for SMEs on some of the vulnerable sites. The outputs from these events, together with a business engagement survey, were used to design a package of support including promotion of climate resilience tools and checklists, case studies, further workshops and one-to-one support for selected businesses. To support this work, the Cheshire and Warrington LEP commissioned the preparation of guidance for SMEs on climate resilience entitled 'Weathering the Storm' under a separate contract. This booklet can be found at: <http://claspinfo.org/smeadapt>

Funded by the Environment Agency via the Environmental Sustainability Technical Assistance (ESTA) Project and the European Regional Development Fund (ERDF). Timescales: December 2013 to December 2014.

Outputs

The following outputs are available via:

www.claspinfo.org/resources/assessing-climate-risks-opportunities-strategic-growth-sites

Phase 1: report detailing the findings from Phase 1 of the project and making recommendations for the implementation of Phase 2.

Case study of Phase 1

Phase 2: report detailing engaging with developers of the Strategic Sites and large businesses on potentially vulnerable sites, along with the development of Site Profiles for each of the sites. Reporting on the results of the above and making recommendations to the LEP for further actions.

Phase 3: to support this work, the Cheshire and Warrington LEP worked with CLASP to produce guidelines for SMEs on climate resilience, see 'Weathering the Storm'.

About Quantum

Quantum Strategy & Technology Limited has internal quality procedures which are registered with Certified Quality Systems Limited as compliant with BS EN ISO 9001 (Registration No: GB2002499). All work conducted by Quantum and its subcontractors is carried out in accordance with these in-house procedures and documentation systems.

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About ESTA

The Environmental Sustainability Technical Assistance (ESTA) project is funded by the Environment Agency (EA) and ERDF to support the five North West LEP areas to embed environmental sustainability into their economic development priorities and work streams; it runs from April 2012 to December 2014.

For more information visit

www.enworks.com/ESTA-intro

About CAG Consultants

CAG Consultants is one of the UK's leading sustainability and climate change consultancies. We provide research, evaluation, policy advice, training and stakeholder engagement across the public and private sector. We work in local communities, towns and cities as well as at regional and national levels. We offer particular expertise in climate change adaptation, and work with businesses, communities and public bodies to help them understand climate risks and build resilience.

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