



MEETING OF LIVERPOOL CITY REGION

LOCAL ENTERPRISE PARTNERSHIP STRATEGIC BOARD

AGENDA

DATE: Thursday, 16th July, 2015

TIME: 8.30 am

VENUE: Room G40, Merseytravel Offices, No.1 Mann Island, Liverpool L3 1BP.

LIVERPOOL CITY REGION

LOCAL ENTERPRISE PARTNERSHIP STRATEGIC BOARD

AGENDA

1. DECLARATIONS OF INTEREST

Board members to declare any interests in items under consideration.

2. MINUTES OF THE LAST MEETING

To consider the minutes of the last meeting held on 4th June 2015.

(Pages 1 - 8)

3. CHAIRMAN'S REPORT

To receive a report from the Chairman, including a verbal reaction to the July Budget Statement and an update from the Board member who represents the LEP on Atlantic Gateway.

(Pages 9 - 22)

4. CHRYSALIS

To receive a presentation by John Tatham on the progress of the Chrysalis Fund.

5. SHALE GAS AND LIVERPOOL CITY REGION REPORT

To receive a report on Shale Gas and the Liverpool City Region.

(Pages 23 - 122)

**6. ROUTES EUROPE 2018 LIVERPOOL CITY REGION HOSTING
OPPORTUNITY**

To consider a proposal for the Liverpool City Region to host Routes Europe 2018.

(Pages 123 - 126)

7. LIVERPOOL CITY REGION BLUE GREEN ECONOMY ERDF INVESTMENT POLICY

To consider a draft Strategic Investment Framework for the Blue Green portfolio of the ESIF 2014-2020 programme.

(Pages 127 - 164)

8. EUROPEAN STRUCTURAL AND INVESTMENT FUNDS 2014 - 2020 PROGRAMME - ESIF GOVERNANCE - ALIGNMENT AND LINKS TO LCR GOVERNANCE STRUCTURES

To receive an update on LCR ESIF 2014-2020 governance.

(Pages 165 - 180)

9. SKILLS CAPITAL INVESTMENT FUND - LOW CARBON STRAND

To consider a proposal for application of Skills Capital to Low Carbon projects.

(Pages 181 - 190)

10. SKILLS FOR GROWTH FUNDING

To consider a proposal for the deployment of Skills for Growth funding included within the Growth Plan.

(Pages 191 - 198)

11. SKILLS CAPITAL INVESTMENT FUND UPDATE

To consider a recommendation to allocate funding to successful applicants under Strand 2 of the Skills Capital Fund.

(Pages 199 - 208)

12. ANY OTHER BUSINESS

The next meeting of the LEP Strategic Board is to be held on 10 September 2015 at 8.30am.

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LIVERPOOL CITY REGION LOCAL ENTERPRISE PARTNERSHIP STRATEGIC BOARD

At a meeting of the Liverpool City Region Local Enterprise Partnership Strategic Board held in the LEP Boardroom 12 Princes Parade, Liverpool L3 1BG on Thursday, 4th June, 2015 at 8.30am the following Members were

PRESENT:

Robert Hough CBE (Chairman)
Mayor Joe Anderson
Chris Bliss
Kath Boullen MBE
Councillor Phil Davies
Richard Else
Councillor Barrie Grunewald
Asif Hamid
Amanda Lyne
Councillor Andy Moorhead
Councillor Rob Polhill
Alistair Poole
Neil Sturmeay
Kate Willard

APOLOGIES:

Professor N Weatherill
Councillor Ian Maher

IN ATTENDANCE:

Mark Basnett	Liverpool City Region LEP
Shelley Lockett	Liverpool City Region LEP
Tony Wade	Liverpool City Region LEP
Alan Welby	Liverpool City Region LEP
Sue Jarvis	Knowsley MBC
Andrew Bilsborrow	Knowsley MBC

128. DECLARATIONS OF INTEREST

Members of the Board declared the following situational conflicts in the agenda items shown:-

Director	Minute No.(s)	Nature and Extent of Interest
Robert Hough	136	Chairman and Director of Liverpool Airport Ltd – relating to Routes Europe – potential host bid
Kate Willard	136	Stobart Group – land-holding at 3MG Widnes

129. CHAIRMAN'S WELCOME

The Chairman:-

- (a) welcomed to the meeting Councillor Andy Moorhead, the new leader of Knowsley MBC and also indicated that Councillor Ian Maher, the new leader of Sefton MBC, had submitted his apologies for the meeting; and
- (b) reported that he had written a letter of thanks to both Councillors Ron Round and Peter Dowd for their substantial input into the work of the Board and the wider City Region.

130. MINUTES OF THE PREVIOUS MEETING

The minutes of the meeting of the Strategic Board held on 23rd April 2015 were received as a correct record and signed by the Chairman.

131. CHAIRMAN'S VERBAL REPORT AND UPDATES FROM LEP BOARD REPRESENTATIVES ON EXTERNAL BODIES

The Board considered the following verbal updates that were given by the Chairman at the meeting:-

- (a) the Chairman pointed out that following the General Election, the clarity and certainty provided by the new Government's 5 year term would provide opportunities for the City Region in terms of Devolution, the Northern Powerhouse and HS2 and HS3;
- (b) he congratulated all parties, in particular the Mayor and Liverpool City Council of Liverpool City Council, for the organisation of the recent "Three Queens" visit held as part of the extremely successful Cunard 175 anniversary celebrations;
- (c) he referred to the recent round table discussion on the Northern Powerhouse, organised by the Liverpool Echo and the University of Liverpool, at which both he and the Vice-Chairman had attended; and
- (d) indicated that he had recently given a presentation at the National Advisory Board for the Whitehall & Industry Group in London on the qualities, attributes and strengths of the City Region.

It was **agreed** – that the report be noted.

132. IFB 2016

The Board received a presentation from Max Steinberg, Chief Executive – Liverpool Vision, and Ian McCarthy, Festival Director , on the arrangements for IFB 2016 which indicated that:-

- a list of 10 major events to be held in the next 2 years was circulating within Government circles – IFB 2016 was one of them.
- IFB 16 would be different, and build on the lessons learned, from IFB 2014.
- The Festival would be held over 3 weeks with 3 themes, 4 enablers, 75 events and include a Great British Showcase at which around 40 examples of the most exciting British products and services would be showcased under 1 roof – the Arena and Conference Centre.

The presentation also outlined the progress made to date and the significant items on the “to do list”.

Asif Hamid stressed the importance of effective engagement with the business sector at the earliest opportunity.

It was reported that a major sponsorship announcement was to be made later this month. In addition, the festival organisers extended an invitation to provide a further short briefing session for Board members.

It was **agreed** -

- (i) That the presentation be noted; and
- (ii) the offer extended for representatives of the IFB 2016 organiser’s team to provide Board members with a further briefing be accepted on a date to be arranged.

133. ESIF 2014-2020 PROGRAMME: IMPLICATIONS OF GOVERNMENT GUIDANCE TO ESIF SUB-COMMITTEES ON STRATEGIC FIT

The Board considered a report that gave an update on the implications of the recent government guidance in relation to the role of the local ESIF Sub-Committee in relation to the “Strategic Fit” of applications submitted for ERDF and ESF.

Councillor Phil Davies referred to the watered down role of the LEP and indicated that a letter had been sent to the Minister for Local Growth and the Northern Powerhouse expressing concerns that the new arrangements appeared to fly in the face of localism and provided only a limited opportunity to respond adequately as a result of the 5 day window in which Assessment Reports are issued.

Major Joe Anderson pointed out that, unfortunately, such representations were unlikely to change the government’s mind. He felt that it was important, therefore, to engage with Government to ensure that the region makes the most of the available opportunities. To do so the CA and LEP should concentrate on the main strategic priorities. He also stressed that in order to capitalise on the available opportunities, capacity issues should be addressed .

The Chairman, whilst accepting that the proposals to support the delivery of the ESIF Operational Programmes were unsatisfactory, indicated that they highlighted the need to ensure that the City Region’s strategic priorities were bold and precise and that further work was required to ensure that adequate resources were available, at the centre, to provide the necessary support.

It was **agreed** –

- (i) That the Executive Director Key Growth Sectors, be authorised to work with the lead local authority Chief Executive for Europe, Mike Palin (St Helens MBC) to develop and secure sign off to a robust locally owned and deliverable ‘strategic fit’ process by the ESIF Committee; and
- (ii) that the Executive Director Key Growth Sectors, be authorised to work with the Combined Authority and the managing authorities for ERDF

and ESF to ensure that the EU governance structure is aligned to the established LCR governance structures.

134. EMERGING GOVERNMENT POLICY

The Board considered a report that set out the important ministerial appointments, and associated individual ministerial responsibilities, for the Liverpool City Region following the General Election. The report also set out the latest Government policy with regard to its long-term economic plan, including rebalancing the economy and improving productivity.

During its consideration of the item, the Board discussed the next stages for the City Region with regard to the Government's devolution agenda.

The report indicated that City Region's devolution/Northern Powerhouse proposals would be focused around 3 core themes – Transport, Skills and Low Carbon. A Board member pointed out that an additional theme –worklessness and productivity had been added.

During its consideration of the proposal, set out in the report, for the LEP Executive to undertake a private sector consultation exercise, the following issues were highlighted:-

- A Board member pointed out that discussions on the City Region's devolution proposals were a preliminary stage and may involve future decisions to be taken by national/local politicians. In view of the timing, a consultation exercise at this stage may not be appropriate or helpful.
- Board members pointed out that whilst businesses were not concerned with governance issues, there was a clear need to keep them in the loop and also demonstrate what devolution means 'on the ground' for small businesses. The views of the private sector would also enable a coherent evidence base to be built up which would help to demonstrate a solid and compelling case for devolution.
- Whilst acknowledging the political sensitivities, the benefits of a twin track process, with political leaders dealing with governance issues and a private sector consultation exercise running alongside such considerations, were acknowledged and supported.
- Clarification was sought on the available mechanism to enable the sector committees to feed potential asks into the Combined Authority. In response, it was reported such issues should be passed to David Brown – Head of Paid Service.

It was **agreed** –

- (i) That the content of the report, and the potential implications for the Liverpool City Region and the LEP of emerging Government policy, be noted; and
- (ii) that the LEP Executive be authorised to organise a consultation exercise with the private sector, in collaboration with the Chambers of Commerce and other private sector representative bodies, to establish if there is support for devolution and potential devolved powers and their

expectation of what would be the potential benefits to business and economic growth.

135. CAPITAL INVESTMENT

The Board considered a report that detailed the ongoing work in the City Region to develop a more aligned approach for the utilisation of capital funding. In this respect, a draft 'Capital Commissioning Framework' was submitted for consideration alongside the context and next steps for the work that is being managed in collaboration with the Lead Chief Executive for Economic Development and with Local Authority Regeneration Directors.

Asif Hamid requested further background information on the available capital funding schemes such as JEREMIE, JESSICA and Chysalis.

Kate Willard felt that the draft Framework should include information on how the available funding sources sit within the broader financial market offer.

Amanda Lyne pointed out that the Energy sector was not adequately covered in the four Commissions.

It was **agreed** –

- (i) that the work undertaken to date be endorsed and it be noted that further work was underway to prepare the detail of the commissioning areas and how the framework could be implemented and supported within the City Region governance structures;
- (ii) that an update paper be submitted to the next meeting of the Strategic Board; and
- (iii) that a briefing paper setting out background information on the available capital funding schemes be circulated to Board members.

136. SUPERPORT UPDATE

The Board considered a report that gave an update on current activities relating to Superport including issues relating to:-

- The Superport Committee
- Northern Powerhouse
- Global Connectivity
- Resources and Marketing

During her presentation of the item, Kate Willard:-

- Highlighted the significant opportunities that would be presented if a bid to host the annual Airlines/Airports Conference "Routes Europe" in 2018 was successful; and
- Referred to the Merseytravel proposal to extend the Liverpool City Region Freight Study across the North and sought nominations for the second seat on the Private Sector Reference Group for this study.

It was **agreed** – that the report be noted.

137. LOW CARBON UPDATE

The Board considered a report that gave an update on current activities in the Low Carbon sector including issues relating to:-

- Off Shore Wind
- The Low Carbon Economy Committee
- Low Carbon call with ERDF ESIF
- Low Carbon skills capital programme.

During her presentation of the item, Amanda Lyne indicated that, with regard to the expansion of Off Shore wind facilities, around 200 attendees from 140 companies, had attended the Supply Chain Communication event held in Wirral on 2nd June which was well received. Councillor Phil Davies stressed the importance of ensuring that future employees had the appropriate skills to take advantage of the employment opportunities that will be presented. It was felt that further work was required to align the work of the Employment and Skills Board with the opportunities presented by the Enterprise Zone. This was flagged up as an area for future discussion.

It was **agreed** –

- (i) that the report be noted; and
- (ii) that the Employment and Skills Board be requested to consider how the demands of, and the opportunities presented by, projects included in the Mersey Waters Enterprise Zone can be met.

138. SKILLS CAPITAL INVESTMENT FUND: STRAND 1 (SITES AND PREMISES) ASSESSMENT RECOMMENDATIONS

The Board considered a report that presented the Skills Capital Investment Panel's recommended investment package for applications received under Strand 1 of the Liverpool City Region Skills Capital Investment.

The Board also considered a presentation that set out details of the:-

- governance arrangements and the links with the Assurance Framework;
- assessment headlines;
- the risks and mitigation, in particular the actions to address the significant level of Strand 1 allocations that will be un-committed following the first bidding round; and
- next steps and indicative timelines.

During the consideration of the item, the following issues were highlighted.

Kate Willard, whilst recognising the significant piece of work that had been undertaken, made the following observations on the pragmatic approach that had been adopted:-

- the evidence of employer engagement appeared weak with little or no specific information included;
- a more proactive approach to equality and diversity issues was required; and

- the low scoring quality of one of the bids that was not recommended to be taken forward, highlighted the need to provided further support to those organisations that were less conversant with the bidding process.

Richard Else placed on record his thanks to Sue Jarvis and her team in Knowsley MBC for the excellent work undertaken during the various stages of the bidding process.

It was **agreed** -

- (i) That the outcome of the assessment process for Skills Capital applications received under Strand 1, as set out in Section 6 of the report now submitted, be noted;
- (ii) that the conditional recommendations made by the Skills Capital Investment Panel for the Skills Capital Investment package, as set out at section 7 of the report now submitted, be endorsed and recommended for approval by the Combined Authority;
- (iii) that the indicative overall investment outcome of the process to date, as set out in section 8 of the report now submitted; be noted;
- (iv) that the next steps, as set out in section 9 of the report now submitted; be noted;
- (v) that the risks and proposed mitigation actions, as set out in section 11 of the report now submitted, be noted;
- (vi) that a progress update on the implementation of these investments be submitted to a future meeting of the Strategic Board.

Minutes 128 to 138 received as a correct record on the 16th day of July 2015.

Chairman of the Board

(The meeting closed at 10.45am)

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Liverpool City Region
Local Enterprise Partnership

Chairman's Report

Board meeting 16 July 2015

Author: Robert Hough
Organisation: Liverpool LEP

1. Recent comments by Greg Clark, Secretary of State for the Department of Communities and Local Government, has been very positive in reaffirming the role that LEPs are intended to play in the context of local economic development and structural change.

Attached is an extract of an email from Alan Welby confirming the Secretary of State's welcome stance.

"Greg Clark the new Secretary of State for Communities and Local Government has spoken very positively about the role of LEPs and their continuing importance.

Greg Clark is a key figure in driving forward devolution and clearly signaled a key role LEPs in devolution and EU funding:

- a. Greg Clark MP spoke at the LGA conference yesterday. You can see his speech at the following link - http://www.lga.public-i.tv/core/portal/webcast_interactive/181766. At 3:52 on the link, Greg spoke specifically about LEPs in local devolution to say "*LEPs guaranteed strong voice for business ... as you develop your local plans continue to embrace business ... I wouldn't agree any deal without seeing a clear role for LEPs ...*"
- b. To give you a bit of heart on EU programmes being part of devolution, in an interview in LGA's 'First' magazine (http://issuu.com/lgapublications/docs/new_first/16?e=16807299/13783391) on pg 17 it states "Mr Clark acknowledged the frustration felt by many local areas being given little or no say on how, when and on what they spend their share of England's £5.3bn EU Structural & Investment Funds. *'It is something we need to come back to because it is not acceptable on a permanent basis. I have every confidence in future we will see LEPs working with local government to manage these schemes.'*"
- c. Finally, there is also further coverage about Greg's speech at the LEP Network dinner, about LEP's role in local devolution - <http://www.publicsectorexecutive.com/Public-Sector-News/leps-must-be-at-the-heart-of-any-devolution-deal--clark>

Greg Clark was extremely positive what LEPs have achieved and our significant role going forward. He gave a commitment to argue strongly for Local growth in the Comprehensive Spending Review over the next few months."

2. I also attach a copy letter dated 5 June from the LEP Network (signed by members of its Management Board) to the Chancellor and Greg Clark containing submissions for this month's Budget. It also addresses several ancillary issues of importance to LEPs and LEP areas which speak for themselves.
3. What has also struck me in recent weeks has been the number of significant transport and energy announcements:
 - a. Pause in East-West electrification which has impacted to an extent the perception of the Northern Powerhouse.
 - b. Announcement of extra runway capacity at Heathrow.
 - c. The grant at the potash mine at North Yorkshire Moor for Sirius Minerals.
 - d. The refusal of planning permission for fracking at the Preston New Road site.

These have significant impact to a greater or lesser extent, negative or positive on economic growth and the environment.

4. It is apparent, particularly within Liverpool itself, that the voice of the private sector is becoming clearer and stronger on the need for swift progress and outcomes on devolution.
5. I was able to have an extended conversation with Lord Jim O'Neill (Commercial Secretary to the Treasury) at a recent event. He is of course a strong advocat of the Northern Powerhouse and of increased collaboration and connectivity between the Northern Cities. He is part of a small group of senior ministers (plus Lord Heseltine) pushing forward on Northern Powerhouse and Devolution.

Jim is particularly significant as he is a Treasury Minister and effectively appointed by George Osborne. His interest in progressing Liverpool's opportunity was strong.

6. Alan Welby has been an Executive Director of the LEP since April 2011, and as I reported earlier he is to join Liverpool John Moores University as Director of Research and Innovation Services. Alan will leave us on 2 October.
7. The strategic discussion to be held after this Board Meeting with the support of Michael Parkinson and Kate Willard is extremely welcome and timely. I hope that Board Members will be able to stay for this session.

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The Rt Hon George Osborne MP
First Secretary of State, Chancellor of the Exchequer
HM Treasury
Horse Guards Road
London, SW1A 2HQ



The Rt Hon Greg Clark MP
Secretary of State for Communities and Local Government
2 Marsham Street
London, SW1P 4DF

5th June 2015

Dear Chancellor and Secretary of State

LOCAL ENTERPRISE PARTNERSHIPS - RESPONSE TO CONSULTATION ON BUDGET JULY 2015 MAINTAINING MOMENTUM IN ECONOMIC GROWTH

The private sector led Local Enterprise Partnerships (LEPs) are providing critical business input into local growth, ensuring that programmes and projects are managed and delivered at pace to secure the maximum impact. This has resulted, to date, in LEPs helping business to create over 100,000 new jobs, support almost 50,000 learners, and leverage £4bn from the private sector. Our locally agreed economic strategies and frameworks are in place, to deliver further substantive progress that will help the government achieve its ambitions of 2m new jobs and 3m apprenticeships by 2020. To help LEPs support these economic ambitions, longer term certainty of funding is needed to ensure that our local economic plans are delivered effectively and at a managed cost.

LEPs have much to offer the discussion around the Bill on the Cities and Local Government Devolution Act 2015. It is vital that the private sector voice is heard in the debate on economic devolution. LEPs are keen to play an active role as local models are developed. We bring over 3,000 private sector individuals who are involved in a leadership position on LEP Boards and sub-groups. The confirmation of continued Local Growth funding will give further weight to the private sector voice in the devolution debate.

LEPs welcomed the Chancellor's announcement in June 2013 of a £2bn per annum Local Growth Fund from 2015/16. LEPs have also welcomed the payment in April 2015 of the first tranche of these Local Growth Funds. However, LEPs only have indicative funding allocations for future years. This is creating uncertainty which, in turn, is causing problems in contracting and therefore delivery, for a number of our public and private sector partners who are implementing high impact projects that span a number of years, in the areas of transport, skills and enterprise. This can be managed by early confirmation and certainty over future years' Local Growth programme funding beyond April 2016. Additionally, the lack of certainty over future core funding for LEPs is causing problems across the network.

Taking these two points in turn, firstly LEPs want to press ahead with 2016/17 proposals. Early confirmation of future funding will help to finalise plans and contracts, to be ready for delivery from April 2016. There is a growing risk that some partners won't sign contracts without certainty about the 'tail' of latter year's funding. Many LEPs are looking to review project implementation in the autumn with a view to making any adjustments necessary to next year's profiles. The lack of certainty over future funding will make this work challenging. The risk that funding could be reduced or even stopped, or paused and then re-started, is leading project sponsors to become cautious and may

potentially delay necessary preparatory activity. This could result in increased costs to the public purse which may lead to a slowing of delivery as we move through this financial year. Early confirmation of next year's funding, together with a funding profile to 2020, and a timescale for future rounds of Local Growth Deal allocations for the remainder of the £12bn, would help to avoid this.

Secondly, the government's contribution in April 2015 to our core funding and Strategic Economic Plan (SEP) delivery funding, is both welcome and necessary. It plays an important part in resourcing LEPs, helping to leverage separate local resource provision, and provides necessary independent capacity alongside contributions from local partners. Where LEPs currently have devolution or other deals, which result in needing to increase their resources to help deliver the government's agenda, the need for this independence of core funding is becoming increasingly important.

The role and expectations of LEPs has expanded as we have demonstrated the added value we bring to the local economic landscape and as private sector members recognise and push for greater engagement with business. Many LEPs are reporting capacity pressures, which is leading to difficult choices regarding the prioritisation of activity. The absence of any additional revenue funding support for programme management in relation to Growth Deal projects has made this all the more challenging.

One area that is particularly challenging in our capacity, is resourcing the active role that LEPs are playing in supporting the Managing Authority implement the European Structural and Investment Fund (ESIF) Programmes. LEPs help promote these ESIF programmes locally and support applicants develop their bids. This is currently unfunded until Technical Assistance (TA) is provided. One immediate thing that Government could do to ease the capacity pressure, is to rapidly assess LEP outline applications for TA and to invite full applications, so that retrospection can be applied.

The most pressing issue, with core funding only guaranteed up until the end of this financial year, is that most LEPs have staff contracts that run until 31st March 2016. This provides uncertainty in the minds of specialist skilled staff, who are crucial to the delivery of both the LEP's and the government's growth agenda. Local authorities, businesses and other partners are already contributing resources to LEPs, and in most cases they are unable to make up the deficit. Again, an early confirmation of the government's willingness to provide core and SEP funding, linked to the growing resource requirements of the LEPs, would be helpful in removing this uncertainty. The potential loss of capacity (particularly independent capacity) is a serious prospect at a time when we need it most. With most LEPs unable to offer contracts beyond 31st March, it is virtually impossible to recruit suitable replacements at this time.

The LEP network would appreciate, therefore, an early commitment in the Chancellor's budget on 8th July 2015 to a multi-year funding agreement, covering the continuation of Local Growth Deals and the provision of LEPs capacity to 2020, in order that we can maintain momentum on the delivery of our ambitious growth plans.

Yours sincerely

The LEP Network Management Board
info@lepnetwork.net



Barry Dennington, Chair
Swindon & Wiltshire LEP



Barry Dodd CBE, Chair
York, North Yorkshire & East
Riding LEP



Christine Gaskell MBE, Chair
Cheshire & Warrington LEP



Geoff French, Chair
Enterprise M3



Graham Wynn OBE, Chair
The Marches LEP



James Newman, Chair
Sheffield City Region LEP



Harvey McGrath, Deputy Chair
London Enterprise Panel



Mark Reeve, Chair
Greater Cambridge & Greater
Peterborough LEP



Peter Richardson, Chair
Derby, Derbyshire, Nottingham &
Nottinghamshire LEP

Copy to:

- 39 Chairs of the Local Enterprise Partnerships.
- The Rt Hon The Lord Heseltine CH.
- Sir Nicholas Macpherson, Permanent Secretary, HM Treasury.
- Melanie Dawes CB, Permanent Secretary, DCLG.
- Tom Walker, Director, Cities and Local Growth Unit.

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Atlantic Gateway General Update for LEPs July/August 2015

1. Introduction

Developments in the last quarter may have caught many of us by surprise with the election result and swift decisions on new Ministerial appointments and other government changes. Government appears to be behind the Northern Powerhouse (NP) with the announcement of several key appointments with specific responsibilities for NP across Treasury, BIS, CLG and DfT (all of which have previously been reported to the Board).

AG has written to all of the new appointments to raise the profile of AG, reaffirm its role in working with partners across the north west to drive growth and highlighting the private sector composition of AG Board and the importance of having a private sector voice. A series of discussions have taken place across departments post-election and a number of interesting meetings are taking place over the next quarter on the lead up to the CSR and Autumn announcements as portfolios are established. This will include consideration of new funding models for outside London, attraction of new investors and development of a portfolio of investment opportunities. Attracting investment into the North will continue to be a key priority for government.

The focus on NP continues to be on devolution and transport (TfN). Whilst other investment announcements have been made with regards to science (and a limited amount with regards to culture), a formal programme of activity to support the development of a NP has not been developed by Government. AG continues to play a role in adding value to the key priorities across the LEPs and in strengthening the NW-leg of the NP, providing an existing effective mechanism to tap into wider opportunities.

Devolution debates continues to take place across the country including ongoing progress on the forthcoming Devolution Bill and Manchester devolution deal. AG remains close to local discussions and to developments outside of AG, with other areas keen to understand more about potential devolution and collaboration opportunities. AG has received some excellent press coverage in various national magazines/papers on the events we have been engaged in with regards to NP and devolution opportunities.

2. Update on core activities

Infrastructure priorities

Following on from the last AG Board meeting, work is now underway on the development of new Investment Priorities for AG. This is being led by Mike Wilton, Arup Director who will be supported Roger Milburn and Carmel Booth.

The approach is focused on establishing a long list of potential infrastructure priorities which will then be considered and prioritised by the AG Board. This will incorporate a review of existing AG priorities and the identification of potential new priorities. It will also include the identification of AG's role for each of the priorities and its asks of government/other partners.



Infrastructure priorities were discussed at the previous AG Board meeting with a number of points raised which will inform this work including but not restricted to:

- the need to consider all infrastructure - green, blue and grey;
- a requirement to include both public and private sector investment;
- the need to recognise the importance of Cities in driving growth;
- the importance of using information already sourced or created by partners;
- a requirement to consider the current status of existing priorities and AG's role;
- the importance of considering wider priorities that are outside of current business plan;
- the importance of the AG Board in deciding upon the priorities (and not external advisors);
- a need to be ambitious and think long term about growth and productivity opportunities;
- a need to consider international competitiveness;
- a need to consider wider infrastructure developments or opportunities that may have an impact on AG (i.e. may be outside of AG area);
- the deliverability of priorities;
- the ability of AG to add value on priorities; and
- need to consider both short and long term issues - can AG "exert pressure"/influence improvements in the short term.

This will be based upon consultation with AG Board members, AG LEPs and other identified relevant infrastructure organisations such as TfGM and Merseytravel. Mike Wilton will lead a structured discussion at the July AG Board meeting to frame the wider consultation programme and will discuss priorities with AG Board members outside of the Board session. A draft report will be produced in August/September for consideration by the AG Board. Prioritisation of the infrastructure long list will be discussed at the next AG Board meeting.

This work will inform a paper to Government on infrastructure and investment opportunities. It will also inform the development of an updated AG Business Plan. Relevant government departments and individuals have been informed of this work and discussions will continue with them over the next few months as this work is progressed.

Science and innovation (S&I)

Further to an update at the last AG Board meeting, work is now underway on the review of collaboration opportunities across AG to strengthen the long term development of the S&I sector. This is focused on how AG can make a positive difference to existing activities and further support strategic cases for policy development and investment.

Following a competitive procurement process, three consultants were interviewed to undertake this work. An AG team including representation from each of the three LEPs selected SQW as preferred consultant. An AG Steering Group has been developed to oversee this work which includes representatives from across the area including independent (non-AG) S&I Steering Group membership. The Steering Group includes:

- John Downes (Chair);
- LEPs - Philip Cox (C&W); Alan Welby (LCR) and Helen Smith/Alison Gordon (GM);
- Andy Hulme (project manager (C&W));
- Carmel Booth (AG);



- Alison Davenport (Birmingham University and STFC Board member); and
- David Parr (Halton Council).

Final reporting is expected in October with interim Steering Group meetings arranged for June, August and September. Individual AG Board members have been identified for consultation by SQW and will be contacted in July to arrange a meeting date. This work will focus on the identification of potential areas for collaboration and interventions within AG, the identification of strategic priorities within AG, the development of specific asks of government and the identification of recommendations for other actions for other organisations to maximise the opportunities for the NW.

Other updates

- Meeting of cross transport, freight and logistics group - update on TfN to be provided as part of AG Partner Updates including new private sector reference group.
- Meeting with the AGSEG - focus on recent collaboration between Liverpool and Manchester, opening of Port Salford cycle pathway, contribution to ResPublica's "Right to Beauty" report, forthcoming City of Trees project in Manchester and review of infrastructure priorities.
- Cross meeting to discuss development of F&L key facts and opportunities - to build upon a fact sheet developed for SUPERPORT focusing on Liverpool.
- Update meetings with various partners to discuss development opportunities, key barriers and key "asks" of government on the build up to Autumn Statement and CSR.
- Various articles for press and magazines (see below).
- Various consultations (cross-party) on key issues including infrastructure, planning, devolution, funding and governance.

3. Resourcing and funding

General - AG's core funding remains in place to meet the costs of a part-time Chief Executive however there is little surplus to meet the costs of wider resource support, events, marketing, sponsorship or brochures. AG continues to be dependent upon the financial support from its partners (MAG, Peel, United Utilities and each of the three LEPs), effective shared services from LEPs and ongoing wider partner support to continue to promote AG. During the year, additional work has been agreed which has been funded by LEPs/other partners including freight and logistics study and S&I study.

EU funding - At the last AG Board, the Board was informed about an EU funding programme to support the development of sustainable F&L gateways across Europe. AG has been selected as a lead private sector and a stage 1 bid has been submitted with a decision expected on the 10th July as to AG's progression to stage 2. With an intervention rate of 60% for AG programme activity, this provides an opportunity for AG to leverage additional funding. If AG is successful in progressing to stage 2, discussions will take place with partners to identify opportunities to maximise AG's leverage and secure more funding to support the development of sustainable gateways. i.e. additional funding from partners will enable AG to leverage match funding of 60% which can be used for AG/cross LEP activities in line with the programme submission to support the development of sustainable logistics gateways.

AG programme secondment - As reported at the previous board, discussions have continued with GT with regards a secondee to AG. This resource will support the development of the Infrastructure Plan, stakeholder management, investment strategy and planning, pre Autumn Statement and spending review analysis and general programme development. Discussions are taking place for a September 2015 start and terms remains subject to agreement.

AG communications support - An initial meeting has taken place with a communications manager (provided by United Utilities) to discuss the current communications plan and future activities that can take place with communications support. It is anticipated that a small amount of additional support can add significant value in terms of the development of a general communications plan, updated stakeholder plan, website development and event planning.

4. Wider stakeholder management and communications

Continued ongoing press coverage of AG via presentation at conferences, events, round table discussions and press commentary on current developments. This continues to be focused on short turnaround activities that are not resource intensive due to resource constraints. For example, round table discussion in London on the development of regional “powerhouses” led by the Estates Gazette Magazine and Birmingham Post.

Continued development of wider media platforms including Twitter with almost 1,000 followers which continues to grow month of month. Plans to develop LinkedIn profile to complement twitter and maximise impact of targeted communications.

Continued bi-monthly meetings with government departments.

AG gave a series of presentations, meetings and attended events including:

- guest speaker at a Northern Powerhouse conference in Manchester;
- speaker at national powerhouse event in London;
- round table discussion on Northern v Midlands powerhouses;
- discussions with regional press on forthcoming articles/publications on investment and northern powerhouse;
- OECD LEED conference in Manchester officials, advisers and ministers;
- panel member at the IPPR roundtable event on Northern Powerhouse;
- meetings with Chambers re collaboration with private sector on common initiatives;
- meetings with a range of private sector businesses on development of AG, NP and wider investment opportunities including Siemens, Peel, MAG, Alston, Investment Funds, local authorities;
- meetings with individual LEPs on developments, challenges and opportunities;
- Echo Business Awards and GM Business Awards; and
- various events attended by board members and affiliates regionally and nationally.

AG has further increased its twitter followers. The three LEPs and AG continue to work very well together on twitter and communications updates which supports the consistency of message on key priorities. Twitter is one of the most efficient ways to reach our target audience, with AG followed by a range of Government departments, MPs, think tanks and



private sector organisations. AG's account is @a_gateway. If you have a twitter account please let me know.

5. Forward plan

Infrastructure

- Ongoing development of Infrastructure Priorities work
- Quarterly AG/LEP executive directors meetings
- Quarterly AG/LEP Freight, Transport & logistics group
- Bi-monthly DfT and BIS update meetings
- Quarterly SUPERPORT meeting
- Ongoing meetings with key funding partners - MAG, Peel, United Utilities, LEPs

S&I

- Ongoing management of SQW - consultation programme, workshops and draft reporting

General

- Bimonthly BIS/DfT/CLG update meeting - July +
- Meetings with Las - ongoing
- NW Construction Conference - July
- EU funding programme meeting – July
- Meeting with government advisors/ministers - ongoing
- Meetings with Chambers of Commerce - various
- NWBLT Board meeting/presentation - September
- AGSEG Board - September
- Continued input into TfN - ongoing
- Submissions to government in advance of Autumn Statement and CSR
- Presenting at MIPIMUK in London - October
- Cheshire Leaders presentation - October
- Communications plan and work programme - ongoing
- Planning for input re IFB 2016 and MIPIM 2016 - ongoing
- Business plan update - timing TBC
- Website updates - subject to resource.

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Liverpool City Region
Local Enterprise Partnership

Shale Gas and the Liverpool City Region Report

Strategic Board Meeting 16 July 2015

Author:
Alan Welby
Liverpool City Region Local Enterprise Partnership

1. PURPOSE OF REPORT

- 1.1 The purpose of this report is to provide context to the Shale Gas and Liverpool City Region report.

2. RECOMMENDATIONS

- 2.1 Liverpool City Region LEP is recommended to:
- (a) Consider the recommendations of the Shale Gas and the Liverpool City Region Report particularly in terms of the potential economic significance of Shale Gas approaching in the LCR.
 - (b) Consider and endorse the next steps outlined in section 6 (Next steps)

3. BACKGROUND

- 3.1 The LEP (via the Making It board) has been considering the topic of energy prices and energy security for the manufacturing companies operating in the Liverpool City Region. The LCR has a high proportion of energy intensive or high energy demand businesses. Ineos in Halton for example has the equivalent energy requirement as the entire city of Liverpool.
- 3.2 The Making It board asked the LEP to gather intelligence on the subject of shale gas extraction in relation to both how it could affect energy prices in future and any potential supply chain opportunities for LCR companies.
- 3.3 As a result at the LEP Board meeting on the 17th July 2014, The Liverpool City Region Local Enterprise Partnership presented a paper outlining the potential scope for such a study of the potential economic benefits of shale gas extraction. A subsequent LEP Board meeting on 18th September determined:

(iv) that in respect of the Innovation update, the proposed membership of the Unconventional Gas Task and Finish Group, under the chairmanship of Sir Michael Bibby, be endorsed;

4 APPROACH TAKEN

- 4.1 The report provides an introductory overview of the processes around shale gas extraction to inform readers with no prior knowledge of the process. The report analyses potential unconventional hydrocarbon developments in spatial proximity to the Liverpool City Region, such as coal bed methane testing sites in Ellesmere Port owned by IGas Plc, shale gas exploration sites in Lancashire owned by Cuadrilla and the numerous possible developments in the wider Bowland shale geological formation.
- 4.2 The focus of report is solely on an **economic opportunity** and not an **environmental** review of the processes and industry related to shale.
- 4.3 The existing case studies of the industry's supply chains in the USA are then analysed on the premise that a similar supply chain would be in operation for the industry in the UK. The report seeks to apply sensible perspectives and estimations around the potential for the region's businesses to participate in this supply chain. The other objective of the report is to deliver awareness to the reader around what obtaining these new hydrocarbon resources could mean for local gas-intensive industries. Interviews with figures from potentially key entities are attached as appendices to provide an evidence-base unique to this report.

4.4 The report has been written from a scientific and evidential basis and where opportunities such as job creation or potential for investment are mentioned, these are references to existing literature that has passed through extensive scrutiny – such as the report produced by the Institute of Directors.

4.5 The steering group was comprised of: Sir Michael Bibby (Chair), David Millar (Heap and Partners), Victoria Merton (Peel), Simon Kirkman (AMF Engineering), Paul Bristol (London Oil Club, Shale England), Paul Groves (Shale England), Prof Andreas Rietbrock (University of Liverpool), Dr John Morrissey (Liverpool John Moores University), Gordon Grant (IGas), Oliver Nuffer (KCA Deutag).

4.6 The composition of the steering group as well as the organisations that other consultees are a part of, such as Merseyside Environmental Advisory Service and Community Foundations for Lancashire and Merseyside, have been conducive to the final piece of work being free of either 'pro' or 'anti' lobbying and undue influence. Whilst expert opinions and contributions have been made by the private sector and companies with experience in the oil & gas industry, the counter-tension produced by academia and public/environmental interest groups has ensured due scrutiny and deliberation over included information.

4.7 The recommendations that the report has produced are proposed as practical steps forward in terms of finding out more information and laying the foundations for future decision-making around the subject. They are the recommendations of the steering group.

5 REPORT RECOMMENDATIONS

5.1 The report concludes:

- **The scientific monitoring of potential drilling sites is approved and supported to generate a proper environmental evidence base.**

This allows the collection of valuable geological and environmental data and should build on from work already in progress with collaboration between the British Geological Survey and the University of Liverpool. The logic of this is that if drilling does proceed at a site, this approach would allow any effects of the drilling to be measured against a site's ambient characteristics.

- **The drilling of exploratory wells is given fast-track approval to generate a proper economic evidence base.**

This does **not** advocate for permission for production of gas. Rather, it will provide valuable geological and environmental data which can inform future decisions on drilling or environmental management.

- **Support the development of a programme to make the LCR “supply chain ready”.**

This should focus on fostering inward investment, infrastructural enablement and public outreach. This has benefits for our industrial economy even if shale drilling were not to proceed.

6 NEXT STEPS

6.1 The LEP will work with the public and private sector to ensure that City Region can proactively respond to opportunities presented through the development of the Shale Gas Industry in the North West. The primarily will take the form of supporting the development of opportunities linked to the supply chain and position LCR companies to take advantage of emerging opportunities.

6.2 Partners on the steering group agreed to continue working together and the LEP will support ongoing activity from this group. The LEP will look to strengthen Local Authority engagement in this committee.

6.3 There is currently no LEP budget line allocated to this activity. The LEP delivery team will look to secure private sector funding and sponsorship to take forward an focussed action plan.

The potential for the Liverpool City Region economy to benefit from shale development

Foreword

This report has been produced as a result of research conducted from November 2014 to April 2015 by the Liverpool City Region Local Enterprise Partnership. This report is based largely upon references from existing literature and case studies, as well as categorical facts regarding the development of the shale industry in the USA and how applicable or inapplicable that is in the UK.

This report aims to be as quantitative an economic study as possible and does not seek, as its main focus, to rebuke the various 'environmental' arguments presented against shale drilling in the UK. Qualitatively, the report has been supported by interviews with a variety of different organisations and its production has been guided by a steering group comprised of parties who could be involved in any potential supply chain, including academia.

The main foci of this report are what benefits shale gas in general can bring people and businesses in the LCR, as well as how the LCR can become involved in the shale supply chain if drilling were to begin. This is in turn contrasted, where possible, against the current economic state of play in the LCR to indicate how beneficial shale drilling might be for the region.

Sir Michael Bibby
Chair of the LCR LEP Shale Gas Report Steering Group

Executive Summary

Following the 2015 General Election, the government has vowed to support the shale industry, viewing it as a stimulus for economic growth and a means of decarbonising the UK economy.

The Bowland shale under the North of England could potentially provide large amounts of shale gas. For this gas to be retrieved however, drilling operations must be undertaken. We have found that there is a substantial opportunity for the Liverpool City Region to be the supply chain hub; the **strategic and operational centre** of these drilling operations. Over 1000 new jobs could be created in the Liverpool City Region as a result. For this to happen however, an evidence base needs to be created from the results of proper testing.

Shale drilling operations are expensive, costing approximately £333million per pad and requiring up to £500 000 per year in maintenance. This means that extracting the gas only becomes economical when the price of gas reaches a certain point. Studies from the Oxford Institute of Energy Studies, Bloomberg Finance, Ernst & Young and Centrica have determined this to be somewhere in the region of 55-70 pence per therm. The Institute of Directors believe it to be lower, around 50 pence per therm even accounting for high operational costs.

These values are based on existing assumptions, drawn from the British Geological Survey regarding how much shale gas there is in the Bowland shale and how much of that is recoverable predicted by empirical models. As of the finalisation of this report (June 2015) there is **no reliable detailed information** from either an environmental or commercial perspective on shale gas at 45 pence per therm (June 2015 spot price), that has been produced as a result of proper well testing. Initial flow tests in Ellesmere Port by IGas show good resource availability and further exploratory fracturing of Cuadrilla's wells in Lancashire is being positively received by statutory consultees as it goes through Lancashire County Council's planning process. This all underlines a **fundamental need to drill and test exploratory wells**.

Whichever region gives the necessary permissions and provisions to facilitate these exploratory wells is likely to become the centre of development for this industry, should the results indicate good commercial viability and safe extractability.

The Liverpool City Region has a standing population of approximately 1.75 million people, the vast majority of which use gas domestically. In addition to this, local to the LCR are 2 of the biggest industrial gas users in the UK who use up to 3% of the UK's gas between them; INEOS operates a Chlorine plant at Runcorn employing in total around 2000 people and Growhow has a facility in Ince (just outside the Liverpool City Region, in 'Cheshire West and

Chester’) which produces Nitrogen fertilisers, employing around 500 people. These companies use gas as a material feedstock to create their end product. They are both increasingly reliant on expensive imports from other countries. If they are forced to cease operations, their closure would undoubtedly negatively impact on the national, regional and local economy. This will be added to by the other businesses which rely on them as customers or suppliers. This makes an economic argument in favour of shale gas extraction.

If the Bowland shale is exploited, there will be a considerable opportunity for local businesses to get involved in the supply chain, as confirmed by consulting Cuadrilla, INEOS and IGas. The Liverpool City Region has numerous businesses of all sizes that can get involved in the shale supply chain in some way. The ‘Superport’ logistics and infrastructure cluster makes Liverpool City Region the prime geographic enabling point for operations in Bowland.

From a technological perspective, the UK currently lags far behind China and the USA in terms of petrochemical industry R&D funding, patents and discoveries. This is despite the fact that we have an array of world class research-led Universities. There is a definite opportunity for the Liverpool City Region’s HEIs to follow the example set by the University of Chester in embracing R&D within the shale industry. Geographically, the Liverpool-Manchester-Cheshire-Lancashire cluster of regions possesses excellent academic capability. Liverpool’s two leading research institutions, for example, currently have a world-class sensor technology University enterprise zone in the form of ‘Sensor City’ which has direct applications to shale exploration and drilling.

In conclusion, it is recommended that the city region takes forward three key actions:

1. The scientific monitoring of potential drilling sites is approved and supported to generate a proper environmental evidence base.

This allows the collection of valuable geological and environmental data and should build on from work already in progress with collaboration between the British Geological Survey and the University of Liverpool. If drilling does proceed at a site, this allows any effects of the drilling to be measured against a site’s ambient characteristics.

2. The drilling of exploratory wells is given fast-track approval to generate a proper economic evidence base.

This does **not** give permission for production of gas. Rather, it will provide valuable geological and environmental data which can inform future decisions on drilling or environmental management.

3. Support the development of a programme to make the LCR “supply chain ready”.

This should focus on fostering inward investment, infrastructural enablement and public outreach. This has benefits for our industrial economy even if shale drilling were not to proceed.

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Steering group members:

Sir Michael Bibby (Chair), David Millar (Heap and partners), Victoria Merton (Peel), Simon Kirkman (AMF Engineering), Paul Bristol (London Oil Club, Shale England), Paul Groves (Shale England), Prof Andreas Rietbrock (University of Liverpool), Dr John Morrissey (Liverpool John Moores University), Gordon Grant (IGas), Oliver Nuffer (KCA Deutag).

LEP Staff:

Alan Welby – Executive Director Key Growth Sectors
Simon Reid – Sector Manager (Advanced Manufacturing)

Authors:

Gavin Jones and Jonathon Clark

Contact: jonathon.clark@liverpoollep.org

Disclaimer:

All opinions expressed in this report should be assumed as those of the individual expressing them and not of the organisation they are affiliated with. All public bodies and academic institutions involved with this work are neutral to developments of the shale industry in the United Kingdom.

Shale Gas – Background to the Industry

A short explanation of the extraction process

Shale gas is natural gas, consisting predominately of methane, which is sealed within shale rock sequences deep underground (1). Conventional oil and gas resources, such as those in the North Sea, are stored within permeable rock formations like sandstone. Shale gas can be referred to as an ‘unconventional’ resource because it is located within impermeable geological formations which require additional stimulation after drilling to produce a gas flow (2). The technique used to extract natural gas from shale rock at economically viable rates is known as hydraulic fracturing.

Hydraulic fracturing, sometimes referred to as ‘fracking’, involves the injection of water, sand and chemicals into drilled wells at very high pressures (3). This process creates and maintains fractures within the shale rock, allowing previously trapped gas to flow out of the well.

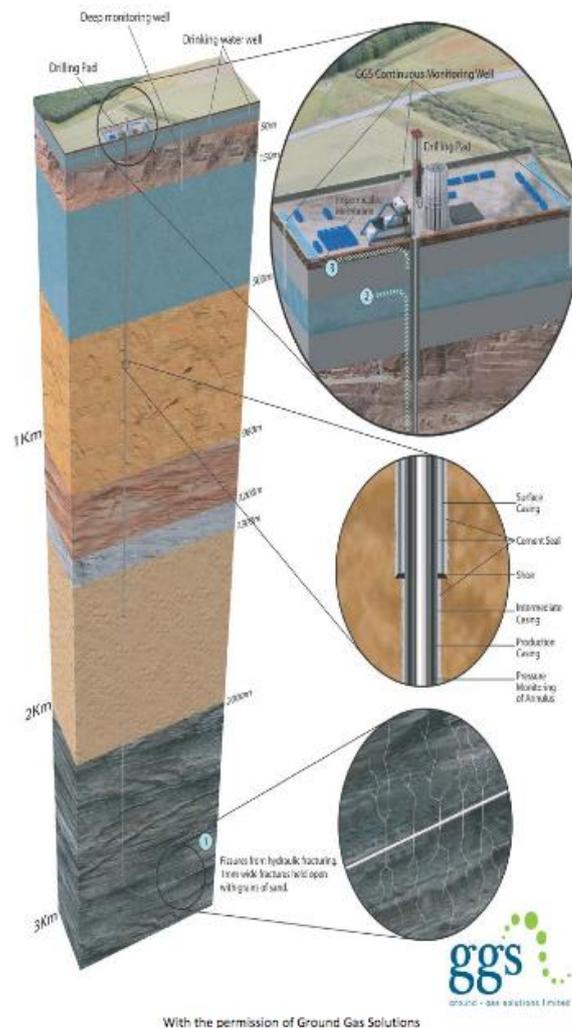


Fig. 1A – Shale gas extraction (3)

Onshore drilling with the use of hydraulic fracturing is not new to the UK. Over 2000 onshore wells have been drilled in the UK over the past 30 years; around 10% of which have been hydraulically fractured to increase recovery rates(4). Recent advances in technology with regards to horizontal drilling and hydraulic fracturing have made unconventional resources such as shale gas commercially viable. This has led to a large scale revival of the natural gas industry in the USA over the last decade (5).

The UK has had successful onshore oil and gas wells for over 100 years. There are around 2000 onshore wells in existence, 10% of which have been hydraulically fractured.

The US shale experience and its associated economic benefits

Production of shale gas in the US increased from 749bcf (billion cubic feet) in 2005 to 8135bcf in 2012, accounting for a third of their overall natural gas production (4). This trend is expected to continue with shale gas production predicted to rise to 16704bcf in 2040, which would account for half of all US natural gas production.

The economic benefits of this new domestic resource have been impressive. For example, the USA experienced a large boost in energy security with net imports of gas falling by 55% between 2007 and 2012. The cost of gas imports reduced significantly from nearly \$30bn in 2005 to less than \$4bn in 2012. The USA is forecasted to be a net exporter of gas by 2020 (4).

According to an IHS report in 2012, upstream shale gas activity in the USA resulted in just over 600,000 jobs created; \$42bn paid in wages; over \$80bn generated in value added; nearly \$20bn collected in federal, state and local taxes; and total capital expenditure reaching \$32bn(6).

The economic impacts in the largest the USA shale plays were considerable:

- In Pennsylvania, across 2010 there was an estimated 68,000 direct jobs in exploration and production from the Marcellus shale, alongside a gross output of \$10bn, with value added of \$5bn(7).
- In Texas, across 2011 there was an estimated 119,216 jobs involved in Barnett shale activity (76,214 in exploration and drilling, 26,160 in pipeline development and 16,841 following on from royalties and lease payments), alongside a gross output of \$13.7 billion(8).
- In Arkansas, from 2008-2011 there was an estimated gross output of over \$12bn, with value added of over \$9b. In 2011 there was an estimated 7,544 direct jobs related to the exploitation of the Fayette shale resource (9).

Significant benefits were also seen by states that didn't have any direct shale gas production, but did take part in supplying construction machinery or financial and legal services to the sector. For example in New York, a state which has now banned hydraulic

fracturing, the IHS estimated that there were more than 44,000 direct, indirect and induced jobs created in 2012 through supporting unconventional gas activity in other states (10).

The USA has experienced a variety of economic benefits through shale gas exploration and production. These include substantial tax revenues, the creation of many highly skilled and well paid jobs, a positive impact on the balance of payments and the development of a vast domestic supply chain which induces large amounts of spending in other areas of the economy (4).

There have been two sectors in particular which have experienced a revival though the availability of a secure and cheap domestic gas supply in the USA; the chemical and manufacturing industries. For instance, the petrochemicals industry has experienced a \$100bn boom in investments as a result of shale gas becoming available (11). The large growth in this market poses a threat to the European chemical industry which cannot currently compete, largely due to differing gas prices.

Whilst taking note of the USA experience is useful, it is important to remember that there are significant differences between the USA and the UK with regards to shale gas (12):

- Gas reserves – Shale gas reserves in the US are much greater than the expected reserves in the UK, making the possibility of local and international supply chain providers to base operations at individual UK shale plays less likely.
- Geography and population density – The shale plays in the USA are vast, and as such, extraction can take place in rural areas with relatively low population density. The size of US shale plays means that suppliers must create local bases, workers must regularly commute from neighbouring areas and the costs incurred in connecting to electric and gas networks can be large. This is unlikely to be the case in the UK.
- Shale characteristics – The shale plays in the US have different depths, densities and various other different characteristics to those in the UK which must be taken into account when planning timescales and operations.
- Landowner payments – In the US, royalty payments are made to landowners who legally own the minerals under their land, providing a significant source of local income. In the UK, the Crown owns all mineral rights; therefore no royalty payments are made.
- Environmental regulation – There will be more robust environmental regulations in place for shale gas exploration and production in the UK compared to those enforced in the US. For example, open water lagoons used for storing waste fracking fluids in the USA will not be permitted in the UK (nor are they a preferred method of storage by drilling firms here). These differences will undoubtedly affect the prices, timescales and jobs involved in shale gas extraction.

- Gas markets – The UK gas system is fully commoditised with pipelines allowing gas to flow between European states. Until recently, the US Government would not allow US shale gas to be exported, thus artificially keeping gas prices low to US consumers. Unless a vast amount of UK shale gas is economically viable, it is unlikely to reduce gas prices. What it will do however is help to limit the increase in price which is set to occur as we rely increasingly on imports.

These differences have led to varying predictions of the effects that UK shale gas production will induce. For example, in their recent report covering manufacturers' view of UK shale, the EEF stated (13): "The manufacturing boom in the US, much of which still has to be realised, will not be repeated in the UK, but domestic shale gas extraction is still likely to help the wider UK economy, energy security and bring opportunities to the manufacturing sector."

UK energy supply, gas price volatility and associated taxes

The UK's oil and gas sector is already well established, with Aberdeen representing the largest hub for offshore activity. Wytch Farm in Dorset is home to Western Europe's largest onshore oil field and has been safely operating within a designated area of outstanding natural beauty since 1979 (14). Both horizontal drilling and hydraulic fracturing have been used at Wytch Farm to stimulate wells for many years without environmental problems (15). Onshore oil and gas only represents approximately 2% and 0.4% of UK production respectively, with offshore extraction dominating the market (12).

Natural gas currently accounts for approximately 80% of the UK's heat demand. Without the implementation of any significant alternatives in the near future, total final gas use is expected to reduce by only 16% between 2014 and 2030. This small decrease in use, coupled with falling levels of North Sea production means that the UK is expected to go from being a net exporter to approximately 80% dependent on imports by 2030(13). There are no tax revenues or jobs created in association with imported gas. This increase in imports also results in a large bill, which can be estimated using net gas import volumes and DECC's (Department for Energy and Climate Change) gas price projections.

Gas imports are estimated to have cost £7.2bn in 2011, with costs predicted to increase to £15.6bn by 2030 (4). A 2012 report by Pöyry predicted that if significant shale gas extraction in Lancashire occurred, gas prices could be between 2% and 4% lower in 2021 (16). Both the IoD and the Energy and Climate Change Select Committee believe that it is still too early to tell whether domestic shale gas supplies will reduce UK gas prices or not (4).

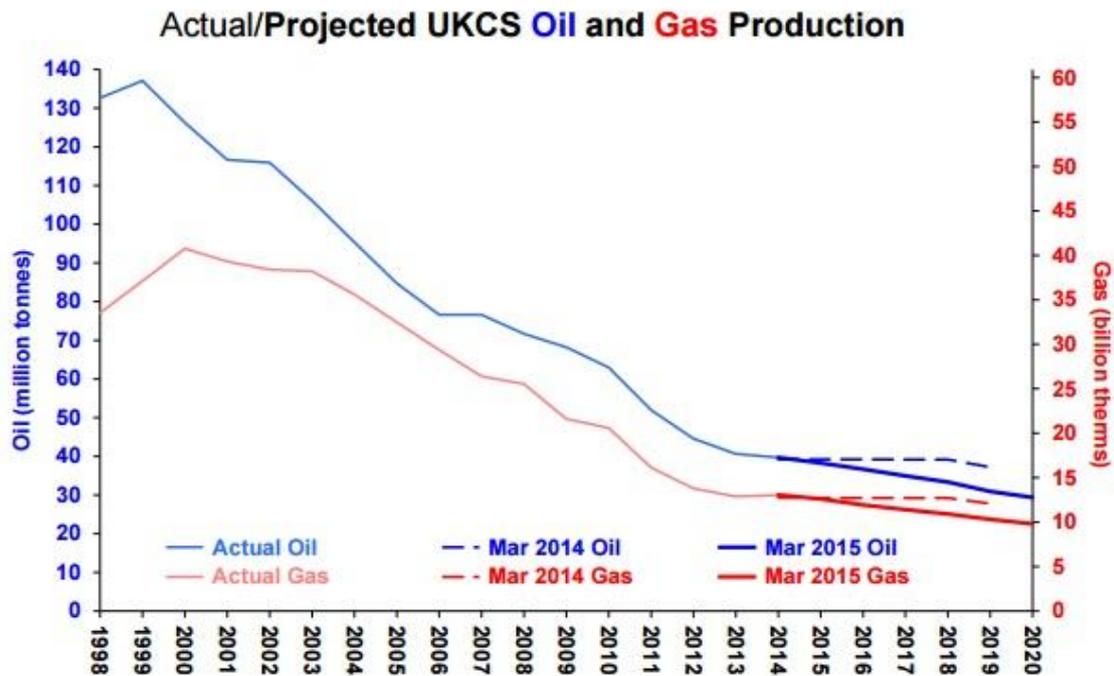


Figure 1B: UKCS Oil and Gas Production, March 2015.

Ofgem has predicted that the UK’s spare electricity generation margins could be as low as 2% in 2015 due to the closure of coal power stations (17). The Government’s gas generation strategy has recognised the need to invest in more gas production alongside, rather than instead of, renewable sources (18). Shale gas could play a large part in this future diversification of supply.

Despite the unknowns, domestic shale gas does have the potential to improve energy security, increase the reliability of supply and reduce the risks associated with the uncertain and often volatile price of gas imports, which the UK will almost certainly be heavily subjected to in the near future (13).

A report by PwC in 2012 estimated that the UK oil and gas exploration and production companies provided a total tax contribution of £30.1bn, which constituted 5.5% of total Government tax revenues in the tax year 2010/2011(19). These figures increase further when the employment and corporation taxes of companies in the associated supply chain are taken into account. Projections provided by the Government forecast a reduction of over 50% in oil and gas tax revenues from 2011/2012 to 2016/2017 (20). The Office for Budget Responsibility expects offshore oil and gas revenues to account for just 0.05% of GDP by 2040 (21):

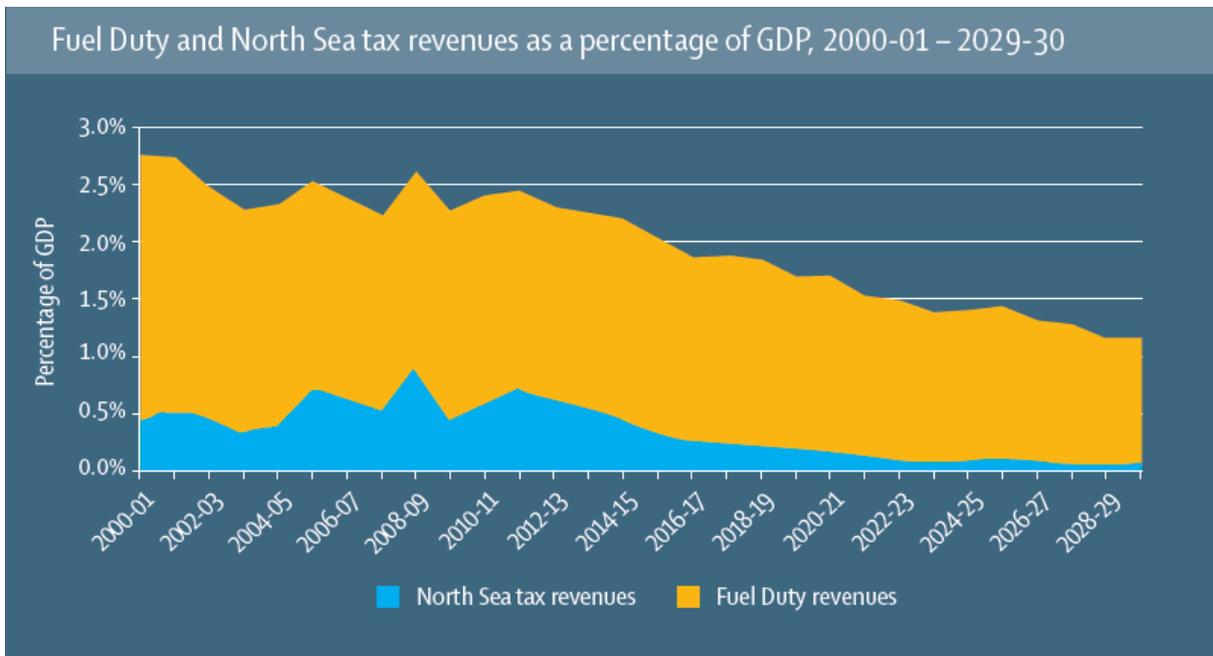


Fig. 2 – Fuel Duty and North Sea tax revenues as a percentage of GDP (4).

With a combination of falling North Sea production, and decreasing fuel duty revenues from more efficient engines, the IoD has predicted that there will be a tax gap of approximately 1.25% of GDP over the next 20 years (22). A domestic supply of shale gas could offer some relief from these calculations. A report by Deloitte predicted that shale gas produced from the Bowland shale alone could generate tax revenues of around £580 million per year by 2020. The same report stated that under the National Grid’s ‘gone green’ prediction of 69% of consumed gas being imported to the UK by 2020, up to 14% of this import requirement could be offset by Bowland shale development (20).

The proposed tax system for UK shale gas is comparable to the North Sea oil and gas tax system, except that it includes incentives to encourage development in the nascent industry. Corporation tax of 20% will be implemented (Down from 30% as of 2015 budget), with profits and losses being subject to a ‘ring fence’ to avert any offset between shale profits and losses and the profits and losses of other trades. There will also be a supplementary charge of 32% of ring fence profits. A shale gas ‘pad allowance’ will remove 75% of capital expenditure, adjusted from an onshore site’s ring fence profits. This allowance is restricted in each year to the production income of the pad. Losses are expected in the early stages of field development; however these losses are preserved by a ‘ring fence expenditure supplement’, which adds 10% per year to any unused expenditure for a maximum of ten years (23).

Various financial incentives are on offer for local communities hosting shale gas activity. The Government has stated that local councils will receive 100% of business rate revenue from shale development sites, which could be worth around £1.7 million a year for a typical site (24). The industry’s representative body United Kingdom Onshore Oil and Gas (UKOOG) has pledged that 1% of gross production revenues before costs, along with £100,000 for each exploratory well that is hydraulically fractured, will go to local communities. This is in

addition to a £20 000 grant per unique drilled lateral well at sites with a minimum length exclusion of 200m. For a typical site, direct revenue from these sources could be worth between £5 and £10 million for the local community (24). In a 2013 report, Deloitte estimated that the revenues to local authorities from shale gas development in the Bowland basin could exceed £54.5 million per year, which is equivalent to 13% of council tax charges to local residents (20).

Considering the UK government’s commitment to reducing carbon emissions massively over the coming decades, a cost-benefit analysis of the remuneration to local communities and the national economy versus the greenhouse gas emissions and environment-changing repercussions should be consulted. To this end, the Low Carbon Hub have undertaken work in quantifying the monetary benefit of shale exploitation against its carbon footprint:

Description	Ref	Source or calc.	Amount
Potential community benefit per project (1% of revenues)	[a]	Sourced ¹	£10,000,000
Project revenues (100x comm benefit)	[b]	= [a] x 100	£1,000,000,000
Wholesale rate of gas per therm	[c]	Sourced ²	£0.65
Project therms produced	[d]	= [b] / [c]	1,538,461,538
Kg CO2 per therm for natural gas ³	[e]	Sourced ³	5.3942
Kg CO2 for the project	[f]	= [d] x [e]	8,298,784,615
Kg of CO2 per £1 community benefit	[g]	= [f] / [a]	830
Amount of community benefit per tonne of CO2	[g]	= 1000 x [a] / [f]	£1.20

Fig. 2B: Low Carbon Hub “Carbon Cost” calculations. (56)

To gain an accurate understanding of the benefits that shale gas could bring, it is necessary for further exploration wells to be drilled, so that the amount of economically viable gas can be known. The economic viability of developing unconventional resources depends upon many factors. These include (25):

- Geology (nature of resource, nature of source rock, resource depth and size).
- Geography (market size and location with respect to resource).
- Topography (ability to construct well pads, water and sand sources).
- Governance (nature and stability of laws and regulations, resource access, taxes, liability exposure, rights of way policies).
- Supporting infrastructure (roads, railways, waterways, power sources, pipelines, disposal options, worker housing/social services).
- Supporting labour force (availability of trained personnel).

- Materials and equipment availability (drilling, fracturing and environmental management equipment, cement, gravel, sand, chemical additives, trucks and piping).
- Pricing (the price being offered for the given oil or gas commodity at the time of investment).
- Continuity of operations to allow long term commitment to drilling contractors and suppliers to provide the catalyst to allow investment and the utilisation of the most appropriate equipment and systems to optimise the operational performance. (John Beswick, PR Marriott Drilling)
- Streamlining of the regulatory process.
- Cost of wells, which is dependent on the ability to drill and complete the wells at a cost that satisfies the business case for the quantity of gas that can be exploited. At present we cannot drill economic wells in the Bowland shale because it is harder to drill than US shale plays. Improvements in the efficiency of production and operation follow naturally over time as operations continue. (John Beswick, PR Marriott Drilling)

Corin Taylor of UKOOG who co-authored the IoD report has revealed that when making that report, conservative income streams and deliberately high CAPEX and OPEX figures were used to intentionally create a critical profits figure. The 20p/therm values for each are reflective of how much more costly offshore operations are than onshore. That means that even with such figures, good profits are predicted for a 5% ultimately recoverable resource level. At 50p/therm gas price, an IRR of 29% is produced (at a 10% discount rate) [as per Sir Michael Bibby’s calculations which are attached as an appendix]. Different studies have shown different points of commercial viability based on differing well spacing, different overheads and different recovery rates. A comparison of these studies is shown here:

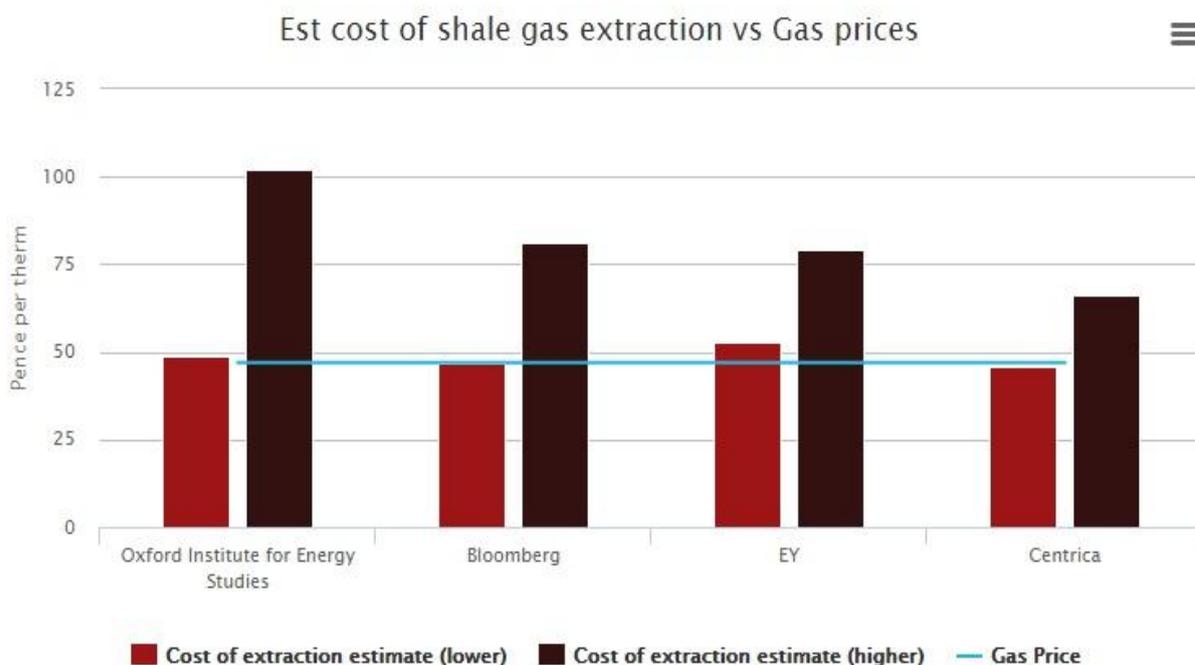


Fig. 2C – Estimated cost of extraction vs. Gas Prices (59)

The co-author of this report [Jonathon Clark] using similar estimates to those of the IoD report (provided by Reach exploration Ltd) found on the basis of the commonly referred to ‘50p per therm’ rate;

“1 bcf gas = approx. 10 million therms. Using £0.5/th, 1 bcf therefore has a value of £5 million

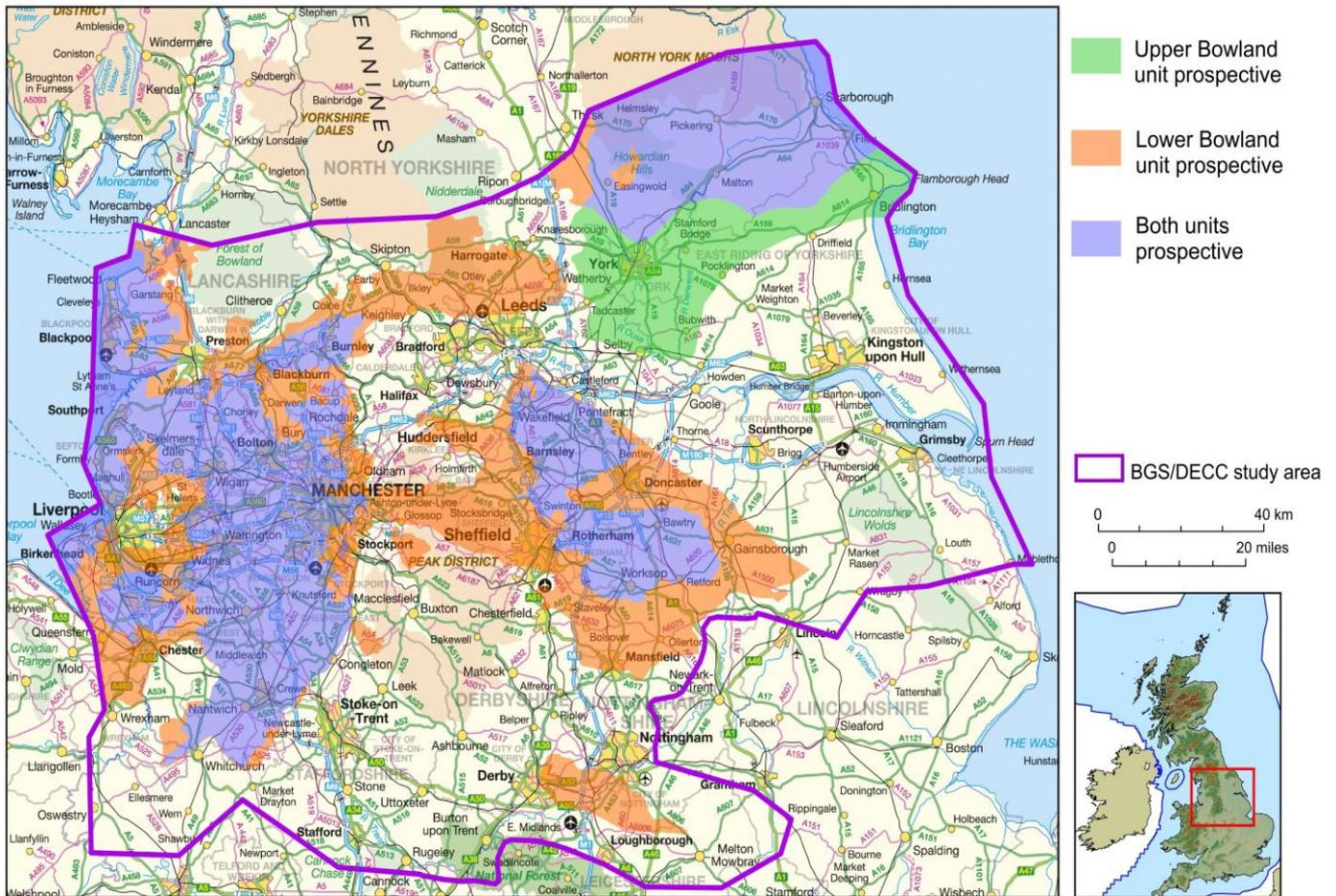
*Therefore, 130 bcf of gas has a sales value of 130*5 = £650m, which far exceeds the £333mil of investment believed to be required for a pad.”*

As of Thursday 25th June 2015, the UK gas price was 44p/therm.

Source: <http://marketinformation.natgrid.co.uk/gas/frmPrevalingView.aspx>

North West Shale Gas

The Bowland Shale



The largest shale sequence in the UK is the Bowland shale.

Fig. 3 – Map of the Bowland shale (26).

A recent British Geological Survey has given a central estimate of 1,329tcf (trillion cubic feet) of natural gas which could be contained in the Bowland basin (26). If only 10% of this resource was recoverable, it would provide 40 years worth of the UK’s gas requirements at current rates, although imports would still provide the bulk of the supply as annual extraction rates are well below annual consumption rates (13). The Bowland shale is around 1,000 metres thick, which is much thicker than the main US shale plays, and has a relatively high total organic content of over 2% (4).

Table 1 – Comparison of main US shale plays to the Bowland shale (27).

The potential of Bowland versus US shale gas plays				
Play	Age	Depth feet	Net thickness feet	Approx average resource billion cu.ft / sq. mile (GIIP)
Barnett	Mississippi	6500 - 8500	100 - 600	240
Marcellus	Mid Devonian	4500 - 8500	50 - 350	13
Fayetteville	Mississippi	3000 - 5000	20 - 200	54
Haynesville	Upper Jurassic	10500 - 13000	200 - 300	113
Woodford	Mid Devonian	6000 - 11000	120 - 220	87
Eagle Ford	E. Cret	8000 - 14000	150 - 300	102
Bowland (Grange Hill)	Carb.	5200 - 10700	3967	1391 = 1.4 tcf / sq.m

The greater thickness of the Bowland shale means that it might be possible for multiple horizontal wells to be drilled at different depths from a single wellpad. This could mean that a fewer number of drill sites are required in the UK when compared to the US (4).

The Energy Contact Company (ECC) has stated that: “Overall, ECC’s view is that the Bowland Shale has all of the basic requirements of a good producible resource and that shale gas development in the UK should therefore be viable.”(28).

Cuadrilla Resources is currently exploring the Bowland shale for economically viable shale gas production via multiple test sites in Lancashire. The first well drilled was at Preese Hall in August 2010. This was followed by a second test well in 2010 at Grange Hill farm (12). There are also plans to build two new pads with up to four wells each at sites in Roseacre and Preston New Road. These wells will be 10,000ft deep, with a kilometre worth of horizontal drilling occurring at depths between 6,000ft and 7,000ft (29).

This exploration activity is already producing a small amount of additional economic activity in Lancashire through on-site activities, accommodation and subsistence expenses of workers (12).

Proposed PEDL areas in the Liverpool City Region

In September 2008, Cuadrilla Resources Ltd was granted a UK Petroleum Exploration and Development Licence (PEDL) to carry out exploration activities in the Bowland shale. The licence area is approximately 500 square miles, covering the western side of Lancashire, including Southport, Preston and Blackpool (12).



Fig. 4 – Cuadrilla’s Bowland shale PEDL area (12). 1 Represents the location of Preese Hall. 2 Represents the location of Grange Hill Farm. The blue boundary represents Cuadrilla’s Bowland shale licence area.

Aurora Energy Resources holds a PEDL which covers 100 square kilometres in the Merseyside region. Aurora currently operates a small conventional oil extraction site in the Formby Oilfield; however plans to explore the deeper Bowland shale for gas have been announced (30). If suitable, this site would allow for thorough exploration in a largely agricultural area. Remuneration for any negative effects on homeowners/landowners would be covered by the community benefit fund which CFLM facilitates. This site has historically been home to multiple onshore shallow oil. Oil seeps on the surface occur naturally due to the underlying geology of this area.

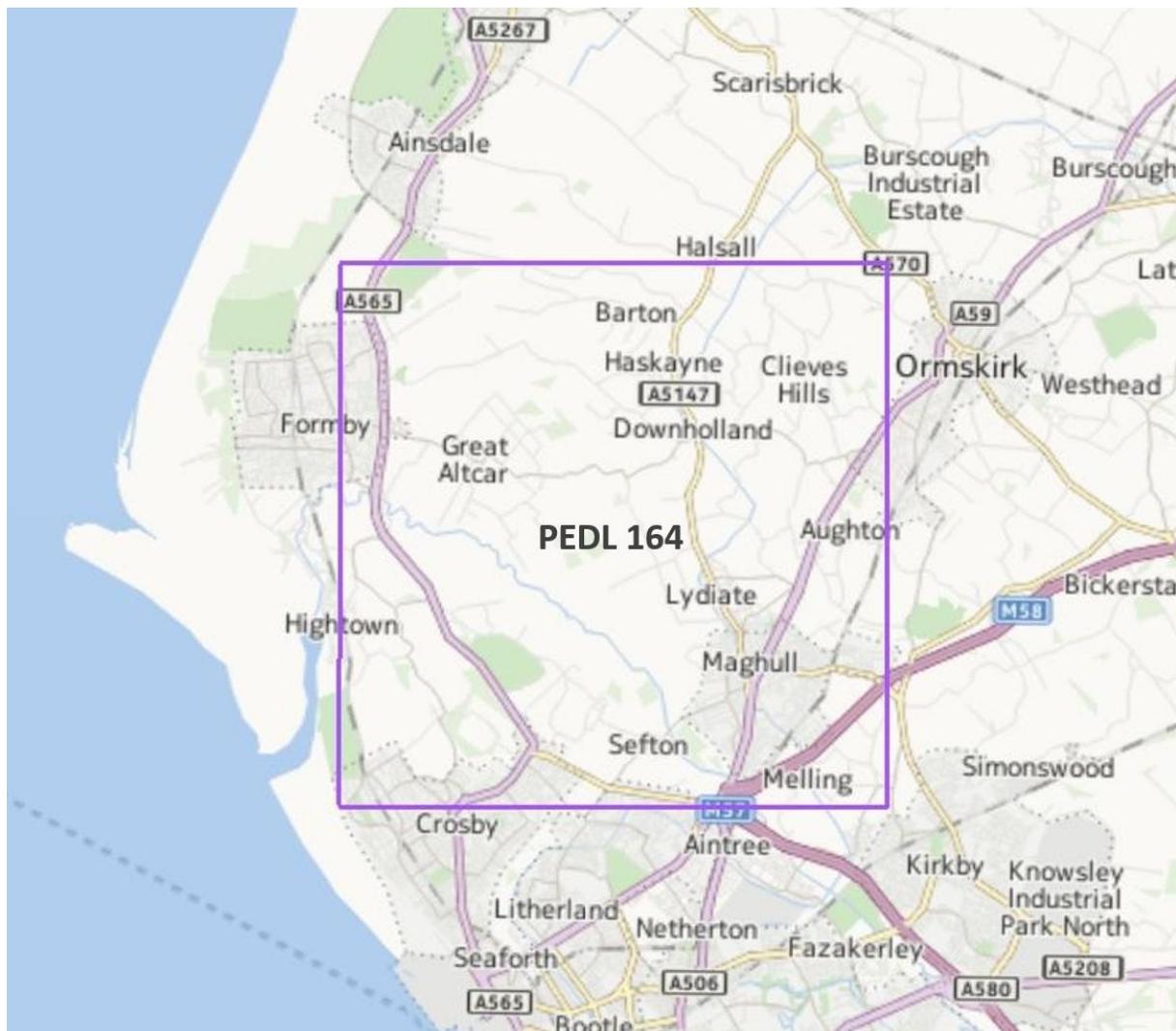


Fig. 5 – Map showing Aurora Energy Resources PEDL in the Formby region (30).

In 2011 IGas Energy received planning permission to drill an exploratory well near Merseyton Road in Ellesmere Port (31). Although their main objective was to identify the coal bed methane opportunities in the area, the company has also encountered the Bowland and Sabden shales, and has since stated: “Significant gas indications were observed across the shale section.” They are currently awaiting the results of detailed core analysis (32). This discovery suggests that the Bowland shale might be present deep underneath much of the Liverpool City Region. John Beswick of PR Marriott Drilling also stated that

intentions have been stated to sample under the Liverpool Bay Area. In addition to this, he has stated there is concern amongst some business that smaller firms such as Aurora have been granted PEDLs as they may lack sufficient assets to see through a proper operation.

Overall, there are between 70 and 80 onshore licensing areas with significant potential across the North West, 9 of which are located in the Liverpool City Region.

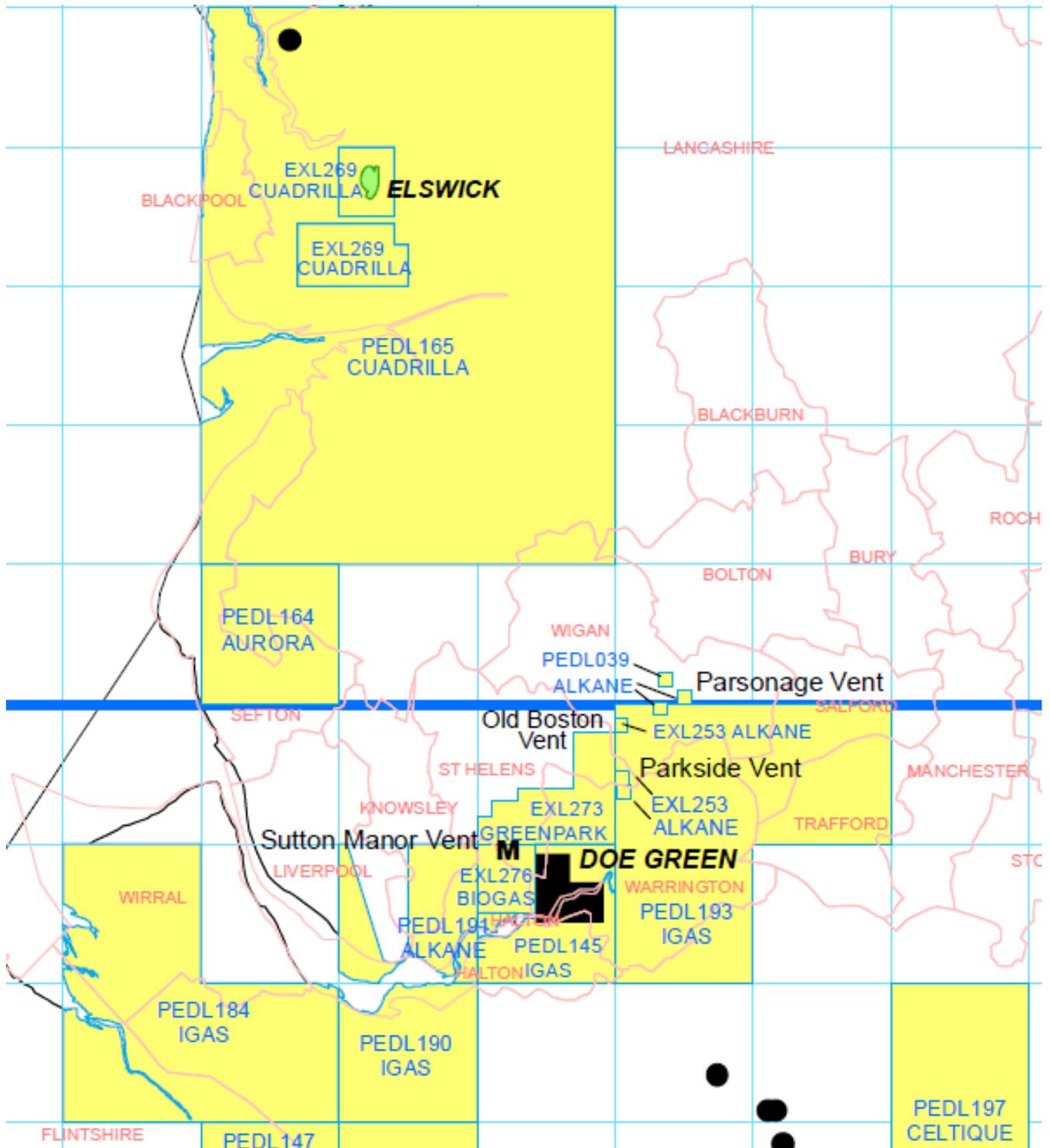


Fig. 6 – Map of PEDLs across the Liverpool City Region as of November 2014 (33).

IGas Energy has drilled three exploration wells in the Northwest (Bowland) basin.

1) Ince Marshes-1 well completed in Jan 2012 in the county of Cheshire, ~5 miles east of Ellesmere port and just south of the River Mersey. Ince Marshes encountered a net coal thickness of around 36ft. In addition an underlying shale section of at least 1000ft was encountered and the well was still in the shale section at total depth (i.e., no underlying Dinantian Limestone was drilled into). Licence PEDL190.

2) In March 2014, the Barton Moss well (Irlam-1) on the Western edge of Greater Manchester, between Eccles & Irlam and approximately 30 miles to the northeast of the Ince Marches well, encountered coal measures at anticipated depths and successfully intersected the secondary target Dinantian Limestone and in doing so, the well also found a package comprising the Sabden and Bowland Shale. Licence PEDL193.

3) Most recently, in Dec 2014, the Ellesmere Port-1 well intersected “a very significant shale section of approximately 1,400ft” and “significant gas indications were observed across the shale section,” Licence PEDL184.

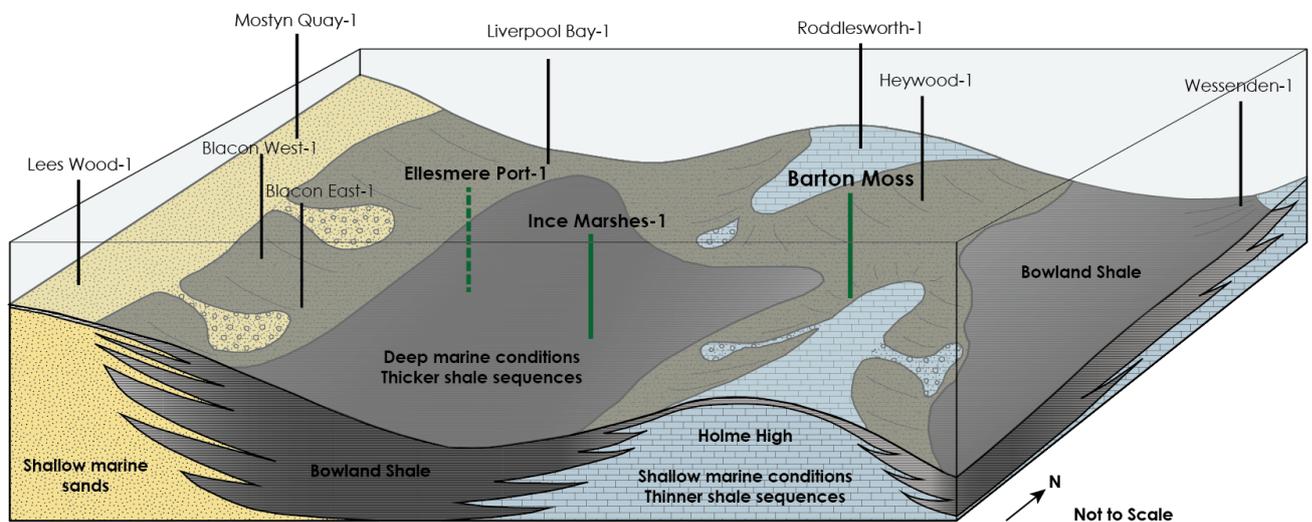


Fig. 6B: 3D simplified geological model of NW Bowland. (Courtesy of IGas)

Potential timescale for extraction

Multiple reports by various parties have estimated the amount of time required to get a shale gas well from the initial application stages to production in the UK. Ernst & Young estimated that it would take 6 years to explore an area, develop a single drill pad with 40 horizontal wells and bring it into production (34). In their review of the potential economic impacts of shale gas production in the Ocean Gateway, Amion Consulting proposed the following development scenario:

Table 2 – Amion’s proposed shale development timetable in the Ocean Gateway (35).

Year	Operating Rigs	Producing Wells	Cumulative total Wells
2015	1	0	0
2016	1	0	0
2017	1	3	3
2018	1	3	6
2019	1	4	10
2020	2	10	20
2021	3	15	35
2022	4	20	55
2023	5	25	80
2024	5	25	105
2025	5	25	130
2026	6	30	160
2027	6	30	190
2028	6	30	220
2029	6	30	250
2030	6	30	280
2031	4	20	300

With an assumed operating life of 15 years, this scenario would see wells the last wells to be drilled producing gas until 2046. Following cessation of production there would be approximately a year of decommissioning activity at each site.

Regeneris Consulting produced the following timetable in relation to the development, drilling and fracturing of a single test well:

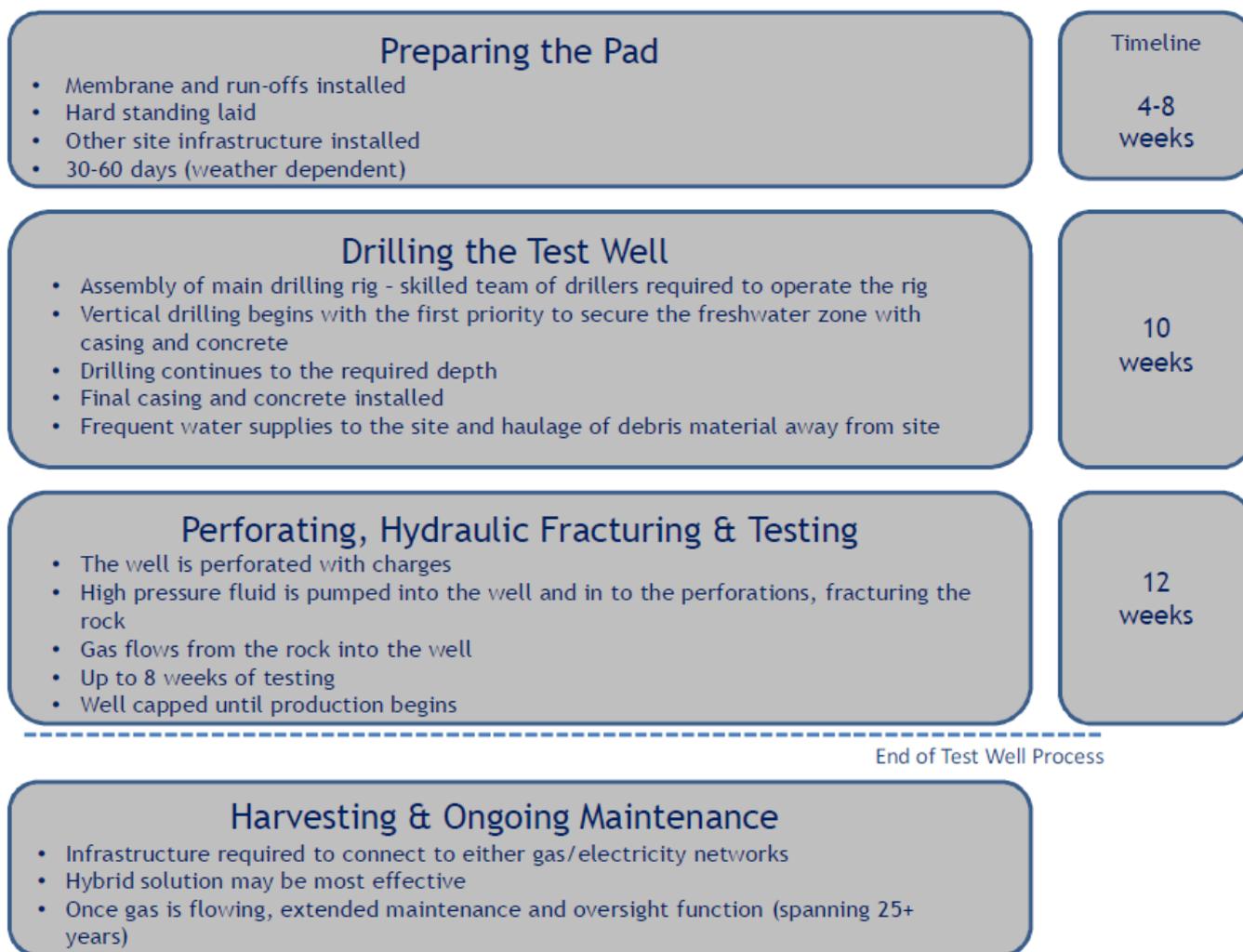


Fig. 7 – Test well pad preparation, drilling and fracturing timescale (12).

The same report stated that it would be possible for six commercial wells to be drilled per year, with Cuadrilla wanting up to 10 drill-rigs being introduced in a licensed extraction area. This could provide up to 60 complete wells per year (12). The following table shows the resulting timetable under three different scenarios: low, medium and maximum activity:

Table 3 – Regeneris Consulting/Cuadrilla proposed drilling timetable (12).

Pads	20 (low)	40 (medium)	80 (max)
Number of years of drilling if all at peak rate	3.3 Say 3.5	6.7 Say 6.5	13.3 Say 13.5
Adjust drilling years to account for build up	Year 1 – 20 Year 2 – 30 Year 3,4,5 – 40 Year 6 – 20 So 6 years = <u>190 wells</u>	Year 1 – 20 Year 2 – 30 Year 3 – 40 Year 4-7 – 60 Year 8 – 40 Year 9 – 30 So 9 years = <u>400 wells</u>	Year 1 – 20 Year 2 – 30 Year 3 – 40 Year 4-14 – 60 Year 15 – 40 Year 16 – 20 So 16 years = <u>810 wells</u>
Source : Regeneris Consulting/Cuadrilla Note : The impact model assumes 10 wells per pad.			

Shale Gas Extraction and the Associated Supply Chain

The supply chain associated with shale gas exploration and production can be investigated via seven key stages across the lifetime of an onshore shale gas drilling site:

1. **Enabling** (identifying suitable locations, gaining PEDL/site and relevant permits)
2. **Site Preparation** (everything required to prepare the site/pad for exploration activity)
3. **Exploratory Drilling** (vertical drilling, flow testing, horizontal drilling of test pad)
4. **Exploratory Fracturing** (site preparation, hydraulic fracturing, flowback collection)
5. **Production Preparation** (site expansion, expansion of well network, commercial fracturing, installation of gas distribution infrastructure)
6. **Operation and Maintenance** (removal of equipment, restoration of water storage, monitoring wells and maintenance of a safe flow of gas)
7. **Decommissioning** (sealing and abandoning wells, removing equipment and reinstating the land to its prior condition)

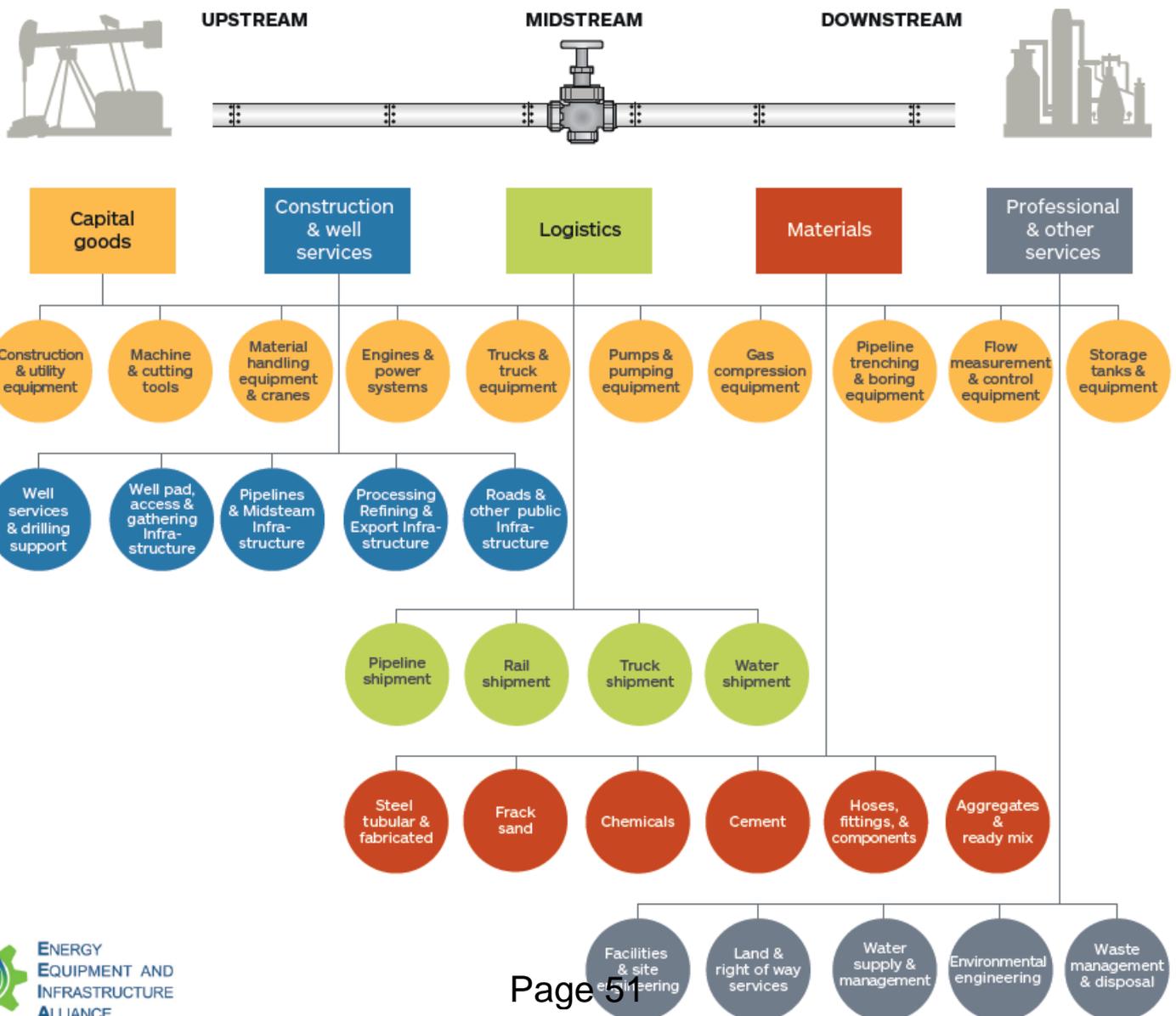


Fig. 8 – An overview of the USA’s unconventional energy supply chain (36).

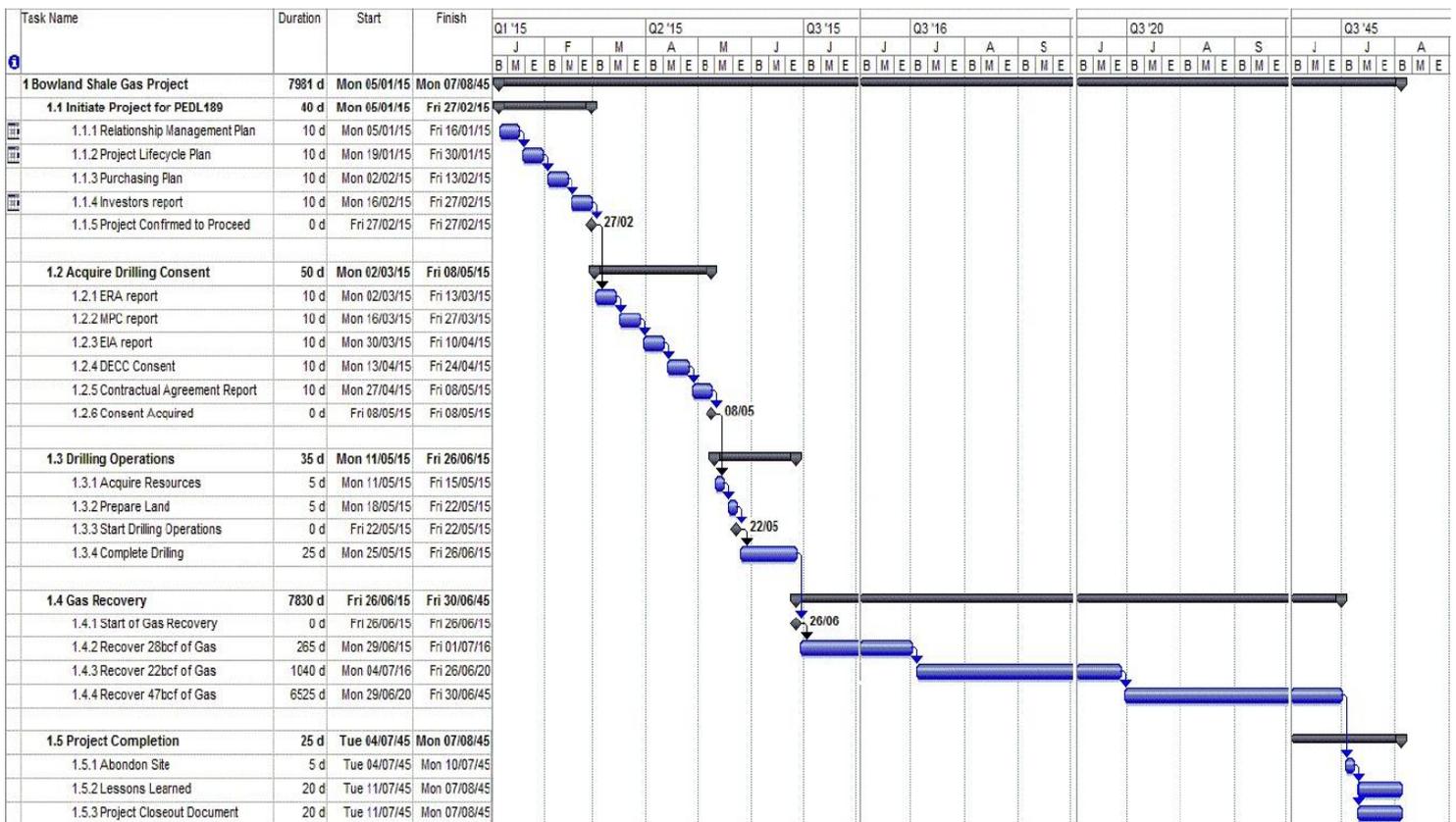


Fig. 8B – Example Gantt Chart for Shale Gas production (58).

Enabling: Estimated Time/Cost, 1-3 years, £0.45mil (35)(37)

Process

The preliminary stage requires planners, geophysicists, transport planners, public relations specialists and land management professionals.

The first step in shale gas exploration is obtaining a Petroleum Exploration and Development Licence (PEDL) from the Department of Energy and Climate Change (DECC). A PEDL gives onshore operators exclusive rights to explore for and extract oil and gas resources within the stated licence area (38). PEDLs are generally distributed every alternate year through a series of competitive licensing rounds. It *should* take approximately 13 weeks after a licensing round closes for a PEDL to be granted (34). History shows that this can be delayed however, especially given the huge gap between the 2008 and 2014 rounds.

Once a PEDL is granted, the operator must then investigate the corresponding area for suitable well pad sites, and then purchase or lease the site from the relevant landowner. As part of the license that has been granted, 3D geophysical sensing must be undertaken to generate as best an idea as possible of underlying geology. Typically these surveys can be undertaken by teams of 4-5 technicians from specialist sensing firms and take a 3-4 weeks in total for several sites to be surveyed and the data to be thoroughly processed (this time

includes the 8-10 days that seismic recording arrays are left on the land to record signals). Unless there is a special condition on the area being surveyed these surveys do not need any planning permission are allowed under Schedule 2, Part 22, Class B of the Town and Country Planning (General Permitted Development) Order 1995, but access must be permitted by the land owner. Once this geological analysis is finished, an environmental risk assessment can be undertaken and a more thorough analysis of geographical and logistics issues can be performed. Understanding the logistics and geography of the location is key to the supply-chain management and efficiency of the companies involved. The environmental risk assessment must be brought before local communities during a round of public consultations which are mandatory as part of UKOOG's community engagement charter. From all of this analytical work, a more comprehensive Environmental Impact Assessment can be completed which forms the basis of planning applications. Planning permission is required for all surface operations such as pad construction, drilling and hydraulic fracturing. Minerals in the UK are owned by the Crown, not the land owner. Operators must consult with the Local Mineral Planning Authority (LCR Authorities) before any site can be explored. The Infrastructure Bill has now passed through parliament and allows operators to gain a right of access to minerals at depths below 300 metres for onshore activities without the landowner's permission (37). Additionally, the act states:

- 1) Fracking is prohibited at **depths of less than 1,000 metres**, unless the Secretary of State gives consent.
- 2) Fracking is **prohibited in protected areas**. The definition of protected areas is to be set by the Secretary of State in regulations to be put before parliament by 31st July.
- 3) Fracking is to be prohibited in "protected groundwater source areas". Again, the definition is to be set by the Secretary of State in regulations required by 31st July.
- 5) The Health and Safety Executive will be required to visit the site of fracking wells. They must also provide a certificate that it has received a well notification under existing regulations.
- 6) **Methane levels in groundwater** will be monitored for 12 months before fracking can begin.
- 7) The environmental permit for a fracking site will require monitoring of **methane emissions**.
- 8) The environmental **regulator will have to approve substances** used in fracking,
- 10) Planning authorities must consider how to impose a **restoration** condition for fracking operations and ensure it is delivered.
- 11) **Water companies** must be consulted before planning permission is granted.
- 12) Operators will show they have given the **public notice** of fracking applications.
- 13) A scheme must be in place to provide "financial or other benefit for the local area".

Planning permission is required from the Minerals Planning Authority for all surface operations, and the well distribution plan, site access and site restoration arrangements must all be agreed before construction can take place. Operators are also required to consult with the Health and Safety Executive to guarantee safe working practices relating to well integrity and properly monitored health and safety at the site (4). Any activity that disturbs or enters coal reserves will require the consent of the Coal Authority under the Coal Industry Act 1994 (37).

Operators must consult the Environment Agency and Natural England with regards to an Environmental Impact Assessment, Environmental Risk Assessment, Habitats Regulations Assessment and, where appropriate, public consultations (4). Local planning authorities are the competent bodies for these assessments and set them as regulatory requirements; an integral part of obtaining planning consent.

A water abstraction licence is required from the Environment Agency if operators are planning to extract water from surface or groundwater sources at a rate exceeding 20 cubic metres per day. The Water Resources Act requires operators to provide both the Environment Agency and the Health and Safety Executive with a notice to drill which illustrates how the operator will protect water resources. Operators must also consult the Environment Agency with regards to the substances used in their fracturing fluids. Only substances deemed to be non-hazardous pollutants under the Groundwater Daughter Directive can be used in hydraulic fracturing operations (4). Chemicals used in fracturing fluid may also have to be registered under the European regime REACH (Regulation, Evaluation, Authorisation and Restriction of Chemicals) (37).

The Environment Agency is in charge of granting permits for the responsible management and disposal of any drilling wastes. A mining waste permit is required for managing flowback fluid and waste gases. A permit is also required for the storage and subsequent treatment of any Naturally Occurring Radioactive Materials (NORMs) found in flowback fluid. It is likely that the granting of these permits will come alongside a public consultation due to high public interest. It is recommended that operators apply for these permits simultaneously to save time and resources (4).

In order to achieve final consent, operators must acquire DECC approval for all operations such as drilling, hydraulic fracturing, well suspension and well re-entering through the Well Operators and Notifications System (4). A comprehensive 'Fracking Plan' must be submitted to DECC which discloses any substances used in the process (37). To undertake hydraulic fracturing operations, the operator must assess all available geological data on pre-existing faults at the site. They must also monitor background seismicity during operations and follow a strict 'traffic light' safety regime whereby operations are halted following any seismological events above a certain threshold. The growth of height of any fracture away from the borehole must also be monitored (4).

Employment Opportunities

Local authorities are heavily involved in granting planning permission and permitting issuance, health, safety and environmental monitoring of operations. Health and Safety Executive members are required to examine all wells. Impact assessment and environment risk advisors will also be required throughout the process (34).

Professional services can be called upon for assistance throughout the relatively complicated planning process. For example, law firm Pinsent Masons have created a specialist 'shale gas team' that can provide advice on (37):

- PEDL applications
- Obtaining planning and environmental permits
- Securing land rights
- Managing protestor activity
- Constructing the shale gas project
- Advice on health and safety compliance
- Securing funding for the project

Local law firms could be used to assist in these activities, although this will only generate a small number of local jobs (39).

Materials and Equipment

The only strategically notable things required at this stage are investment and permission, save for any specialist equipment that geophysicists use in pre-screening (34). There is the potential, given LCR also acting as a hub for 'Sensor City' and tech innovation, that specialist software and tools could be developed and improved for this preliminary stage and also the monitoring and infrastructural planning stages that follow.

Site Preparation: Estimated Time/Cost, 4-8 weeks, £0.5mil per site (35)(40)

Process

Firstly, a geophysical and geochemical survey of the site must be carried out to identify the best locations within the site for shale gas exploration (34). When a suitable location is found and a well pad is designed, it may be necessary for access roads to be created (40).

Before construction begins, it may be necessary to remove any trees or vegetation and level the area to provide a suitable foundation for the pad (41). The construction of the well pad involves drilling to remove top soil and gravel and the installation of an impermeable membrane across the pad area along with a cement collar (12). The pad itself is then constructed with rock. The base of a typical Marcellus shale pad is 8 to 12 inches thick consisting of a coarse aggregate, followed by a 3 to 4 inch layer of finer aggregate (41). The final stage of a typical Marcellus shale pad construction is to 'seed' the outer edges of the site in order to re-establish vegetation and prevent soil erosion (41).

Offices, gas and water storage facilities and purification facilities must be installed along with double-skinned steel storage tanks for the storage of flowback water after fracking (40). Other requirements include restroom facilities, security fencing, security cameras and a power source (this could be from the mains or an on-site generator depending on the site) (42). The mobilisation, assembly and installation of drilling rigs will take approximately 1 week (12).

The Institute of Directors (IoD) has estimated that there will be 40 truck journeys required for site access and well pad construction, 40 truck journeys for drill rig installation and 10 truck journeys for well pad completion (4). John Beswick (director of PR Marriott Drilling) however has recently stated that there is so much variance in this truck activity for each site that the International Association of Oil and Gas Producers has deferred creating a guide to it.

Employment Opportunities

Identifying sites with suitable geology requires research and development companies within the physical sciences sector (39). This stage relies heavily on the geophysical and engineering services industry, along with the construction industry. Demand is also created within the commercial and industrial machinery and equipment rental industries. Environmental remediation services will also be required to some extent at this point. The most likely area for the largest immediate local opportunity exists in the heavy haul/truck transportation industry, with trucks being required throughout the site preparation process for the delivery of equipment and materials, and the removal of dirt and waste (39).

Materials and Equipment

Thumper trucks are required to produce seismic waves to study the geology of the area. Geophones are used to detect the seismic response, and the results are analysed in a seismic recording centre (34).

When working alongside Cuadrilla on their Lancashire test sites, Regeneris Consulting estimated that the site preparation works for a test well totalled to £590,000. This included all planning consent work and all initial earth work and laying the membrane (12). The costs associated with individual activities given below are taken from a USA study. There are no detailed case studies in the UK or Europe as of yet due to a lack of shale gas activity in these regions.

The costs involved in the creation of access roads can vary greatly depending on the well pad location. The average road creation project for a site in Pennsylvania costs between \$10,000 and \$20,000 (41). Heavy construction and excavation equipment used to level the site and create the pad must be mobilized. This includes dozers, backhoes, tractors, blades and heavy haul trucks. This process can be performed by a heavy haulage company, and the typical cost in Pennsylvania is between \$10,000 and \$20,000 (41).

The costs involved in stripping and grubbing an area vary greatly depending on the density of forestation present. Typical costs in Pennsylvania vary from 0\$ for a natural field to \$45,000 for an area with lots of trees and vegetation (41). Levelling a pad site in

Pennsylvania costs between \$125,000 and \$300,000 on average (41). The aggregate rock mixes required for pad construction cost, on average, between \$10,000 and \$20,000 per site in Pennsylvania (41). The average cost of 'seeding' a pad in Pennsylvania is between \$20,000 and \$50,000 per site (41).

Exploratory Drilling: Estimated Time/Cost, 8-10 weeks, £4.3mil (12).

Process

Once the rig is set-up on the pad, a drill bit is mounted onto the end of a drill pipe and the initial stage of drilling can commence. A mixture of water and various additives known as 'drilling mud' is injected during drilling to cool the drill bit, stabilise the well wall and force drilling waste to the surface (12). Once a suitable depth is reached (beneath the aquifer, around 150m above the shale sequence) the drill bit and pipe are removed and are replaced with steel pipes of various thicknesses (40).

The following details on the casing process used in a vertical well are from a typical Barnett shale pad in Texas; as such, the well depths in the UK will differ (25):

- Conductor casing – an initial layer of steel pipe attaching the system to the surface at depths of 40 to 100 feet.
- Cement is pumped down the casing, out through the bottom and up between the well and the casing to provide an impermeable seal (12).
- Surface casing – a secondary steel pipe which goes beyond the aquifer, typically 1,000 feet below the surface
- Cement is pumped through the surface casing to seal it in place.
- Intermediate casing – This steel pipe extends thousands of feet down into the shale rock. (Intermediate casing is sometimes not required depending on the local geology of the site).
- Cement is pumped through the intermediate casing to seal it in place.
- Production casing – This is the final set of steel piping which is installed after horizontal drilling has taken place. This is the pipe through which gas flows to the surface.
- Cement is pumped down to seal the production casing in place.

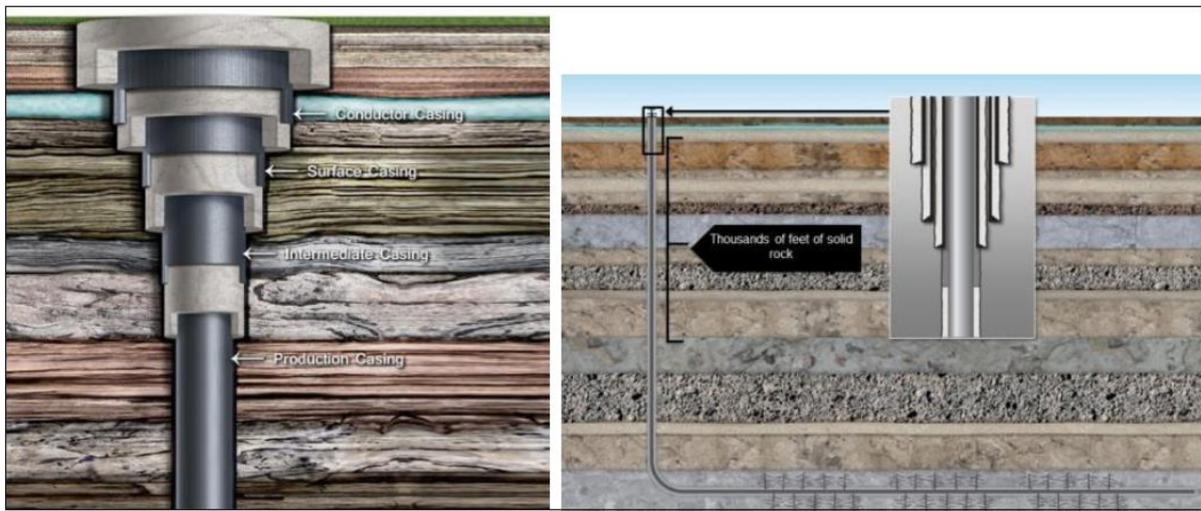


Fig. 9 – Multiple casings used in a typical shale gas well (25).

Note: All UK wells must be triple cased at point of Aquifer layer (HSE).

At this stage core samples of the shale can be extracted and sent away for detailed analysis. Core analysis provides important geological information about the hydrocarbons present in the shale (34).

The next stage is horizontally drilling into the shale formation, which requires a hi-tech coil tube drill bit to be mounted onto the drill pipe. Once the desired distance is reached the drill pipe and bit are removed from the well and production casing is installed. Testing is then performed to monitor the safety of the well. Daily deliveries and removals of drilling materials and drilling waste occur throughout the drilling stage. Constant site security is also required (12).

Employment Opportunities

Detailed description of the jobs involved in this development stage can be found in the Production Preparation section, as a lot of overlap occurs.

Materials and Equipment

Required equipment includes a drilling rig, a work-over rig, rig lubricants, conductor/surface/intermediate/production casing, cement, power generators, drilling mud and injection system, waste storage and removal, horizontal drilling equipment and a well head (34).

Regeneris Consulting has estimated that the total cost of drilling a test well is £4,338,000 which includes payments made to third party suppliers and drill fluids, all costs incurred by drill service company, an allowance for depreciation of the drill rig and steel tubes for casing (12).

Exploratory Fracturing: Estimated Time/Cost, 12-20 weeks, £5.5mil

Process

This stage begins around 3 or 4 weeks after the exploratory drilling is completed, and lasts for around 2 or 3 weeks for a test well. This process allows for the flow testing of a well (12). The first step involves lowering a perforating gun into the well and sending an electrical current to set the charge off. A small controlled explosion occurs which perforates the steel casing, cement and the shale rock surrounding it. This is repeated at regular intervals through the horizontal section (12).

A mixture of water, sand and chemicals known as ‘fracking fluid’ is then forced down the well and into the perforations at high pressures in order to create fractures in the shale rock. This injection of fluid can be repeated several times to extend the fractures through the shale and increase eventual gas collection. Seismic monitoring using geophones occurs throughout the fracturing process (40).

Flowback water is produced at the surface throughout hydraulic fracturing and continues to be produced for a considerable amount of time after fracturing has finished. This water is stored in double-skinned steel storage tanks on-site. This is in accordance with methods of best practice and also prevents the escape of free methane. Flowback water treatment can take place on-site or at a permitted waste management facility and the treated water can be re-used. If on-site treatment is not possible the flowback water must be transported to an off-site treatment facility via tankers operating in accordance with Environment Agency legislation. (40).

Once fracturing is completed a cement plug is inserted into the well and gas levels are monitored for approximately 8 weeks to see if the well is safe, and if the gas production levels are economically viable. Once this testing phase is completed, the plug is removed and a permanent well head is installed and the well is considered closed until the production phase begins (12).

Employment Opportunities

Details of the jobs involved in this development stage can be found in the Production Preparation section, as a lot of overlap occurs.

Regeneris Consulting provided an estimate for the total number of jobs created in one year’s worth of activity across three test wells:

Table 4 – An estimate of the number of full time equivalent jobs created in one year through activity across three test wells in Lancashire (12).

	Lancashire	Rest of UK	All of UK total
Jobs within Cuadrilla/1st Round Suppliers	17	108	125
Jobs due to subsistence expenditure	19	4	23
Jobs within the rest of the Supply Chain	4	68	72
Jobs from Induced Impacts	3	27	30
TOTAL	43	207	250
Implied Jobs per Well			83
Source : Regeneris Consulting			

Materials and Equipment

Equipment required for this stage includes a data centre for geophysical monitoring, fracking fluid (water, sand, chemicals), chemical storage and blender, perforation charge, high pressure pumps and covered gas flare to test if the gas produced is 'wet' (34).

Regeneris Consulting estimated that all fracturing related costs and flow testing amounted to £5,517,800. This includes all costs incurred by the fracturing company, depreciation on fracturing equipment, payments by third party suppliers and technical testing throughout the process (12). They also estimated the total cost incurred in developing a single test well to be £10,446,000:

Table 5 – Disaggregation of costs incurred for a single test well in Lancashire (12).

	Workers & Suppliers based in...				<i>All of UK</i>
	Lancashire	Rest of UK	Overseas	Total	
Labour	303,000	1,983,000	547,000	2,833,000 (27%)	2,285,000 (33%)
Subsistence	385,000	77,000	51,000	513,000 (5%)	462,000 (7%)
Bought in Goods & Services (inc depreciation)	801,000	1,793,000	2,102,000	4,696,000 (45%)	2,594,000 (37%)
Overheads	115,000	691,000	345,000	1,151,000 (11%)	806,000 (11%)
Profits	125,000	752,000	376,000	1,254,000 (12%)	877,000 (12%)
TOTAL	1,729,000	5,296,000	3,422,000	10,446,000	7,024,000
	17%	50%	33%		

Source : Cuadrilla Resources & Regeneris Consulting

An estimate for the cost of producing a subsequent commercial well was given as £8.97 million (12).

Production Preparation: Estimated Time/Cost; 2 years, Pad expansion, well drilling and fracturing costs around £333mil per pad, distribution infrastructure costs around £5mil per pad

Process

A pad development plan must be submitted to the DECC. Once planning permission for site development is granted, the first step is to expand the well pad to accommodate further gas and water storage facilities and vehicle parking space. Further vertical and horizontal drilling takes place on the pad (40). The IoD, Amion and Ernst & Young reports about UK shale gas all assume that each individual pad contains 10 vertical wells, with each vertical well having 4 horizontal wells associated with it, giving a total of 40 horizontal wells. This arrangement would use approximately 2 hectares of land (4).

In their 2013 report, the IoD assumed that the water required for the drilling and fracturing processes comes directly from the mains supply. Approximately 13,600 cubic metres of water are required per horizontal well for hydraulic fracturing. It is also assumed that the amount of flowback water produced totals 30% of this amount. This gives an estimated total of 544,000 cubic meters of water required for hydraulic fracturing per pad, with 163,200 cubic metres of flowback water produced per pad (4).

The IoD also believes that if shale gas extraction were to happen at scale in the UK, there would be no reason to believe that the supply of rigs and associated equipment would not meet demand. For example, the Weir Group PLC is based in Aberdeen and already provides approximately half of the high-pressure pumps used in US and Canadian shale markets (4).

Fracturing takes place between 8 and 13 times for each horizontal well. The flowback water produced is collected and stored in double skinned steel storage tanks awaiting either on-site or off-site treatment. Once fracturing is complete, cement plugs are used to seal the wells. Once the wells are ready to produce gas these cement plugs are removed and are replaced with permanent well heads (40).

The 2013 IoD report also estimates that each well will require 50 truck journeys for pipe construction, 10 for casing, 25 for the removal of drill cuttings, 50 for the removal of waste water, 2 for the delivery of fracturing chemicals, 136 journeys for the removal of flowback water and 3 for the water produced during gas collection (4).

The IoD gives the following estimated timeline for activity in the UK. It will take approximately 2 months per horizontal well for both drilling and fracturing to occur in the first year of operations. The drilling pace is then assumed to increase to 10 horizontal wells per year in subsequent years. It is also assumed that production won't start until 2017 due to the requirement of further planning approval. For a single pad, this means that 6 horizontal wells are drilled in the first year, 10 horizontal wells are drilled in the second, third and fourth years and 4 horizontal wells are drilled in the fifth year (4).

The Amion report for the Ocean Gateway envisages the development of 30 production sites each with 10 vertical wells and 40 associated horizontal wells. This development would result in a total of 300 vertical wells and 1,200 horizontal wells being drilled in the Ocean Gateway area over a period of 16 years (35).

The 2 main options for gas distribution considered by Regeneris Consulting in relation to Cuadrilla's production wells are (12):

- The construction of new pipelines to connect purified gas to the National Transmission System.
- The on-site generation of electricity. This is then connected to the National Grid.

Another option would be the use of tankers initially transporting produced gas off-site whilst new distribution infrastructure is developed. This would require a larger site area due to the introduction of extra gas storage facilities (40).

It is possible for operators to split the costs and work involved in creating distribution infrastructure between them by building shared infrastructure. Options include (34):

- Regional gas gathering facilities which connect pads from different operators.
- Regional gas processing plants which could be shared by multiple operators.

Any new treatment facilities would need further planning consent, and should be built as close to the well pads as possible in order to reduce truck driving distances, and allow the opportunity for treated water to be recycled in the fracturing process, thus reducing the amount of clean water required. The construction of new water treatment facilities provides another opportunity for investment and job creation by the private sector (4).

Overall it should take approximately 6 years to get a single pad from planning stage into production; however complex and ever-changing planning rules and regulations are causing a lot of uncertainty for the future (34)(40)(4).

Employment Opportunities

The following information comes from a 2014 Ernst & Young report which splits the jobs involved in each stage into direct and support roles (34).

Direct roles

Drilling and completions (drilling services, casing and cement services, coiled tubing, drilling waste disposal and logistics management):

- Drilling crews, including engineering services, project management and front line supervisors.
- Derrick (rig) and equipment operators.
- Apprentices and labourers (roustabouts – workers that maintain operations in an oil/gas field).
- Mud loggers, geologists and geotechnical engineers.
- Drill cutting and waste disposal vehicle drivers.

Hydraulic fracturing (high-pressure pump equipment and perforation set-up and operations, chemicals and proppant supply, mixing and pumping fracturing fluid, waste management, micro seismic services):

- Fracturing and perforating crews with engineering services.
- Front line supervisors and project management.
- High-pressure pump operators.
- Perforating charge operators.
- Blender operators (for mixing fracking fluid).
- Apprentices and labourers (roustabouts).
- Waste water treatment and disposal vehicle drivers.
- Crane and tower operators.

Petroleum engineering and geosciences:

- Environmental consultants (evaluation and monitoring of field performance, seismic modelling coring and field sample analysis).
- Petroleum engineers.
- Geologists and geophysicists.
- Lab technicians.
- Seismic crews (supervisors, equipment operators, observers and apprentices).

There are an estimated 102 direct jobs per pad per year (34). The percentage of jobs by category is given as:

Drilling and operations 62%, Operations support 11%, Direct office support 10%, Petroleum engineering and geosciences 9%, Hydraulic fracturing 5%, Planning approval and permitting issuance, health, safety and environmental monitoring 2%, Construction 1% (34).

Support roles

Operations management (site and facilities management, security services, fuel, waste disposal and cleaning, equipment inspections and maintenance):

- Operations and maintenance technicians.
- Security guards.
- Fuel truck drivers.
- Waste disposal vehicle drivers.
- Trades services and apprentices (carpenters, electricians, plumbers).
- Construction labourers.

Construction (pad site grading, construction of gathering facilities and pipelines, transport of construction materials):

- Excavation heavy equipment operators.
- Engineering (civil, mechanical, chemical, electrical).
- Project management.
- Trades services and apprentices (carpenters, electricians, plumbers).
- Construction labourers.

Office support (field services support including drilling, well completions, geology, health and safety, environmental monitoring, permitting, production planning, procurement, community relations, finance and administrative):

- Field services support (drilling engineering, well completions, geological support, health and safety, approvals and permits, production and site planning, procurement and public relations and community relations).
- Finance and administrative professionals.

- Marketing and sales professionals.

The average salary ranges for key exploration and development roles per year are (34):

- Drilling £52,156 - £125,743
- Geosciences £40,573 - £159,520
- Health, safety and environment £38,146 - £102,994
- Reservoir and petroleum engineering £35,926 - £106,323
- Process (chemical) £38,076 - £115,201

The IoD investigated US job roles in their 2013 report on shale gas. The following information from that report shows the main occupations involved along with their average hourly wages (4). Clearly the wages may be different in the UK but this could provide a picture of the potential pay hierarchy based on the number of people fulfilling certain roles in the operation.

Management, Business and Financial:

- General and operations managers (\$63.03)
- Construction managers (\$45.42)
- Engineering managers (\$64.74)
- Cost estimators (\$32.12)
- Accountants and auditors (\$34.83)

Professional and related:

- Architects (\$37.79)
- Surveyors (\$27.44)
- Civil engineers (\$40.18)
- Electrical engineers (\$43.98)
- Mechanical engineers (\$39.42)
- Petroleum engineers (\$67.55)
- All other engineers (\$47.99)
- Architectural and civil drafters (\$24.00)
- Civil engineering technicians (\$23.22)
- Surveying and mapping technicians (\$19.98)
- Geoscientists (\$63.61)
- Geological and petroleum technicians (\$27.65)

Sales and related:

- Sales representatives, wholesale and manufacturing (\$31.85)

Office and administrative support:

- First line supervisors/managers of office and administrative support workers (\$27.62)
- Bookkeeping, accounting and auditing clerks (\$17.56)
- Secretaries and administrative assistants (\$18.60)
- Office clerks (\$14.95)

Skilled blue collar:

- First line supervisors/managers of construction trades and extraction workers (\$32.63)
- Carpenters (\$23.29)
- Cement masons and concrete finishers (\$19.33)
- Paving surfacing and tamping equipment operators (\$18.97)
- Operating engineers and other construction equipment operators (\$21.70)
- Electricians (\$27.49)
- Plumbers, pipefitters and steamfitters (\$26.99)
- Derrick operators, rotary drill operators and service unit operators (\$23.28)
- Mobile heavy equipment mechanics (\$22.22)
- Industrial machinery mechanics (\$24.36)
- Maintenance and repair workers (\$19.96)
- Petroleum pump system operators, refinery operators and gaugers (\$26.83)
- Crane and tower operators (\$24.55)
- Pump operators and wellhead pumpers (\$21.59)

Semi-skilled blue collar:

- Roustabouts (\$16.72)
- Helpers/extraction workers (\$17.62)
- Welders/cutters/solderers and brazers (\$19.08)
- Inspectors/testers/sorters/samplers and weighers (\$19.39)
- Truck drivers, heavy and tractor trailer (\$18.37)
- Evacuating and loading machine and dragline operators (\$19.25)

Unskilled blue collar:

- Construction labourers (\$16.54)
- Fence erectors (\$15.25)
- Labourers and freight/stock/material movers (\$13.62)

Other professions not mentioned in the US data include security guards, financial services professionals and public relations staff (4).

Materials and Equipment

A paper from the University of Manchester gives the following central estimates for the amounts of core materials required in drilling and hydraulic fracturing a single well: 330

tonnes of steel, 210 cubic metres of concrete, 1000 cubic metres of water for drilling fluid, 12,000 cubic metres of water for fracturing fluid, 1215 tonnes of sand and 7 tonnes of polyacrylamide (the only chemical used by Cuadrilla for hydraulic fracturing so far) (43).

The following breakdown of materials and services needed comes from a 2014 Ernst & Young report and is based on a single pad with 10 vertical wells and 40 horizontal wells drilled (34):

Drilling and completions – Estimated £8.2 billion total spend UK wide, £82.6 million for single pad:

- **Steel casing** - £23 million – 28% of spend. There is an existing market here that requires additional funding. There are two UK steel manufacturers that supply the offshore market and are considering onshore shale opportunities.
- **Rig hire** - £21.7 million – 27% of spend. A new market with significant investment is required here. Most parts and drilling crews will be imported from the USA and Europe.
- **Ancillary equipment and services** - £11.9 million – 14% of spend. There is an existing market here that requires additional funding. The UK doesn't currently have the capability to manufacture high-tonnage drill rigs; however an opportunity exists for UK companies to upgrade imported rigs to UK standards via design and provision of ancillary equipment.
- **Cementing services** - £8.2 million – 10% of spend. There is an existing market here that requires additional funding. There are four major UK cement manufacturers based across eleven sites. Operators tend to purchase cement services from an international oilfields services company with established UK operations.
- **Directional drilling services** - £7.5 million – 8% of spend. An innovative market with significant investment potential. Directional drilling is considered a highly specialised skill purchased from oilfield services companies. If a UK shale market is established, there is an opportunity for UK small and medium sized enterprises to develop this competency.
- **Drilling fluids and fluids engineering** - £5.7 million – 7% of spend. There is an existing market here that requires additional funding.
- **Drill rig fuel** - £4.6 million – 6% of spend. There is an existing market here with no anticipated supply constraints.

Hydraulic fracturing – Estimated £20.5 billion spend UK wide, £205 million for single pad:

- **Specialised equipment and personnel** - £170.6 million – 83% of spend. A new market with significant investment is required here. Pipes and valves tend to be

sourced from the UK; however the majority of basic pump units are manufactured outside the UK. There are opportunities for equipment support services and parts replacement.

- **Proppant (treated sand)** - £20.3 million – 10% of spend. There is an existing market here that requires additional funding. There are 20 existing UK sand quarries from which silica sand can be purchased with no availability problems.
- **Chemicals** - £8 million – 4% of spend. There is an existing market here with no anticipated supply constraints.
- **Mobilisation and Demobilisation** - £4 million – 2% of spend.
- **Miscellaneous** - £2 million – 1% of spend.

Waste disposal – Estimated £2.8 billion total spend UK wide, £27.7 million for single pad:

- **Waste water management** - £14.5 million – 54% of spend. There is an existing market here that requires additional funding. There are Naturally Occurring Radioactive Materials (NORMs) treatment facilities and Ultra Violet bacteria removal technologies present in the UK. On-site treatment technologies already exist and are manufactured and distributed by some UK suppliers.

Most of the flowback water produced surfaces in the first 3 months of hydraulic fracturing taking place. This water must be treated for NORMs, bacteria and chemicals. Around £5.9 million of the waste water spend total is used to transport flowback water to an off-site treatment facility. There is a great opportunity for on-site water treatment technologies to develop as they would improve site efficiency (34).

- **Drilling waste management** - £13.2 million – 46% of spend. There is an existing market here that requires additional funding. The North of the UK is host to a number of drilling waste disposal facilities; however additional permits and increased capacities are required for shale development. There are also mobile technologies which can dewater drilling waste on-site thus reducing the amount of drilling waste which needs to be transported off-site.

Throughout the drilling process ‘muds’ are removed from the well and are injected into a mud tank system in order to remove drill cuttings and other solids. The resulting solids must then be transported off-site and treated before being disposed via landfill or recycling. There is an opportunity here for the development of on-site drilling waste treatment technologies which would greatly reduce the number of truck journeys required for a site (34).

Storage and Transportation – Estimated total spend UK wide, £1.3 billion, £12.7 million for single pad:

- **Waste transportation** - £7.5 million – 62% of spend. There is an existing market here with no anticipated supply constraints. There are already companies that can offer specialised waste transport for drilling operations.
- **Water storage and transportation** - £5.2 million – 38% of spend. There is an existing market here with no anticipated supply constraints. This cost depends heavily on the use of on-site treatment technologies and the readiness of operators to build and share infrastructure such as material and equipment depots.

The level of requirement for storage and transportation services depends heavily on the use of mobile on-site treatment facilities for flowback water and drilling waste. Collapsible ‘bladder tanks’ could be used to store on-site liquids whilst reducing the number of associated truck journeys. Operators could also share the costs involved in producing centralised warehouses for equipment and material storage. The average cost associated with storing water on-site over the entire drilling period of a single pad with 10 vertical wells and 40 horizontal wells is £1.1 million (34).

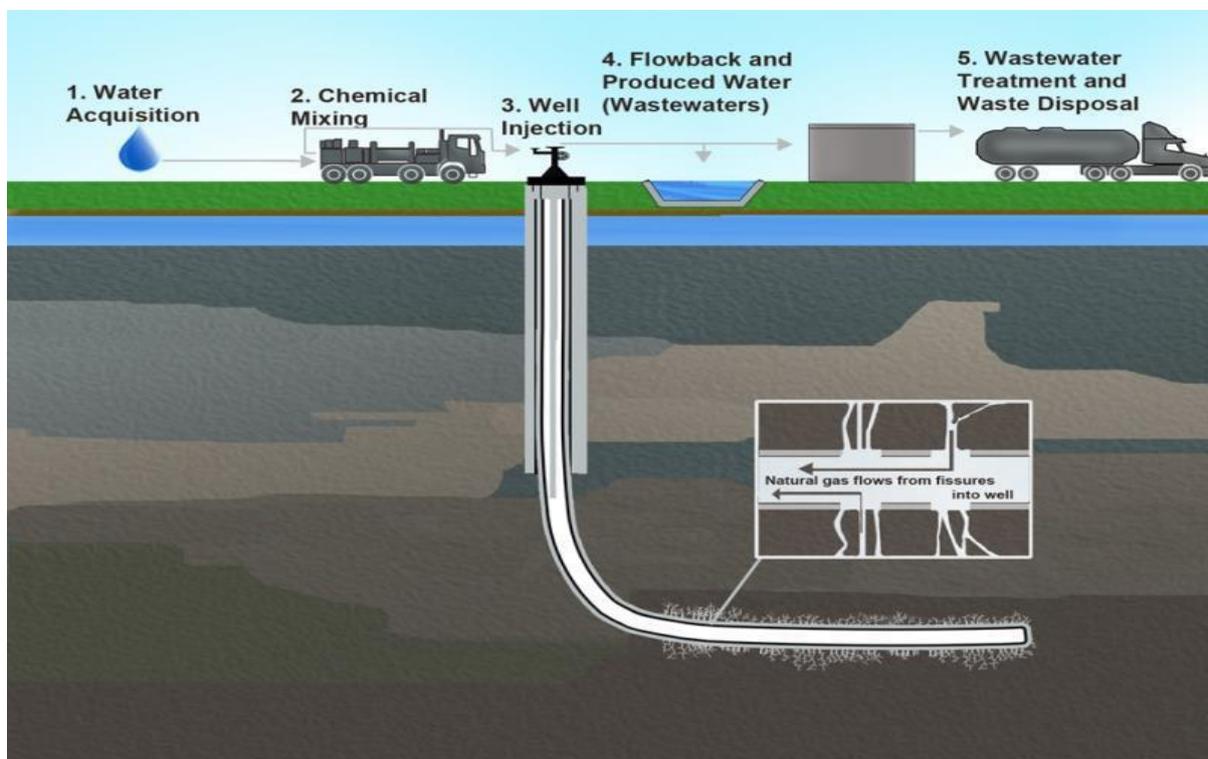


Fig. 10 - Water usage in shale gas extraction (25).

Other costs - £5 million for a single pad:

- This includes pad preparation, construction services and security services.

Total required to bring a single 10 vertical well, 40 lateral well pad into production is approximately £333 million [higher cost scenario](34).

The next stage would be to gather the gas, process it and deliver it to end-users. New pipelines will be used to connect well heads to processing plants, and then from there to interconnectors and market hubs. A Network Entry Agreement with National Grid would be required to connect new gas sources to the National Transmission System. The number of Network Entry Agreements required depends on whether operators share a single connection point from a shared gas processing plant, or if they have individual connections for each pad. The charge for construction works for a new minimum off-take connection at a National Grid Greenfield site is approximately £2 million (34).

The key steps in constructing a new pipeline are as follows (42):

- Pre-construction survey – Ensures compliance with regulations and avoids disruption to existing utility lines and agriculture.
- Cleaning and grading – Clear the route over which the pipeline will travel.
- Trenching – Removing soil to create a trench in which the pipeline will be installed.
- Pipe stringing and bending – Placing individual sections of the pipe in order.
- Welding, pipe coating and weld inspection – Welding individual pipe sections together.
- Lowering pipe in and ‘backfilling’ – Putting the welded pipeline into the trench.
- Water test – Running water through the pipeline to test for leaks.
- Restoration – Reinstating the land on which construction has taken place.

The estimated cost of installing pipelines in the USA is around \$1 million to \$1.5 million per mile. With one 12 inch thick pipe being able to transport 1.7 billion cubic feet of gas per day, this could support 1,000 Marcellus shale gas well sites (42).

Operation and Maintenance: Estimated Time/Cost; 15/20 years, £0.5 million per year (35)(4).

Process

Drilling and fracturing equipment, offices, restrooms and storage facilities are removed from the site. Gas purification plants, flares, inspection platforms and spaces for vehicle movement remain. Water storage tanks are removed and the water treated. The wells are tested to ensure their safety for around 4 weeks per well, and maintenance contractors ensure the safe and continued flow of gas (40).

The highest gas flow rate occurs in the first year of production, with the rate decreasing by two thirds by the end of the first year. It is then estimated that the gas flow rate halves in each subsequent year up until the tenth year, after which the decrease in flow rate slows down. Re-fracturing can occur if there are realistic opportunities of extracting more gas, and this usually occurs within the first five years of production (40). The IoD estimate that a single pad with 40 horizontal wells will produce 126bcf of gas over the course of its lifetime (4).

Decommissioning: Estimated Time/Cost, 1 year, £11 million per site (35).

Process

Once the well is no longer producing economically viable amounts of gas, the drill shaft is filled with cement and the well head is sealed. All unnecessary facilities such as purification plants or storage facilities and offices are removed and the pad is restored to its prior state in accordance with the pre-arranged agreement with Government bodies (40).

The IoD differs greatly from Amion’s report here by assuming that wells are abandoned after 20 years of production at a cost of £40 million for a well pad with 10 vertical wells and 40 horizontal wells (4).

Overview of activity

Table 6 - The Institute of Director’s summary for activity across a single pad in the UK with 10 vertical wells and 40 horizontal wells (4).

	Amount	Comments
Gas production	126.2 bcf	Total over lifespan
Investment	£514 million (constant prices)	Total capex plus opex over lifespan
Jobs	Peak of 1,104	Total of direct, indirect and induced
Homes	Peak of 747,000 homes powered OR 417,000 homes heated	Assuming losses in generation (for electricity) and transmission / distribution (for both electricity and gas) specified in previous section
Drilling schedule	Year 1 – 6 laterals Year 2 – 10 laterals Year 3 – 10 laterals Year 4 – 10 laterals Year 5 – 4 laterals	Once site preparation work completed
Water used for fracturing	544,000 m ³	Will be heavily concentrated in early years
Flowback water	163,200 m ³	Will be heavily concentrated in early years
Total number of truck movements	11,155 – 31,288	Depending on whether drilling and fracturing water trucked to the site or provided by mains supply. Total over 20 years, but truck movements will be heavily concentrated in early years

In their 2014 study into UK shale gas, Ernst and Young provided the following summation of activity: Across the UK at peak, 64,500 downstream related jobs will be created. 6092 direct roles, 39,405 indirect/supply chain roles and 19,036 induced roles (34).

Table 7 - The Amion development summary for the Ocean Gateway is as follows (35):

Developed production Wells	300
Maximum Annual Cost	£945.1m
Average Annual Cost	£466.4m
Cumulative Spend (to 2035)	£9.8bn

Table 8 - The corresponding jobs summary for the Ocean Gateway is as follows (35):

	Ocean Gateway	UK
Direct	1,482	2,914
Indirect	1,792	6,444
Induced	230	6,184
Total	3,504	15,542

A lot of the induced spending will go to companies based outside of the Ocean Gateway region, hence the low figure of jobs associated with it in the table. These jobs figures are based on the assumption that a substantial amount of supply chain jobs are sourced within the UK, and that a local base of suppliers and skilled workers will have developed by the time the shale industry takes off (35).

Table 9 - Cuadrilla’s estimates of job creation via its drilling activities in Lancashire under three scenarios of activity (40):

Scenario	Number of wells drilled	Number of well pads	Duration of drilling	FTE jobs in Lancashire	FTE jobs in all UK	Local FTE jobs / pad
Low	190	20	6 (2018)	560	3400	28
Central	400	40	9 (2021)	1700	5620	43
High	810	80	16 (2028)	2500	6550	32

The Central scenario sees 4000 direct and indirect jobs created throughout the UK by both the drilling and fracturing processes (71% of total); 610 direct and indirect jobs (11%) involved in bringing wells into the production phase; 160 (3%) would be operation and maintenance jobs that would persist once wells are in production; and a further 850 (15%) induced jobs in the wider economy (40). Further analysis suggests that 17% of disposable income generated by these new jobs goes to the local economy; 50% to the national economy; and 33% goes overseas. Based on the ‘Central’ scenario above, this represents a benefit of £52.4 million to the local economy; £154 million to the national economy; and £101.6 million would go to non-UK nationals and companies (40).

Assuming there is no overlap between the studies, combining the Amion and Cuadrilla central scenario data provides a fuller picture for the North-West region: 700 wells drilled on 70 pads across twenty years, 5200 direct jobs created in the local area and 21,000 jobs created across the UK. A 2013 report by Deloitte which looked at potential job creation from the Bowland shale estimated that significant development could generate between 6,900 and 23,600 jobs in peak employment after 2025. Continued drilling operations could create 5,700 direct jobs by 2026.

The most important factor in generating these figures is the extent to which UK manufacturers and service companies develop the relevant skills and capacity to supply the shale sector (20).

A large number of created jobs will be temporary (drilling crew, labouring, haulage) and will move from one location to the next as licence blocks are progressively exploited, occasionally returning to sites for re-fracturing. The majority of labour intensive work occurs during the exploration and production preparation stages, so these employment benefits will probably be temporary and transient in nature (40).

Research from Cuadrilla indicates that 15% of new jobs may be taken by local workers. It is not clear whether their estimates include local indirect employment in the haulage sector or not. This effect could be substantial given the large number of truck movements required at each well pad (40).

Gordon Grant from IGas stated: *“Replacing an ever decreasing supply of UK chemical feedstocks could safeguard up to 100,000 jobs in the petrochemicals industry alone.”*

£20billion per year is contributed to the UK economy by the chemicals industry and local businesses INEOS, Growhow and Essar are key players in this. 48% of the world’s population relies on chemical fertiliser for food; therefore, if Growhow are quickly priced out of the market because US companies can create this fertiliser and export it to European markets cheaper than Growhow can, we are losing jobs, losing GVA and actually increasing carbon emissions. UK industry is already at a disadvantage because electricity prices are twice as high as in Germany.

“The key is to create an environment in which businesses can and will invest and the decline can be slow. Often the investment decisions that should be made to maintain a sustainable business have long lead times. By the time it is evident outside the business and the jobs are truly at risk, irreversible damage is done. At the first level, Shale can retain existing well paid jobs by preventing the various businesses in the UK from becoming the marginal cost producers. It can prevent investment leeching to the US and maintain the jobs we already have. At a second level, it has the potential to create a substantial investment hub developing – as it has done within the chemical (and steel industry) within the US. However,

because investment is leeching to the US, and as the new US capacity comes on stream, UK businesses are moved up the margin cost producers list, it becomes more critical that we are allowed to assess the potential to achieve the first level and simply retain what we have.”

Gary Haywood, CEO of INEOS Upstream (who have just bought stakes in IGas’ sites) says:

“This is a great opportunity to acquire some first class assets that have the potential to yield significant quantities of gas in the future. INEOS believes that an indigenous shale gas industry will transform UK manufacturing, and that we can extract the gas safely and responsibly. We are pleased to have agreed this deal with IGas. INEOS’s scale, asset position across the UK, US shale gas expertise, and our expertise in managing oil and gas facilities will be a great match with IGas’s existing onshore asset base, and significant exploration and production capability”.

‘UK shale will help to protect manufacturing and jobs by securing competitive secure energy and raw materials. If we are successful in accessing shale, we will share the profits and create jobs in Britain's industrial heartlands’ – INEOS chairman Jim Ratcliffe.

The LCR as a UK Shale Gas Hub

Dan Lewis wrote about Lancashire becoming a shale gas ‘hub’ or global centre of excellence in the Institute of Directors report. More recently, Peel Gas and Oil have promoted the idea through reports produced by AMION. It is reasonable to say that a ‘hub’ could encompass an area wider than a city region alone and could potentially encompass an area such as the Atlantic Gateway area. The April 2015 AMION report issues enhanced job creation figures based on the development of a hub in the Atlantic Gateway area;

“Stage	Without Hub	With Hub
Direct	2,179	5,463
Indirect	2,383	4,683
Induced	769	3,002
Total	5,333	13,148”

It is difficult to extrapolate these results to a spatial area that only includes the LCR without knowing exactly how the consultants have come to these figures, which is their proprietary commercial data. If one broadly imagines the type of jobs that have been stipulated throughout this report and the various reports it draws on, however, it would be reasonable to expect that city centre locations such as Liverpool and Manchester would be vying to supply professional services and HEI capabilities. Hinterland areas such as Knowsley, Halton, Warrington and Salford (which are rich in warehouses, logistics facilities and industrial capacity) would be in competition for inward investment opportunities. There is a real opportunity to make use of the Manchester Ship Canal to reduce road congestion and ensure the benefits are spread along the length of the Atlantic Gateway as opposed to concentrating all of the activity in one area, which would be neither a wise economic distribution nor likely a welcome decision in the locale which was to receive all of the activity.

The potential exists for the Port of Liverpool, and other surrounding areas, to act as a hub for shale gas activity including maintenance, repairs, supply chain and logistics. It is likely that a small number of hubs will exist across the UK due to the spread of shale deposits across the entire country; however some hubs will be larger than others, and Liverpool City Region has a lot to offer across a range of areas. The following information originates from a promotional leaflet by Peel (44):

- The Port of Liverpool can take inbound steel pipe-work, casing materials, drilling components and sand through the largest established steel and dry bulk terminals in the UK.

- There is excellent connectivity for supply chain components via rail, road and water (including 22 miles of transport via the Manchester Ship Canal) to ease congestion. This ties in with the upcoming EU initiative “Motorways of the Sea”.
- Port centric and landside property is available to facilitate assembly of rigs and supply chain infrastructure/commodities (2,500 acres of land and property available to facilitate manufacturing).
- There is an abundance of energy, manufacturing and engineering expertise available supported by an organised structure of academic and vocational learning across the North West.
- There are 10 motorways within 10 miles of the Port of Liverpool and 10 rail terminals within easy access of the Port of Liverpool.
- There is the highest concentration of large warehousing within 70 miles of Liverpool and 35 miles of Manchester.
- Two of the five National Colleges with educational, training and engineering skills for onshore oil and gas will be situated within close proximity to Liverpool.
- Hub logistics are already in place for complete supply chain support across the Bowland shale.
- There is regional economic support available including grant funding and tax incentives to attract companies to the region, including three Enterprise Zones.

Liverpool City Region’s suitability to host a shale hub has also been noted by UK-wide studies. The following information comes from the IoD’s 2013 report into UK shale gas: The River Mersey is Britain’s third busiest estuary, with the Port of Liverpool and the Manchester Ship Canal handling over 40 million tonnes of cargo and 15,000 ship movements a year (4). Liverpool John Lennon airport has increased capability as well.

Other locations have been considered for hosting a shale hub as well. For example, Blackpool will be very close to a lot of Bowland basin activity, and operators such as Cuadrilla want to have a hub as close to their operations as possible; however, Blackpool does not have an appropriately sized and equipped port for the scale of activity that will result from significant shale gas extraction. The West-facing Port of Liverpool also has an obvious advantage over East-facing ports in the North East for importing equipment from the USA.

Conversations with industry representatives involved in shale gas (see appendix) revealed widespread support for the Liverpool City Region acting as a hub for UK shale activity. Favourable attributes included:

- Good transportaion links in place (large west-facing port, canals running at low capacity, road, rail, airport).
- Utilities infrastructure already in place (including spare National Transmission System capacity, the Stanlow oil refinery in Ellesmere Port).
- Spare land for construction and manufacturing.
- Existing pool of relevent expertise (strong base for logistics, legal/financial professional services, engineering and construction skills. Also plenty of hotels capable of accomodating imported rig crews).
- Close to the core of shale activity in the North West with large, shallow shale sequences available and recent 'Northern Powerhouse' investments and sovereign wealth fund announced by Government.
- Two good Universities in Liverpool capable of providing appropriate graduates and research and development, with Manchester and Chester Universites also nearby.

One local supplier pointed out that a Liverpool based hub would be ideal for networking with other businesses and securing new contracts, because it is difficult to know who to talk to at the moment. Liverpool already has substantial expertise in place in relation to logistics, professional services and engineering; the areas which offer significant opportunities for investment and development are drill rig imports/manufacturing, training with respect to onshore shale gas extraction and research and development in understanding local geology and finding the most efficient and safe methods of shale gas extraction.

There is a large gap in the UK market for drilling rigs at the moment. It is likely that new rigs from Europe and the USA will be imported for use in shale gas exploration due to their only being a small number of UK rigs at present, most of which are old and unreliable. The EY report draws attention to the fact however that many US rigs are too large and too noisy to operate within UK parameters. The EU has at present 77 rigs, whereas the UK would need 50 alone for full exploitation of shale plays. If shale gas extraction were to take off across the UK and Europe, there is a significant opportunity here for importing, and eventually manufacturing, drilling rigs. Cammell Laird, for example, is based in Birkenhead and has plenty of heavy fabrication experience, including supplying the offshore oil and gas sector as well as the petrochemical sector (45) and has successfully diversified into offshore wind.

Liverpool has a very strong engineering base with plenty of engineering companies that are capable of contributing to the shale gas supply chain. The difference between the USA and UK regulations with regards to shale gas extraction means that there will be plenty of opportunities for engineering companies to supply high quality safety and measurement components to bring imported equipment up to UK specification. A secure and possibly

cheaper gas supply for large industrial companies in the area could induce further opportunities for local engineering companies.

Although the USA has built up plenty of experience in shale gas drilling and hydraulic fracturing, there is no drive to export these skills to the UK and Europe. The UK has already had experience of building and exporting skills and standards in offshore oil and gas production with the North Sea. Onshore shale gas represents another opportunity for developing relevant expertise and technologies and exporting them to other countries.

The University of Liverpool and LJMU are world-leaders in sensor technology, chemicals innovation and built environment research. They not only produce hundreds of graduates in fields relevant to shale exploitation but have large research endowments, collaborative capability and enterprise potential in the cutting edge technologies and methodologies they are producing in these fields.

Within the context of the recently established Liverpool Earth Observatory (LEO) and a nationwide consortium, researchers at the University of Liverpool are investigating induced seismicity and the associated hazard related to hydraulic fracturing operations. Currently, University of Liverpool researchers are deploying a local seismic monitoring network in Lancashire where two proposed hydraulic fracturing sites are located; this network will be expanded into Cheshire over the summer. The monitoring network will supplement an existing national earthquake-monitoring network run by the British Geological Survey (BGS).

The dense seismic monitoring network will enable scientists to assess the existing background seismicity, not detectable with national monitoring networks, and to monitor seismic activity before, during and after hydraulic fracturing operations. Researchers at the University of Liverpool will use these data to characterize changes in seismicity and seismic hazard over the life-cycle of a shale gas site. They will investigate the expected ground vibrations related to any seismicity, investigate local amplification effects - leading to stronger localized shaking - and investigate the physical nature of the induced earthquakes. The University of Liverpool is part of a national consortium comprising of the BGS and the universities of Birmingham, Bristol, Liverpool, Loughborough and Manchester. The consortium will provide base line monitoring in relation to possible wider issues of hydraulic fracturing such as groundwater, regional air quality, seismicity and ground movement.

As is the case with many industries and businesses which look to locate in the LCR, we have existing advantages which benefit a multitude of potential ventures. Even factors which are difficult to quantify, such as the friendly, welcoming nature of the people of the Liverpool City Region are positive elements when businesses are scoping out whether to locate in the region.

A SWOT analysis of the key relevant considerations regarding the LCR developing into a 'hub' for shale gas:

<p>Strengths</p> <ul style="list-style-type: none">• Infrastructural capabilities.• Global connectivity with port facilities.• Proximity to Bowland shale.• Strong manufacturing sector.• Relevant HEI research ventures and skills base.	<p>Weaknesses</p> <ul style="list-style-type: none">• Public opinion split over the subject of shale.• More traffic could potentially add to current congestion.• Some gaps in our supply chain capabilities (see heat map).• Lower than national average output per head.
<p>Opportunities</p> <ul style="list-style-type: none">• Strong potential for jobs as part of the Atlantic Gateway (AMION report).• Large investment potential given large capital requirement for shale pads.• Potential for petrochemical R&D as part of a 'shale hub'.	<p>Threats</p> <ul style="list-style-type: none">• Highly emotive topic means logical thinking and actions can be sometimes cast aside by parties.• 'First mover' advantage could sway to other regions as more begin to affirm their position on shale.• Failure to capture opportunities could see benefits flow out of LCR.

On April 16th 2015 at the Shale Gas World UK conference, Peel Gas and Oil unveiled a report produced by AMION which analyses in detail the economics around a 'hub' for shale gas being located in the Atlantic/Ocean Gateway area which service the wider Bowland shale (57). The report highlights fundamental advantages to using the Atlantic Gateway area as a base of operations for drilling. Increased job creations, R&D potential and greater in-region trade are amongst the benefits listed, while a list of actions that need to be taken are also laid out. These actions range from infrastructural investment to marketing and attracting companies. Similar opportunities and action points were suggested by the co-author of this report, Jonathon Clark in a presentation delivered to the Liverpool City Region Local Enterprise Partnership's 2nd Shale Gas Steering Group on March 24th 2015.

Local Supply vs. National Grid

The UK already has an extensive gas grid system, so gathering pipelines will be more straightforward than it has been in the USA (35) although there would still be a considerable cost. The National Transmission System (NTS) is the high-pressure portion of the gas grid which supplies gas to large industrial users. Smaller consumers receive gas at lower pressures from one of twelve local distribution zones. The NTS has a substantial amount of spare capacity; for example, the North West sector has an unused system capability of approximately 14 million cubic metres per day. Lancashire is a part of the 'Central-West Coast' sector of the NTS, which has a spare system capacity of 19 million cubic metres per day (4).

The number of gathering pipelines which need to be built should be low compared to the USA due to a relatively low number of pads required in the UK. Building shared gas processing plants can be done with relative ease, with money being supplied by industry (4).

Three processes must be completed when connecting a new supply of gas to the National Transmission System (4):

- Physical connection takes around 24-36 months.
- Network entry agreement.
- Entry capacity agreement (takes around 42 months from the Quarterly System Entry Capacity auction).

These processes can be run simultaneously, so gaining a grid connection takes a total of approximately 3 ½ years.

The IoD believe that a large proportion of the shale gas produced in the UK will be purified and fed directly into the NTS, either to supply homes directly or to be sent to gas power plants to generate electricity. There are concerns that the time-consuming grid connection process could slow down shale gas development (4).

Another option for distributing gas in the early stages of development is to transport compressed gas off-site via tankers whilst new gas pipelines and facilities are being built. There is also the option of building extra infrastructure to burn the gas on-site and distribute the generated electricity to users in the immediate vicinity of the well (40). Cuadrilla owns the Elswick gas well near Blackpool which has been successfully converting gas into electricity on-site via a power plant since 1998, and was safely hydraulically fractured in 1993. The power-plant is based above a natural gas formation thus removing the need for gas distribution infrastructure (46).

It is crucial that core samples from the Bowland shale are analysed in order to understand important characteristics of the gas within e.g. calorific content. For the gas to be connected to the NTS it must pass a series of tests which demonstrate that the gas is suitable for the

NTS. Depending on the outcome of those tests, a hybrid solution of gas distribution and electricity generation may be the best way forward.

Energy intensive companies in the LCR

There is a risk of overseas companies with large energy requirements moving UK operations to the USA in order to take advantage of a cheap and secure supply of shale gas, and increased liquefied natural gas export capacity. The option for private, dedicated gas supplies for major energy users in the North West is a possibility. The ability to avoid gas transmission costs and possess a secure and more cost-effective supply of domestic energy could offer enough incentive for large companies to maintain operations in the LCR and protect many jobs in the area (35). It is unlikely that shale development in the UK will bring down gas prices significantly due to being connected to the European gas market (47). It will however provide security against politically-motivated disruption of supply and provide a degree of insulation from the volatility of global supply patterns. It will also be cheaper than importing LNG purely through infrastructural and processing costs.

Large energy users in the region include Ineos ChlorVinyls, Pilkington, Jaguar Land Rover, Jacobs Bakery, GrowHow (slightly outside LCR). Ineos have been vocal in their support for shale gas development; for example, in November 2014 they announced plans to invest up to £640 million in UK shale gas exploration (48). The petrochemicals industry has the greatest potential benefit from locally produced natural gas, as operations not only require large amounts of energy but they also require a feedstock of raw materials from natural gas for use in chemical production e.g. the Ethylene supply chain:

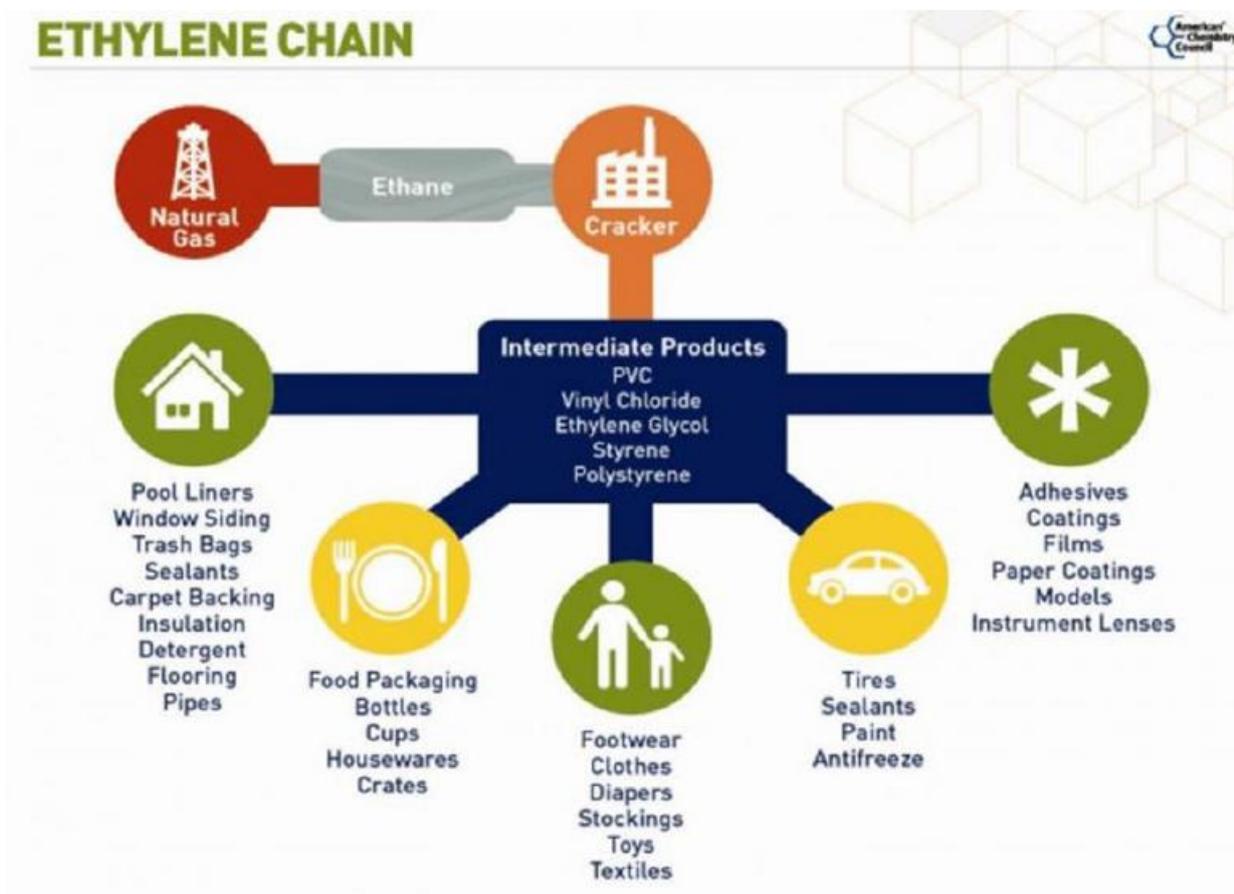


Fig. 11 - Ethylene supply chain (39).

United Kingdom Onshore Oil and Gas (UKOOG) has stated that replacing an ever decreasing supply of UK chemical feedstocks could safeguard up to 100,000 jobs in the petrochemicals industry alone (22).

Skills and Training

One of the main barriers to the growth of the shale gas industry in the UK is the lack of a sufficiently skilled workforce (35). In their UK-wide assessment, Ernst & Young stated that there will be no anticipated supply chain constraints in relation to management, commercial, legal, other professional services, semi-skilled blue collar and administrative roles. There is also a well established UK construction industry with a strong base of construction workers in place (34).

They did highlight the following critical areas which require further investment in order to meet the demands of shale gas production at scale (34):

- Petroleum engineering and geosciences (including environmental consultants) - There is an existing market here that requires additional funding. The UK has had a strong track record in relation to engineering and geosciences; however there is an aging workforce with predominately off-shore expertise. There has been an increase in the number of graduates with geology, chemistry, process and engineering degrees. It may be possible to offer these graduates courses or international secondments to provide necessary shale gas expertise.
- Drilling and completions - There is an existing market here that requires additional funding. Both off-shore and on-shore drilling have taken place in the UK before, however shale gas exploration is in its infancy in the UK and will require imported workers initially.
- Hydraulic fracturing - A new market with significant investment is required here. There is a small global supply of hydraulic fracturing experts, and the UK is currently competing with other countries interested in shale development for their skills. The geology of the UK is very different to the geology of the USA, so there is an opportunity to train hydraulic fracturing engineers with specific knowledge in local geology and the UK/EU planning process. There is a delay expected here, with the development of a training course taking up to four years, and the actual training taking up to five years.
- Planning approvals and permitting issuance, health, safety and environmental monitoring - There is an existing market here that requires additional funding. As planning permission is required at multiple stages throughout exploration and production, additional resources will be needed to meet the extra demand associated with shale gas development. The Environment Agency is expected to be able to scale up and meet additional environmental permit demand. The HSE has enough well drilling expertise to handle the exploratory phase but may require additional funding for large scale shale gas production.

Although recruiting the most highly skilled drillers for shale gas exploration and production could prove to be difficult, onshore operations provide an attractive alternative to the traditional offshore sector due to similar levels of pay without the accompanying difficulties involved in working on an offshore rig for multiple weeks at a time. There are also many parts of the supply chain which do not require highly specialised skills (4).

The Energy and Climate Change Select Committee have stated (49):

“The UK already has extensive drilling experience from the conventional gas industry in the North Sea, some of which could be transferable to the onshore industry... We recommend that Government encourage partnerships such as the one between Cuadrilla and the University of Central Lancashire to ensure the skills required to develop the shale gas industry are available. Government should make an assessment of the need for skills development and should work with industry and the relevant sector skills council to develop a skills action plan for shale gas similar to the Nuclear Supply Chain Action Plan which the Government has recently published.”

The number of employees in the offshore oil and gas sector employed in the North West is estimated as being (12)(40):

- 200-400 (each) in South Cumbria / North Lancashire, Fylde, and the Mid-Mersey sub-region
- 400-600 (each) in the City Region east of the estuary, and the Wirral.

The conventional oil and gas sector in the region is not in a period of growth; hence it is unlikely that shale operations in the area will draw from this local employee base. It will be possible for some workers to transfer from the conventional oil and gas sector in Scotland to unconventional operations in the North West of England due to the decreasing amount of North Sea activity. Local employment in direct extraction operations will most likely be in unskilled roles until significant local training takes place (40).

The offshore oil and gas sector is currently experiencing a skills shortage, with demand for engineers and geoscientists exceeding global supply. In their Ocean Gateway study, Amion have noted the immediate and growing need in the UK for the following professions (35):

- Geologists and geophysicists with subsurface reservoir characterisation skills.
- Reservoir and petroleum engineers who are able to locate optimal drilling sites and maximise productivity.
- Drilling specialists with experience of shale gas reservoirs and horizontal drilling techniques.

- There are also requirements for the surveyors, architects and civil engineers needed to build and maintain drilling sites and related infrastructure.

The UK Government has announced a £1.5 million initiative to create a National College for onshore oil and gas. The National College for Onshore Oil and Gas will be headquartered in Blackpool and will have a number of other institutions involved across the UK in a 'hub-and-spoke' model. UKOOG provide the following descriptions of each institution on their website (50):

- **Blackpool & Fylde College's Lancashire Energy HQ** will deliver a comprehensive range of qualifications up to QCF Level 6, with facilities including a drill simulator and emergency control simulator.
- The **University of Chester's** Faculty of Science and Engineering at Thornton Science Park will deliver a number of industrially informed undergraduate and postgraduate degree courses (QCF Level 4 to QCF Level 7) as well as specialist masters, MRes and PhD programmes. In addition, the University of Chester will undertake research and technology transfer in the areas of process improvement, computational modelling and simulation, environmental monitoring and data and information management.
- **Redcar and Cleveland College** is currently working with the Local Enterprise Partnership and Tees Valley Unlimited to create a new £7.4m Oil and Gas Academy for the North East, supported by the oil and gas sector and a Local Growth Fund bid. Teesside Oil and Gas Academy will deliver a range of accredited and specialist bespoke courses up to Level 5, and the College will provide additional specialist provision as part of the National College.
- **Highbury College Portsmouth's** Centre of Excellence in Construction, Energy & Sustainable Technologies provides a comprehensive range of accredited and bespoke courses to support entry to and progression in the onshore energy industry. Courses cover construction, environmental technologies, health and safety, and leadership and management. Highbury College is also developing a strong partnership with the Southern Alberta Institute of Technology, an acknowledged global leader in this industry and located in Calgary, Canada's hub for oil and gas operations.
- **Weir Group PLC** – the world's largest supplier of hydraulic fracturing equipment – their supply chain and the **University of Strathclyde** – the UK's centre for hydraulic fracturing pump design – will partner with the National College to provide access to the latest industry best practice and the latest research and technology. Weir and Strathclyde will develop simulation systems the National College can use for training and accreditation, and will support the creation of UK industry standards for safe and responsible hydraulic fracturing operations.

The 4 key focus areas of the venture are:

- Providing the specialist skills needed by the industry at Levels 3, 4 and 5 or higher and training teachers and regulators.
- In partnership with OPITO, accrediting the courses run by other institutions.
- Carrying out research and development for improved equipment, materials and processes that will increase the efficiency and reduce the environmental impact of operations.
- Working with schools to encourage children to consider careers in the industry, and to help them make the right subject choices early on.

In a discussion with representatives from an international drill rig company (see appendix) they said that experienced drill rig crews would be imported initially, with around 30-50 local workers hired per rig for low skilled roles. These workers would then be trained as operations progressed and would subsequently move into higher skilled roles in drilling operations. There is an opportunity for the creation of an LCR based shale academy given the LCR's suitability as a shale hub of activity. The academy could possibly focus on the three main areas of shale gas development that currently suffer skills shortages in the UK: geosciences, directional drilling and hydraulic fracturing. These skills could then be exported to other countries if shale gas were to develop in earnest across the UK and Europe, mirroring the Aberdeen/North Sea experience. The viability, targets and economic impacts of an LCR shale academy would need to be investigated in further detail.

Between them, LJMU and the University of Liverpool produce approximately 400 graduates per year who hold degrees in subjects such as Civil Engineering, Construction Management, Supply Chain Management, Environmental Science, Geological Science and Petrochemistry. Enabling local opportunities for employment and even summer placements may go some way towards stopping "Brain drain" for these subjects.

The readiness of LCR companies to take advantage of Shale Gas

Discussions were had with representatives of companies interested in being a part of the shale gas supply chain (see appendix) in order to understand the opportunities presented by shale, as well as the barriers currently hindering progress. Opportunities included:

- Engineers providing equipment and components for the shale gas exploration and extraction processes e.g. shafts, valves, actuators.
- Engineers playing a role in repairs, maintenance and providing spare parts to operators.
- Drilling companies importing appropriately skilled personnel and then hiring local people for lower skilled work (approximately 30-50 people per rig) and then training them up to higher skilled roles as operations progress.

All of the LCR companies that took part in the discussions stated that the vast majority of their contributions in goods and services would be based in the UK and not imported (including employees). Barriers to their participation in the shale gas supply chain included:

- Contract availability – Lots of businesses are waiting for significant contracts to be made between operators and oil and gas service companies (such as drill rig companies) before they devote time and resources to shale gas opportunities. The UK currently consists of relatively small exploration companies facing high capital costs and uncertainty in relation to planning permission and tax regimes. Greater collaboration between operators in generating capital and more clarity from Government over regulations and taxes could provide the necessary push for investments to be made and major contracts to begin to surface.
- Negative public perception of shale gas extraction – There is a large media misrepresentation of shale gas exploration and production (particularly prevalent in the UK). There is a lack of legitimate information about shale gas and the majority of the public are open to learning more about it. Public debates tend to be highly polarised and are often heavily focussed on environmental concerns. More work needs to be done to highlight other aspects of the debate (e.g. if there is no shale development then the UK will be heavily reliant on gas imports). There is a need to remove the fear of ‘fracking’ and replace it with factual information, which could be achieved via greater communication between operators, protestors and the public in open debates. The Government also needs to be clearer on what can be done about protests at shale gas sites (for example, Chevron has recently stopped operations in Poland; speculatively, this may be due to extensive protests at their site although the

geology was also likely different from what they expected). The public must be provided with clear and tangible economic benefits associated with shale gas. Some companies said that the negative public perception of shale gas would not have an effect on them as they have already been involved in other sensitive areas e.g. nuclear weapons.

- Lack of communication and notifications regarding UK shale gas developments – Some local companies missed out on opportunities to supply the offshore wind farm industry in the UK due to being ‘left out of the loop’. This mistake must not be repeated with regards to the onshore shale gas supply chain. Most small companies get their information and contracts from larger companies, so it is important to emphasise the importance of shale gas operators selecting capable local companies for contracts instead of imported goods and services.
- Lack of readily available equipment or manufacturers thereof in the UK (noted in the NOF Louisiana/Oklahoma Visit Report).

All of the companies spoken to believe that they currently have the capacity to be a part of the shale gas supply chain, and that they would prefer for progress to be as quick as possible. The companies gave the following recommendations for the Local Enterprise Partnership:

- Assist in engaging with the public – The majority of companies suggested that the LEP could follow Cheshire’s example by playing a role in facilitating public debates for the dissemination of reliable information, and the removal of the unfairly negative public perception of shale gas.
- Keep local companies ‘in the loop’ with regular updates with regards to shale progress and networking to help ensure local company involvement and a competitive environment.
- Encourage Government to produce a clear tax regime to encourage investment and lobby questions to parliament to open a public forum for debate on shale.

Various steps have already been taken by small and medium sized enterprises (SMEs) interested in taking part in the shale gas production supply chain in the UK. The Onshore Energy Services Group (OESG) was founded by a small group of SME companies that are already participants in the supply chain supporting onshore oil and gas development. The OESG exists to “...ensure that small British companies and the people they employ benefit the most from the countless supply chain opportunities that will be on offer should Britain choose to exploit its sizeable onshore oil and gas resources” (51).

The OESG asserts that UK SMEs can offer the following services to the shale gas industry: site selection; pre-planning; land access negotiation; planning consultancy; EIA development

; environmental permitting; baseline monitoring; creation of the pad (civil); erection of fencing; delivery of equipment; drilling; drilling fluids; environmental monitoring; drilling waste disposal; mud logging; coring; wireline logging; casing supply and installation; cementing; mobilisation of fracturing equipment; delivery of sand, water, additives; environmental monitoring; flowback disposal; gas to grid (civil) and connections; process automation; demobilisation; site restoration; permit surrender (52).

The website “shalegaslancashire.co.uk” was also recently launched: *“As part of its procurement strategy Cuadrilla has partnered with the two Lancashire Chambers of Commerce (North & Western Lancashire and East Lancashire) to identify and support local businesses that want to become part of the supply chain. The Chambers are the first point of contact for local business and agencies wishing to engage in the project. This website forms the central resource for all Lancashire businesses who wish to make the most of the opportunities arising out of the development”* (53).

Larger companies are also ready for shale gas. There is a significant amount of chemical industry activity in the North West with companies such as Ineos and GrowHow operating here. Growhow sees around 70% of its manufacturing costs come from gas. The UK chemical industry as a whole supports UK shale gas development. The Chemical Industries Association believes that shale gas could present a secure and potentially competitive feedstock for chemical products, which will improve the business case for UK chemical investment. There is also a smaller scale opportunity in supplying the chemicals to be used in fracturing fluid during exploration and production (11).

Ineos has already been vocal in its support for the UK shale gas industry. If UK shale gas is found to contain useful chemical feedstock substances such as ethane and propane, the petrochemical industry could benefit greatly, although it is still too early to give an accurate prediction of this effect. Tom Crotty, the CEO of Ineos Olefins & Polymers Europe, told the Energy and Climate Change Select Committee (4): *“I should say, from a chemicals point of view, we must not forget the other aspect of shale gas, which is potentially a key raw material for the chemicals industry, not from its energy content but from its chemical content. That has probably been the most transformational impact of it on the US chemical industry.”*

Extra facilities would need to be built by the chemical industry to capitalise on any chemical feedstock substances present in shale gas, presenting another opportunity for jobs and investment. For example, fractionators are used by the chemical industry to separate the individual components that make up the natural gas. In relation to the Ineos Runcorn plant, Tom Crotty has said (4): *“For example, I am not suggesting this is an investment strategy that we have, but our major site in the North-West is in Runcorn, which is not a million miles away from where a lot of [shale] development is going on. You could conceivably see us running a fractionator on that site, as an example.”*

GrowHow operates in Chester and is the UK’s only remaining primary nitrogen fertiliser producer. When speaking to the North West Energy Task Force, GrowHow stated that (54):

“Nitrogen fertiliser is a globally traded product. Gas is our primary raw material and it represents 68% of the variable manufacturing cost of our ammonium nitrate fertiliser at GrowHow. It is the single biggest factor in determining our profitability as a business.” A new domestic source of natural gas could assist in limiting future increases in fertiliser prices.

It is not just high energy manufacturers in the LCR that are looking at shale gas developments. For example, Peel have created a subsidiary branch of their business called Peel Gas & Oil specifically developed to provide support to the onshore unconventional oil and gas industry in the UK. A promotional leaflet from Peel quotes the following services (55):

- Land and property – site identification, land acquisition and estate management.
- Politics and consenting – Public relations, planning permission and environmental permits.
- Water services – Abstraction and supply, waste water treatment and waste water disposal.
- Site construction – Compound construction, site services & management and site remediation.

The LEP has conducted extensive supply chain research combining industry liaison with statistics harvesting. The result of this was the production of a supply chain heat map which shows where the LCR already has active companies that can get involved in the shale supply chain and where we have inward investment opportunities:

59	Industry	Liverpool City Region		
60	23510 : Manufacture of cement		25500 : Forging, pressing, stamping and roll-forming of metal; powder metal	10
61	20110 : Manufacture of industrial gases		25610 : Treatment and coating of metals	20
62	20130 : Manufacture of other inorganic basic chemicals	10	25620 : Machining	220
63	20140 : Manufacture of other organic basic chemicals	15	25730 : Manufacture of tools	10
64	20150 : Manufacture of fertilisers and nitrogen compounds		25910 : Manufacture of steel drums and similar containers	0
65	20160 : Manufacture of plastics in primary forms	10	25930 : Manufacture of wire products, chain and springs	10
66	20170 : Manufacture of synthetic rubber in primary forms		25940 : Manufacture of fasteners and screw machine products	0
67	20200 : Manufacture of pesticides and other agrochemical products		25990 : Manufacture of other fabricated metal products nec	75
68	20301 : Manufacture of paints, varnishes and similar coatings, mastics and	15	28110 : Manufacture of engines and turbines, except aircraft, vehicle and cyc	0
69	20510 : Manufacture of explosives		28120 : Manufacture of fluid power equipment	0
70	20590 : Manufacture of other chemical products nec	25	28131 : Manufacture of pumps	0
71	42110 : Construction of roads and motorways	60	28132 : Manufacture of compressors	0
72	42210 : Construction of utility projects for fluids	10	28140 : Manufacture of other taps and valves	10
73	42910 : Construction of water projects	5	28150 : Manufacture of bearings, gears, gearing and driving elements	0
74	42990 : Construction of other civil engineering projects nec	25	28210 : Manufacture of ovens, furnaces and furnace burners	5
75	43110 : Demolition	15	28220 : Manufacture of lifting and handling equipment	20
76	43120 : Site preparation	35	28240 : Manufacture of power-driven hand tools	0
77	43130 : Test drilling and boring		28250 : Manufacture of non-domestic cooling and ventilation equipment	15
78	43210 : Electrical installation	60	28290 : Manufacture of other general-purpose machinery nec	25
79	43220 : Plumbing, heat and air-conditioning installation	50	28410 : Manufacture of metal forming machinery	0
80	43290 : Other construction installation	15	28490 : Manufacture of other machine tools	0
81	43310 : Plastering	55	28910 : Manufacture of machinery for metallurgy	0
82	43320 : Joinery installation	33	28921 : Manufacture of machinery for mining	0
83	43330 : Floor and wall covering	13	28922 : Manufacture of earthmoving equipment	0
84	43341 : Painting	23	28923 : Manufacture of equipment for concrete crushing and screening roa	0
85	43342 : Glazing	6	28990 : Manufacture of other special-purpose machinery nec	10
86	43390 : Other building completion and finishing	25	74901 : Environmental consulting activities	50
87	43910 : Roofing activities	15	74902 : Quantity surveying activities	100
88	43991 : Scaffold erection	8	80109 : Activities of patent and copyright agents; other legal activities (othe	235
89	43999 : Specialised construction activities (other than scaffold erection) ne	23	49410 : Freight transport by road	620
90	25110 : Manufacture of metal structures and parts of structures	65	38110 : Collection of non-hazardous waste	70
91	25120 : Manufacture of doors and windows of metal	25	38120 : Collection of hazardous waste	0
92	25210 : Manufacture of central heating radiators and boilers		38210 : Treatment and disposal of non-hazardous waste	35
93	25290 : Manufacture of other tanks, reservoirs and containers of metal	5	38220 : Treatment and disposal of hazardous waste	0
94	25300 : Manufacture of steam generators, except central heating hot water		38310 : Dismantling of wrecks	0
95	25400 : Manufacture of weapons and ammunition		38320 : Recovery of sorted materials	50
			Column Total	5,005

In addition to the services and equipment currently required to construct and operate drilling pads, there is an opportunity for the HEIs of the LCR to become involved in what is at present a weak UK R&D industry. The UK Oil and Gas Business and Government Action Report (2013) indicated that only 0.3% of the money generated from sales in the petrochemical industry is re-invested into R&D. This pales in comparison to 4% in Norway.

The LEP, by analysing data from Thomson Reuters business intelligence company, has noted that around 60% of all patents in the oil and gas sector originated in China in 2014, where 7243 applications were filed. Most of the other patents originated in the USA, which filed 2188 in 2013 [2014 data not yet available]. The UK saw 150 oil and gas related patents in 2013, with only 2 shale-specific patents filed in the past 2 years.

The companies who filed most of the 150 patents in the UK referred to are: QINETIQ (7), PETROWELL (13), SWELLTEC (11), VETCO GRAY CONTROLS (28), M-I (19), Schlumberger (63) and BP (16). [Data provided by PatAnalyse patent analysis service]. Some of these names appear on the Scottish '50 Largest companies list' which features 17 oil and gas related

companies including Maersk North Sea, Abbot Group, Total Upstream, John Wood Group and Talisman Energy UK.

In the event of the LCR moving forward to be part of a shale hub, it would be prudent to engage with these companies to get LCR HEIs involved with petrochemical research. This opens up the door to potential funding, collaboration, research projects, graduate placements and ultimately jobs should these companies or their affiliates locate in the region.

Several shale drilling service providers have been in contact with the LEP and have recognised the potential of the LCR, given what the region has to offer. Through phone conversations with their businesses development staff, opportunities have been identified for speciality chemicals produced by companies such as *Nalco* (a popular USA provider of drilling chemicals) to be shipped over using the port facilities and opportunities for local chemical companies to create bespoke, proprietary blends for use in the Bowland shale have been noted. A large, recognised drilling or services company could act as a platform company which in turn brings many more additional companies with it. It should be noted, however, at present the opportunities for chemical supply are constrained by the Environment Agency not publishing a definite 'allowed' or 'banned' list.

Conclusion

Employment

There is a strong economic case for the Liverpool City Region's local authorities to support shale drilling nationally and locally. In our city region we presently have businesses in the chemicals industry which directly employ approximately 4000 people, who, if cheaper gas is not provided to them in the coming years, could be progressively priced out of the international chemicals market by their US competitors.

In addition to this, at a regional scale our present unemployment numbers could be improved upon by the direct, indirect and induced job creation which comes with developing the industry; as it stands, there is the potential for over 3000 jobs in the Ocean Gateway region according to AMION, based on April 2015 industrial practices and PEDL allocation. This provides an opportunity for up to 4.5% of the c. 67 000 unemployed people in the city region to become employed.

Market Diversification

In 2014, advanced manufacturing – the type that would be associated with facilitating the creation of drilling components – made up 13.2% of the LCR's economic output. This would stand to rise as component materials and equipment from other countries comes onshore using the Port of Liverpool and are integrated into the supply chain quickly and efficiently; avoiding the need to transport it by road or rail from the South coast up to the Bowland shale area. This provides market diversification of this high-GVA sector as we broaden the industries which make up the sector. This is important considering our economy is more reliant on advanced manufacturing than the national average (11.6%). Other industries that would stand to benefit are those of our services and knowledge sector, where our HEIs underpin our strengths in geo-environmental services, sensing and project management.

A 'shale gas hub'

The developing nature of shale drilling in the UK means that connectivity and infrastructure are crucial to the successful, responsible completion of drilling operations. The natural geographical the LCR has cannot be ignored. Whether importing equipment from the US for retrofitting, or utilising motorway connectivity to distribute supplies to sites across the Bowland shale, the LCR is a logical component of any 'shale hub', reducing costs and carbon emissions for the companies involved.

In order for the LCR to be best placed to capitalise upon the opportunities that may be made available, good preparation is essential. The LEP, for example, can conduct a strategic approach towards identifying, supporting and promoting businesses in the LCR which are suitable for participation in the supply chain. Where no businesses exist in a particular field, an approach to attract businesses from outside the city region to develop here can be

created. In some cases, this may not even be necessary as an existing business may have scope, given the right support from organisations like the LEP and its partners to diversify into a new field.

Public Opinion and What Shale Can Offer

Shale drilling is a highly emotive topic in the UK today with public concerns being raised around seismicity, aquifer contamination, environmental degradation and the reputations of the companies involved. If the LCR is to become involved with the shale industry, it is vital that a clear, balanced argument is presented to the public to inform their opinion.

For this to happen, an organised campaign of factual information dissemination followed by comprehensive public consultation needs to be undertaken.

The economic benefits need to be highlighted and contrasted appropriately to the scale of associated risks. Further attention should be given to the green credentials of shale drilling, for example. The produced gas is much cleaner than coal for electricity generation and could serve well as a transition fuel while the UK's economy undergoes decarbonisation.

Underpinning many of the economic arguments is the tax revenue potential from produced gas, which again, should be illustrated in further detail than at present

Whilst promotion of the benefits of shale is important, the drawbacks of renewables at present should also be pointed out, in order to allow the public to judge each method of energy generation on their credentials compared to each other. Further attention should be given to the requirement of gas as a material feedstock in industry and how renewable energy generations methods do **nothing** at all to satisfy our industrial sector's need for gas for this purpose. As technology develops in the future, it is likely other renewable solutions such as better biofuels, bioplastics and renewable material feedstocks will become commercially viable. At present however, shale gas has the potential to be a successful transition fuel.

Recommendations for the LCR

Throughout the UK's city regions there is a hesitance to establish a firm position on shale, based on the threat of popular upheaval at such a politically sensitive time. This means that the opportunity exists for the LCR to potentially be the national leader in terms of its approach, methodology and execution of working with the shale industry. The LCR could adopt a proactive approach to this debate and suggest a step by step process to foster confidence as well as develop partnerships and understanding.

Ultimately, before any plan around exploiting this comes to fruition, exploratory wells must be fractured in order to determine what levels of gas we are dealing with and what the practicalities of drilling are in different UK sites. Exploratory drilling can be given a green light without commissioning production and is a good research exercise for the parties involved. Shale drilling operations can be expensive and require upfront investment which must be invested in good faith of the exploratory drilling results being reliable, and a

profitable amount of gas being extracted. This strongly underpins the case for at least further exploratory drilling and fracturing to be performed.

Before any drilling can occur, baseline monitoring must be put in place at the chosen site. Baseline monitoring for 12 months provides a reliable set of ambient characteristics from the site so that any changes which are a result of shale drilling activity can be assessed and compared to the norm for that area. This is an area which the University of Liverpool can progress its research in as there are presently projects seeking to better the technology, equipment and techniques used in such monitoring at the University.

Concurrent to this, gaps in the supply chain should be addressed and the LCR as a whole should be made 'supply Chain ready' so it is in a position to benefit as much as possible for if and when shale drilling does proceed.

The national and regional state of play at present appears to be constrained by a lack of evidence, which is in turn causing the delay of any firm decision about proceeding with operations of any kind – even exploratory. To this end it is imperative that partners:

- **Develop the methodology and criteria to measure and monitor the economic and environmental impact of drilling and operating wells**
- **Once the above standards are in place, approval for tests sites should be given to allow results to be compared to the standards.**

From this, a proper evidence-based decision can be made on whether further development is appropriate and the supporting infrastructure developed in parallel.

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Appendices

KCA Deutag - conversation with Rodrigo Rendon and Oliver Nuffer, 09/01/2015

Barriers:

Contract availability – To comply with market requirements modern, western drilling equipment needs to be imported from abroad. This needs to make commercial sense as there are high mobilisation/demobilisation costs (relatively small operators looking at high capital costs). As soon as long-term, serious contracts become available KCA Deutag will make aggressive bids.

Operators “making the move” – Would be best for operators to open dialogue and combine forces to meet the capital required and get these rigs going.

Public opinion - Large media misinterpretation of shale gas exploration (particularly in the UK, one bad news report can slow progress drastically). Need to inform public/remove fear over shale gas drilling. Work together with operators, contractors, protestors and the public to disseminate accurate information (EG: Peer reviewed scientific papers) and remove worries.

Hub location:

- They would like to be close to the core of the activity.
- Good transportation links to move equipment (Liverpool water channels look good as can avoid road congestion).
- Cooperation from local authorities (nothing new, compliments what has happened in Aberdeen).
- Accommodation facilities for crew (hotels, B&Bs - Liverpool is great for this).

Local jobs/skills:

- KCA Deutag offer high quality, efficient and safe drilling... This requires appropriately skilled personnel, so at the beginning a core team will be imported alongside rig.
- Can hire local people for low skilled work (10-20 per rig) and then train these people as operations develop, move them from position to position, eventually giving them high skilled jobs in operations.

UK Tax/Regulations:

No concern. KCA Deutag have 16 operations in UK with bases in Aberdeen and London, have been here for a long time, they know the regulatory/tax environment and will happily operate within it.

What can the LEP do?

- Get people communicating (operators + operators, operators + contractors + public + protestors)

- Keep them and other stakeholders in the loop with progress/developments with regular updates and ensure a competitive environment.

AMF Precision Engineering - conversation with Simon Kirkman, 12/01/2015

Opportunities:

AMF could manufacture and provide equipment/components for the exploration/extraction process (e.g. they have already talked about providing shafts for shale wells in the USA). They could also play a role in providing maintenance and spare parts.

AMF could manufacture equipment/components for the exploration, extraction process, and maintenance.

Barriers:

The biggest barrier is lack of communication/notification of developments regarding shale. For example AMF missed out on the Merseyside wind farm supply chain opportunity due to being left out of the loop. AMF normally get their information from larger companies that are carrying out the bulk of a project (would be shale operators/drillers in this case). They are aware of the negative publicity surrounding shale but not a big problem for AMF (have worked with nuclear weapons industry and in other sensitive subjects before).

The biggest barrier is lack of communication/notification of developments regarding shale. For example AMF missed out on the Merseyside wind farm supply chain opportunity due to being left out of the loop. AMF normally get their information from larger companies that are carrying out the bulk of a project (would be shale operators/drillers in this case). They are aware of the negative publicity surrounding shale but not a big problem for AMF (have worked in sectors that have been controversial in the past). AMF are aware of environmental concerns but also see the benefits to the area in creating jobs and securing investment.

Required scale of activity:

Need large company to get things started before AMF can get involved. AMF will wait for projects to be approved (i.e. permission granted and capital requirements met) before they approach the big companies for potential business opportunities.

UK based contribution:

Majority of work and equipment will be local. They may have to purchase some assembly parts/equipment from abroad. AMF concentrate more on exporting rather than importing.

Liverpool Hub:

Very positive about a Liverpool based shale hub (could be crucial for networking with other companies and disseminating information). It should make it easier to get contracts.

What can the LEP do?

- Keep in touch with developments and study progress.
- Keep information coming in terms of who to speak to with regards to shale gas, networking and general information on progress.

IGas meeting with Paul Smith and Rachel Smith, 13/01/2015

- IGas is currently in the process of understanding the geology of this area. They are in the latter stages with core samples having been extracted from Ellesmere Port and sent off for analysis.
- IGas has set 2015 as the year in which they will carry out their first shale gas drilling operation.
- IGas will always try to find local suppliers/business first before importing goods/services.
- UKOOG is looking at how to get local workers the high value jobs in shale gas extraction (could contact Ken Cronin for more information).
- 14th licensing round results will be announced at some point in the near future.
- IGas have acquired Dart Energy (making them largest operator in the UK in terms of PEDL's).
- Might be helpful for Liverpool LEP to follow Cheshire example and facilitate a series of public, open debates from all parties interested in shale (operators, supply chain, protestors, residents).

Paul Groves phone conversation, 15/01/2015

CEO of Shale England, ex-lecturer of Physics at Oxford and Business Development at Shell.

Benefits

- North Sea tax decrease is being exacerbated by recent fall in oil/gas prices, shale could offer some relief.

Barriers

- What is the tax regime? Need a clear and solid UK tax regime for significant investment to be made in shale.
- What to do about protests? Government need to state how they are going to deal with protests (e.g. Chevron have recently stopped operations in Poland after extensive protests at their site).
- Need to see if shale gas meets minimum specifications of National Grid/ National Transmission System gas requirements e.g. calorific content and purity. (Awaiting IGas Ellesmere port gas analysis; could compare with min spec of NTS). Electric generation may be easier if the gas proves to be unsuitable.

Skills

- US shale market took skills from traditional oil and gas market in Houston, offering greater pay/flexibility. UK shale could attract workers from dwindling North Sea operations thus lowering skills shortage pressures. Need to look at protecting UK geology jobs for UK geologists, (imported workers or other countries poaching UK workers). Should encourage people to take shale geology related degrees.

Liverpool hub

- A Liverpool hub is the right thing to do. Terrific unique attributes with large west-facing port, Manchester ship canal links running at low capacity, one of largest oil refineries at Ellesmere Port (Stanlow) with spare land for exports, spare NTS capacity, powerful companies/families such as Bibby, Peel with great logistics experience, and Cammell Laird construction skills easily transferable to shale rigs.
- Need to advertise Liverpool and show why East coast / other locations aren't as suitable.
- Lancashire ahead in terms of the Fylde College, but Liverpool has a greater opportunity.
- Could work together across the North West i.e. Northern powerhouse investment and sovereign wealth fund, two good Universities in Liverpool, with nearby Manchester being in UK top 10.

What can the LEP do?

Include discussion on barriers and encourage Government to create clear tax regime and address perceived public fear/negativity over shale. Lobby questions to parliament, open public forum for debate over shale (Vince Cable could run this as well respected MP with oil and gas market expertise)

Everyone is waiting for the 14th PEDL round results, General election result, Cuadrilla planning permission result, IGas Ellesmere Port gas analysis result... Now is the time for UK shale to get going.

Heap and Partners – conversation with David Millar, 15/01/2015

Shale Opportunities

- Biggest opportunities are for their customers. High energy users such as Ineos and GrowHow (Chester based fertiliser company which used 1% of total UK gas one year). Cheap local energy could transform those businesses, which in turn produces more business for Heap and Partners.
- The US style of low cost, cheap as possible extraction is not attractive to Heap. Stricter UK regulation not only calms environmental concerns but also gives Heap a significant market opportunity for supplying high quality components.

Does Heaps currently have the capacity for shale supply chain?

Yes

Barriers for shale

- Biggest barrier is negative public perception. People are starved of legitimate facts/information about shale, and in his experience of debates about shale across the UK, most people are in the centre of the debate and eager to learn more (mentioned that fracking in the UK has gone on for 30 years, and that the biggest 'fracker' in the UK is Thames Water who frack to break rock and release drinking water). Also important for the public to realise that 80% of Britain's heat comes from gas, and the gas has to come from somewhere (local supply or imports are the options).
- A real problem would be logistics i.e. lots of lorries operating over a short period of time, but this is manageable. Mentioned a family member's experience in Somerset where 500 lorries were operating in a small rural village over a short period of time in order to build a flood barrier, but no public outcry because the disruption was temporary and the long term benefits were visible and tangible. Also experience in visiting shale plays in Oklahoma, where the benefits of shale production are advertised clearly (i.e. this road/rail/stadium/event paid for by shale money). Demonstrated safe operations along with clear and visible economic benefits to local communities win over public opinion.

Liverpool region strengths

- First and foremost, we have significant shale gas resources. The shale is also located at a shallow depth, unlike Poland for example where technical problems in relation to depth and protest difficulties have practically ended their hopes for a shale revolution.

- This region has very good engineering capabilities. The USA is well ahead in terms of shale know-how; however they are very insular and are not interested in exporting skills/expertise. The UK has already achieved this with the North Sea, i.e. British workers and standards are used worldwide. UK shale presents an opportunity to develop the expertise/technologies and export them to other countries again.

What timescale/scale of activity do you need to invest?

- As much progress as soon as possible. Need to get rid of coal firing stations and catch up with US shale ASAP. There are a finite number of rigs available for shale which are soon to be in great demand globally; therefore the UK needs to act quickly to avoid large delays related to manufacturing new rigs.
- Mentioned that the USA is the only country to have exceeded their Kyoto target (despite not signing the agreement) due to switching off coal and turning on shale gas. The downside is that their coal is being exported to be burned in the UK (environmental travesty).

How much UK based contribution from Heaps?

- Vast majority of work will be UK based (gave an estimate of 85% of their activity).

Liverpool hub?

- Large amount of support for a Liverpool based UK shale hub due to abilities in infrastructure and skills.
- North East is keen to look at this option as well so we would have to keep an eye out.

What can the LEP do?

- Engage with the public, have an open and honest debate about shale and assist in removing the current, unfairly negative perception of shale gas and hydraulic fracturing.

Conference Call with INEOS

Friday 27th February 2015, 1100-1230

Participants: Andrew McKenzie (INEOS Runcorn), Peter Rose (INEOS Hampshire), Jonathon Clark and Simon Reid (LCR LEP).

After introductions were done, Simon presented the LEP and the work it is doing at present looking at the economic benefits of shale gas drilling (particularly within its supply chain) to Liverpool.

Andrew presented an overview of INEOS activities. To summate:

- INEOS's Runcorn plant uses 200MW of electricity, equivalent almost to the City of Liverpool itself. In addition to this, natural gas is a key source of energy for the facility, where it provides power to make Chlorine and Caustic Soda. Also ethane - a component of gas extraction - is used to make ethylene in INEOS Grangemouth. Ethylene and chlorine are PVC manufacturing. Note, therefore, that an increase in gas prices means an increase in cost and price for products such as window frames and other petrochemical derived products; this is often unmentioned in the media. Renewable energy will **not** solve this problem.
- There are 5 other large INEOS plants in the UK aside from Runcorn. They employ in total around 6000 staff, 1300 of which are based at Runcorn.

Peter Rose then gave a general background to the company's stance on shale gas, reciting 'pro-fracking' arguments and also perspectives from the Chemical Industries Association, the futility of some of the environmental arguments presented against it. Key points from this part of the conversation were:

- 75% of INEOS assets are located in Europe and 25% in the USA, yet the profitability is the reverse of this. This is down almost entirely due to the cheaper price of gas in the USA.
- The future of UK manufacturing reliant on petrochemical products is in doubt due to the UK's inability to provide gas at prices competitive with those in the USA and abroad. In fact, it has proved cheaper to transport gas from the USA to here (despite costing hundreds of millions of pounds to do so). At present ~60% of the natural gas used in the UK is imported. The UK as a whole uses 3 trillion cubic feet per annum, per DECC figures. This % import requirement will only increase between now and 2030 - also according to DECC figures - as North Sea gas availability declines further.

When asked about what barriers they believed exist preventing INEOS accessing the benefits of the shale industry, Andrew and Peter stated that they believe national government is generally supportive of shale gas development but is concerned about public concerns, pre-election, to make any positive moves (update: since the UK election the new

Government has come out strongly in favour of shale gas development). This, combined with the scaremongering by some and lack of in-depth knowledge held by the general public, is proving to be a brake on progress in this area. They believe all of the major political parties with the exception of The Green Party are in favour of shale gas drilling, based on the excellent technology and regulation we have available in the UK. Peter noted that our technology, manufacturing, infrastructure and regulation in relation to shale gas drilling are the best in the world.

At this point, Andrew revealed INEOS has also acquired PEDLs for UK Sites He made reference to one confirmed INEOS site in Scotland, but Scotland has currently placed a moratorium on shale gas drilling and so their ability to progress with work on this site is likely delayed. Update: Since this discussion INEOS has confirmed the ownership of two licenses in Scotland, and part ownership (with IGas) of others in England. This revelation places INEOS in a very unique position – they would be a producer as well as a primary **and** secondary consumer of shale gas; extracting it, transporting it, using it as material and using it to generate electricity themselves.

Peter raised the notion that given the small size (compared to US companies) of drilling companies in the UK and the various obstacles preventing progress in the field, this may become a popular option at least amongst companies in the chemicals industry. The idea of shale exploitation by shale gas consumers is an interesting sub-field to this debate, definitely worthy of more investigation – it has the potential to cut out international interest in UK resources, which in the case of the railways has had many negative effects for the end-user in the UK.

When asked about the idea of Liverpool as a “Shale Hub”, Andrew noted that local gas means local feedstock, cutting logistics costs as well as material feedstock costs and power costs; essentially slashing overheads. Adding to this, Peter raised the idea that locally sourced shale gas could be combusted near to its source and used to power a willing nearby factory (ie; Runcorn) to avoid having to purify it for use in the National Transmission System. This could mean immediately recognisable local benefits in the form of reduced gas and electricity prices, something which the government has been keen to emphasise to attract interest and support from industry and to pacify objectors.

Andrew added that Liverpool should somehow follow Blackpool’s example in the knowledge economy related to shale gas drilling, perhaps introducing a skills course at a college or something similar.

Finally, when asked what an LEP could do to support their business in regards to shale gas, both Andrew and Peter felt certain that demonstrable support, visible to the public eye was

crucial. This means utilising the LEPs unique position as a regional catalyst for economic growth to get local businesses involved as much as possible in the supply chain of shale gas exploitation and assisting in finding solutions to the problems associated with it which make it unpopular with people. At this point Simon raised the idea of using Liverpool as a central port for shale gas drilling Lancashire as it is well-equipped and located, and perhaps using 'Motorways of the Sea' to ship equipment up the coast or the Manchester Ship Canal to eliminate road congestion. Peter confirmed it was concepts such as this which could be big points of leverage in the push to get shale gas drilling 'moving forward' locally and nationally.

The chemicals industry is the UK's and the North West's top manufacturing earner. EU production is set to fall behind US production within the next 2 years and the forecast shows very little growth in Europe, with the US capturing a large market share as a result. To finish, Andrew and Peter suggested we get in touch with Corin Taylor, who wrote the Institute of Directors report and now works at UKOOG under Ken Cronin (who has been unable to attend our steering group). They also suggested we speak to Debbie Baker from GrowHow (fertiliser manufacturers). Other avenues of contact to pursue are 'United Oilfield Services' and 'Marriott Drilling'. Andrew said he will be in contact to supply contact details as well as much other information as possible which may be useful to our project, including INEOS' contribution to a committee held by West Cheshire Council on shale gas exploitation.

Cathy Elliott of Community Foundations for Merseyside and Lancashire

3rd March 2015, 11:15-12:00.

- “Tell us about your experiences with community benefit and working with Cuadrilla so far.”

Cuadrilla is exploring two sites near Fylde. They have been at the pre-permission stage for over a year. With regards to the community benefit fund, the Community Foundations will independently administer funds allocated to them (which is based entirely on their locale and what shale exploration or drilling operations are occurring in that locale under the UKOOG and UK Community Foundations agreement of 2014). For each of the two Lancashire pilot sites a fund of £100k per site or well head is proposed with up to two well heads per site (ie; £400k), if permission are given. In the US the funds take a % of the revenue generated by each well when drilling and this is being debated currently in the UK.

This entire fund is separate to other funds, such as infrastructural improvements, ie; A drilling company investing in local roads to improve them so that access is easier to a drilling site. Community Foundations in the UK have a long track record of working with energy companies on community benefit funds, especially for wind farms.

- “What ideas have been mentioned in regards to spending the fund?”

The fund will be administered transparently by the Community Foundations (CFs) independently under the legislative rules of the charity commission, if permission are given. The CFs must appoint a panel comprised of local representatives of the community, not elected officials. Panel members may well be local residents, community leaders and local business owners. It is these people who ultimately vote on where the money should go. Charities, community groups, social businesses and individuals in need will be funded against a mutually agreed local criteria. The CFs will work independently of Cuadrilla to ensure that funds are effectively managed to deliver the greatest possible social benefit

There is a concern that local public sector bodies would want to use the money to restore funding to services that may have seen government cuts. This is not the intended use of community benefit fund money and there will be other funds available for statutory bodies and services, such as under planning requirements. The CFs envisages that proper use of the funding would mean investment in grassroots projects, the appearance and amenity of local community facilities.

Community benefit funds are looking to be much better planned in the shale gas industry. This is a message being shared by UKOOG in conjunction with UK Community Foundations.

Finally, Cathy stressed that authorities must work together on this for this to work properly, if permissions are given. She also believes the awareness of community benefit funds could be raised with the relevant parties, again if permissions are given.

Meeting with Dr Alan Jemmett, MEAS.

Thursday 5th March, 1030-1130

Alan Jemmett (AJ), Director of Merseyside EAS introduced the context within which the MEAS review of Shale was prepared. The main driver was to provide an even-handed review of information on the basis of evidence and information available – the report was just that and not a formal ‘adopted’ document. MEAS held a neutral position on the issue and its role is to act as a technical advisor to the Local Authorities, in shale’s case, Minerals Planning Authorities and had tried to cut through polarised positions and questionable claims.

Given that this was a very quickly changing area, the June 2014 report was already in need of updating for a variety of reasons including UKOOG information, experience in Lancashire, various industry reports and Government announcements and passage of Water and Infrastructure Bill.

AJ stressed the importance of making sure that the LEP group convened to explore the economic issues was objective and evidence based. This was especially important given the sensitivity and publicity around Shale or ‘fracking’, the role of the LEP including Low Carbon and significant interest and sensitivity within some Local Authorities. Given that there are some significant concerns and negative perceptions about shale, the industry needed to ‘up’ its game in terms of communications and practice.

AJ went on to explain that in MEAS’s role they have provided training to planners and some members and the Sefton Council had recently convened a member working group looking at the issues associated with shale gas development in Sefton.

AJ noted that the land use planning system primarily through Minerals Planning Authority was the primary mechanism for local regulation though it had to operate in tandem with other regulatory regimes. The minerals policies in emerging Local Plans were particularly important from that respect and to date no case had been made to treat shale any differently to other energy minerals. The MPAs have been effectively managing similar industrial processes for many years.

In terms of the work of the LEP on shale, AJ noted that it would be prudent to ensure Local Authority representatives were involved/aware.

He also noted that in terms of economic impacts that economic potential and benefits e.g. supply chain, hub or research and innovation, should also be weighed against any dis-benefits such as potential impact on tourism, agricultural production, land value, road infrastructure, hidden cost on health and wellbeing. Again, this was important to be seen to be objective and even-handed. However, the LCR could be very well placed to benefit from the industry if it develops to any scale in the UK given its geographical location, industrial

base with obvious synergies, research and development expertise and thickness of potential gas bearing rock.

AJ noted that there was significant potential for the supply chain when associated infrastructure, treatment and waste disposal requirements were taken into account. He also noted that useful work could be done of employment generated as experience thus far tended to show relatively modest local employment and local retention of spend.

Caution should be exercised to avoid too many comparisons with the US experience due to multiple differences in geology, energy market structure, regulatory frameworks and geography.

What would be very helpful from the LEP work would be to:

Better understand the infrastructure requirements of shale gas development given that there were several options for using the gas, EG: on-site, local distribution to local consumer, connection to grid network. This could be a very important factor affecting location of pads and the economics of development.

Include scenarios about what small, medium and 'boom' shale development would look like.

Ensure that developers were aware for and included in project planning the cost of regulatory consents needed at each stage of the development cycle. Regulation is an evidenced-based approach informed by baseline data that sometimes had a considerable lead in time.

AJ noted that the cost of regulation could be significant given early experiences in Lancashire and encouraged the LEP to communicate with Lancashire County Council/LEP. For example, the resources needed to complete a Health Impact Assessment in Lancashire were significant. The industry should not underestimate the cost and time taken for such regulatory matters.

Finally AJ noted that the economics of the proposed process remained quite uncertain and that would probably remain the case until such time as some developments proceed to testing and appraisal and then production.

Ken Cronin (UKOOG) Conference Call.

Monday 9th March 2015

- North Sea oil and gas is a good proxy in terms of how the development of the industry could occur once drilling has begun. It is not unreasonable to expect one city or region to become a focal point of the industry, nor is it unreasonable to expect a supply chain and knowledge economy to benefit this region. Before the EY report, UKOOG believed shale gas drilling would actually develop evenly all over the UK, but now it is looking like a 'Pilot region' is needed to some degree. This is expected to develop over the next 2-3 years. This region would get a head start in becoming a "shale gas hub".
- Ken thinks Liverpool already has possibly the best head start in the UK given its location, its existing industries' relevance to the shale supply chain and the production of this report; Aberdeen became the North Sea hub and not Dundee because *Aberdeen wanted it more*.
- A shale hub would feature a manufacturing hub, an innovation hub and a focal point for logistics. There are only 2 rigs in the UK that could be used for shale gas drilling right now. There are 77 in the EU and thousands in the USA that would need retrofitting. Ergo, we must establish facilities to produce our own bespoke rigs as we expect to need 50 over 15 years. To this end, we would need seamless steel imports (Liverpool ideally positioned with new dock developments and sea access) and it would need to be close to facilities where it can be modified and put together with other equipment to form part of the rigs used (again, Liverpool ideally positioned with existing chemical industry, fittings manufacturers and infrastructural links to rest of country). The innovation side of things comes from the huge R&D opportunity in terms of drilling techniques, equipment, waste water treatment, chemical engineering and geophysics employed in the operation, and would require collaboration between LCR Universities and industrial partners. Ken agrees that there is no need to let any University hold a monopoly on shale knowledge and innovation.
- Ken believes the LEP should facilitate funding where necessary for the supply chain and end-user and more importantly should push factual information out to the public to stop the scaremongering.
- Over the next 15 years we must de-carbonise our electricity generation. This will be led by renewable and nuclear. We have to shut out coal and reduce gas to a position where it is a supplement. Industry knows this. But what they don't have a solution for is heating and industrial use of gas. We will have >80% import reliance in under

15 years. This will have serious knock-on effects. EG: 75% of farmers use nitrogen based fertiliser which uses gas as a material feedstock. Food production will suffer.

- UKOOG feels all of the political parties aside from the Greens are behind shale gas. The conservatives are just the most vocal.
- Coordination needs to happen between industry and local, regional, national authorities to keep the supply chain opportunities UK-based and even better, locally based. Some of the recent larger wind farms in the UK have had c60% of the supply chain money going outside of UK. Dreadful considering it was funded from renewable subsidy paid for by energy consumers

Call with Debbie Baker (GrowHow)

Tuesday 10th March, 09:30-10:00

- Debbie has forwarded me GrowHow's contribution to the CWaC Economic Review.

GrowHow is the biggest industrial user of gas. They use the same amount of gas in their 2 plants as Liverpool and Manchester combined each day. 33% of this is burnt to power their ammonia production process which is very heat intensive. The rest is used as chemical reagents.

GrowHow don't need a huge shale revolution like has occurred in the US. They just need enough to buoy the UK through increasing import costs in order to safeguard UK nitrogen-based fertiliser/chemical production and to keep their people in employment (figures in CWaC document).

Debbie feels the LEP should market the factual benefits of shale to the public, as should all authoritative bodies; this is essential to getting people on board with it. People are being short-sighted by being 'anti' as they don't realise the huge consequences of the UK chemicals industry going under.

The LEPs of the North West should work together to make the region as a whole a 'shale gas hub'. The LEPs should start a multi-industry, cross disciplinary organisational forum which sets out frameworks for development and speaks with one voice for the whole of the North West's shale interest groups. Perhaps this could even be a logical next step from our steering group? This group shouldn't just focus on shale however – it should seek to be a voice for all energy in the North West, including renewable, fossils and nuclear. It should carefully manage the balance between de-carbonisation and maintaining industrial strength. It could also become a European Leader in the energy and fuel sector. "We have the resources here in terms of geography, industry, population and R&D, so what is stopping us? Lack of coordination and cohesion."

Any shale gas hub should be regional and focus around Thornton Science Park. Thornton Science Park needs careful guidance and development but could be a focal point for R&D and enterprise. Also, don't forget that there are continual R&D benefits of keeping the chemicals industry fed with affordable gas – consistent improvements that have been seen in sustainable chemical engineering, resource efficiency and chemical strength would continue as long as the industry is maintained.

Debbie isn't sure about what can be done with the supply chain as it is not her remit, but whatever happens don't have a repeat of the wind turbine travesty that let profits and jobs from our wind developments flow out of the UK.

"Where regional academia meets cutting edge industry and collaboration occurs, progress is made."

NEWSPAPER ARTICLE: Andrew Critchlow, Commodities editor, The Telegraph

6:00AM GMT 10 Feb 2015

North-Sea-focused oil and gas companies will create fewer jobs over the next year and increasingly look to diversify their interests towards onshore shale projects, a new survey of the industry by the Bank of Scotland revealed.

Oil and gas companies working in the UK's North Sea basin are expected to add 8,000 staff over the next two years, down from 10,000 since 2013 amid greater anxiety within the industry over the direction of crude prices.

Activity in the North Sea has been hit hard by a 50pc slump in the price of oil to around \$50 per barrel since June last year. Oil & Gas UK said in its latest annual survey that total oil revenues from the North Sea fell to £24bn in 2014, while the impact of rising costs saw a £5.3bn cash deficit for the region, the worst recorded since the 1970s as falling oil prices eroded profits. Chancellor George Osborne is now widely expected to announce tax breaks for North Sea oil and gas operators to help boost investment in production and support the local economy around Aberdeen. Leading industry figures such as Sir Ian Wood have called on the Treasury to slash corporation tax on operators to around 45pc.

However, the Bank of Scotland survey also showed that many companies operating in the North Sea remain quite optimistic despite the recent volatility in oil markets. About a quarter of the companies surveyed expect to merge or acquire a rival, while 92pc still expect to grow over the next two years.

"While it is obvious the North Sea is facing some serious challenges, this research paints a clear picture of a global industry, which having dealt with similar commodity price challenges in the past, is determined to come through fitter and stronger," said Stuart White, area director of commercial banking at Bank of Scotland. The survey of 101 UK oil and gas companies looked at firms ranging in size from a turnover of less than £25m to more than £500m. It found that 92pc of respondents still expected to grow their business over the next two years. Many were also looking to diversify into the nascent onshore shale gas industry in the UK and renewable energy, according to the study.

"Firms continue to be concerned by an ageing workforce and a lack of skills, which explains why the industry is determined to get through the current storm without major workforce reductions," said Mr White. "North Sea firms are seen as world leading, so it is therefore not surprising they are looking at international expansion opportunities where they can enjoy continued growth backed by the strong expertise they have developed here in the UK."

The Bank of Scotland survey is in contrast to some of the gloomy predictions recently made about the North Sea's future. Data from insolvency specialists Begbies Traynor recently showed that the number of UK oil and gas businesses experiencing "significant" financial distress increased by 69pc to 486 in the fourth quarter of 2014, compared with 288 companies a year earlier.

Call with Director of Innospec Brian Watt

Thursday 19th March, 0930-1000.

- Innospec would obviously benefit from shale gas as a lower cost means of generating heat and electricity on-site. Where it would benefit most however is that Innospec is already a major player in the supply of specialty chemicals and services to the oil & gas industry in North America and it aims to become the number 1 in the UK and Europe. Innospec has a comprehensive chemical range for use in drilling, hydraulic fracturing, stimulation and production of well sites.
- Innospec, like most companies, wants the red tape removed and progress to speed up although they are well aware this may not happen for some months after the election. Despite working with CWaC LEP, a lot of their employees are from Liverpool and they see already see Liverpool as a hub of sorts for their business because of its port and infrastructural facilities.
- In particular, Innospec has a substantial manufacturing site at Ellesmere Port site with significant opportunities for expansion. This site could potentially be involved in processes needed for the industry to move any NW shale gas that isn't pumped into the NTS and loading onto transport near its extraction site to keep costs and carbon footprint low.
- Innospec believes that more than anything, drilling and fracturing needs to start on a few wells and it needs to be well maintained and shown to be sustainable. If this were to occur for even only a handful of wells, the supporting services and supply chain would flourish, encouraging further growth of the industry.

IRR Calculations by Sir Michael Bibby based on IoD Report values

revenue			2.5 times opex (50ppt versus 20ppt)																
depletion Profile	40% p.a.																		
		100	60	36	21.6	12.96	7.776	4.6656	2.79936	1.679616	1.00777	0.604662	0.362797	0.217678	0.130607	0.078364	0.047018	0.028211	
Period	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
capital opex	-17.50	-260.00																	
		-104.00	-62.40	-37.44	-22.46	-13.48	-8.09	-4.85	-2.91	-1.75	-1.05	-0.63	-0.38	-0.23	-0.14	-0.08	-0.05	-0.03	
revenue		260.00	156.00	93.60	56.16	33.70	20.22	12.13	7.28	4.37	2.62	1.57	0.94	0.57	0.34	0.20	0.12	0.07	
	5.25	31.20	-28.08	-16.85	-10.11	-6.07	-3.64	-2.18	-1.31	-0.79	-0.47	-0.28	-0.17	-0.10	-0.06	-0.04	-0.02	-0.01	
cash flow	-17.50	-72.80	65.52	39.31	23.59	14.15	8.49	5.09	3.06	1.83	1.10	0.66	0.40	0.24	0.14	0.09	0.05	0.03	
discount rate		10.0%																	
NPV		£32.22																	
IRR		29%																	

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0.016927	0.010156	0.006094	0.003656	0.002194	0.001316	0.00079	0.000474	0.000284	0.000171	0.000102	6.14E-05	3.68E-05		249.9999
18	19	20	21	22	23	24	25	26	27	28	29	30		
														-277.5
-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-260
0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	650
-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-33.75
0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.5

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Liverpool City Region
Local Enterprise Partnership

Routes Europe 2018
Liverpool City Region Hosting
Opportunity

Strategic Board Meeting 16 July 2015

Author:
Mark Basnett
LCR LEP

1. Background

- 1.1 Routes Europe and World Routes are the airline and airport sector industry gatherings that since 1995 have shaped the world's air service community as it exists today. The Routes concept is simple and unique: it recognises that air service development is a partnership between airlines, airports and tourism authorities. Placing the airlines centre-stage, Routes gatherings provide an opportunity for these partners to meet, negotiate and build relationships that shape the world's future air route networks. These are as such the world leading events in the industry.
- 1.2 Hosting Routes provides the chance to showcase all that is on offer for airlines, tourists, businesses and inward investors, and an opportunity to positively change perceptions about an airport and a destination. It has a strong track record of delivering significant economic impact to those regions that host the event through increased connectivity and inbound passenger numbers. Previous hosts include Marseille, Budapest, Aberdeen and Tallinn.
- 1.3 There is an opportunity for Liverpool City Region to host Routes Europe 2018 which, along with significant PR coverage and media exposure, will attract network decision makers from between 110 to 130 airlines; around 450 airports and a delegate figure in the region of 1,400.
- 1.4 Hosting Routes comes at a significant cost, typically borne by the hosting region, of circa £800,000, but it can be demonstrated that the long term economic benefits accruing from the event in hosting regions are many multiples of this figure, measured in terms of GVA impact and local jobs.
- 1.5 The potential to host Routes 2018 was considered at the last Superport Committee and unanimously endorsed as the kind of market leading activity the City Region should seek to be engaged in. Following that, an expression of interest for Liverpool City Region to host Routes Europe 2018 was submitted to the organisers on the City Region's behalf by Liverpool John Lennon Airport. Further to this it has been confirmed that we are the only potential UK applicant for this event in 2018.
- 1.6 The LEP is now part of a working group with LJLA, Merseytravel, ACC, Marketing Liverpool and Visit England others established to build up a compelling business case for the event to come to Liverpool City Region in competition with a number of other European centres and identify sources of funding.
- 1.7 The event organisers are planning a visit to the City Region in early August to assess our suitability to host the event. A detailed submission will then be required by 31 October 2015 setting out our proposition and how it will be resourced and what the anticipated economic impact of the event will be for the City Region. A decision on the successful region will be made early in 2016.
- 1.8 A review of potential sources of funding is currently underway, including application to the £2.5m ESIF allocation for place marketing. Projects funded through this initiative will be required to demonstrate how they contribute directly to the City Region's economic growth and the creation of FTE jobs. They must also be of direct relevance to the key growth sectors identified within the region's growth strategy including SuperPort, Knowledge and Visitor Economy. On the basis that this project will present a good strategic fit with these priorities it is proposed that once the Place Marketing ESIF Call is established over the next 2-3 months with input from the Visitor Economy Board, that a detailed submission will be made for support from this funding source.
- 1.9 External sources of funding are also being worked on with input from Visit England including the potential to position this event for the wider benefit of the North and Northern Powerhouse. It will be critical to ensure that funding is in place, or underwritten, by the application deadline date of 31 October 2015 to give the City Region the greatest potential of success.

2. Next Steps and Recommendation

- 2.1 The LEP Board is asked to confirm its interest in the City Region hosting Routes Europe 2018 on the basis of its significant potential economic impact and in the LEP executive and partners exploring sources of funding both locally and nationally to resource and underwrite this event.
- 2.2 Subject to this endorsement the LEP Executive will work with LJLA, LA and other colleagues including the Visitor Economy Board to develop a compelling detailed proposal to host this event.
- 2.3 The detailed proposals will be shared with the LEP Board once developed.

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Liverpool City Region
Local Enterprise Partnership

Liverpool City Region Blue Green Economy ERDF Investment Policy

Strategic Board Meeting 16 July 2015

Author:
Alan Welby
LCR LEP

1. PURPOSE OF REPORT

- 1.1 The purpose of this report is to present the LCR LEP with the draft strategic ERDF/ ESF investment framework for the blue green economy.

2. RECOMMENDATIONS

- 2.1 Liverpool City Region Local Enterprise Partnership is recommended to:

(a) Endorse the draft ERDF/ESF strategic investment framework for the blue green economy.

3. BACKGROUND

- 3.1 The Blue Green Economy was one of the five priority investment portfolios submitted to Government in the Liverpool City Region 2014-2020 European Structural and Investment Funds (ESIF) Strategy in 2014. Since the submission of the ESIF Strategy, the LEP has undertaken a significant piece of work with local stakeholders to develop a Blue Green strategic investment framework.
- 3.2 Priority Axis 4 (PA4) (shift to a low carbon economy) is the primary focus for delivery of LCR ESIF investment in the Blue Green Economy. In addition, the Government has proposed that England's 'core cities' can contribute up to 10% of their EU-funds towards 'Sustainable Urban Development' (SUD), which allows for an integrated package of actions to tackle challenges affecting urban areas.

ERDF INVESTMENT STRATEGY FOR THE BLUE GREEN ECONOMY

- 3.3 The strategic framework for ERDF investment in 'Blue Green Economy' activity is split into six defined sections:

Section 1: Governance for Blue Green investment decisions
Section 2: Vision and Aims: What does the Blue Green Economy mean for Liverpool City Region?
Section 3: Identification of Blue Green ERDF and ESF investment priorities
Section 4: First round calls: Ensuring continuity of activity
Section 5: Local 'Strategic Fit': Outline principles for investment
Section 6: Sustainable Urban Development and the Sustainable Development Cross-Cutting Theme

- 3.4 A blue green 'task and finish' advisory group, chaired by Gideon Ben-Tovim, has been established to provide an appropriate governance structure to support the development of the investment strategy and to provide specialist guidance to the ESIF committee on the local 'strategic fit' assessment of low carbon and wider blue green ERDF project proposals.
- 3.5 The strategy (detailed in Annex 1) sets out key Blue/Green ERDF / ESF investment priorities for Liverpool City Region, aligned to the UK Growth Programme. It also outlines opportunities for inclusion of blue green activities within the proposed Sustainable Urban Development (SUD) strategy and the role that the Sustainable Development Cross-Cutting theme can play in actively delivering sustainable solutions across the ERDF programme in Liverpool City Region.
- 3.6 The nominal grant allocation for PA4 of the ERDF programme is £15m. To achieve maximum impact for Liverpool City Region, ERDF and ESF investment should be targeted at a small range of strategic and complementary activities across the PA4 priorities.
- 3.7 Specific priority investment areas have been defined in draft and reviewed by the Blue Green Advisory Group. These include the first round of ERDF Low Carbon calls. Appendix 2 of the

strategy provides the detailed investment priorities and their links to existing local strategies such as the SEAP.

- 3.8 Liverpool City Region was one of only a few LEP areas to put out a PA4 low carbon ERDF call in March 2015. This call was focused on projects that could deliver continuity of eligible low carbon activity from the ERDF programme (2007-2013). The deadline for outline applications was 21st May and it is expected that the project submissions will be reviewed at the ESIF committee meeting on 21st July.
- 3.9 There remains uncertainty over the definitive outputs and results to be delivered from Priority Axis 4, however, based on the draft Operational programme, it is likely that this is the only Axis in which GHG emissions reduction will be measured. Therefore it is important that a robust and appropriate methodology for calculating GHG emissions for projects coming forward under this PA are captured.
- 3.10 Investment priority 4a - promoting the production and distribution of energy derived from renewable sources – has been identified as a key priority area for investment the City Region, however there remains some uncertainty as to what interventions around energy infrastructure ERDF funding can eligibly support, and how these link to wider issues such as State Aid and public procurement regulations. The LEP is collaborating with nine other LEPs in England on a joint working group led by DECC to seek clarification from the Managing Authority on the areas of uncertainty around eligibility.
- 3.11 Clarification is also being sought from DCLG as to the opportunity to utilise ERDF funding under PA4 for the development of local low carbon strategies, under priority 4e.
- 3.12 It is important that the City Region has a mechanism in place to develop appropriate skills needed to drive the low carbon and wider blue green economy. Holistic skills development projects are required across the City Region which will align to market needs. Further input is required to align ESF investment to low carbon priorities.
- 3.13 The focus of blue green activity over the coming months will be on supporting applicants that have been successful at outline application stage with the development of their full proposals, to ensure that these meet local needs and opportunities. It is not anticipated that a further low carbon call will be released in the summer. Subject to clarification on eligibility, it may be feasible to release a call under priority 4a by end of the year.
- 3.14 Priority investment areas within the blue green economy portfolio are intrinsically linked and activities should complement each other to deliver economies of scale and create a step change across the City Region. Section 5 of the Blue Green Investment Strategy sets out some 'outline principles for investment' in ERDF funded low carbon projects.
- 3.15 The blue green portfolio also links strongly with both the business economy and the innovation economy portfolios. Some strategic low carbon activities will be more appropriately delivered via these other priority axis to ensure they are fully aligned with existing delivery models for the City Region, for example, low carbon sector development activities and low carbon product innovations.
- 3.16 Sustainable development has been established as a cross-cutting priority theme within the ERDF programme 2014-2020. This means that, at a project level, applicants need to demonstrate how any potential negative environmental impacts associated with their project will be minimised, or mitigated, and how potential positive impacts will be maximised. The ESTA project developed an online guidance document for ERDF project applicants, which was reviewed and signed off by DCLG. It is recommended that this guidance document is shared with all ERDF project applicants in Liverpool City Region in the development of their full proposals.

NEXT STEPS

- 3.17 It is intended that this Investment Framework will be a working document, reviewed on a regular basis and developed further once clarity is given on a number of issues such as: the process of undertaking strategic fit assessments for projects; the content and allocation of funding for the SUD; clarity on the funding eligibility for priority 4a; allocation of ERDF funding for sustainable transport; and further identification of opportunities to link with the ESF programme. As such, the LEP is being asked to endorse the draft framework as a tool for ensuring that applications received from the Call already issued can be assessed to ensure they fit with City Region priorities.

A Strategic Framework for Investing ERDF and ESF Funds in the Blue Green Economy Portfolio

CONSULTATION DRAFT

June 2015

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Executive Summary

The blue green economy portfolio is the primary portfolio which will support ERDF and ESF investment in Liverpool City Region's transition to a low carbon economy, however its focus also extends beyond low carbon, to encapsulate economic activity across all sectors and supply chains that contribute to the decoupling of economic growth from increased carbon emissions and environmental degradation.

The concept of the blue green economy builds upon Liverpool City Region's unique maritime location and the wealth of opportunity this brings, for example: the ability to generate marine renewable energy (offshore wind, wave and tidal); the development of innovative low carbon solutions (in relation to the river, port, and logistics hub); activities to increase energy efficiency of businesses and buildings; opportunities for increased connectivity, energy network development and modal shift; and prospects to maximise our natural assets to address climate change challenges. In a nutshell it is about making the unique geography and natural environment of Liverpool City Region work for our economy.

The overarching vision for the blue green portfolio is to become 'a world leading sustainable Atlantic coastal City Region with a thriving, resilient blue green and low carbon economy'. This vision can be achieved through...

- Investing in energy efficiency measures to save money, cut GHG emissions and reduce the strain on our existing energy capacity;
- Generating more of our energy from low carbon and renewable sources, to become more energy self-sufficient;
- Managing our resources more effectively, developing an economy which prevents and better manages its waste;
- Exploiting commercial opportunities associated with our green and blue economy, getting more people into employment in the sector and growing its value;
- Fostering low carbon innovation, being at the forefront of new emerging technologies;
- Adapting infrastructure to climate change, to ensure we are well prepared for future challenging climate impacts;
- Sustainably managing our land, water based assets; maximising the opportunities they provide to the Liverpool City Region economy to attract investment and encourage people to live, work and visit Liverpool City Region;

Given the amount of ERDF funding available, the focus of this investment strategy will be on catalytic and enabling activities that can demonstrate significant impact, outputs and results. Funding will be allocated across a small number of collaborative projects.

Projects within this portfolio will be expected to: demonstrate how they will deliver scaled Greenhouse Gas (GHG) reductions; how they will support the development of the blue green vision; and how they will deliver wider economic and social benefit for the City Region.

Projects will also be expected to align with City Region strategies such as the SEAP, Low Carbon Action Plan and the City Region's sustainable waste management strategy and Green Infrastructure strategy

ERDF Priority Axis Theme	Outline Priority Activities for LCR	Budget
4a - Promoting the production and distribution of energy derived from renewable sources	<p>Activities which can increase renewable capacity of Liverpool City Region. pump-prime local investment in the deployment and distribution of renewable and low carbon energy generation (where there is a clear and eligible market failure to intervene) and for example:</p> <ul style="list-style-type: none"> • Deployment of enabling infrastructure to accelerate development and restoration of derelict, underused and neglected land through installation of renewable energy technologies • Activities to address market failures and barriers in the deployment of new and emerging energy technologies. • Coordination of municipal and private sector organic waste streams into a city region based energy from waste / AD facility <p>Projects will be required to accurately report GHG savings and will be expected to offer wider local community and public benefit, Activity must also align with ESF funds to contribute to development of a skilled local workforce within the renewable and low carbon energy sectors</p>	£6-8m
4b - Promoting energy efficiency and renewable energy use in enterprises	<p>A coordinated Liverpool City Region wide initiative to simulate awareness of the business benefits of energy and wider resource efficiency, to drive the market demand across the City Region for energy efficient and climate resilient technologies.</p> <p>Projects will be required to accurately report GHG savings and activity must align with the 'Business Economy' ERDF Priority Axis 3 to dovetail with wider business support delivery structure and objectives of the City Region via Liverpool City Region Growth Hub model.</p>	£1m
4c - Supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector	<p>A City Region wide collaborative project that will deliver activities to improve the energy and resource performance of buildings in the city region, with a focus on one or more areas of; social housing, commercial and/or public buildings;</p> <p>Projects should have clear, long-term objectives considering wider economic, social and environmental impacts. Activities should include innovative low carbon technology developments.</p>	£3-4m
4e - Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures.	<p>This would be the most appropriate axis from which to allocate low carbon SUD funding and strategy development around sustainable urban mobility to include blue and green Infrastructure investments (including in relation to SuperPort); supporting the sustainable development and resilience of significant infrastructure assets.</p> <p>Development of low carbon strategies i.e. SEAP could be eligible to be included under this priority. This is still to be clarified.</p>	£1-2m
4f - Promoting research and innovation in, and adoption of, low-carbon technologies	<p>Activities that will strengthen relationships and interactions between local businesses and the wider knowledge economy, to drive forward the uptake of low carbon technology innovation. R&D partnerships delivering knowledge transfer to develop new low carbon eco-innovative products, processes and services.</p>	£3-4m

Introduction

The Blue Green Economy was one of the five priority investment portfolios submitted to Government in the Liverpool City Region 2014-2020 European Structural and Investment Funds (ESIF) Strategy in 2014.

Since the submission of the ESIF Strategy, the LEP has undertaken a significant piece of work with local stakeholders to develop a Blue Green strategic investment framework, focused around relevant 'priority axis' of the draft ERDF Operational Programme for England.

Priority Axis 4 (PA4) (shift to a low carbon economy) is the primary focus for delivery of LCR ESIF investment in the Blue Green Economy, along with a small element of PA6 (Preserving and Protecting the Environment & Promoting Resource Efficiency). It is also anticipated that funding originally aligned to a transport priority may also be moved to the Low Carbon Priority Axis (PA4).

In addition, the Government has proposed that England's 'core cities' can contribute up to 10% of their EU-funds towards 'Sustainable Urban Development' (SUD), which allows for an integrated package of actions to tackle challenges affecting urban areas. There is an opportunity for the blue green economy to be an integral part of the SUD strategy.

What do we mean by the blue green economy?

The overall priority of Liverpool City Region is the creation of jobs and an increase in economic growth, however the economy cannot grow in isolation, there needs to be a balance of economic, environmental and social concerns and a shift in behaviour change.

The Blue Green economy can be thought of as one that is low carbon, resource efficient and socially inclusive. Growth is driven by investments which reduce carbon emissions and pollution, enhance energy and resource efficiency and prevent the loss of bio-diversity and ecosystem services.

The Blue green economy builds upon Liverpool City region's unique maritime location which affords the City Region many of the components required to self-generate marine renewable energy (such as wind, wave and tidal) and develop innovative low carbon solutions in relation to port, sustainable logistics and modal shift opportunities. It includes activities to; increase energy efficiency of businesses and buildings; develop new technological innovations; generate and distribute renewable sources of energy and materials; increase connectivity; and improve the management of our natural assets to address climate change challenges.

What are the challenges we are facing?

Our current and future climate presents a major challenge – globally, for the UK and for Liverpool City Region. Over the next 50 years we will experience higher temperatures, changing rainfall patterns, rising sea levels and more frequent extreme weather events ranging from droughts, floods and freezing winters. We need to plan for this today and consider now what steps are needed to ensure our infrastructure, and the crucial services it provides, can meet the challenges that lie ahead¹.

¹https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69269/climate-resilient-infrastructure-full.pdf

This strategic framework for ERDF investment in 'Blue Green Economy activity is split into five defined sections:

Section 1:	Governance for Blue Green investment decisions
Section 2:	Vision and Aims: What does the Blue Green Economy mean for Liverpool City Region?
Section 3:	Identification of Blue Green ERDF and ESF investment priorities
Section 4:	First round calls: Ensuring continuity of activity
Section 5:	Local 'strategic fit': Outline principles for investment in low carbon and wider blue green activities
Section 6:	Sustainable Development Cross-Cutting Theme

It is anticipated that this strategy will be reviewed on an annual basis.

DRAFT

Section 1: Governance for Blue Green investment decisions

The Managing Authority for ERDF (DCLG) will look to the local ESIF Committee to provide advice on ERDF project applications to ensure local 'strategic fit'. Likewise the Opt-in organisations/DWP will also request advice from the ESIF committee in relation to the ESF.

An important part of this investment framework has therefore been the development of an appropriate Governance structure to advise the ESIF Committee on decisions relating to low carbon and the wider blue green economy investments.

Stakeholder relationships across the low carbon, maritime and logistics agenda are strong. A number of groups exist that cover the Blue Green Economy agenda to some extent, including the LEP led Low Carbon Economy Board, the SuperPORT Committee and the Local Nature Partnership. However the breadth of this portfolio, together with an emerging potential for environment to be included within the City Region's ERDF Sustainable Urban Development Plan (SUD), meant there was no single appropriate Governance structure in place to provide the advisory capacity and expertise needed to support the ESIF committee in the decision making process for the Blue Green ERDF investment priorities.

To address this, a 'task and finish' advisory group has been established to provide the specialist strategic guidance required to review, shape and sign off an Investment Framework for the Blue Green ERDF portfolio and advise the ESIF committee on blue green investment priorities.

The advisory group meets on a monthly basis and comprises impartial cross-sectoral representatives from across the low carbon, environmental and wider logistics sectors. The group is chaired by Gideon Ben-Tovim, who is also the current environmental sector representative on the ESIF committee.

The group's current membership and the Terms of Reference can be found in [Appendix 1](#). Given the significant changes to the national Governance structure surrounding the EU Programmes these structures will need to be kept under review to ensure they are fit for purpose.

In its inaugural meeting, the group agreed that there were a number of ways in which they could influence the Blue Green agenda within the programme:

- Help to shape the 'local investment need' sections of the calls within PA4 as they are being developed.
- Outline local strategic fit by bringing together the priorities of existing local strategies such as ESIF strategy, the Low Carbon Action Plan, SEAP, the Local Nature Partnership vision, local transport plans etc.
- Build a strong Blue Green focus into the Sustainable Urban Development (SUD) priority of the ERDF programme.
- Drive best practice for all projects through the sustainable development cross-cutting theme
- Provide ongoing support to projects once they have been approved, through access to the group's networks and business contacts.

Section 2: Vision and Aims: What does the Blue Green Economy mean for Liverpool City Region?

At the core of the blue green economy concept is an ambition to be a lower carbon, more resource efficient and sustainable City Region, unlocking growth potential through exploiting low carbon growth opportunities, focusing on the City Region's sectoral and geographical strengths, whilst also de-coupling sustainable economic growth across all sectors from environmental degradation.

One of the first tasks the Advisory Group were asked to consider was the context in which the Blue Green Investment Framework was being delivered. In order to shape this, it was agreed that a shared vision for the Blue Green Economy should be defined.

VISION:

“A world leading sustainable Atlantic coastal City Region with a thriving, resilient blue green and low carbon economy”

The vision is supplemented by a number of high level aspirational actions:

By 2025, Liverpool City Region will...

- Investing in energy efficiency measures to generate financial savings, reduce GHG emissions and reduce the strain on our existing energy capacity;
- Generating a significant proportion of our energy from low carbon and renewable sources, to become more energy self-sufficient;
- Managing our resources efficiently, developing an economy which prevents and manages waste more effectively;
- Exploiting commercial opportunities associated with our green and blue economies, getting more people into employment and growing the value of the sector;
- Adapting infrastructure to climate change, to be well prepared for future challenging climate impacts;
- Sustainably managing our land, water based assets; maximising the opportunities they provide to the Liverpool City Region economy to attract investment and encourage people to live, work and visit Liverpool City Region

Section 3: Identification of Blue Green ERDF and ESF investment priorities

The new ERDF and ESF programmes present a wide scope of opportunity for investment in low carbon and wider Blue Green activities across the City Region, however there is a limited budget.

UK Priority Axis 4 (PA4) (shift to a low carbon economy) is the primary focus for LCR ESIF investment in the Blue Green Economy. At a national level, this priority axis is expected to receive around 15% to 20% of ERDF allocated funding during the 2014-20 programme period.

For Liverpool City Region, a nominal allocation of £15m ERDF grant funding for investment in Priority Axis 4 has been identified over the life of the programme. In line with recommendations from the EU Commission to combine non-refundable grants with other types of financing mechanisms, £10m ERDF funds have also been potentially allocated to establish appropriate Low Carbon Financial Instruments in the City Region (along with funding from other Priority Axis). In addition, £3m ESF funds have been aligned to low carbon investment.

To achieve maximum impact for Liverpool City Region, ERDF investment should be targeted at a range of strategic and complementary activities, building on current and potential key assets and capabilities to create a competitive advantage and a distinctive value proposition for LCR, whilst achieving economies of scale.

Given the limited budget, ERDF funding should be to be used in a catalytic and enabling role, to unlock further public and private sector funding and to bridge the gaps where there are clearly defined market failures.

USPs for Liverpool City Region

Liverpool City Region's unique Atlantic coastal city location, with both the River Mersey and the Port of Liverpool identified as key economic drivers for the City, presents significant opportunities for; future energy generation, low carbon sector development and continuing to strengthen the City Region's position as a low carbon logistics hub and an attractive and resilient place for future investment.

The City Region has an aspiration to be energy self-sufficient within 20 years. It is an aspiration which the City Region has many of the natural, built and business assets to achieve, whether it is through the ways that energy is generated; the way it is distributed through smart grids, heat and energy networks, or the way it is consumed and preserved through energy efficiency actions and building retrofitting schemes. Activities to deliver this aspiration are the cornerstone of the investment priorities for Liverpool City Region under Priority Axis 4 (PA4).

The low carbon environmental goods and services sector in Liverpool City Region is made up of some 1,200+ companies that employ around 22,000 people and command sales worth more than £2.7 billion per year. Demand for low carbon environmental goods and services is growing. In 2012/13 the sector grew at 4.9. The sector can therefore play a significant role in social-economic and environmental development, through assisting with development of a low carbon future and contributing to development of the emerging skills and workforce required to supplement and replace traditional roles.

The Blue Green Economy is wider than low carbon, it is about achieving an appropriate balance between environmental, social and economic objectives. Liverpool City Region also has an aspiration to future-proof infrastructure investment, to ensure climate resilience and to help to create the right conditions for growth to support sustainable economic development.

There is an emerging opportunity to deliver wider blue green objectives through the Sustainable Urban Development (SUD) strategy and via the sustainable development cross-cutting theme. This is covered in more detail in [Section 6](#).

It is also important that the City Region has a mechanism in place to develop appropriate skills needed to drive the low carbon and wider blue green economy. Holistic partnership skills development projects are required across the City Region which will align to market needs.

[Appendix 2](#) sets out the key priority areas that have been identified for investment under the blue green economy portfolio for Liverpool City Region. These are aligned with the UK Growth Programme's eligible activities within Priority Axis 4 (PA4) which have been agreed at an England wide level within the Draft Operational Programme² and are set out below.

Priority Axis 4: supporting the shift towards a low-carbon economy in all sectors by:

- (a) promoting the production and distribution of energy derived from renewable sources;
- (b) promoting energy efficiency and renewable energy use in enterprises;
- (c) supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector;
- (d) developing and implementing smart distribution systems that operate at low and medium voltage levels;
- (e) promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures;
- (f) promoting research and innovation in, and adoption of, low-carbon technologies;
- (g) promoting the use of high-efficiency co-generation of heat and power based on useful heat demand;

²https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414906/Draft_ERDF_OP_FINAL_200315_Publi shed.pdf

Section 4: First Round Calls: Ensuring Continuity of Activity

A number of low carbon projects formed part of the previous ERDF programme (2007-2013) and it is important for the City Region that the expertise, knowledge, capabilities and lessons learnt from these projects are not lost going forward to the new programme.

It is not appropriate to simply continue these existing projects, however it is important that eligible activities that are still relevant, meet local demand and address prevalent market failures are taken forward into the new programme, albeit on a smaller budget and with an increased emphasis on collaborative partnership working to ensure value for money and economies of scale are realised.

Three areas within Priority Axis 4 have been identified where existing project activity under the 2007-2013 programme aligns with future eligible activity under Priority Axis 4 of the 2014-2020 programme, these are:

4(b) promoting energy efficiency and renewable energy use in enterprises;
<ul style="list-style-type: none"><i>A pilot project delivered through Liverpool and Sefton Chambers of Commerce to provide practical support to SME's who want to reduce their costs by implementing measures such as waste recycling and energy reduction.</i>
4(c) supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector;
<ul style="list-style-type: none"><i>The REECH (Renewables and Energy Efficiency in Community Housing) initiative, aimed at improving energy efficiency in some of the most deprived communities in the City Region, through installation of energy efficient technologies to houses owned by Registered Social Landlords (RSLs).</i>
4(f) promoting research and innovation in, and adoption of, low-carbon technologies;
<ul style="list-style-type: none"><i>The Centre for Global Eco-Innovation, an SME-led collaborative R&D partnership with the University of Liverpool and Lancaster University, supporting companies through PhD research projects to support them in commercialising eco-innovative products and services.</i><i>The Low Carbon Innovation Hub at Liverpool John Moores University partners SMEs in any sector across Liverpool City Region with University researchers to identify opportunities for low carbon development.</i>

Under the first round of ERDF within PA4 calls were developed to provide an opportunity for proposals under these strands to bring forward continuation activity – where they could clearly demonstrate that such activity will deliver the aims and objectives of the new programme and deliver significant, appropriate outputs and outcomes for the City Region.

The deadline for the outline project submissions for the first round of low carbon calls was 21st June. It is anticipated that the new Blue Green Advisory Group will play a role in supporting the ESIF committee to provide advice on the local strategic for these projects in early July. The 'local strategic fit' and key principles for investment outlined in section 5 of this investment strategy will be used as a template to support this advice.

Section 5: Local 'strategic fit': Principles for investment in low carbon and wider blue green activities

On 7 May 2015, the Government issued further advice on the role of the ESIF sub committees, which makes it clear that advice on local strategic fit will be in the form of oral advice on local economic development needs only. There will be significantly less input, time and information required than originally anticipated and committed to by Government

A centrally coordinated 'strategic fit' process and assessment template is being developed for the City Region. On the assumption that project assessment reports will only be circulated by the Managing Authority five working days in advance of the ESIF committee meetings, it has been suggested that for the low carbon call, Blue Green Advisory group meetings will be set in advance of the ESIF committees and the group will complete the strategic fit template. A draft of the proposed template is set out in [Appendix 3](#).

To support this emerging process, the Blue Green Advisory Group have developed some core 'principles for investment' for any blue green project coming forward under the programme. In addition, the investment priorities set out in Appendix 2 include reference to local relevant strategies, to assist with analysis of local strategic fit.

It is important to recognise that activities delivered in priority axis 4 are intrinsically interlinked and ERDF investment should maximise the opportunity for integration across activity areas, so that no project is delivered in isolation and that they all work together to deliver a holistic 'whole place' approach, to deliver economies of scale and a step change across the City Region.

Local strategic fit for projects submitted under the blue green portfolio should be considered in the context of relevant existing strategies and work programmes across Liverpool City Region including:

- Low Carbon Economy Action Plan
- Liverpool City Region Sustainable Energy Action Plan (SEAP)
- Liverpool City Region Innovation Plan
- Super Port Action Plan
- Local Nature Partnership Prospectus
- Liverpool City Region Green Infrastructure Framework
- Merseyside and Halton Waste Partnership's sustainable waste management strategy RESOURCES Merseyside 2011 – 2041.

Appendix 2 aligns the ESIF themes and the key priority areas that have been identified for investment in the City Region under PA4 with the above strategies, to identify the areas of strategic fit for each priority.

In addition, the following local 'principles for investment' have been endorsed by the Blue Green Advisory Group:

- Given the amount of ERDF funding available, ERDF investment within the PA4 Priority Axis should focus on complementary, catalytic and enabling activities, which build on current and potential key assets and capabilities to create a competitive advantage and a distinctive value proposition for the City Region.
- ERDF funds under Priority Axis 4 (shift to a low carbon economy) for Liverpool City Region will be targeted at activities that can deliver significant GHG emissions reduction (to meet the current ERDF output target of 47,000 tonnes CO₂ equivalent – this is subject to confirmation by the Managing Authority), whilst also significantly contributing to the wider economic development aspirations and Blue Green Economy vision for the City Region. It will be expected that projects will be able to demonstrate delivery of

significant outputs across more than one output area, maximising economic, environmental and social benefits.

- Applicants looking to submit low carbon projects that align with Priority Axis4 and others must clearly highlight the rationale for submitting a project under their chosen Axis and identify how their project will align with wider Liverpool City Region policy objectives.
- Applicants will be expected to be able to deliver LCR wide projects / projects that cross local authority boundaries. Any project which is more locally focused will need to have a clear business case.
- Project proposals coming forward under this investment priority should clearly evidence that collaborative engagement has taken place with stakeholders across the City Region, to ensure that the proposal is fit for purpose and delivers appropriate support in line with local need, clearly demonstrating a rationale for why ERDF funds are necessary.
- Any energy related investment activities under Priority Axis 4 should be aligned to the Liverpool City Region sustainable energy action plan (SEAP). This provides a single co-ordinated programme of action across the City Region to support the transformation to a low carbon economy through the identification and delivery of a variety of interventions in the energy sector. Consideration should also be given to local SEAPs (developed in the context of the Covenant of Mayors) and the Low Carbon Strategy for the City Region (2011-2015).
- Proposals should demonstrate 'lessons learnt' from previous programmes and be developed accordingly to address these.
- Any business support activities brought forward under a PA4 must demonstrate how they propose to fit with the wider Liverpool City Region business support programmes and emerging the Growth Hub.
- Any activities incorporating low carbon technology or wider environmental innovation activities must demonstrate how these activities align with the Liverpool City Region Innovation Plan.
- Any activities incorporating capital funding, should align with the commissioning framework for capital investments.
- Proposals should factor in 'skills' development opportunities where it is appropriate to do so.

Section 6: Sustainable Urban Development (SUD) and the Sustainable Development Cross-Cutting Theme

There are wider opportunities to influence investment through the Sustainable Urban Development (SUD) strand of the programme and through the Sustainable Development cross-cutting theme.

SUD

Government has expressed that it would like to see the 'core cities' focus ERDF funding on Sustainable Urban Development through the establishment of sustainable urban strategies. In May 2015, supplementary guidance for the SUD was issued to the LEPs, including a draft template for the SUD strategy.

The SUD area for LCR will cover the entire LCR area and the focus will be formed based on the ESIF strategy framework. The SUD will cover up to 10% ERDF funding allocation. Urban Authorities representing the Core City Regions will be established as Intermediate Bodies and be able to select projects appropriate for their delivery. This provides a unique opportunity to make a case for holistic 'place' type interventions in targeted locations, bringing together one or more themes for intervention.

Opportunities are emerging for delivery of wider blue green economy priorities under the Sustainable Urban Development (SUD) strand of the ESIF. A dialogue is taking place with partners across the City Region to develop this further during summer 2015.

Liverpool City Region's Low Carbon Action Plan (2011-2015) set out the ambition to use the City Region's competitive advantage to build on expertise across four key areas of energy, networks, transport and buildings. These areas showed the greatest growth potential for Liverpool City Region and relate to existing strengths.

With a unique Atlantic coastal city location, with both the River Mersey and the Port of Liverpool identified as key economic drivers for the City Region, there is a significant opportunity for a SUD to be developed around future proofing the city region's strategic economic infrastructure assets (linked to one or more of the low carbon strategy priority areas of energy, networks, transport and buildings)- decoupling economic growth from increased carbon emissions, environmental degradation and climate risk.

The SUD presents a significant opportunity to start 'joining the dots' via integrated approach, aligned with the wider 'Place and Connectivity' and 'Innovation Economy' portfolios.

Many of our project opportunities and infrastructure interventions can, and should at least in the short and medium term, priorities around Strategic Growth and Investment Sites – energy infrastructure, resource management, deployment of renewable technologies, enabling transport and green infrastructure;

There is an existing and strengthening evidence base to support the planned approach to investment including economic needs, provision of housing, climate change business risks and opportunities; the emerging GI prospectus with proposed GI and renewable energy investments;

Sustainable Development Cross-Cutting Theme

As well as being a priority thematic axis, low carbon and the wider blue green economy also links very strongly to the sustainable development cross-cutting theme - impacting across

other portfolios and providing opportunities to embed sustainability across all revenue and capital projects funded under the ERDF programme.

Sustainable development is an overarching objective of the European Union and has been established as a cross-cutting priority theme within the ERDF programme 2014-2020. This means that, at a project level, applicants need to demonstrate how any potential negative environmental impacts associated with their project will be minimised, or mitigated, and how potential positive impacts will be maximised.

The preparation and implementation of ERDF projects should consider actions against the following five topic areas:

Green Infrastructure - Applicants will need to demonstrate how environmental impacts will be managed and opportunities to enhance green infrastructure have been considered.

Resource Efficiency - Applicants will need to demonstrate how they have maximised opportunities to improve resource efficiency.

Sustainable Procurement - Applicants will need to demonstrate how they have considered environmental, social and economic benefits in their purchasing decisions.

Climate Change Resilience - Applicants will need to demonstrate how their projects will be resilient to climate risk and take advantage of any opportunities.

Standards - Where appropriate, applicants will need to demonstrate how they have applied these standards. For capital programmes this includes BREEAM and CEEQUAL, and for revenue programmes includes Environmental Management Systems such as EMAS and ISO14001.

The Blue Green Advisory Group would like to offer support to projects in development, to help them to address the topic areas outline above, to ensure that all projects funding in Liverpool City Region have appropriately addressed sustainable development risks and opportunities.

The ESTA project developed an online guidance document for project applicants, which has been reviewed and signed off by DCLG.

<http://www.enworks.com/resources/ESTA%20CCT%20Advice%20Note%20Final.pdf>

It is recommended that this guidance document is shared with all ERDF project applicants in the development of their full proposals.

Appendix 1: Blue Green Advisory Group Membership and Terms of Reference

1. Context

Government discussions to agree the ERDF and ESF Operational Programmes with the European Commission are progressing. In anticipation that the formal ERDF OP will be approved in June 2015, the ERDF programme was 'soft launched' in March 2015, so that initial projects can be submitted for appraisal ahead of any formal commitment of funds.

UK Priority Axis 4 (shift towards a low carbon economy) is the primary focus of the Blue Green Portfolio for Liverpool City Region and is expected to receive around 15% to 20% of ERDF during the 2014-20 programme period. (Nominal ERDF grant allocation of £15m and ESF allocation of £3m)

A stakeholder workshop on 23rd February identified that there are potential areas of activity across Liverpool City Region ready to submit applications for investment decision. This led to a recommendation to the ESIF Committee that it would be appropriate to release a PA4 (low carbon) call in March for early project considerations.

Given the diverse scope of this portfolio and its cross-cutting priorities around sector development, maritime, logistics and innovation and the emerging potential for environment to be included within the City Region's ERDF Sustainable Urban Development Plan (SUD), a specific blue green ERDF advisory 'Task and Finish' group has been proposed, to provide the advisory capacity and expertise needed to input into the decision making process for investment priorities.

2. Role of the Advisory Group

Members of the Advisory Group will undertake to:

- Review and shape a low carbon ERDF investment policy for the low carbon thematic strand (PA4) of the 2014-2020 ERDF programme (although it should be noted that the advisory group has not got a final decision making mandate within the City Region).
- Help to shape the 'local investment need' sections of ERDF calls within PA4 as they are being developed.
- Outline local strategic fit by bringing together the priorities of existing local strategies such as ESIF strategy, the Low Carbon Action Plan, SEAP, the Local Nature Partnership vision, local transport plans etc.
- Provide data and other evidence as appropriate to underpin the emerging LCR ERDF low carbon investment policy
- Advise and assist in the development of the LCR Sustainable Urban Development (SUD), to build a strong Blue Green focus.
- Promote the sustainable development cross-cutting theme.
- Provide ongoing support to projects once they have been approved, through access to the group's networks and business contacts.
- Review opportunities for Liverpool City Region arising from other EU investment programmes such as Interreg, LIFE+ and Horizon 2020.

The first phase of activity for the group will be to provide expertise and guidance in the production of the low carbon ERDF investment policy for the low carbon thematic strand of the 2014-2020 ERDF programme.

It is expected that this first phase of the Advisory group task will be completed by the end of June 2015. Following the development of the investment policy, the LEP will make a further decision as to whether the Advisory Group should continue, to provide a sounding board for the ESIF committee to provide advice on the strategic fit low carbon activities submitted to the ERDF programme under TO4.

3. Membership

The Advisory Group will be made up of the following representatives:

Organisation / Context
ESIF Committee Member (Chair)
Advisor to the LEP (Secretariat)
HE Sector representative
LEP Low Carbon Board representative
Local Authority representative
Local Nature Partnership representative
EU Delivery Group representative
Transport representative
Third sector representative
RSL representative
FE representative
Chamber of Commerce representative
Waste representative
Private sector representative
Utilities representative
LEP representative

- Members will be appointed for their knowledge, expertise and experience.
- In order to promote objectivity, advisory group members will be expected to respect the confidential nature of any discussions that take place in the Advisory Group.

4. Decisions

- Decisions and conclusions of the Advisory Group shall be reached, wherever possible by consensus. The Chair's decision will be final.

5. Conflicts of Interest

- Members are also asked to declare any specific conflicts of interests at the start of Advisory Group meetings and if so requested to withdraw from the room for the duration of these items on the agenda.

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Appendix 2: LCR Call Priorities for Priority Axis 4 (Low Carbon)

Investment priority 4a

Priority Axis 4	OP Indicative Actions	LCR ESIF	Local Strategic Fit	Priority Areas for LCR investment / DRAFT call outline text	ERDF Funds
<p>Investment priority 4a - <i>Promoting the production and distribution of energy derived from renewable sources.</i></p> <p>Specific objective: <i>to increase</i></p>	<ul style="list-style-type: none"> Measures to support increased production of renewable fuels and energy, in particular wind energy, solar and biomass, Support to build capability and capacity for supply chains in renewable energy Demonstration and deployment of renewable energy technologies Measures to support the wider deployment of renewable heat, including micro-generation, geothermal, renewable heat networks or district heating, ground source and air source heat pumps, and 	<p>Catalyse the development of local renewable and low carbon energy generation initiatives;</p> <p>Develop and grow supply chains in the Low Carbon and Environmental Goods and Services (LCEGS), Logistics, Marine and Maritime sectors</p> <p>Enabling activities to support targeted investment in economic infrastructure to</p>	<p>LCAP - Ensure that Liverpool City Region fully meets its potential to be the principal West Coast offshore wind hub for manufacturing, assembly installation and maintenance</p> <p>SEAP AP3 Action 1 - Develop the City Region's energy sector supply chain.</p> <p>SEAP AP3 Action 3 - Support the identification of new opportunities for wind generation</p> <p>SEAP AP3 Action 2 - Support the development of combined heat and</p>	<p>To support its ambition to achieve energy self-sufficiency in 20 years, Liverpool City Region wants to utilise ERDF funding to support activities to ensure that a greater proportion of energy consumed in the City Region is from renewable and low carbon sources.</p> <p>In order to flexibly meet future energy demands, there needs to be long term and efficient programme of energy infrastructure development across the City Region.</p> <p>The distribution network in Liverpool City Region needs reinforcing and ageing energy infrastructure needs to be replaced if we are to move to a system of decentralised and local energy generation and transmission.</p> <p>There is an emerging funding gap around the cost of network construction. Private investments in infrastructure projects have typically been constrained by high upfront capital costs, relatively</p>	<p>£4-5m</p>

<p><i>the number of small scale renewable energy schemes in England</i></p>	<p>biomass systems with associated heat off-take and heat distribution networks along with recycling processing reprocessing and remanufacturing facilities, and</p> <ul style="list-style-type: none"> Anaerobic digestion plants and other biomass or landfill gas schemes 	<p>exploit opportunities in the Low Carbon, Maritime and Logistics sector</p>	<p>power and heat networks</p> <p>SEAP AP3 Action 6 - Support the delivery of building integrated ground source heat pumps (GSHP) and air source heat pumps (ASHP).</p> <p>GI Climate Change - Cultivate conditions under which bioenergy can develop as a viable and self-sufficient energy source</p> <p>Merseyside and Halton Waste Partnership's sustainable waste management strategy</p> <p>RESOURCES</p> <p>Merseyside 2011 – 2041.</p> <p>LCR Green Infrastructure Investment Prospectus – renewable energy projects on derelict land. (might also fit in 4e)</p>	<p>low-returns and long investment timelines.</p> <p>In November 2013 Liverpool City Region submitted a co-ordinated bid to DECC Heat Network Delivery Unit (HNDU) for funding to investigate energy network deployment across the City Region. Four projects were funded in the first and second HNDU allocations.</p> <p>There remains a significant market failure around the lack of certainty with regard to regulation and support mechanisms to encourage the up-take of renewable energy, however there is some uncertainty as to exactly what interventions around energy infrastructure ERDF funding can eligibly support, and how this links to wider issues such as State Aid and public procurement regulations.</p> <p>Any capital investment should also align with the emerging commissioning framework for capital investment in the City Region.</p> <p>Building on LCR viability studies for Heat Network Delivery....</p> <p><i>We would like to see projects come forward which increase renewable capacity of LCR. Projects should focus on initiatives which can pump-prime local investment in the deployment and distribution of renewable and low carbon energy generation</i></p>	
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				<p><i>(where there is a clear and eligible market failure to intervene) which can offer wider local community and public benefit.</i></p> <p><i>We would like to see an ERDF-funded project that looks at the deployment of enabling infrastructure to accelerate development and restoration of Derelict Underused and Neglected Land and installation of renewable energy technology.</i></p> <p><i>We would like to see an ERDF-funded project that looks at Green infrastructure deployment around strategic investment areas to accelerate investment and future-proof investment from climate risks.</i></p> <p>Liverpool City Region has strengths in offshore wind, marine tidal energy, retro-fitting, bi-product hydrogen, waste management and recycling, water treatment and energy management.</p> <p>A priority sector for the City Region has been identified as the offshore wind sector and we would like to see an ERDF funded project which provides tailored support to develop the local supply chain for this sector.</p> <p>Specific support that organisations in this sector may require, include:</p> <p>Supporting businesses to get 'ready to bid' for large scale contracts and to showcase their products and services to the marketplace;</p>	
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				<p>Providing new opportunities for knowledge exchange across the supply chain. Promoting opportunities for local businesses to diversify into this sector.</p> <p>It is not recommended that calls are put forward in isolation (under PA4) for low carbon sector support and supply chain activities. Partners should work with the LEP under the Business Economy portfolio and the emerging Growth Hub structures to ensure low carbon sector support provision is entrenched within the wider business support model, rather than as an 'add on'</p> <p>Tidal Energy on River Mersey – Liverpool City Region has, in the Mersey estuary and tidal waters of Liverpool Bay, a unique resource with the potential to generate a significant proportion of the regions energy needs in future.</p> <p>There is significant scope for ERDF investment in supporting the development of a Circular Economy in the City Region through the sustainable management of resources.</p> <p>In particular a focus is emerging on food waste.</p> <p>We would like to see a coordinated waste projects come forward that work with the municipal and private sector organic waste sector for potential input to waste / AD facilities.</p>	
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Investment priority 4b

Priority Axis 4	OP Indicative Actions	LCR ESIF	Local Strategic Fit	Priority Areas for LCR investment / DRAFT call outline text	ERDF Funds
<p>Investment priority 4b - Promoting energy efficiency and renewable energy use in enterprises.</p> <p>Page 153</p> <p>Specific objective: increase energy efficiency in particular in SMEs, including through the implementation of low carbon</p>	<ul style="list-style-type: none"> Enhanced advice, support, information and action to promote innovation in businesses and how they operate, in order to deliver best practice in energy management. This will include innovation in energy efficiency and energy cost reduction to improve businesses' competitiveness and resilience. Support to businesses to undertake 'green' diagnostics or audits of energy efficiency and potential for renewable generation and energy use, which will be followed by provision of energy efficiency information and guidance, tailored energy action plans and of support to implement them. Investing in energy efficiency measures, processes and renewable generation capacity to improve a business' or building's environmental performance or its resilience to the impacts of climate change. 	<p>Support energy and resource efficiency in enterprises</p> <p>Reduce the overall demand for energy across Liverpool City Region;</p> <p>Build the market in low carbon environmental technologies, goods and services;</p>	<p>SEAP AP2 Action 2 - Deliver a programme of behavioural change measures</p> <p>Innovation Plan- Key challenges and opportunities for high value manufacturing include: Resource efficiency, against the backdrop of a scarcity of energy and other resources, will impact on the LCR manufacturing sector. Exploiting a low carbon market, reducing the usage of and securing materials will be increasingly vital.</p>	<p>Liverpool City Region must actively manage its energy consumption so that net increases in energy use do not result in increased emissions. It is vital that all businesses, regardless of their sector are encouraged to reduce their impact on the environment, lower energy costs, increase resource efficiency and decrease carbon emissions. This is about encouraging businesses to do things differently and is as much about behaviour change as it is about infrastructure.</p> <p>Due to a number of factors, including a lack of strategic resources, SMEs tend to have a short-term view of their business with little room for long-term planning. As such many organisations do not prioritise the environmental costs of their actions and have a lack of understanding of the long-term cost of their production and consumption choices and the cost savings that can be achieved from becoming more resource efficient.</p>	<p>£1m</p>

<p>technologies</p>	<ul style="list-style-type: none"> Investing in measures to stimulate cost-effective deep renovations of buildings, including staged deep renovations. Supporting an increase in energy efficiency in enterprises including an emphasis on 'whole place' especially through improving industrial processes, designing out waste, recovery of 'waste' heat energy and CHP. Supporting increased Small and Medium Enterprise access to national and local government procured contracts for energy efficient goods and services. Developing low carbon innovation in relation to energy efficiency within enterprises, including through technologies and engagement practices. Building retrofit and energy efficiency measures, especially whole building solutions to exemplify, and support the commercialisation of, next phase technologies which are near to market and low carbon construction techniques to improve the energy efficiency of buildings 		<p>ERDF cross-cutting theme for Sustainable Development - Applicants will need to demonstrate how they have maximised opportunities to improve resource efficiency.</p>	<p>Energy and resource efficiency by businesses can be an opportunity to achieve environmental benefits while also strengthening business resilience and decreasing costs. It also has the potential to contribute substantially towards government targets to reduce CO2 emissions.</p> <p><i>We would like to see a Liverpool City Region wide initiative to simulate awareness of the business benefits of energy and wider resource efficiency, drive market demand across the Liverpool City Region for energy efficient and climate resilient technologies.</i></p> <p><i>Projects will be required to accurately report greenhouse gas savings associated with the uptake of actions undertaken by businesses as a direct result these interventions.</i></p> <p>This activity must be aligned with the 'Business Economy' ERDF Priority Axis 3 to dovetail with wider business support delivery structure and objectives of the City Region via Liverpool City Region Growth Hub model.</p>	
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Investment priority 4c

Priority Axis 4	OP Actions	Indicative LCR ESIF	Local Strategic Fit	Priority Areas for LCR investment / DRAFT call outline text	ERDF Funds
<p>Investment priority 4c - Supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing</p>	<ul style="list-style-type: none"> • Provision of advice and support to increase the use and take up of low carbon technologies, energy efficiency measures, renewable energy technologies and smart energy systems in housing stock and public buildings • Supporting low carbon innovation in relation to the integrated 'whole place' energy management approach including energy waste and re-use • Investing in building retrofit, energy efficiency measures, renewable and smart energy systems deployment, especially whole building or place solutions exemplifying next phase technologies which are near to market. • Investing in domestic energy 	<p>Develop and deliver energy performance of building stock, for example through design and upgrading, retrofitting and demonstrators</p>	<p>SEAP AP2 Action 1 Development of a domestic, industrial and commercial retrofit programme</p> <p>SEAP AP3 Action 6 - Support the delivery of building integrated ground source heat pumps (GSHP) and air source heat pumps (ASHP).</p> <p>LCAP - Create centres of excellence for retrofitting of low carbon technologies to residential properties and commercial buildings</p> <p>LCAP - Develop an integrated multiuser heat network in a Liverpool City Region location and use this to</p>	<p>Addressing energy consumption in buildings is also vital for the City Region in terms of energy efficiency and the opportunity for low carbon technology development³. The building sector is one of the key consumers of energy.</p> <p>Low carbon building technologies are in future demand in infrastructure, public sector and social housing construction and retrofit projects</p> <p>80% of the UK's current building stock will exist in 2050.</p> <p>All types of buildings (public, residential and commercial) are in</p>	<p>£3-4m</p>

³The Energy Performance of Buildings Directive (EPBD)³ and Renewable Energy Directive (RED)³ set minimum energy performance requirements and renewable energy levels for new buildings, renovation of existing buildings and specific building elements.

<p>sector.</p> <p>Specific objective: Increase energy efficiency in homes and public buildings, including through the implementation of low carbon technologies</p>	<p>efficiency, renewable energy and smart construction techniques</p> <ul style="list-style-type: none"> Investment in the development and wider use of Energy Performance Contracting in the public buildings and housing sectors 		<p>develop supply chain activity</p>	<p>principle eligible for</p> <p>ERDF funding; however large commercial buildings are not a policy priority for EU Cohesion Policy Funds. Priority investment areas under PA4 are focused on public infrastructures, including public buildings in the housing sector.</p> <p>ERDF grant funding is required to continue to support this area of intervention, along with consideration of wider FI investment opportunities, as there remains a market failure, with costs of retrofitting properties still significantly more than the likely limits on expenditure under the Green Deal and ECO.</p> <p>There are 150,000 dwellings in the social rented sector in Liverpool City Region. While significant efforts have and are being made to improve their energy efficiency, huge opportunities remain in this sector.</p> <p><i>We would like to see a City Region</i></p>	
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wide collaborative project that will deliver activities to improve the energy and resource performance of buildings in the city region, with a focus on one or more areas of; social housing, commercial and/or public buildings;

Projects should have clear, long-term objectives considering wider economic, social and environmental impacts. Activities should include innovative low carbon technology developments.

Investment priority 4e

Priority Axis 4	OP Actions	Indicative LCR ESIF	Local Strategic Fit	Priority Areas for LCR investment / DRAFT call outline text	ERDF Funds
<p>Investment priority 4e - Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures.</p> <p>Specific</p>	<ul style="list-style-type: none"> Investments in local/regional smart grid demonstration projects, including validation and solving system integration issues Sustainable energy action plans for urban areas, including public lighting systems, smart metering and distribution through smart grids Investments in cogeneration, or combined heat and power from renewable sources Investments to encourage the adoption of renewable technologies Investments in actions aimed at improving the capacity at local level to develop and implement integrated and sustainable transport strategies and plans (including for example actions related to modelling data collection, integrated transport management, operations and services, 	<p>Support development of innovative, Low Carbon connectivity solutions, such as Low Carbon transport infrastructure technologies, modal shift , smart systems, port centric and population centric logistics and ICT applications;</p> <p>Support green and blue infrastructure provision to harness the natural environmental</p>	<p>SEAP AP1 - Action 1: Develop governance and project management structures and resources</p> <p>SEAP AP1 - Action 2- Develop a SEAP project delivery mechanism</p> <p>SEAP AP1 -Action 5: Develop an Energy Masterplan for the City Region</p> <p>SEAP AP5 – Action 1 - Develop options and agree detailed modelling and forecasting of energy consumption and CO2</p>	<p><i>In May 2015, government issued supplementary guidance for the SUD, including the draft template for the SUD strategy. Priority 4e would be the most appropriate axis from which to allocated SUD funding and activity- to maximise the resilience of Liverpool City Region’s strategic economic infrastructure assets, urban mobility and enhance the strength of the City region as an attractive place to invest.</i></p> <p>Liverpool City Region has globally significant port, airport, road, rail and logistics assets that extend out across the whole City Region. In addition, the City Region has a number of priority strategic developments planned that will grow the housing, employment and</p>	<p>£1m</p>

<p>objective: <i>Increase implementation of whole place low carbon solutions and decentralised energy measures.</i></p>	<p>public consultation etc.) to reduce transport related air pollution, in particular retrofit or replacement programmes for bus fleets, incentive schemes for cleaner transport, improved public transport infrastructure and alternative forms of transport;</p> <ul style="list-style-type: none"> • Investments in actions aimed at introducing innovative technologies for environmentally-friendly and low-carbon technologies (for example alternative fuel stations or charging points); • Investments in actions aimed at developing innovative and multi-modal transport services (for examples, intelligent transport systems for travel information and planning, traffic and demand management, smart ticketing, multimodal integrated datasets or cooperative systems; • Innovative transport pricing and user charging systems; • Cycle paths, walkways and waterways where part of an integrated approach to greenhouse gas reductions. 	<p>assets of LCR, to underpin strategic capital developments, tackle constraints on growth and support climate change adaption/resilience</p>		<p>transport infrastructure.</p> <p><i>DCLG has expressed that the development of low carbon strategies could be included as a project call under 4e.</i></p> <p><i>The LEPs are exploring the possibility of working together to develop a joint call and use a national call template to explore options for collaboration.</i></p> <p><i>The establishment of a central 'Low Carbon Development Unit' in the City Region would help to coordinate the development of low carbon strategies, sustainable energy action plans and support the development of financing methods that encourage the adoption of proven low carbon technologies and generate long-term financial savings. We still need clarification as to whether this would be a viable ERDF funded project.</i></p>	
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Investment priority 4f

Priority Axis 4	OP Indicative Actions	LCR ESIF	Local Strategic Fit	Priority Areas for LCR investment / DRAFT call outline text	ERDF Funds
<p>Investment priority 4f - Promoting research and innovation, and adoption of, low-carbon technologies.</p> <p>Specific objective: Increase innovation in, and adoption of, low carbon technologies</p>	<ul style="list-style-type: none"> • Research and Development, innovation and supply chain work for low carbon technologies and materials, including wave and wind energy, smart grids, distributed generation, solar and photovoltaic, heat networks, heat pumps and low carbon heat for energy intensive industries; • Research underpinning carbon capture and storage; • Technology centres of excellence and test facilities, including relevant Catapult centres; • Renewable technologies in the UK renewable energy roadmap; Research, development, demonstration and adoption of technologies and systems that support low-energy transport and accelerate the establishment of new technologies such as low emissions vehicles (electric, hybrid and hydrogen); 	<p>Accelerate the demonstration, adoption, deployment and diversification of Low Carbon and resource efficient technologies and processes, including activities that support collaborative partnerships and knowledge transfer to encourage commercialisation and drive innovation.</p>	<p>Innovation Plan – More needs to be done to create within-sector and cross-sector dialogue and to disseminate more quickly and effectively innovation news and ideas to give our businesses first mover advantage.</p> <p>SEAP AP3 - Action 4: Support the development of the Mersey Tidal Project</p> <p>SEAP AP1 - Action 4: Develop an agreed City Region approach to energy planning</p> <p>Innovation Plan - Investment in sustainable energy solutions is strongly backed by the local</p>	<p>Innovation is at the core of the efforts to shift to a more resource efficient and low-carbon future. Support is needed across both the demand and supply of eco-innovation solutions; to support enterprises researching and developing new sustainable solutions, alongside support to enterprises to adopt and use these new solutions.</p> <p>There are a number of emerging areas of local expertise and capabilities through the Universities relating to eco-innovation; sustainable energy, sensor technologies, water innovation and smart infrastructure.</p> <p>The City Region has a substantial number of academic and vocational assets in place for developing a strong energy sector and supply chain. There is now a need to co-ordinate this as a City Region offer (SEAP)</p> <p>It is anticipated that University led</p>	

	<ul style="list-style-type: none"> • Knowledge transfer with Higher Education / Further Education and Businesses; • Supporting low carbon tech start-ups and greater commercialisation of low carbon products and processes; • Developing financing methods that encourage the adoption of proven low carbon technologies and generate long-term financial savings; • Demonstration and deployment of decentralised renewable energy technologies • Research and Development, innovation and supply chain development for low carbon and resource efficient technologies and materials (including small scale pilot programmes that test the market with new low carbon solutions and the use of secondary materials). 		<p>manufacturing/engineering sector, with the identified first steps to focus on local energy generation, capture skills and competencies in power management, and invest in local energy infrastructure</p>	<p>projects in ‘product and service’ eco-innovation areas will submit proposals under Priority Axis 1 of the ESIF, along with creating exemplar low carbon facilities and local centres of expertise, in line with the City Region’s Innovation Plan.</p> <p>There is a strong rationale to consider wider ‘process eco-innovation’ activities within Priority Axis 4, particularly where such activities will deliver significant GHG emission reductions as a result of ERDF funded interventions, supporting novel technological and non-technological solutions that reduce the material and energy costs of companies in all sectors.</p> <p>This includes activities that will strengthen relationships and interactions between local businesses and the wider knowledge economy, to drive forward low carbon technology innovation and activities that contribute to supporting innovative responses to environmental challenges and opportunities.</p> <p><i>Projects are being sought that provide small and medium enterprise-led collaborative research and development</i></p>	<p>£3-4m</p>
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				<p><i>partnerships developing new low carbon eco-innovative products, processes and services and delivering knowledge transfer with higher education / further education and businesses.</i></p> <p>Liverpool City Region and has allocated a nominal £3m ESF funding under Priority Axis 4. ERDF investment should focus on activities that support measures to adapt the skills and qualifications of the labour force to work in sectors related to energy and environment. This will include higher level skills.</p>	
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Appendix 3 – Draft Project Assessment Template

ERDF: Priority Axis 4: Low Carbon

Application	Lead Applicant	Project Title	Fit with LCR ESIF Strategy, including why this Priority Axis?	Fit with Strategic Economic Plan	Fit with LCR Low Carbon Action Plan and SEAP	Relevance and capacity of proposed delivery model and consortium	Assessment of Strategic Fit*	Priority**	Progress to Full Application? Y/N	If Yes to progress to Full Application, changes required by ESIF Committee
1										
2										
etc.										

*Assessment of Strategic Fit: Completely meet/Largely meet/Partially meet/Does not meet

**Priority: High/Medium/Low

APPENDIX 4 – PRIORITY AXIS 4 OUTPUTS

Investment Priority 4a

ID Indicator

- C1 Number of enterprises receiving support
- C5 Number of new enterprises supported
- C30 Additional capacity of renewable energy production
- C34 Estimated annual decrease of GHG

Investment Priority 4b

ID Indicator

- C1 Number of enterprises receiving support
- C5 Number of new enterprises supported
- C34 Estimated GHG reductions

Investment Priority 4c

ID Indicator

- C31 Number of households with improved energy consumption
- C32 Decrease of annual primary energy consumption of public buildings
- C34 Estimated GHG reductions

Investment Priority 4e

ID Indicator

- C1 Number of enterprises receiving support
- C5 Number of new enterprises supported
- C34 Estimated GHG reductions

Investment Priority 4f

ID Indicator

- C1 Number of enterprises receiving support
- C5 Number of new enterprises supported
- C26 Number of enterprises cooperating with research institutions
- C29 number of enterprises supported to introduce new to the firm products
- C34 Estimated GHG reductions



Liverpool City Region
Local Enterprise Partnership

European Structural and Investment Funds 2014-2020 Programme:

ESIF Governance - Alignment and Links to LCR Governance Structures

Strategic Board Meeting 16 July 2015

Author:
Alan Welby
LCR LEP

1. Executive Summary/Purpose of Report

- 1.1 Following the approval of the England ERDF and ESF OPs, the LCR ESIF committee will become a formal sub committee of the national Growth Programme Board. It therefore also means that there will be no formal links between the ESIF committee and LCR wide governance structures. This joint report to the CA and the LEP Board sets out the process for achieving this.

2. Recommendations

The LEP Strategic Board

- endorse the approach set out below to ensure continued alignment between the ESIF committee and the Combined Authority and the LEP on an interim basis while the full governance structure requirements has been assessed;
- request regular updates on the delivery of the European Programme;
- support the proposed process for local call text and strategic fit;
- note the update on the Technical Assistance application.

3. Background

- 3.1 During the development of the England ERDF and ESF Programmes, LEPs were asked to establish shadow ESIF committees to support the development of the local ESIF strategy and the first round of calls. The LCR local ESIF committee was a follow on from the EU Sub Group, which oversaw the closure of the 2007-13 ERDF Programme as well as the development of the 2014-2020 ESIF Strategy. The LCR ESIF committee membership is representative of all partners (and specified in the ToR). Both the CA and the LEP nominated representatives to the shadow ESIF Committee.
- 3.2 The development of the LCR ESIF Strategy took as its starting point the City Region Strategic Economic Plan as well as agreed plans and strategies overseen by the Innovation Board, the Growth Hub (now Enterprise) Board, the Employment and Skills Board, the Low Carbon Committee, the SuperPORT committee and the Local Authority Regen Directors. Common to these are established reporting lines to the Combined Authority and/or to the LEP Board, thus ensuring a strong alignment during the development phase of the ESIF Strategy.
- 3.3 With the transfer to the Managing Authority, the direct links between CA and LEP members of the LCR ESIF committee and the LCR wider governance structure has been curtailed and the CA and the LEP need to consider how this can be restored.

4 Terms of Reference Local ESIF Committees

- 4.1 The National Growth Programme Board (GPB) has now agreed the formal ToR for the 39 local LEP Area ESI Funds sub-committees. They set out the out the role and functions of the committees. The main points to note are:
- While they will be chaired by the a local partner, the ToRs makes it clear that their role will be advisory only
 - The main functions will be to advise on local development needs for calls, support the development of the pipeline, promote the programmes, local leadership and support the MAs in delivery of good projects
 - Membership will be inclusive and in line with EU regulations and the scope of the ESI Funds priorities, and will not give undue weight to any one sector
 - Members should represent their sector/relevant stakeholders and be able to demonstrate their accountability to their constituencies
 - Principles for how the committee will operate around calls, advice at outline and full application stage, and on-going implementation is set out

- Meetings are likely to be held quarterly with the Growth Development Team (GDT) acting as secretariat, working with the chair of the committee
- Members of the committee will be operating under Nolan principles and will be required to sign a register of interest as well as the code of conduct
- The Sustainable Urban Development Advisory Committee will be represented on the ESIF committee

4.2 Current membership will be reviewed in 2017, but it may be prudent for the Combined Authority and the LEP to work with the DCLG GDT (the local secretariat) to ensure appropriate membership as the role and functions of the ESIF committee will shift from strategy development to development of calls, the development of the pipeline, giving advice on the 'strategic fit' of applications and monitoring performance of approved projects.

5 Alignment between ESIF subcommittee and LCR Governance Structures

5.1 With the ERDF and ESF programmes now moving into the delivery phase, we need to ensure that calls and strategic fit advice continues to be guided by and based on the LCR ESIF strategy and agreed LCR priorities across the five portfolios through a more formal role of and links to/from the various LCR wide Boards/Committees. The role of the ESIF committee is an advisory capacity will be to ensure that projects fit with strategies agreed at the City regional level by the CA and the LEP. The membership of the ESIF committee will have to respect the wider partnership principles of the EU regulations and will include other partners such as the voluntary, trade union and environmental sectors.

5.2 For members drawn from the CA and the LEP, there needs to be a 'dual key' approach where relevant members of the ESIF committee are able to demonstrate accountability to their sector/constituency (in line with the ESIF sub committee ToRs, see Annex 1) and alignment to the priorities of the relevant CA and/or LEP Boards/Committees of which they are members.

5.3 The critical issues relate to: 1. membership alignment and accountability and 2. local development need/call texts and 'strategic fit' at outline and full application stages.

5.4 Membership and accountability

5.5 It is agreed clear lines of accountability between of CA and LEP membership on the ESIF committee and the wider CA and LEP governance structures, i.e. members of the ESIF sub committee nominated by the CA and/or LEP have as their constituency the relevant CA/LEP Board as well as their sector base.

5.6 It is proposed that Updates on the delivery of the LCR ESIF Strategy should be given at regular intervals to both the CA and the LEP Board by the Co-Chairs (Cllr Phil Davies and Robert Hough) so that there is a good understanding of what the ERDF and ESF programmes are delivering, alignment to wider LCR strategies, issues of concern (if any) can be discussed and raised as necessary, etc.

5.7 Individual members should report back to their respective Board, seek endorsement and be empowered to act on behalf of the Board/Committee

5.8 Development of local open call text and 'local strategic fit'

5.9 There is an opportunity within commission calls to include a section in relation to the local development needs: this ensures that the activity being secured meets the local needs as set out in the ESIF strategy. It is proposed that this should be determined by the relevant city region Board, prior to consideration and approval by the ESIF Committee.

5.10 'Local Strategic Fit' advice for the relevant portfolio/call will have a direct input from relevant Boards, prior to the discussion and agreement at the formal ESIF committee, to ensure that LCR agreed priorities are reflected within the 'strategic advice' given by the ESIF committee.

- 5.11 This second element will require the endorsement and agreement of the ESIF Committee and the CA and the LEP should work with the GDT to get this agreement.
- 5.12 Until now, a Delivery Group has also supported the ESIF committee with membership from the wider range of LCR stakeholders. It has performed a valuable role as a sounding board, as source of technical advice in the development of the ESIF Strategy and a rapid channel to all partners for dissemination of information. As we now move into the delivery phase and it is clear that Government will manage the programmes, the Delivery Group will not be a formal subgroup of the ESIF committee. It is proposed that it is retained only as a conduit for partnership engagement, as and when required.

6 Local 'Strategic Fit' Advice

- 6.1 The first round of calls for ERDF and ESF has now closed and the Managing Authorities are assessing outline applications for both ERDF and ESF. As part of this process, the ESIF committee will be asked to provide oral advice on 'strategic fit' with the LCR ESIF Strategy and 'local development needs'. This is likely to happen in July (8th and 21st) in relation to the first round of calls.
- 6.2 The process would ensure that the ESIF committee agree its local 'strategic fit' advice to the MAs, based on advice from the relevant Boards/Committees and the technical assessment reports from the MAs. The proposal is that the Boards/Committees discuss and agree their advice to the ESIF Committee on all project applications at outline stage, informed by the technical assessment reports carried out by the Managing Authorities, and that this is submitted to the ESIF committee in advance of their formal meeting. Officers from the CA and the LEP will support the process. It should be noted that the ESF process will include an officer Panel and that the ESF process has been endorsed by the ESB, the ESIF committee (via written procedures).
- 6.3 The proposed process will be supported by CA and LEP officers and gives the maximum input from the various LCR wide governance structures underpinning the LCR ESIF Strategy and will ensure that ERDF and ESF projects moving to full applications do support wider LCR priorities. The full process is available on request from the CA and/or the LEP. The LEP Board is asked to support this.

7 Technical Assistance

- 7.1 Technical assistance is available for local partners but it is important to note that the scope of eligible activities has been tightly defined and will have to focus on predominantly on pipeline development with only limited scope for activities such as partnership development, studies, etc. An outline application has been submitted by the end of April through the CA. We understand this has been assessed and that the GDT is looking to get the oral advice from the ESIF committee in July. It is likely that the application will require an extensive period of development over the next couple of months to progress to the full application stage, something that was always assumed by the CA and the LEP. This needs to be supported by officers from the CA and LEP to ensure that the TA bid supports the delivery of the LCR ESIF Strategy in line with the June Board Report.

8 Conclusion

- 8.1 This joint CA and LEP Board report has given an overview to ensure that the city region democratic (Combined Authority) and economic (LEP Board) structures retain as much influence on the delivery of the ESIF Strategy as possible.



European Union

European Structural and Investment Funds

Terms of Reference for the Growth Programme Board's Local Enterprise Partnership (LEP) Area 2014-2020 European Structural and Investment (ESI) Funds Sub-Committees

The LEP Area ESI Funds Sub-Committee

1. The Terms of Reference for LEP area ESI Funds sub-committees are described in the following sections:
 - A. Overview and governance context
 - B. Functions
 - C. Operating practice
 - D. Operating protocols
 - E. Membership

Annexes:

- A. Sustainable Urban Development
- B. Community Led Local Development
- C. Code of Conduct
- D. Declaration of Interest

A. Overview and governance context

2. The LEP area ESI Funds sub-committees will provide advice to the Managing Authorities throughout the cycle of programme implementation. This is described at project level on GOV.UK and the documents that describe the lifecycle of a project.
3. Local partner advice has played an important role in identifying local development needs set out in LEP area ESI Funds Strategies, which are reflected in Operational Programmes. Partners are close to the practical implementation and understand local needs and so will continue to play an important role in advising the Managing Authorities on local growth conditions throughout the 2014-2020 programme implementation period.
4. The 2014-2020 European Regional Development Fund (ERDF), European Social Fund (ESF) and part of the European Agricultural Fund for Rural Development (EAFRD) Operational Programmes have been aligned in England in a ESI Funds Growth Programme. The governance structure of the ESI Funds Growth Programme has been established to exploit a multi-fund approach and ensure that the strong territorial basis of EU Cohesion policy is implemented in a way that best capitalises on national arrangements and local strengths. This governance model will therefore ensure that partners are effectively involved at national and local level.
5. A combined Programme Monitoring Committee (PMC), known as the Growth Programme Board (GPB) has therefore been set up, to maximise the synergies of the separate Funds in the ESI Funds Growth Programme. The GPB will be the PMC for the England ERDF and ESF

Operational Programmes and will provide advice to the England PMC for the European Agricultural Fund for Rural Development.

6. The GPB will be supported by a sub-committee in each Local Enterprise Partnership (LEP) area for the ERDF and ESF Operational Programmes, which will report to the GPB through the Managing Authorities.
7. The LEP area ESI Funds sub-committees will not be sub-committees of the EAFRD PMC but will assist the EAFRD Managing Authority and the GPB by providing advice as set out in these Terms of Reference where those activities are relevant to EAFRD spend which is part of the ESI Funds Growth Programme. Where there are differences of detail in the arrangements or procedures for the EAFRD Growth Programme, these will be spelled out separately by Defra to LEP area ESI Funds sub-committees with a rural interest.
8. These local sub-committees will be known as LEP area ESI Funds sub-committees. The territory of each LEP area ESI Funds sub-committee will be denoted by a geographic prefix, for example the 'Humber LEP area ESI Funds sub-committee'. In Cornwall and the Isles of Scilly, the LEP area ESI Funds sub-committee will be known as the 'Cornwall and Isles of Scilly ITI Board'.
9. The LEP area ESI Funds sub-committees will support the GPB's role in considering overall Operational Programme performance by specifically looking at and advising on the local, on-the-ground implementation of it, via project calls, applications and ongoing implementation.
10. Where local implementation issues require escalation, this will be organised through the Managing Authorities who will submit the advice of affected LEP area ESI Funds sub-committees to the GPB/relevant GPB sub-committee via the GPB Secretariat.
11. LEP area ESI Funds sub-committees will advise the GPB on Major Projects following which the GPB will review and provide advice to the Managing Authorities on them.
12. Local promotion of ESI Funds and their impact will be a priority for the LEP area ESI Funds sub-committee, as will local leadership of this amongst partners.
13. Each LEP area ESI Funds sub-committee will be therefore chaired by a local partner who, along with other members drawn from business, public, environmental, voluntary and civil society sectors, will be advocates for the opportunities and impact of the ESI Funds. Membership will be inclusive and in line with EU regulations and the wide scope of ESI Funds priorities.
14. The Department for Communities and Local Government (DCLG), as the local lead Managing Authority, will be the Deputy Chair of the local LEP area ESI Funds Committee, except in London where the Greater London Authority (GLA) will be designated as an Intermediate Body for the ERDF and ESF programmes.

B. Functions of LEP area ESI Funds sub-committees

15. The LEP area ESI Funds sub-committees will have the following functions:
16. Provide advice to the Managing Authorities on local development needs and opportunities to inform any changes to Operational Programmes and ESI Funds Strategies.
17. Work with sectors and organisations they represent so that they engage with and understand the opportunities provided by the ESI Funds to support Operational Programme objectives and local economic growth.
18. Promote active participation amongst local economic, environmental and social partners to help bring forward activities which meet local needs in line with the Operational Programmes

and local ESI Funds Strategies.

19. Provide practical advice and information to the Managing Authorities to assist in the preparation of local planning that contributes towards Operational Programmes priorities and targets.
20. Similarly, provide local intelligence to the Managing Authorities in the development of project calls decided by the Managing Authorities that reflect Operational Programmes and local development needs as well as public and private sector match funding opportunities.
21. Provide advice on local economic growth conditions and opportunities within the context of Operational Programmes and the local ESI Funds Strategy, as well as complementarity with interventions funded through other public and private sector funding, to aid the Managing Authorities' assessment of applications at outline and full application stage, as set out in Section C.
22. Contribute advice, local knowledge and understanding to the Managing Authorities to aid good delivery against spend, milestones, cross-cutting themes, outputs and results set out in the Operational Programmes and local ESI Funds strategies.
23. Having regard to the Managing Authority's statutory duties under the Equalities Act 2010, provide information advice and local knowledge regarding the likely and actual impact of ESI Funds strategies and plans on persons with the protected characteristics and advice on mitigating measures where adverse impacts are identified

C. Operating practice of the LEP area ESI Funds sub-committee

24. As set out on GOV.UK in documents that describe the lifecycle of a project, there are two routes into the programme, via an open project call or, for the European Social Fund only, through a co-financing organisation, so-called Opt-ins.
25. The LEP area ESI Funds sub-committee will have a role in each of these routes as detailed below:

Operating practice – open project calls:

26. For the open call route, Managing Authorities will draw up project call specifications and will be aided with intelligence on local development needs provided by local LEP area ESI Funds sub-committees. This will help to inform which Priority Axes and Investment Priorities calls focus on, the level of financial resources, any geographic focus and the timing of such calls.
27. Minuted oral advice provided by the LEP area ESI Funds sub-committees on specific local development needs will also be considered by the Managing Authorities and reflected as appropriate as part of the project call information that will be published on GOV.UK. The Managing Authorities will be responsible for developing and finalising the Project Calls and publishing them on GOV.UK.
28. Minuted oral advice provided by LEP area ESI Funds sub-committees on project calls will be within the context of relevant Operational Programmes, ESI Funds Strategies and other relevant factors, such as applicable policy initiatives and match funding opportunities that are/become available over the programme period.

Operating practice – ESF Opt-in organisations:

29. LEP area ESI Funds sub-committees will provide minuted oral advice to the ESF Opt-in organisations on local employment, skills and social inclusion needs and opportunities to be considered in the development of the Opt-in organisations' full applications to the Managing Authority for ESF.

30. The purpose of such advice will be to assist Opt-in organisations in developing proposals for provisions that are locally appropriate, within the context of the ESF Operational Programme and ESI Funds Strategy.

Outline and full applications

31. Applications will be received by the Managing Authorities from potential beneficiaries, at outline and full application stages.
32. The Managing Authorities will assess such applications against the Project Selection Criteria that have been agreed by the respective PMC.
33. The Managing Authorities will provide an assessment report for each application. This report will provide a synopsis of the project (which will be repeated verbatim from the application) and outputs, results and financial data. Once this report has been completed by the Managing Authority, it will be circulated to the relevant LEP areas ESI Funds sub-committee(s).
34. The LEP area ESI Funds sub-committee will provide minuted oral advice to aid the assessment of the Managing Authorities. The advice provided by partners will be in relation to the extent to which the proposed activity meets local strategic needs.

Ongoing implementation

35. EU Regulations state the Programming Monitoring Committee shall review implementation of the programme to which it relates and progress towards meeting its objectives, and shall examine all issues that affect Operational Programme performance. The LEP area ESI Funds sub-committees will do this at local level and will provide minuted advice, local knowledge and understanding to support the Managing Authorities throughout the implementation of the 2014-2020 ESI Funds Operational Programmes.
36. Operational Programmes deliver their programme strategies through a series of Priority Axes, Investments Priorities and associated results and outputs, and financial targets. These in turn reflect local development needs set out in ESI Funds Strategies, on which basis financial resources have been targeted, through notional allocations in each LEP area.
37. Each LEP area therefore has an important role to play in contributing to the implementation of Operational Programmes. The advice of partners on LEP area ESI Funds sub-committees will be important to assist the Managing Authorities in progress against spend, milestones, cross-cutting themes, outputs and results set out in Operational Programmes and local ESI Funds Strategies.
38. The Managing Authorities will provide each LEP area ESI Funds sub-committee with quarterly implementation reports and risk registers that set out progress in its area against Operational Programme and ESI Funds Strategy specific objectives and targets. These reports will be provided in a common format and will also be used to inform reports to the GPB, on national and local implementation.
39. Specific reports may be provided by the Managing Authorities on particular initiatives or projects as relevant to LEP areas, such as for Community Led Local Development or Financial Instruments. The LEP area ESI Funds sub-committee will provide advice to the Managing Authorities in such cases, including on measures to be considered to support strong performance and effective implementation.
40. LEP area ESI Funds sub-committees will also provide advice to the Managing Authorities on programme evaluation, including Managing Authority preparations for the conduct of a mid-term review, in line with the national Evaluation Strategy.

41. To support the objective set out in the Partnership Agreement and Operational Programmes for the ESI Funds to be developed and delivered in complementarity with other each other and with other European programmes, partners will provide advice to the Managing Authorities on approaches which exploit these synergies.
42. Collaboration is key to driving economic growth regardless of administrative boundaries, so the LEP area ESI Fund sub-committee will also be a forum for member to identify opportunities for delivering activity in collaboration with other areas in England as appropriate and advise the Managing Authority ongoing.
43. In all of its activities the role of LEP area ESI Funds sub-committees will not substitute for or take on the tasks and functions of the Managing Authorities,

D. LEP area ESI Funds sub-committee operating protocols

44. Meetings will be normally held on a quarterly basis.
45. Full use will be made of smart technology to support meetings and attendance.
46. Meeting dates for each calendar year will be provided in advance.
47. Papers will be electronically circulated by the Managing Authorities, normally five working days in advance of a meeting.
48. Any questions/comments on the agenda, papers or programme implementation should be addressed through the Managing Authority Secretariat.
49. The Managing Authorities may, where necessary, circulate papers or proposals to members via the Secretariat for advice by written procedures after consultation with the chair, with two weeks allowed for comment, unless exceptional circumstances dictate otherwise. The Secretariat will maintain a record of advice provided under written procedures.
50. After consulting the chair on draft meeting minutes, these will normally be circulated by the Secretariat within 10 working days of meetings. Final minutes of meetings held once ERDF and ESF Operational Programmes have been adopted will be published on GOV.UK
51. Members should be able to attend regularly and be able to devote necessary time to any preparatory work. Members should not send a substitute unless this has been agreed in advance by the Managing Authority in consultation with the chair; it is suggested that all members should nominate a deputy for this purpose. Members missing more than 50% of meetings in a twelve month period or three meetings in a row may be asked to step down by the Managing Authorities in its role as Secretariat, after consultation with the Chair.
52. The organisation that the member represents shall be responsible for reimbursing any reasonable expenses incurred in attending meetings of the LEP area ESIF sub-committee by that member.

Managing conflicts of interest

- 55 The Managing Authorities will be responsible for ensuring that partner roles and responsibilities are clearly set out at all levels and that conflicts of interest are avoided.
- 56 To ensure that this is compliantly managed and that appropriate standards are maintained, LEP area ESI Funds sub-committee members will be required to sign an undertaking to abide by 'Seven Principles of Public Life', known as the 'Nolan Principles'¹ (see Annex C).

¹ <https://www.gov.uk/government/publications/the-7-principles-of-public-life/the-7-principles-of-public-life--2>

- 57 The Managing Authorities will establish a “declarations of interest” register which will be updated at each meeting (See annex D).
- 58 The Managing Authority will be responsible for maintaining and monitoring the register and its application at each meeting.
- 59 Members must declare an interest in any agenda items at the start of each meeting and must not participate in discussions about either the development of project call specifications that are limited in scope/relate to a project in which they have an interest; or outline and full project applications that have been submitted by them or organisations for which they work/ by whom they are employed/that they represent.
- 60 Similar conditions relating to confidentiality, data protection and compliance with freedom of information requirements will apply to the proceedings of the Committee as to the members of the PMC.

The Secretariat

- 61 The Secretariat function will be provided by the Managing Authorities. All matters regarding the setting up of meetings, the drawing up of agendas and papers, membership and attendance should be referred to the local Managing Authorities. The DCLG Growth Delivery Team (GDT) will be the Secretariat in each LEP area.
- 62 DCLG as the local lead Managing Authority will provide the Deputy Chair of LEP area ESI Funds sub-committees and will act as chair in the absence of the nominated partner Chair. The Secretariat will:
 - 63 Be the Secretariat for LEP area ESI Funds sub-committees.
 - 64 Schedule and manage meeting dates, venues, minute taking, record advice and collate and circulate papers, working closely with the Committee and the Chair.
 - 65 Take the minutes of meetings and circulate them within 10 working days of meetings or exceptionally within a longer timescale and publish agreed minutes on GOV.UK.
 - 66 Provide Management Information reports on behalf of the different Managing Authorities in a standard format that will be used to contribute to GPB reports
 - 67 Support the Chair, Committee and DCLG Managing Authority (in its role as Chair or Deputy Chair) in communicating progress and feeding in to national processes as appropriate
 - 68 Support communication between the GPB and the LEP Area ESI Funds sub-committees via the GPB Secretariat.

E. Membership

- 69 The composition of the LEP area ESI Funds sub-committee will reflect the priorities of the Operational Programmes that apply in each LEP area and the supporting local ESIF strategy and reflect as far as possible the breadth of partners specified in Article 5 of the Common Provisions Regulations and the EU Code of Conduct on Partnership.
- 70 The Managing Authorities will be responsible for ensuring the membership is compliant with regard to these requirements. In putting together the LEP area ESI Funds sub-committee, Managing Authorities will have due regard to the Public Sector Equality Duty, taking account of the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations between people with and without a protected characteristic.
- 71 Partners to be represented are set out below.

- Partners Chair
- Managing Authority Deputy Chair ²
- Local Enterprise Partnership
- Local Authority
- Business partners (including small businesses and social enterprise as appropriate to the [xxxx – *specify local area*])
- Voluntary & Community Sector
- Environment (with relevant expertise in e.g. sustainable development)
- Trade Union and employer representation (as appropriate)
- Equality and diversity representation
- Higher Education
- Education, skills & employment
- SUD city region groupings (where appropriate to the [xxxx – *specify local area*])
- Rural (where appropriate)
- CLLD Local Action Group(s) where appropriate to the [xxxx – *specify local area*])
- Managing Authorities for each of the ESI Funds and BIS local
- Others as needed by the LEP area ESI Funds sub-committee

72 Each partner above should ideally be represented with a separate individual to minimise potential conflicts of interest. Members may represent more than one grouping in agreement with the Managing Authority.

73 Membership should be proportionate and not give undue weight to any one sector.

74 The partner Chair and Managing Authority Deputy Chair will be additional seats on the LEP area ESI Funds sub-committee.

75 Members need to be clear about who they are representing and how. All partners selected should be representative of their sector and/or relevant stakeholders and able to demonstrate accountability to their constituencies.

76 Membership will be for a three year term. The Managing Authorities will review LEP area ESI Funds sub-committee membership in 2017 to ensure its composition remains relevant to investments still to come forward through the Programmes. Where members leave before that time, representatives will be sought again by the Managing Authorities from the sector/organisation they are representing. Membership will also be refreshed as needed to reflect any changes in relevant EU and national regulations and policy.

77 By agreement with the Managing Authority there will be scope to invite expert guidance to specific meetings to assist consideration of a specialist proposal.

78 DCLG as the lead Managing Authority and the Deputy Chair will be responsible for ensuring that the other Managing Authorities are consulted and have agreed papers as appropriate where these affect the administration of the different ESI Funds.

Subsequent amendments to these Terms of Reference will be discussed and agreed in advance by the England ESI Funds Growth Programme Board

² The Greater London Authority will carry out this role in London

Annex A

Sustainable Urban Development

1. London and appropriate bodies within England's Core Cities/Core City Regions will be designated as urban authorities under the Sustainable Urban Development initiative (SUD).
2. Specific governance arrangements will apply for Sustainable Urban Development (SUD) outside London.
3. Each designated Urban Authority will be responsible for establishing a SUD Advisory committee. This committee will perform functions that are analogous to those of the LEP area ESI Funds sub-committees in respect of the advice they provide to the Managing Authorities for the mainstream ESI Funds. The SUD Advisory committees will provide advice on local economic growth conditions and opportunities within the context of Operational Programmes and the SUD Strategy to aid the designated Urban Authority's assessment within the terms of the Intermediate Body arrangements agreed by the Managing Authority
4. Membership of this Advisory Committee will reflect the Priority Axes and range of interests covered by the SUD Strategy.

Annex B

Community Led Local Development

1. The Managing Authority will seek proposals for Local Development Strategies that implement Community Led Local Development (CLLD) in conformity with the strategy and selection criteria set out in ERDF and ESF Operational Programmes.
2. The lead partner/agreed body for each Local Action Group will have the following responsibilities which will conform to CPR Article 34:
 - Set up a Local Action Group that represents the community interests of a proposed Local Development Strategy with a minimum 50% non-public body partners and select a lead partner/agreed body
 - Prepare and submit a Local Development Strategy to the Managing Authority
 - Draw up selection procedures and criteria
 - Prepare and publish calls for proposals
 - Assess applications which the Local Action Group will consider and select according to those operations that best contribute to the Local Development Strategy and are compliant with EU regulations.
Preparatory support will be made available, including through technical assistance if appropriate.

Annex C

Code of Conduct

All GPB members are required to:

- **consider** the terms of this Code of Conduct,
- take appropriate action to avoid any conflict of interests; and
- **sign and return** this Code of Conduct and return a register of interests

Conduct

Committee members agree to act in accordance with the 'Seven Principles of Public Life', known as the Nolan Principles:

1. **Selflessness**

Holders of public office should act solely in terms of the public interest.

2. **Integrity**

Holders of public office must avoid placing themselves under any obligation to people or organisations that might try inappropriately to influence them in their work. They should not act or take decisions in order to gain financial or other material benefits for themselves, their family, or their friends. They must declare and resolve any interests and relationships.

3. **Objectivity**

Holders of public office must act and take decisions impartially, fairly and on merit, using the best evidence and without discrimination or bias.

4. **Accountability**

Holders of public office are accountable to the public for their decisions and actions and must submit themselves to the scrutiny necessary to ensure this.

5. **Openness**

Holders of public office should act and take decisions in an open and transparent manner. Information should not be withheld from the public unless there are clear and lawful reasons for so doing.

6. **Honesty**

Holders of public office should be truthful.

7. **Leadership**

Holders of public office should exhibit these principles in their own behaviour. They should actively promote and robustly support the principles and be willing to challenge poor behaviour wherever it occurs

Breach of this Code

Each member's participation in the business of the Board is subject to compliance with the terms of this Code of Conduct and any breach may result in a requirement to step down from the Committee, as determined by the Managing Authority in discussion with the Chair and following a reasonable inquiry into the matter.

Agreement

I confirm that I have read the Code of Conduct and will abide by its principles and provisions

Signed.....

Date.....

Name

Representing.....
(Name of organisation and sector)

Annex D

GPB 2014-2020

DECLARATION OF INTEREST

GPB members will use the following form to register any organisational and/or personal interests of his or her own or immediate family³, which might be seen as creating a possible conflict of interest with their position on the GPB with regard to the functions set out in its Terms of Reference. The purpose of this form is to ensure transparency and to identify and manage any potential conflicting interests at an appropriate stage of the process.

Name of Member	
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Name of Body	Nature of involvement or interest (i.e. employee, proprietor, director, board member, member, trustee, chairperson)

Signed:

Date:

³ For the purposes of this form immediate family means spouse, or civil or other domestic partner, or child living at home

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Liverpool City Region
Local Enterprise Partnership

Skills Capital Investment Fund Low Carbon Strand

Strategic Board Meeting 16 July 2015

Author:
Mark Basnett
LCR LEP

1. Background

- 1.1 In the 2015/16 Liverpool City Region Growth Deal £6.5m of capital funding was allocated by Government for a Low Carbon Strand of the Skills Capital Investment Fund, to be spent in 2015/16 (£1.5m) and 2016/17 (£5.0m) subject to approval of the Business case by BIS.
- 1.2 Working with colleagues from St Helens Council (Mike Palin), Liverpool City Council (Lisa Smith) and ESB (Sue Jarvis) the attached Business Case Proposal has been produced and was sent to Sam Evans at BIS for consideration on 19 June 2015.
- 1.3 We await formal feedback from BIS but have been advised that, whilst it is being reviewed by them, the decision to proceed is likely to rest with LEP/CA under Assurance Framework arrangements.
- 1.4 In order to make urgent progress to approve this proposal and develop an implementation plan in time to allocate and spend funds appropriately within the agreed profiles, the LEP Board is asked to consider the proposal and to endorse the approach subject to detailed development of delivery arrangements with ESB and Local Authority colleagues.

2. Proposal Summary

- 2.1 The Proposal as attached, sets out the proposed use of the fund according to Green Book Appraisal principles. It seeks to address the need to significantly improve efficiency and decarbonise energy consumption in the City Region through the FE College estate. Whilst the technologies exist to achieve these, take up is low due to uncertainty of impact, risk and capital outlay.
- 2.2 In order to stimulate uptake and resultant impact within Colleges and the City Region, a Capital Grant with an annual 3% levy for 5 years is proposed. The levy will allow for much needed revenue activity to be funded to support the Colleges in both the selection and application of appropriate measures, the introduction of energy management systems and evaluation of impacts so as to deliver long term efficiencies and cost reductions across the College Estate.
- 2.3 This levy will cover the costs of the City Region Low Carbon Unit working with Colleges and others to roll out energy efficiency and decarbonisation measures alongside programme management and any specialist consultancy support as may be required.
- 2.4 This proposal was presented to FE College Principals with ESB colleagues on 30 June 2015 and endorsed by them as a workable approach. Due to the need for specialist energy efficiency advice and guidance in the development of appropriate measures and the need to move to implementation quickly, an allocation approach to funding was considered desirable provided this can be agreed and applied in a fair, transparent and compliant manner.
- 2.5 The proposal was also tabled at the Combined Authority Implementation Group (CAIG) and the need for further work to be undertaken on the process for the administration of the fund noted.

3. Next Steps and Recommendation

- 3.1 The LEP Board is asked to endorse the proposal presented and authorise the LEP Executive to work with LA and ESB colleagues to develop the detailed implementation plan, including an allocation process that is fully compliant with BIS and Assurance Framework requirements, in a timely manner to meet funding allocation deadlines.
- 3.2 Further to endorsement, the detailed implementation plan will be developed and formal approval of allocations from the fund will be presented to the LEP Board later in the year for approval.

**Liverpool City Region
Growth Deal**

**Skills Capital Investment Fund
Low Carbon Strand**

Business Case Summary

Liverpool City Region – Skills Capital Investment Fund Low Carbon Strand

Executive Summary

Liverpool City Region has established the development of a Low Carbon Economy by 2050 as one of its key strategic priorities. In the last 3 years alone considerable strides have been made towards this goal, becoming the only Centre for Offshore Renewable Engineering (CORE) on the UK's West Coast and in tandem, the City Region has become the assembly, installation and operations base for a number of offshore wind farms in the Irish Sea including Gwynt y Mor, one of the world's largest.

The LEP and its City Region partners are seeking to embed the application of a range of energy and carbon reduction measures into the economy through homes, business and schools, colleges and Universities. It has been driving this forward through the application of a Sustainable Energy Action Plan (SEAP) and working with Government on the roll out of HNDU (Heat Network) developments across the City Region.

The proposal for a Low Carbon Strand of the Skills Capital Fund is entirely consistent with the City Region's ambitions and current programmes and provides a mechanism to embed energy efficiency measures in FE Colleges as exemplars of good practice whilst educating students and educators of the mechanism and benefits of the energy efficiency and carbon reduction measures.

The rationale for the Skills Capital Low Carbon Strand is summarised below:

- Evidenced Demand/Need for Intervention
The need for the UK to manage its energy consumption far more efficiently and decarbonise it over the long term has been well established and accepted by Government. This forms an integral element of the City Region's economic priorities. Whilst progress is being made towards these objectives this needs to be accelerated in order to meet the targets set.
- Market Failure
Whilst many of the systems, technologies and equipment to deliver significant energy reduction in buildings have existed for some time their take up remains far below potential and the amount necessary to address the economic imperative. The reasons for this are numerous – but lack of information and knowledge, uncertainty, risk and capital outlay are all significant components. This project seeks to tackle a number of these market failures.
- Aims & Objectives
The aims and objectives of the project are to embed in energy efficiency and carbon reduction strategies including investment in appropriate capital infrastructure to reduce the energy consumption and carbon footprint of the participating organisations. By working with the leadership, educators and students of these organisation in the application and evaluation of these measures, will establish a hard evidence base and a cohort of champions to both spread the message about the benefits and encourage take up and application of such measures beyond those organisations directly assisted.

4. Inputs

The key inputs required to make this project effective and to tackle the market failures identified are the provision of specialist support to determine the most appropriate systems/investment required to optimise energy and carbon reduction within the College buildings and the application of capital funds to implement these investments. The Skills Capital Fund will provide the capital funds necessary and the LEP and partners, working with the colleges, will provide the specialist expertise required through its Low Carbon SEAP Unit.

5. Activities

The project will be led by the City Region's Low Carbon SEAP Unit who will work with the City Region's FE Colleges to review a range of options for reducing the energy consumption and carbon footprint of their portfolio of buildings. These would typically involve a portfolio of measures assessed to produce the greatest impact and could include Smart Metering, Cladding buildings, Energy efficient boilers, low energy lights, better controls on lighting and heating, carbon displays, solar panels, biomass and fuel cells. Integral to this would be energy audits etc to establish the optimum investment with the funds available to reduce energy and carbon. An agreed percentage of the savings generated by this investment would be retained by the College for further investment in energy reduction measures and the remainder would be utilised to evaluate and publish the outcome of this programme and to roll out this approach more widely.

6. Outputs

The outputs from this Skills Capital Investment would be as follows:

- Direct Improvement in FE College campus infrastructure
- Improved energy efficiency of College estates
- Reduction in energy consumption in FE Colleges
- Reduction in Carbon footprint in FE Colleges

7. Outcomes

There would be a range of beneficial outcomes that would continue to be realised over an extended period including:

- Significantly increased knowledge and evidence base of impacts of these measures and their applicability to other buildings, users etc.
- Ongoing promotion and delivery of assistance to those seeking to apply these energy efficiency measures to generate further energy and carbon efficiencies

8. Impact

The long term impact of the investment would be a reduction in the City Region's carbon footprint a significant step forward to delivering the long term ambition of a low carbon economy in Liverpool City Region by 2050.

Summary Business Case

Introduction

The Liverpool City Region is the only **Local Enterprise Partnership (LEP)** area in England to have sought a **Low Carbon Strand** to its **Skills Capital Investment Fund**. This reflects the importance of the Low Carbon sector to the Liverpool City Region. The Low Carbon Economy is one of the LEP's key priority sectors. The Low Carbon Strand is an innovative approach which is envisaged to reduce fossil fuel energy use for colleges. This will result in significantly lower operating costs and reduced carbon emissions, both of which will lead to a more sustainable future for these key community assets

Low Carbon Strand capital investment in FE colleges will improve building conditions. This will help achieve the wider investment aim of the Skills Capital Fund programme, which is to improve the experience of students and foster a culture of high expectations. By educating through example, the outcomes of the Low Carbon Strand will promote sustainable and environmental values in learners, staff and the wider community.

It is proposed that a **competitive grant fund**, as used for other strands of Skills Capital in 2015-2017, is applied to this strand. Alternatives including a **revolving loan fund** and a **repayable grant** have been considered but the LEP has concluded that the grant fund approach will be the most appropriate to address the market failure, secure the buy in required from Colleges to realise the outputs and outcomes sought from this programme. Loan funds and repayable grants are mechanisms that may be applied in future once the return on investment case has been proven to the Colleges.

Strategic Case

The Strategic Case for **Low Carbon Skills Capital** Investment in FE Colleges Fund has been made by considering: The City Region's Low Carbon Economy priorities; the strategic priorities of Skills Providers; The conditions of college's buildings; Skills Funding Agency evaluation of FE Colleges energy use; and research by the Department of Business and Skills into the impact of capital expenditure; CO₂ emissions associated with FE Colleges energy use.

- FE College estates energy performance is linked to building condition. City region FE College estates aspire to achieve Building Condition ratings A or B. Investment in energy efficient building services and building envelopes can enable this by improving buildings rated C & D.
- On average across England, FE Colleges spend 22% of their operational budget on energy costs (eMandate summary 2012) and energy costs are increasing
- Energy saving by FE Colleges which reduced CO₂ emissions up to 20% would have a value to the city region of up to £80,000 per annum (HM Treasury Green Book Valuation of GHG)
- FE Colleges have limited resources to develop low carbon projects internally. A city region wide project will bring scale and opportunities for shared learning.

Economic Case

A review of energy use in Liverpool City Region FE College estates has been undertaken. FE Colleges spend circa £2.5M a year on energy. Implementing wide ranging energy savings projects has the potential to reduce energy use significantly. However, to unlock these savings, requires both substantial funding and a better technical understanding of potential opportunities. The £6.5m Low

Carbon Skills Capital funding will make a significant contribution to that, potentially reducing carbon energy use by £325,000 per annum.

To be most effective, the low carbon investment fund should ideally support both capital projects and revenue activity such as energy audits and better energy management. Investment in energy efficiency requires long term thinking. Although colleges may wish to act, they have other priority projects to fund out of their capital reserves. Therefore a funding programme is recommended in the form of a grant. Energy related activities that could be part of the Low Carbon Strand can be separated into a number of different types. Some are capital investments and some are revenue projects.

Energy Activity Types	Revenue opportunity	Capital/ Revenue	Examples	Impact (Estimated)
(E0) Energy & Carbon Baseline	Energy saving = Operational cost savings	Revenue/ Capital	Energy Audits Specialist Surveys Smart Metering	Up to 3% reduction in energy bills + Estate GHG emission reduction
(E1) Energy efficiency (retrofit)	Energy saving = Operational cost savings	Capital	Cladding buildings Replace boilers Low energy lights Better Controls	5%-15% reduction in energy bills + Estate GHG emission reduction
(E2) Energy management	Energy saving = Operational cost savings	Revenue	Lights operation Heating timing and set temperature	2%-5% reduction in energy bills + Estate GHG emission reduction
(E3) Energy infrastructure additions	Energy demonstration/ Strategic Priority	Capital	Electric Car Charing Sub-station upgrades ULEV Transport Carbon displays	Better energy systems <i>Enabling</i> energy generation projects
(E4) Skills Capital project Low Carbon Uplift	New and renewed buildings, lower operational cost	Capital	Best practice energy performance of new installations	More efficient buildings vs. a <i>notional baseline</i> . + Estate GHG emission reduction
(E5) Energy purchase, ESCOs, Demand Management	Operational cost savings	Revenue/ Capital	Consolidate estates contracts Collective purchase With other businesses ESCO Demand Response	1%-3% reduction in energy bills + Estate GHG emission reduction
(E6) Energy generation	(50%) Energy saving (50%) Energy sale to third party	Capital	Solar panels Biomass Fuel Cells	2% reduction in energy bills + Energy sales equiv. 2% reduction bills + GHG reduction

The average savings for these projects based on energy audits and improved energy management are in the order of 5% of the total sums invested per annum. On this basis a fund of £6.5m would have the potential to generate a £325,000 reduction in energy costs per annum across the participating college network once fully implemented. It is proposed that this saving is used to support further work within colleges and beyond to promote and learn from the investment, evaluate the most significant impacts and apply to other organisations. It would also provide the funding for revenue elements of the project not eligible for inclusion in the programme. The basis for this is set out below.

Fund Application and Operation

The City Region's FE Colleges would each be invited to prepare their proposals for capital investment in energy efficiency and carbon reduction measures from an approved list of eligible interventions.

Each College would be required to set out an estimate of the measures it proposed to apply and the anticipated reduction it expected to see from these savings. The Colleges would be supported in their development of these proposals by the City Region Low Carbon Unit to ensure the basis on which their proposals are made is both sound and consistent.

The proposals would be independently assessed according to agreed value for money and impact criteria and funds allocated accordingly. It is envisaged that there will be 2 Calls, the first for projects that can commence in 2015/16 and a second for 2016/17 projects.

The aim is to encourage all colleges to participate to significantly enhance the energy efficiency of their estate and we would look to work collaboratively with Colleges to best achieve this outcome.

As a condition of their funding, each College would be required to commit to the following, funded from savings made in their energy and operational costs:

- a programme of evaluation and education of teaching staff and students on the systems and installations made and the savings made from them
- a contribution to the City Region's Low Carbon Unit to support their activity in developing their proposals, monitoring their impact, promoting and developing their wider application amounting to 3% of the Skills Capital sums received payable per annum in advance for 5 years
- re-investment of further savings in additional energy reduction through energy management systems, carbon efficiency and other measures to improve the performance of the College for a 5 year period.

Whilst applications for 100% funding for low carbon capital investment would be considered, contributions from colleges towards capital costs including in-kind and other match, to create larger projects would be actively encouraged with an estimated programme intervention rate of 80%. Payment of fund would be made against evidenced defrayment of eligible capital and in-kind items.

We will consider extending the eligibility to include other training providers subject to affordability.

Appendix A below sets out the Programme Design Recommendation and Appendix B sets out the implementation timetable.

Management and Governance

A Skills Capital Investment Panel has been established to provide independent oversight and scrutiny on behalf of the Liverpool City Region, in line with the Growth Deal assurance and monitoring framework, to the outcome of the appraisal process for applications made under the Skills Capital Investment Fund. As part of this process, the Panel will make recommendations to the Liverpool City Region Employment and Skills Board (ESB), in its advisory capacity, on a set of investment proposals for final consideration and endorsement by the LEP and Combined Authority.

Decisions on Skills Capital investment will ultimately be undertaken by the LEP in terms of strategic fit and the Combined Authority in terms of financial risk and probity.

The Panel will comprise:

- Lead Officer for Employment and Skills
- Combined Authority Treasurer
- LEP Executive Director
- Low Carbon Committee Member
- ESB Board Member
- Local Councillor

In addition advisory members from the City Region Low Carbon Team in conjunction with the City Region Employment and Skills Team and Skills Funding Agency Finance and Property team and the City Region Low Carbon team will support the work of the Panel.

The Panel will ensure that the assessment process has been robustly and consistently applied and that the process has been fair and is transparent. It will also ensure that the assessment process adheres to the Growth Deal Assurance Framework and the Evaluation and Monitoring Methodology.

A detailed implementation plan will be developed in consultation with the sector once the investment package has been approved.

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Liverpool City Region
Local Enterprise Partnership

Skills for Growth Funding

Strategic Board Meeting 16 July 2015

Author:
Sue Jarvis
Knowsley Council

1. Purpose of Report

The purpose of this report is to inform the Local Enterprise Partnership (LEP) of the progress in implementing the Growth Deal funding for Skills for Growth activity.

2. Recommendations

2.1 It is recommended that the Local Enterprise Partnership:-

- (a) Note the requirements and constraints on the utilisation of the funding;
- (b) Consider and support the proposed design principles for the utilisation of the funding;
- (c) Support the proposal to allocate £0.150m to Halton Council for the Apprenticeship Hub;
- (d) Support the proposal to secure £0.100m WorldHost training for City Region businesses for 2015/16;
- (e) Request the Combined Authority to delegate authority to the Lead Officer: Employment and Skills to agree the model for the deployment of the remaining £1.300m funding for 2015/16 for submission to Government for approval; and
- (f) Request the Chairs of the LEP Board and Combined Authority to write to Government to register the City Region's concerns over the constraints and potential delivery challenges noted in the report.

3. Skills for Growth Funding

3.1 The Growth Deal agreed with Government secured funding to build on the lessons learned in delivery of the Skills for Growth Bank pilot and committed £4.6m over three years (in 2015/16 and subject to Departmental budgets being available in 2016/17 and 2017/18) to co-invest in a reshaped Skills for Growth model which will support employers who are willing to invest in training to source high quality training provision and to grow the skills base in the Liverpool City Region.

3.2 In discussions early in 2015 with the Department for Business, Innovation and Skills (BIS) and the Skills Funding Agency (SFA) it was made clear that the independent evaluation of the Skills for Growth Bank was due to report at the end of May 2015 and until that time development work on the deployment of the £4.6m Growth Deal funding was deferred. This was acknowledged by BIS and SFA colleagues.

3.3 The position changed in June 2015 when Government advised that £1.550m was available in 2015/16 to be spent by 31 March 2016, with all training interventions to be completed and claims made for the associated funding by 31 March 2016.

3.4 Discussions with BIS colleagues also confirmed the following:-

- The funding is a 'top slice' from the Adult Skills Budget and must be used in line with national skills policy: this means, for example, that it cannot be used to fund Level 3 programmes for 24+ learners as this is against national policy on loans;
- The funding cannot be used for Higher Education or for pre-19 provision;
- The funding must be employer facing, taking on the spirit of the Skills for Growth Bank by seeking employer involvement and co-investment;

- The funding must be used to add value to mainstream provision and enable increased apprenticeship take up, but this would not be an exclusive requirement of the funding;
- A small proportion of the funding can be used for non-participation costs but the vast majority must be used for actual training delivery; and
- On receipt of a detailed proposal and expenditure profile from the City Region, BIS and the SFA will review this for fit with the original agreement, undertake due diligence processes and commence grant paperwork with the agreed accountable body for the Liverpool City Region.

3.5 As the devolution agenda grows in pace, it is important that the City Region demonstrates to Government that it has the ability and capacity in place to allocate and spend discretionary funds effectively. The Skills for Growth Bank evaluation identified delivery issues that occurred from having a detailed and rigidly applied transactional based contract with the SFA, the restraints this placed upon delivery, and, in turn, how this impacted on employers' ability to draw down the full budget allocation. In agreeing options for the Growth Deal funding the Combined Authority will need to consider how it can ensure a more flexible approach is adopted.

3.6 Given these challenges, the priority for the short term is to develop a delivery model that enables the efficient allocation of the funding in 2015/16 to support training activity delivered at an increased pace. In parallel work will continue on the design of the approach for Years 2 and 3 to be implemented from April 2016. This work will continue throughout the Autumn, ahead of expected confirmation of the availability of the funding for Years 2 and 3 in December 2015 as part of the Spending Review process.

3.7 The LEP is invited to note the requirements from Government on the use of the funding and the constraints on delivery timescales.

4. Proposed Delivery Approach

4.1 The outline principles for eligible activity have been agreed with BIS and negotiations are underway with the SFA on the exact terms and conditions of the funding agreement, including the payments and reconciliation arrangements. The City Region's negotiating position is to seek maximum freedoms and flexibilities in respect of the funding agreement.

4.2 Based on the Skills for Growth Bank evaluation feedback, the requirements of the funding and the current position within the City Region, it is proposed that the following principles endorsed by the Employment and Skills Board are used to design the delivery model for the Skills for Growth funding:-

- The funding is focused at and directed by employers;
- The approach to implementation seeks to maximise the funding to be spent within 2015/16;
- The learning funded responds clearly to articulated employer demands and is focused on learning that cannot be funded by mainstream funding;
- The delivery model is agile and provides strategic fit;
- A City Region model should be adopted;
- The activity should facilitate an increase in Apprenticeships;
- Employer co-investment will be assumed (both cash and in kind);

- The model aligns with existing approaches and delivery models to secure efficiencies of operation and responsiveness of delivery; and
 - The model focuses on activity in sectors of the economy that supports growth or increases in productivity.
- 4.3 The LEP is requested to consider and support the proposed principles to the design of the operating approach.
- 4.4 There are a number of possible options or potential models for the use of Growth Deal funding in light of the evaluation findings and the evidence of existing employer demand for a successor programme. These are:-
- Maintaining the status quo and routing the Growth Deal funding via the Skills for Growth Bank;
 - Commissioning a managing agent to deliver both brokerage and training activity via a consortia arrangement;
 - A twin track approach using the Skills for Growth Bank model in the short term for immediate delivery of on-going activity (for example linked to WorldHost) whilst commissioning out the remainder of the Growth Deal funding as a longer term solution;
 - Commissioning out the Growth Deal funding at a Local Authority level; and
 - Alignment of the funding with existing Hubs such as the Apprenticeship or Business Growth Hub.
- 4.5 The restrictive delivery window for 2015/16 means that a pragmatic approach is required as there is insufficient time to design a new model to support workforce development across the City Region and/or to procure this in line with OJEU procurement regulations with the confidence that the training would be delivered and all funding claimed by 31 March 2016. Therefore, a more practical and expedient solution is being proposed following consultation with SFA, Council and Combined Authority colleagues, which does share some similarities with the options presented in paragraph 4.4 leaning towards a hybrid model.

Apprenticeship Hub

- 4.6 There is a clear desire from Government to see some of this funding used to support activity that will facilitate an increase in the number of Apprenticeships in the City Region, and the number of employers who are accessing Apprenticeship provision. This is in support of the Government's commitment to deliver 3 million Apprenticeships by 2020.
- 4.7 The City Region's Apprenticeship Hub has received funding through the ESF Local Response Fund in the last 6 months which has enabled 2 full time equivalent co-ordinators to be employed in support of City Region priorities; the funding for this capacity runs to the end of July 2015. This investment has been extremely beneficial and has been used to fund promotional campaigns including the forthcoming Graduation Ceremony. There is an allocation within the SFA ESF procurement for £0.300m to support the work of the Hub from Spring 2016, which would leave a funding gap from August 2015 to March 2016 and give rise to missed opportunities to promote Apprentices in the City Region.

4.8 It is therefore proposed to allocate £0.150m of the Growth Deal funding to support the work of the Apprenticeship Hub for the period August 2015 to March 2016 to fund capacity and promotional campaigns leading up to National Apprenticeship Week, expected to be in March 2016. This will enable the Hub to deliver a number of high profile events providing momentum to the local and national campaign to increase the number of apprenticeships. It is proposed to grant this funding to Halton Council on behalf of the Apprenticeship Hub, and the LEP is recommended to support this proposal. A set of clear performance metrics will be developed.

Skills for Growth delivery

4.9 It is proposed that the balance of the 2015/16 Growth Deal funding (£1.300m) is deployed in support of employer skills priorities that are in line with national skills policy but are not able to be funded through the mainstream adult skills budget. This would be a balance of employer identified short courses which do not lead to a qualification and units of qualifications including higher level courses, with all training leading to workforce development.

4.10 City Region officers have explored with the SFA a number of commissioning approaches to enable a programme of activity to be delivered within 2015/16 in line with public procurement regulations (including any opportunities to use the SFA's existing pre-qualified providers process). The approaches discussed included an open procurement process for independent brokerage and a training fund and/or the feasibility of a direct allocation to a learning provider or consortium of providers who currently hold a funding agreement with the SFA. Unfortunately the SFA have advised they are unable to build on existing arrangements in this way.

4.11 The most practical option is to target specific employer needs that are known to the City Region with the view to establishing a delivery model/training package to service these particular needs.

4.12 For example, there is a known need for further WorldHost training for employees within the Visitor Economy, particularly in the lead up to the International Festival for Business (IFB) in 2016. WorldHost is a global programme that provides high quality customer service training and was used as part of the London 2012 Olympic Games. The training was delivered successfully in support of IFB 2014 and was funded from the Skills for Growth Bank; access to this funding enabled the City Region to be accredited as a WorldHost City Region, the first area in the country to receive this accolade. It is proposed to procure £0.100m training around WorldHost in support of further development of front line customer service skills in the Visitor Economy.

4.13 Alongside the above suggestion, it is proposed that the balance of the 2015/16 funding is deployed to support the specific training needs of individual employers through a combination of the following:-

- Geographic support via existing business facing or skills promotion routes;
- Using a sectoral approach where appropriate; and
- Delivering a consistent offer to all businesses in the City Region irrespective of their location or sector.

- 4.14 Linked to this, it will be important to work closely with existing provider networks to ensure that the funding adds value to existing mainstream contracts by supporting additional and new activities rather than more of the same.
- 4.15 The detail of this proposed approach will be developed with input from Councils, Further Education colleges, employers and business support leads, and the Employment and Skills Board. Given the limited delivery window in 2015/16 and the need to commit this expenditure, it is proposed that this development work is concluded by the end of July 2015 and that authority is delegated to the Lead Officer: Employment and Skills to agree the final model for delivery, including the management arrangements for implementation. This is to allow procurement of delivery partner(s) to commence in August 2015, with delivery starting in Autumn 2015, subject to agreement of the proposal by BIS and the SFA.

5. Resource Implications

5.1 Financial

The proposed model must ensure the delivery of the £4.6m Growth Deal funding for Skills for Growth and ensure employer co-investment. The learning from the Skills for Growth Bank evaluation around the process and the basis for the contract must be taken into account. It is important that clear guidance on what can and cannot be funded is agreed with BIS and SFA from the outset as this will support the engagement of both employers and learning providers. Alongside this, there needs to be an agreement that Growth Deal funding, the scope and focus for its use, can be modified to reflect changing needs and circumstances. The model set out in this report is focused upon the 2015/16 element of the funding.

5.2 Human Resources

There are no direct issues as a result of the recommendations set out within this report.

5.3 Physical Assets

No issues arising from this report.

5.4 Information Technology

The recommendations in this report will not have any direct impact upon the use of IT, or need for IT support.

6. Risks and Mitigation

- 6.1 There is a risk that the identified proposal is not approved by BIS and national SFA colleagues. This will be mitigated as much as is possible by working closely with them to develop a mutually agreeable position.
- 6.2 There is a risk that the time taken to reach an agreement will take too long meaning that there will not be enough time to secure delivery in 2015/16. This will be mitigated by the Combined Authority agreeing a clear cut off point on time beyond which delivery would not be possible.

- 6.3 There is a risk that the City Region will not be able to deploy this funding by 31 March 2016. This will be mitigated by aligning existing delivery approaches and the pipeline of employer contacts rather than establishing new models.
- 6.4 There is a risk that future years funding will not be confirmed or will be reduced as part of the Spending Review process. This will be mitigated by ensuring that the confirmed funding for 2015/16 is deployed correctly on agreed priorities.
- 6.5 There is a risk of duplication with activities of the City Region's Business Growth Hub. This will be mitigated by ensuring clear operational alignment between the work of any potential Managing Agents and the Growth Hub.
- 6.6 There is a risk that the City Region will not be able to secure delivery partners through a procurement process. This is being mitigated by engaging with potential delivery partners as part of the development process.
- 6.7 There is a risk that the City Region is not prepared for delivery in 2016/17 and 2017/18. This will be mitigated by undertaking the development work throughout Autumn 2015 and having the delivery model agreed and ready for commissioning in early 2016, following confirmation of availability of the funding from Government.

7. Equality and Diversity Implications

- 7.1 The utilisation of the funding will require monitoring of equality and diversity impact.

8. Communication Issues

- 8.1 All relevant partners and stakeholders will be invited to be involved in the development of the delivery model for 2015/16.
- 8.2 It is proposed that the Chairs of the Combined Authority and LEP Board write to Government to express the concerns of the City Region over the constraints and potential delivery challenges noted in the report.

9. Conclusion

- 9.1 This report has outlined the progress in deployment of the Skills for Growth element of the Growth Deal funding and proposes an approach for implementation which focuses on delivery in 2015/16.

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Liverpool City Region
Local Enterprise Partnership

Skills Capital Investment Fund Update

Strategic Board Meeting 16 July 2015

Author:
Sue Jarvis
Knowsley Council

1. Purpose of Report

- 1.1 The purpose of this report is to present for approval the Skills Capital Investment Panel's recommended investment package for applications received under Strand 2 of the Liverpool City Region Skills Capital Investment Fund. It also provides a progress update for the other strands of Skills Capital activity.

2. Recommendations

- 2.1 The Local Enterprise Partnership (LEP) Board are recommended to:-
- Note the outcome of the assessment process for Skills Capital applications received under Strand 2, as set out in Section 4;
 - Consider and agree the recommendations made by the Skills Capital Investment Panel for the Skills Capital Investment package as set out at Section 5 and recommend these to the Combined Authority for approval;
 - Endorse the proposal to allocate the remaining 2015/16 Strand 2 funding across the 7 FE Colleges and to open up Strand 2 to all approved training providers for 2016/17 activity;
 - Nominate 2 LEP Board members to consider Skills Capital Investment Panel recommendations during August 2015 on behalf of the LEP Board;
 - Note the proposed risks and proposed mitigation actions at Section 9; and
 - Request a progress update on the implementation of these investments at a future meeting of the LEP Board.

3. Background - Skills Capital and Governance Roles

- 3.1 The Skills Capital Investment Fund is an integral element of the Local Growth Fund which is deployed through the Growth Deal process. The Liverpool City Region has secured an allocation of £41.1m Skills Capital within the £232m announced in the Growth Deal in July 2014. The Skills Capital allocation is split across 4 key strands of activity as set out in Table 1.

Table 1 Skills Capital allocations

Investment Strand	2015/16	2016/17	Total
1.Sites and Premises	£8.6m	£15m	£23.6m
2.Improved Conditions	£2m	£2m	£4m
3.Equipment	£1m	£6m	£7m
4.Low Carbon Fund	£1.5	£5m	£6.5m
Total	£13.1m	£28m	£41.1m

- 3.2 Given the detailed work involved in assessing applications and the particular requirement to ensure any potential conflicts of interest are mitigated against it has been previously agreed by the LEP Board and Combined Authority that a separate Skills Capital Investment Panel be established.

- 3.3 The purpose of the Skills Capital Investment Panel is to provide independent oversight and scrutiny on behalf of the Liverpool City Region in line with the Growth Deal assurance and monitoring framework, to the outcome of the assessment process for applications received under the Skills Capital Investment Fund.
- 3.4 The LEP are represented on the Skills Capital Investment Panel by David Hunt a member of the Low Carbon Committee and Alan Welby in his capacity of LEP Executive Director. The Terms of Reference for the Panel (including full membership list) were shared with the Board at the 4 June 2015 meeting.

4. Strand 2 Assessment Process

- 4.1 Strand 2 (Improved Facilities) was launched via the Skills Capital page of the LEP website on 12 May 2015. It was previously agreed that this strand is only open in this first instance to the 7 FE Colleges based in the Liverpool City Region. This was in recognition of the important role the FE College estate plays in supporting in the region of 45,000 learners and as a public/community asset which must continue to be fit for purpose, efficient and provide a safe environment for learners.
- 4.2 The aim of Strand 2 is to support applicants to maintain and improve the quality of the current FE estate, with a focus on value for money and improved efficiency. As a benchmark the intervention rate was set at between 33%-100% (dependent on value for money / affordability) and one application was permissible per FE College.
- 4.3 During the initial design phase it was considered that an allocation based methodology for the deployment of the funds to Strand 2 may be appropriate. However, following discussions at the LEP/Combined Authority the decision was taken to change the approach to a competitive one; this was to gauge likely demand and is consistent with the approach taken to Strands 1 and 3 of the Skills Capital Investment Fund.
- 4.4 Disappointingly, the City Region only received two applications for Strand 2 Improved Facilities projects by the submission deadline of 8 June 2015 (from Wirral Metropolitan College and from Southport College) seeking grant funding of circa £381,393.
- 4.5 Feedback suggests that a mixture of some colleges being awarded a one-off allocation of c £100k of capital maintenance funds by the Skills Funding Agency (SFA) in April 2015, combined with a larger pot of funding being available for Sites and Premises within a similar timeframe, may have influenced some Colleges not to come forward with an application for Improved Facilities. This will be discussed with the sector as part of the review process for the scheme.
- 4.6 The Liverpool City Region Employment and Skills team and the SFA through their 'opt-in' offer have undertaken the assessment of the Strand 2 applications using the same process outlined in detail for the Board at the meeting on 4 June 2015.
- 4.7 As a result of the type of intervention, Strand 2 has followed a business case approach to the application form with less detailed information required for the project in comparison to applications under Strand 1. However, the gateway process and main appraisal criteria used for assessing each project has remained the same; namely estate need, educational and economic benefits and a financial appraisal to establish value for money and affordability.

5. Strand 2 Outcomes and Recommendation

- 5.1 Based on the scores as set out at Appendix One, the Investment Panel is recommending that subject to a due diligence process, both applications are approved. This would result in a total maximum investment package for this round of £381,393.

Table 2 Recommended for Approval

Strand 2 Applications	Grant (£)
Wirral Metropolitan College	£290,643
Southport College	£90,750
Total	£381,393

- 5.2 Although it was made clear in the application form that the focus of Strand 2 was on improving learning facilities for existing learners, applicants were asked to note any growth in learner numbers attributable to the project so these could be reported to Government as part of the Assurance Framework and monitoring arrangements: these are also summarised in Appendix One.
- 5.3 The recommended projects would result in the refurbishment of existing floor-space within the FE estate. The full impact on quality of the FE estate will be monitored on an on-going basis against the latest eMandate (SFA measurement tool) returns held by the SFA.
- 5.4 Overall, intervention rates will not reach the 33% benchmark set out in the Assurance Framework. The implications will be considered at a programme level as we run further rounds in terms of an overall value for money judgement of the scheme as a whole, but this should also factor in the benefit to learners and improvements to the maintenance of public estates.
- 5.5 The Employment and Skills Board considered the outcome of the assessment process for Strand 2 on 2 July 2015 and support the Skills Capital Investment Panel recommendations. These projects have the potential to bring about a satisfactory level of investment versus spend without compromising the integrity of the process and meet the clear aspiration to invest in skills projects that will contribute to the City Region's economic growth priorities.

6. Strand 2 Financial Position

- 6.1 Table 3 summarises the grant sought and availability of resources for Strand 2 activity over the funding period:

Table 3 Strand 2 financial position

	Grant Sought	Funding Available	Variance
	£	£	£
2015/16	£282,693	£2,000,000	(£1,717,307)
2016/17	£98,700	£2,000,000	(£1,901,300)
TOTAL	£381,393	£4,000,000	(£3,618,607)

- 6.2 Based on the above, there is £1,717,307 unallocated for 2015/16 with a further £1.9m for Strand 2 available for allocation and spend in 2016/17.
- 6.3 It is recommended to use an allocation process for the remaining £1.717m 2015/16 Strand 2 monies in line with the approach of previous years undertaken by the SFA. This would allow investment across the 7 FE Colleges in the short-term (next 3 months) to maximise spend against an agreed business case of works to be undertaken this financial year with the monies potentially matched against existing capital maintenance budgets.
- 6.4 The Employment and Skills Board were keen to see this strand opened up to a wider set of providers to access. However, the time to run an application and appraisal process and deliver the work in-year means that it would not be possible to do this for 2015/16, hence the recommendation to consider an allocation for the remaining funding. Instead it is recommended that Strand 2 is opened up to all approved training providers for 2016/17 activity and that this application window is operated before Christmas 2015 to allow sufficient time for delivery.

7. Skills Capital Next Steps

- 7.1 The call for projects under Strand 3 (Equipment) closed on 29 June 2015. Under this strand a total of 9 applications were received requesting a total grant value of c £1.4m. This exceeds the amount of available funding for 2015/16 of £1m but there is currently a further £6m unallocated for spend in 2016/17 for this strand.
- 7.2 The assessment process for Strand 3 is now underway and we expect to conclude the assessment process within the next 2 weeks and it is anticipated that subject to the agreed Governance process for approvals the outcome of the process will be announced by 31 August 2015 as planned.
- 7.3 The LEP Board is not scheduled to meet during August 2015 but a strategic steer will be required over this period for Strand 3 (Equipment) projects and Strand 1 Full Applications (following on from the successful Expressions of Interest (EOI) agreed by the Combined Authority in June 2015). To address this, the LEP Board are asked to nominate 2 representatives to consider the Investment Panel recommendations for these Strands at this time.
- 7.4 The outcome of the Strand 1 (Sites and Premises) assessment process was shared with all applicants as planned on the 23 June 2015 (a press release was also issued) and we are now moving forward with putting in place the funding agreement and the due diligence process for the 4 detailed applications being progressed. This requires support from Merseytravel in their capacity as Accountable Body for the Combined Authority and it is essential that this work is completed speedily as most of the projects are planning major works over the summer period.
- 7.5 Feedback sessions with all EOI applicants from Strand 1 (successful and non successful) were held on 7 July 2015. It is expected that the successful EOIs will submit detailed bids in August 2015 for further assessment and final project approval.
- 7.6 Strand 4 (Low Carbon) is being led by the low carbon team within the LEP and is subject to the development of a business case for approval by BIS. This business case has now been submitted and we are awaiting feedback.

8. Resource Implications

8.1 Financial

The financial issues are set out in this report as at Section 6.

8.2 Human Resources

There are no direct issues as a result of the recommendations set out within this report.

8.3 Physical Assets

If taken forward, the recommendations in this report will result in local improvements to FE sector buildings and facilities and improve the quality of teaching, learning and employment engagement.

8.4 Information Technology

The Skills Capital page of the LEP website will continue to be used as the principal source of information on the Fund.

9. Risks and Mitigation

- 9.1 There are key risks and issues with implementing an investment fund of this nature, as set out at Table 4.

Table 4 Skills Capital Investment Fund risks and mitigation

Risk Issue	Mitigation
Ensuring the award of Skills Capital Investment is open and transparent and conflicts of interest managed whilst at the same time ensuring the approval and decision making process is agile and fit for purpose by way of managing risk and maximising spend.	The operation of the fund has been managed through a clear and transparent process, including the publication of the Assurance Framework, scheme paperwork and establishment and role of the Investment Panel and LEP Board/ Combined Authority.
There is a clear risk that we will not be able to get enough projects up and running by the autumn of 2015 to meet the spend profile which could impact on the City Region's ability to spend the money allocated for 2015/16 and could have a knock on impact on spend in 2016/17.	<p>This need must be monitored against the requirement to ensure transparency and meet the City Region investment priorities and secure value for money.</p> <p>The LEP Board and Combined Authority are asked to consider whether any streamlining in the governance, assessment and allocation process is possible and the implications for phasing of resources.</p> <p>Clearly further rounds will be required for Strand 1 and 2.</p>
Spend versus Value for Money – relaxing eligibility and co-investment aspirations has the potential to deliver poor value for money projects.	This will need to be considered by the Combined Authority and LEP, with the potential for a different approach to be taken in 2015/16 to that in 2016/17: i.e. for Strand 2 there is potential to award

Risk Issue	Mitigation
	<p>the remaining funds through an allocations approach.</p> <p>Value for money is a requirement of the assurance framework and will need to be considered at overall programme level as we progress through the award stages.</p>
<p>Awarding the funding to successful applicants is only the start of the process for Skills Capital investments. Further work is required to develop in conjunction with the Accountable Body (Merseytravel) the legal, funding arrangements, programme/project and risk management arrangements for the offer and deployment of the grant.</p>	<p>The City Region Employment and Skills Team has started discussions with the Accountable Body but recognise any capacity issues relating to the Skills Capital Investment Fund will need to be managed within the wider context, Assurance Framework and resource discussions for the Growth Deal as a whole.</p> <p>A small task and finish group met on the 15 June 2015 and is taking this work forward.</p>
<p>Value for Money for the scheme as a whole needs to be considered as many of the projects are requesting an intervention rate in excess of the benchmark expectation of 2:1 applicant to grant ratio.</p> <p>This risk becomes greater if the eligibility and match funding ratio is relaxed.</p>	<p>Where applicants can afford to meet the benchmark ratio they should be required to do so but a wider range of indicators other than money will need to be developed and justified.</p> <p>Value of money will be considered at the headline level of the fund.</p>

10. Equality and Diversity Implications

- 10.1 If realised, the investments proposed will have a positive impact on equality and diversity including learner benefits for local young people and adults including those living in deprived communities. As part of the due diligence process for any projects taken forward, applicants will be asked to consider these impacts in full including realising any skills through procurement opportunities.
- 10.2 Each of the successful projects will be required to undertake a full equality impact assessment and identify and put in place an action plan to monitor appropriate mitigation actions.

11. Communication Issues

- 11.1 The recommendations from this report will be communicated to successful applicants following approval of the LEP Board and Combined Authority.

12. Conclusion

- 12.1 This report has set out the proposed investment package recommended by the Skills Capital Investment Panel for Strand 2 Improved Facilities and provided a progress update for the other strands of activity.

Appendices:

Appendix One – Strand 2 Panel Recommendations

Strand 2 Panel Recommendations

Applicant	Project Description	Total Score - Max 9	Comments
Wirral Metropolitan College	Maintenance work to the existing campus sites in Birkenhead of 12 Quays and Conway Park. To comprise: <ul style="list-style-type: none"> • External steelwork protection • Heating and boiler system upgrade • CCTV replacement and new fencing • Classroom remodelling to accommodate 8+ additional learners per lesson (from 12 to 20+ learners) and increase numbers taught / efficiency • Other energy efficiency works (new LED lighting and enhanced roof insulation) 	9	<ul style="list-style-type: none"> • The project will support Skills for Growth delivery, leading to an additional 10 Apprenticeships and 20 additional Adult (19 year old+) classroom based learners from re-investing energy savings generated by the works • Costs appear reasonable given scale of project and the 59% grant rate requested is recommended to be accepted based on the financial appraisal
Southport College	Remedial maintenance works to the brick and steelwork on the building housing gas, plumbing, electrical & engineering provision, a library and offices. The project comprises the strip down of the south facing elevation brickwork, clean-up of the steel frame and a re-build of the elevation brickwork. It will also be necessary to replace all windows and re-cast the window frames. Without this work the building condition will become unsafe.	7	<ul style="list-style-type: none"> • Aligns to guidance requirements and needs to be addressed as a priority to maintain operational building • The college is only asking for 33% grant therefore affordability not considered

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	Application			
	Wirral Metropolitan College		Southport College	
Learner No.	Existing	New	Existing	New
Apprenticeship numbers	432	10	80	0
Adult (19+) learner numbers	351	25	65	0
Traineeships	0	0	0	0

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