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A Report for: *Manchester Knowledge Capital*

ESCO Feasibility Study

Final Report

Date: *July 2007*

Executive Summary

This feasibility study identifies opportunities for the use of Energy Service Companies (ESCOs) within public sector developments in Greater Manchester and the North West. It considers the options for Energy Service Companies as well as identifying and developing possible opportunities for pilot projects to be taken forward in the short term. It also presents a strategy for continued roll out, including the identification of potential market sectors to create momentum for the long term establishment of ESCOs across the Region.

The study has been undertaken by TNEI Services Ltd as part of the Manchester Is My Planet Climate Change Programme, on behalf of Manchester: Knowledge Capital and the North West Development Agency (NWDA).

The project team used stakeholder consultation and involvement to engender commitment to the project across various relevant sectors. This process included a stakeholder event and a combination of meetings and telephone calls. The project was highly constrained by time however most stakeholder groups managed to make a contribution. Shortcomings exist in the amount of information that has been collected in relation to each pilot project, due to restrictions in time and access to information. A programme of continued work for the next two months (July & August 2007) has been approved by the project steering group. This period will be used to establish and manage a working group for each pilot project, to guide the ESCO development process. A second report will be generated following this period, providing details of the membership and actions of the working groups.

Fundamentally the project has identified that the ESCO related requirements within the public sector tend to relate to capital finance and legal/financial compatibility and that a current lack of these services is a fundamental barrier to ESCO development. Currently there is a significant mismatch between the services on offer from existing providers and the requirements of the public sector. This is magnified by the lack of understanding and expertise relating to ESCOs that exists across many parties.

The public sector represents a very significant opportunity for ESCOs and there opportunities for economies of scale, through the bundling of projects, to enable ordinarily unviable projects to be implemented.

The public sector is becoming engulfed in policies that encourage/require it to respond to climate change and ESCOs represent a highly effective approach to reducing costs and emissions. The project team has proposed the broad concept of a Generic Public Sector ESCO that is driven by a financial institution and therefore seeks to finance projects and offer services specifically designed to fit contractually within public sector constraints. The ESCO would be delivered by an intermediary able to facilitate projects and build service contracts around the finance.

The project has identified two distinct pilot projects and two broader markets to be progressed. These include:

- The Bickershaw North and South Projects to be linked by an ESCO using a wind turbine to generate revenue that could be invested in other technologies
- A domestic affinity contract based ESCO set up in Oldham to reduce fuel poverty
- The opportunities emerging from the Building Schools for the Future programme
- The opportunities associated with local authority buildings.

It is proposed that these projects be pursued over the next 2 months, through the programme of continued works, to collect more data and build up detailed economic models. It is also suggested that the Generic Public Sector ESCO is progressed further by the Co-op Bank and that it is tested against the expectations of senior decision makers. The flexibility of this ESCO will be tested using the proposed pilot projects.

The project has identified a lack of innovation within the ESCO sector and has therefore suggested projects and mechanisms demonstrate the flexibility that can be achieved. Discussion also covers alternative business models that could be made to work by considering individual projects, bundles of projects and services in different ways.

Finally the document proposes an approach to ongoing roll out that would involve an individual or body dedicated to facilitating projects and providing education around the subject of ESCOs. This function could be provided by the generic ESCO and justified by the potential savings across the North West.

1 Contents

2 Introduction

Energy Service Companies (ESCOs) are not a new concept; organisations such as Dalkia and Elyo have been operating as ESCOs for many years. Many ESCOs are already in operation, in a variety of forms, around the UK but they are used to a far greater extent elsewhere in the world. In Scandinavia, for example, community ESCOs commonly operate large biomass district heating schemes.

In the UK however, they are a relatively new concept to many and they challenge the UK's culture of asset ownership and are therefore often misconceived as a distinct model rather than a "way of doing things".

Energy Service Companies offer significant benefits through economies of scale for both capital equipment, such as energy efficient or renewable energy technologies, and feedstock or fuels. ESCOs can also offer increased efficiencies and incentives to improve efficiencies as a result of greater energy management expertise, experience, capital investment and guarantees. They can exemplify the concept of distributed generation and can offer the opportunity to bring people 'closer' to their sources of energy.

This project seeks to form the basis of a phased approach to the roll out of Energy Supply Companies (ESCOs) in Greater Manchester and the North West. It aims to:

1. Identify short term opportunities for the energy services
2. Help develop these opportunities through illustrated cases studies
3. Identify potential issues and barriers to their implementation

Develop a group of interested parties who can play a role in progressing future projects. This study will be used to inform other interested parties on the advantages of forming an ESCO type company as well as progressing other energy reduction and energy saving projects. The implementation of such projects will help to accelerate the use of ESCOs to meet local, regional and national climate change and energy targets.

Following on from this report, a two-month programme of continued works has been approved by the project steering group. During this period, pilot projects and broader markets will be furthered through the establishment and management of working groups, networking and 'meet the buyer' type events, and development of detailed business cases.

3 Approach

Prior to the start of the study, Manchester Knowledge Capital selected a number of individuals/organisations to form the project steering group. These members were selected on the basis of them being able to add value to the project by providing direction and contacts. At the beginning of the study, a kick-off meeting was held to discuss the project proposal, methodology and contact list for the stakeholder engagement process and workshops.

Ongoing input was received through email and telephone communication, in addition to feedback following the first stakeholder workshop.

The following individuals constituted the Steering Group:

- Keith Boxer – Manchester: Knowledge Capital
- Sandra Cox and colleagues – KPMG
- Dan Epstein – English Partnerships
- Melanie Hart & Damian Burton – NWDA
- Steven Fawkes – Matrix Corporate Capital LLP
- Colin Lovegrove – DCLG
- Chris Matthews – Co-op Bank
- Helen Seagrave – Envirolink Northwest

3.1 Identification of opportunities

Certain projects lend themselves more readily to the adoption of an Energy Service Company approach than others. TNEI has collated a comprehensive, but not exhaustive, list of the public sector developments that are planned in Greater Manchester and the North West which could represent an ESCO opportunity.

These projects cover a range of sectors including local/regional authority buildings and social/mixed housing projects as well as large public sector complexes such as hospitals, universities and colleges.

3.2 Evaluation of potential opportunities

In order to assess the level of interest and potential for adopting an ESCO approach the project team undertook the following tasks:

- To work with the key decision makers responsible for placing contracts and managing the lifetime costs of building projects identified
- To develop a clear understanding of the characteristics of ESCOs and the variety of finance and contracting models used
- To identify barriers to uptake and implementation
- To develop an understanding of the types of service provider that exist, the projects they favour and how flexible they are at meeting the needs of a diverse client base.

3.3 Identification of pilot projects

A stakeholder workshop was organised to introduce the project and encourage stakeholder buy-in. In addition, this provided an opportunity to further identify and investigate potential pilot project options.

A project and ESCO briefing sheet was compiled by TNEI and sent out with the emailed invitation to the first stakeholder workshop. The aim of this, in combination with the

invitation, was to provide stakeholders with details of the background to the study, its goals and the consultation process being followed. In addition, it briefly explained the concept of an Energy Supply Company and provided a selection of case studies. This was intended to encourage a greater number of potential stakeholders to register for the workshop than if only limited information was distributed. A copy of the briefing document can be found in Appendix A.

Feedback from the initial stage of project identification (Section 3.1) and the first stakeholder workshop provided direction for the selection of specific pilot projects. However, further information is still required for each project in order to fully evaluate its potential.

3.4 Identification of barriers and enablers to ESCOs

The project team identified general and project specific barriers to the use of ESCOs and offered potential solutions where appropriate. Following this, enablers & drivers were identified which would assist the projects, allowing the development of a number of successful pilot projects and therefore facilitate the development and wider uptake of ESCOs in the long term.

The process of barrier, solution and driver identification and reasoning was carried out in partnership with the project stakeholders.

3.5 Assessment of existing entities, pilot projects and ESCO models

Whether or not a project progresses successfully will depend not only on the nature of the project (and its stakeholders) but also on the existence and readiness of an appropriate organisation to provide services to deliver the project. Whilst many providers may have the technical ability to deliver, some project owners may prefer services to be provided by or through an organisation with sound environmental ethics, a local organisation, an organisation with experience in dealing with the public sector and communities, or an organisation with all three qualities.

The project team identified the services required by clients, and where appropriate their preferences for a particular type of service provider. Following this, service provider stakeholders were contacted in order to determine the extent to which they would be able to comply with the requirements.

This process lead to recommendations for two ESCO models involving a variety partners (see Section 7 for further details).

To an extent, the preceding process scoped the nature and scale of opportunity available to an appropriate service provider. However, in addition to this, the project team researched the potential future growth of key public sectors in order to identify markets for ESCO development.

This phase of the study also explored the preferences and requirements of stakeholders that could influence how ESCOs develop within the region.

3.6 Findings Workshop

A feedback workshop for stakeholders is planned for (December 2007). The focus for the half day event will be to present the ESCO models that have been created, and provide details of the projects identified and pilot projects selected. In addition, the options for the roll-out of ESCOs across the region and potential markets that have been identified for targeting will be presented.

The day will be more of an information seminar as opposed to the initial stakeholder workshop which was very interactive.

4 Stakeholder Workshop

Over 190 individual stakeholders were personally telephoned and invited to attend the first stakeholder workshop. These calls were then followed up with an emailed invitation accompanied by the briefing document located in Appendix A.

The main aims of the initial stakeholder workshop were to:

- Reinforce the credibility of the feasibility study
- Engage key stakeholders from across the North West
- Convey to stakeholders the flexibility offered to them through different ESCO models and the economic and operational benefits associated with such approaches
- Encourage buy-in to the study, the consultation process and the ESCO concept
- Identify developments taking place in the region which may benefit from an ESCO approach
- Identify interested service providers.

26 people attended the workshop held at the Castlefield Rooms in Castlefield, Manchester on Thursday 15 March 2007. Delegates represented a range of organisations including 9 of the 10 Greater Manchester local authorities, construction contractors, regional government and energy agencies, banks, fuel and technology suppliers and universities. A full list of attendees is provided in Appendix B.

Keith Boxer of Manchester: Knowledge Capital welcomed the delegates and set the scene for the project background. During the first session, Matthew Lumsden of TNEI Services Ltd provided details of the study including the methodology being adopted and the process and importance of stakeholder consultation and input. In the second session, Matthew presented a selection of ESCO 'models' with case study examples and detailed the process of ESCO project development, addressing common issues encountered.

Numerous parties with experience of establishing and operating ESCOs were asked to speak at the workshop. Unfortunately, due to existing commitments and increasingly busy project workloads, the majority of those invited were unable to attend and/or present at the event. However, information on the process and importance of effectively engaging with contractors was presented by Simon Hyams of Galliford Try. The full agenda for the workshop can be found in Appendix C.

Three group work sessions were organised, addressing energy problems faced by different sectors and the development of potential projects in Greater Manchester and the North West. The sessions were designed to provide details of project owner prerequisites and preferences from service providers and in return the service providers' criteria for identifying projects suited to an ESCO approach. The results of these sessions are integrated into section 6.8.6.

Delegates were provided with a project pro-forma prior to attending the workshop, allowing them to record details of any projects they were involved in or aware of in their area.

Several delegates completed their forms with project details and these provided the basis for discussions focussed on adopting an ESCO approach to the selected projects. Other groups discussed projects with the potential of being developed in the long term. These projects are discussed further in section 5.2.

An additional option, discussed by one group was the idea of creating a 'Greater Manchester ESCO' or ESCO defined by a public sector grouping such as local authorities. This approach is discussed further in Section 7.

5 Pilot projects/opportunities

The following sections present the projects identified during the stakeholder workshop and through preceding and subsequent discussions.

5.1 Projects identified in Greater Manchester and the North West

A wide range of organisations and individuals were contacted when researching the types and quantity of projects currently in development in Great Manchester and the North West. Everybody invited to attend the workshop was asked to provide details of potential projects as well as any other potentially useful public sector contacts.

The following projects were identified through desk-based research, stakeholder engagement and the stakeholder workshop:

- Oldham domestic energy project
- Manchester Building Schools for the Future
- Bickershaw Colliery
- Liverpool Waters
- BBC move to Liverpool (Media City UK)
- Barrow Master Plan – West Lakes Renaissance
- Kingsway Business Park
- Pathfinder
- New Islington Millennium Community
- Morecombe West End
- Castlefields Partnership
- Central Lancashire
- Countess of Chester
- Carlisle Renaissance
- Urban Regeneration Company
- Gorton Monastery Village, East Manchester
- Early Hattersley, Greater Manchester
- Hospital Sites Programme (Chester, Lancaster, Preston)
- Lime Street Gateway, Liverpool
- Omega, Warrington
- Runcorn (Sandymoor community centre & Sandymoor 6&9A)
- Skelmersdale Town Centre Regeneration
- Kingswood 6 & 7
- Whittle Hall

Further details of the above projects can be found in Appendix D.

Feedback on projects from regional contacts and stakeholders was not extensive. A number of reasons were offered for this including a lack of interest in the project as an individual or organisation, work schedules too busy due to the approaching end of financial year, the short timescale of the feasibility study, no one in the organisation wanting to accept responsibility for this aspect of development and several contacts were unable to provide details of projects due to their commercially sensitive nature. These issues are addressed

within Section 6.6 when considering general and project specific barriers to ESCO development.

It was intended that discussions with a selection of service providers would identify a set of criteria on which to assess the above list of projects in order to identify those suitable to take forward as pilot projects, those which would potentially be suitable as part of a long term roll-out of ESCO approaches in the region and those not suited to an ESCO approach.

Despite various attempts by the project team to encourage engagement with the project, the commercially sensitive nature of ESCO and business models prohibited organisations from providing these details. It was therefore decided that the projects introduced by delegates at the stakeholder workshop would be considered as pilot projects with the intention of generating a set of criteria through the feasibility process. These projects had one key feature in common – an interested project stakeholder willing to invest time and resources and consider an ESCO approach for their project.

Through its engagement with the pilot projects and other stakeholders, as well as TNEI's previous experience of ESCOs, the project team has created a set of criteria which can be used to assess the compatibility of a project with an ESCO approach. Details of these criteria are covered in Section 6.8.6. This is however relatively broad by virtue of the diverse forms ESCOs can take.

5.2 Selected projects

The following have been selected as pilot projects:

5.2.1 Bickershaw Colliery – North Site

The development of the former Bickershaw Colliery site in Leigh is split into two halves. The North Site is owned and being developed by Wigan Metropolitan Borough Council as a leisure resource comprising golf and pitch and putt courses, a visitor centre, activity centre and multi-use country park. There is great interest from Wigan MBC to be involved in this study to scope opportunities for ESCO involvement.

The South Site will include construction of a new waterfront neighbourhood with up to 650 new homes, and potential to attract commercial and leisure activities such as bars, restaurants and shops. This site is being developed by the NWDA in conjunction with English Partnerships. At present there is no interest from the project managers to be involved in this study as a private consultancy has been contracted to assess energy provision and options for the site. Options for interlinking the South and North sites will be discussed in case this situation changes.

Given the optimistic findings of a feasibility study exploring the potential to install a large wind turbine on the Bickershaw North site there is an opportunity to bring the two sites together with a project encompassing the opportunities associated with supply and demand.

5.2.2 Building Schools for the Future (BSF) programme

The national Building Schools for the Future (BSF) initiative aims to rebuild or renew every secondary school in England over the next 10-15 years, ensuring that every secondary school student learns in 21st Century facilities. The BSF project was worth £2.2 billion in 2005-2006 (its first year). Combining major investment in buildings and Information, Communications and Technology (ICT), it is the largest single government investment in improving school buildings in over 50 years[1].

The programme will be rolled out in 15 waves dependent on funding over approximately 20 years. By 2011 every Local Authority will have received funding to maintain at least the school in the area with the greatest need. At least 3 schools in the area will have undergone rebuilding and remodelling by 2016.

[1] See website for further details of national scheme: www.bsf.gov.uk

Delivery of zero and low cost energy services as well as capital input for energy efficiency measures and renewable energy technologies expand the scope for creating quality energy efficient design and construction with renewable energy technologies, providing both environmental and educational value.

5.2.3 Oldham Housing ESCO

Oldham Metropolitan Borough Council is keen to explore the possibility of setting up an energy service company to initially assist low income homes then potentially expand to provide services to a broader domestic property market.

Oldham has already held discussions with Scottish Power about setting up an affinity deal based ESCO but this has amounted to nothing.

In the first instance the Council would be keen to explore a model that helped homes using prepayment meters to access cheaper electricity. This would require a number of delivery partners and a significant number of committed homes before financial stability could be achieved.

5.2.4 Local Authority Buildings

Local authorities across the UK own, and are responsible for, a significant number of buildings in which council staff work. In addition, many buildings purchase their energy from councils, including institutions such as schools, libraries, leisure centres and public sector care homes. With increasing pressure on central government departments, and in turn local authorities, to reduce their carbon emissions, local authority operated buildings and other assets represent a package of potential ESCO projects.

6 The Energy Service Company approach

It is important to be open-minded when considering the potential applications for Energy Service Companies. There are several existing business models but the drivers affecting the way organisations view energy have changed profoundly; energy prices have increased and promise to follow an upward trend, security of supply is critical and climate change is near, if not top, of the agenda. Today these factors carry a very different weighting compared with as few as 5 years ago.

Energy Service Companies should not provide a fixed offering but a service solution that befits the client's needs. They are likely to be contractually bound to either reducing energy costs or usage or perhaps carbon costs. It is therefore useful to consider where costs and therefore opportunities for savings and services may lie. The table below indicates some of the areas where savings can be made.

Transmission (Tuos)	Renewables Obligation	Finance
Distribution (Duos)	Energy purchasing	Legal
Transmission losses	Suppliers margins	Capital
Distribution losses	VAT	Energy services
Climate Change Levy	Administration	Bad debt
Opportunity costs	Infrastructure	Management
Operating costs	Energy costs fluctuations	Security of supply
Backup supplies	O&M	Inefficiencies

In terms of the effective evolution of the Energy Service Company to respond to major drivers, customer focus is essential.

6.1 Defining Energy Service Companies

There is no fixed definition of an ESCO and no set criteria or documented methodology to differentiate between various ESCO approaches. Indeed, the recently released London Energy Partnership report 'Making ESCOs Work' notes that those involved in setting up and/or using ESCO type entities are helped rather than hindered by the reality that such an entity can be whatever they want it to be[2].

For the benefit of this report, we will not attempt to create a definition of an ESCO but instead use the following characteristics, as provided by the 'Energy Service Companies in Europe' report[3]:

- It guarantees the energy savings and/or provision of the same level of energy service at lower cost
- Its remuneration is directly tied to the energy savings achieved

[2] Making ESCOs Work: Guidance and Advice on Setting Up & Delivering an ESCO, Brodies LLP for London Energy Partnership, February 2007. Available from http://www.london.gov.uk/mayor/environment/energy/partnership-steering-group/docs/making-escos-work.pdf (Accessed March 2007).

[3] Energy Service Companies in Europe. Status Report 2005. Paolo Bertoldi and Silvia Rezessy for European Commission Directorate General Joint Research Centre. (http://re.jrc.cec.eu.int/energyefficiency/pdf/ESCO%20report%20final%20revised%20v2.pdf). (Accessed February 2007).

- It can either finance, or assist in arranging financing for the installation of an energy project they implement by providing a savings guarantee.

The following demonstrate the wide range of activities included within the definition of 'energy services'[4]:

- Energy analysis and audits
- Energy management
- Project design and implementation
- Maintenance and operation
- Monitoring and evaluation of savings
- Property/facility management
- Energy and/or equipment supply
- Provision of service (space heating/cooling, lighting, etc.)

It also needs to be borne in mind that Energy Service Companies can provide services to clients ranging from energy intensive industries through to domestic properties suffering from fuel poverty. The generic 'high level' services and benefits may be similar but the service delivery will be profoundly different.

By the same token Energy Service Companies can be integrated into the scoping of new developments at a very early stage as well as providing services to existing operations.

6.2 Contracting Models

6.2.1 Energy Performance Contracting models

Energy Performance Contracting (EPC) can be defined as 'a form of 'creative financing' for capital improvement which allows the funding of energy efficiency upgrades from cost reductions'[5]. Performance guarantees are given by the ESCO in terms of the level of energy service or the level of cost and/or energy savings. The savings are then split between the ESCO and the client who could potentially reinvest this into more improvements. This approach differs from the energy supply contracting models discussed below in that savings in production and distribution are targeted instead of merely focussing on the delivery of an energy service package on a commercially attractive basis. There are two main variations of this model:

6.2.1.1 Shared savings

Under this model, the ESCO finances the project either through its own funds or by borrowing from a third party. The ESCO takes on the performance risk of the project and any risk associated with the customer's credit rating. The cost savings are divided between the ESCO and customer at a prearranged percentage for an agreed length of time. The percentage division is influenced by the cost of project, length of contract and risk accountability. The percentage of the savings paid to the ESCO is higher than that in guaranteed savings contracts (see below). Shared saving contracts are beneficial when the customer does not have borrowing capacity.

[4] Energy Service Companies in Europe. Status Report 2005. Paolo Bertoldi and Silvia Rezessy for European Commission Directorate General Joint Research Centre. (http://re.jrc.ec.europa.eu/energyefficiency/pdf/ESCO%20report%20final%20revised%20v2.pdf). (Accessed February 2007).
[5] Ibid

6.2.1.2 Guaranteed savings

In this case, the customer finances the design and installation of the project by borrowing funds from a third party such as a bank or through leasing the equipment. The ESCO has no contractual arrangement with the bank but does assume the project risk and guarantees the energy savings made. If the savings do not reach agreed minimums the ESCO covers the difference; if they are exceeded then the customer agrees to share the savings with the ESCO. Thus, the ESCO is providing a guarantee of performance to the customer. The customer is willing to assume the debt, or lease payment, because of the guarantee that the savings will exceed the debt payments. The advantage of the guaranteed savings approach is that a third party financier assesses and bears the customer's credit risk.

'Pay from savings' is a subcategory of a guaranteed savings contract whereby the payment schedule depends on the level of savings made instead of the customer having fixed repayments. The greater the savings achieved from the project the quicker the payback. Pay from savings is less risky than guaranteed savings and approximately the same risk as a shared savings contract. This form of ESCO is particularly popular with the public sector as it results in increased investment in energy saving measures and technologies.

The following table provides a summary of the features of guaranteed and shared savings models:

Table 1: Features of guaranteed and shared savings

Guaranteed savings	Shared savings
Performance related to level of energy saved	Performance related to cost of energy saved
Value of energy saved is guaranteed to meet debt service obligations down to a floor price	Value of payments to ESCO is linked to energy price
ESCO carries performance risk. Energy user/customer carries credit risk	ESCO carries performance and credit risk as it typically carries out the financing. In some circumstances the customer may carry the credit risk due to contract termination provisions.
If the energy user/customer borrows, then debt appears on its balance sheet	Usually off the balance sheet of energy user/customer
Requires creditworthy customer	Can serve customers that do not have access to financing, but still requires a creditworthy customer
Extensive M&V	Extensive M&V
ESCOs can do more projects without getting highly leveraged	Favours large ESCOs; small ESCOs become too leveraged to do more projects
More comprehensive project scope due to lower financing costs	Favours projects with short payback ('cream skimming') due to higher financing costs

Sources of data: Bertoldi & Rezessy 2005[6].

Energy performance contracts can clearly work in parallel with significant investments in capital plant but it is important to remember (particularly if innovative business models are to be explored) that performance contracts could be tied into lower level investments in plant or simply into improved services.

Example 1: experience proves that staff awareness raising and training can make a significant difference to energy performance. On this basis there may be circumstances where a specialist could be contracted in to work with staff on an Energy Performance Contract basis rather than on a normal consultancy basis. The contractor could potentially experience a much greater financial reward and the client would only pay if savings were experienced.

6 Ibid

Example 2: affinity deals have been set up whereby domestic tenants who, as a result of their payment method or credit reference, may ordinarily pay premium rates for electricity are guaranteed reduced costs if they commit to certain conditions. These conditions may include a nominal monthly charge, a home energy check or the funded implementation of certain improvement measures.

6.2.2 Energy supply contracting

Energy supply contracting provides many of the advantages of the performance contracting model and potentially more but typically has a shortcoming in that there is less motivation for the contractor to continually improve the energy performance experienced by the client. This type of service tends to be delivered on a low risk – low margin basis with suppliers' business models often focussing on developing long term operation and maintenance contracts.

6.2.2.1 The Chauffage contract

This is a type of supply contracting typically employed in the UK. This contract provides a structure in which end users are sold energy, such as the energy generated from a CHP plant or sourced externally. The contractor charges agreed rates for providing required energy services to a guaranteed level and has the freedom to act and make decisions on the installation of energy efficiency measures to reduce their own operating costs. The contractor provides all associated maintenance and operations support throughout the duration of the project. These contracts typically have a time scale of 20 to 30 years and are useful when the customer wishes to outsource facility services and investment.

6.2.2.2 The Build-Own-Operate-Transfer (BOOT) contract

This contract model is increasingly popular for financing CHP projects in Europe. The ownership of equipment is transferred from the ESCO to the client at the end of a long term contract with the BOOT operator, before which the ESCO may have designed, built, financed and operated the equipment. The charge incurred by the client includes the recovery of operating costs, capital and project profit.

6.3 Financing an Energy Service Company

The nature of services provided clearly influences the issues surrounding project or company finance. There has been much written about the options and problems associated with the provision of finance for capital projects and these are discussed later. However, it is worth considering service performance type contracts which do not involve significant capital spend and are required to be managed financially through the working capital of the Energy Service Company. Projects of this nature will often be seen as discrete cost centres within the business and may even be set up as individual companies so that risk can be 'ring fenced'. The cash flow associated with these projects may not be a significant issue for larger organisations like Elyo who are long established, have a critical mass of income streams and a very large parent company backing. However for smaller companies seeking to deliver energy performance contracts cash flow can be a very significant issue particularly in the context of the contractual risks that may come attached to the project. This problem is sometimes overcome when larger project partners are prepared to underwrite or structure payments to assist the smaller energy service company but if bank finance is required the legal and due diligence costs could make projects unfeasible.

The options available for financing capital projects include:

- ESCO financing where the energy service company finances the project through its own equity. It is far more common for ESCOs to access various forms of debt so that they have the flexibility to run a greater number of projects.
- Energy user/customer financing, where again the finance comes from internal resources of the client with the risk managed through the energy service guarantees. This may make sense if organisations have 'ring fenced' funds that could be invested in guaranteed energy projects.

- Third party financing is the most commonly employed option and is discussed in greater detail:

6.3.1 Debt financing

Debt is the most common financing instrument; it lowers financing costs because the average customer's cost of capital is lower than the average leasing company's or ESCO's. Most ESCO projects are financed by debt which the customer has borrowed from a bank or other lending institution. The principal disadvantage of debt is that it appears on the customer's balance sheet, which affects its ability to borrow for activities directly related to its business.

6.3.2 Leases

Leases are similar to debt financing. ESCOS use guaranteed leases such as capital, operating and municipal. In a capital lease, the customer essentially owns the equipment. At the end of the lease following regular payments, they have the option of purchasing the equipment. Capital leases appear on the customer's balance sheet as both an asset and a liability.

Operating leases involve the leasing company retaining ownership of the equipment. An advantage is that the risk remains with the leasing firm; however, this makes operating leases more expensive for the customer. In an operating lease, neither the leased assets nor the lease obligations appear on the balance sheet of the customer. At the end of the lease, the customer has the option to take title to the equipment, based on fair market value of the equipment, rather than at a price stipulated in the lease. The equipment available through these leases is limited.

Municipal leases are commonly used to finance projects in schools, hospitals and other facilities operated by local governments. Municipal leases can be either capital or operating leases, but their distinguishing feature is their low cost.

6.4 Advantages of using an Energy Service Company

The ESCO approach, as a general concept, can offer many benefits for projects and their associated stakeholders. These are discussed below.

6.4.1 Technical capacity and capability

- Energy services are provided by an organisation or partnership of organisations for which the relevant activity is core business. This has a number of benefits including the availability of technical and commercial expertise, manpower and experience.
- With regard to operation and maintenance, routine activity such as cleaning and any system problems that arise can be dealt with quickly and efficiently, generally with little effort or involvement from customers.
- In the case of 'Chauffage contracting' customers have only one point of contact for bills, complaints and maintenance.
- Sites may from time require very different levels of resourcing. Energy service companies are able to access experienced people from a larger internal bank and can therefore be far more responsive. A potentially broader skills base and external network means that energy service companies can provide efficient and relatively un-disruptive turnkey project management for any capital projects
- Building and technology upgrades as well as organisational restructuring can mean that operational, service and maintenance employees become redundant or unsuited to the job. Associated personnel issues and costs can be avoided by outsourcing these services. In some instances existing internal personnel are transferred to the employment of the energy service company.

6.4.2 Performance risk management

- ESCOs have an incentive/commitment to reduce either energy costs or energy usage and this should be backed up with the resources to achieve these improvements. As a result the incentive is of value and therefore effective in increasing efficiency. Often internal energy managers have an objective to reduce costs but do not have the resources to do so; this can result in de-motivation and failure to consider major changes.
- It is in an ESCO's interest to identify and document energy efficiency savings accurately; including cross-system efficiencies (e.g. more efficient lighting reduces heat, thus decreasing cooling loads). This benchmarking provides a level of understanding that helps guard against unexpected costs.
- Continuing longer-term incentives, linked investment and technical expertise mean that some ESCOs are also more inclined to deliver continual improvement and technology upgrades than parties with short term budgets to manage.
- The upgrading of equipment must meet industry-wide measurement and verification protocols providing reassurance to customers.
- Clients are able to transfer performance risk to ESCOs and in some cases the financial risk as well.
- The adoption of an ESCO approach can involve a guarantee to reduced carbon emissions. Everything from simple zero or low cost actions to the installation of large scale CHP systems can contribute to local, regional and national targets for reducing carbon emissions.
- Large scale ESCOs operating private wire systems can offer security of supply through independence from the National Grid network.
- Under some contract models, the price of energy is constant or index linked thereby providing clients with a relatively predictable basis for business planning.
- Some energy service companies are able to provide replacement guarantees whereby capital plant is replaced free of charge if it fails within the contract period.

6.4.3 Flexibility

- ESCOs can help to eradicate fuel poverty by enabling the provision of energy services to customers that may otherwise be overlooked by support programmes, e.g. by offering 'pay as you go' customers the same energy rates as those paying by direct debit.
- Onsite or local energy generation or the use of local service providers can mean that a higher proportion of energy related expenditure is retained within the local community or group of customers.
- Customers of CHP systems may have 'pay as you go' heating, therefore receiving no large bills.
- The commercial objectives of ESCOs differ from those of their clients; one implication of this is that they may be more inclined to commit the resources necessary to deliver larger integrated projects. For example an ESCO may link several clients to a single CHP plant or may enable their client to capitalise on local third party operations and employ waste heat or steam recovery technologies.
- The current commercial climate means that new energy related business models may be capable of being developed and deployed on a sustainable basis. Innovative and/or entrepreneurial energy service companies are far more likely to deliver new services than their clients are to develop them internally.

- Major capital intensive projects such as private wire schemes can be developed with shared savings making them financially attractive but not necessarily achievable without third party involvement.
- The use of an energy service company creates an opportunity to develop an alternative formal relationship between energy supply and demand. This relationship could involve local or community stakeholders to provide an increased sense of ownership. Involvement of appropriate stakeholders can also provide the increased level of 'transparency' and engagement required by public sector bodies.
- The use of an ESCO can be a positive driver towards achieving successful solutions in that there is another party with additional resource and motivation for taking a project forward.
- An ESCO may provide the opportunity to bundle projects thereby creating economies of scale and possibly enabling projects to be realised that otherwise would not have been viable.

6.4.4 Financing benefits

- An ESCO with experience and expertise, either by virtue of its balance sheet or its joint venture partners may be able to access finance more easily than the client organisation.
- An ESCO can provide the facility for capital investment to be made off the client's balance sheet thereby potentially increasing operational overheads but liberating capital to be invested in core business related assets.
- Private wire systems operating in accordance with the Electricity Exceptions Order 2001 can 'lose' significant costs associated with transmission, distribution and the Climate Change Levy. These savings can be invested in other measures or technologies on site.
- Financing may be made easier by virtue of reduced project and operational costs that may be achievable through the increased buying power of a bulk purchasing ESCO.
- Legal and financial processes and costs may be improved by working with an organisation that has previous experience and established processes and documentation in place.

6.5 Disadvantages of an ESCO approach

As always, there are some disadvantages to be considered:

- Energy service companies naturally include a profit margin and their internal operational costs within the cost of their services.
- Whilst the theoretical flexibility and innovative potential of ESCOs has been trumpeted, the reality is that existing energy service companies are relatively established in their ways and risk averse; this compromises the range of projects with which many are keen to be involved. ESCOs typically prefer medium and large-scale projects (~£250,000 + annual energy costs), which can lead to the exclusion of smaller projects unable to finance energy efficiency measures, renewable energy technology installations or even a contractor to provide a commercial service.
- Whilst the energy service companies may arrange for third party financing, the loan and credit worthiness generally applies to the owner rather than the ESCO. The credit rating and apparent prospects of the client will not only influence the ability to raise finance but also the eagerness with which a contractor pursues a long term contract. It is commercially critical that energy service companies include a provision for bad debt within their business model and the client specific level of this will impact on the extent to which the offer is commercially attractive.
- ESCOs can be complex and expensive to set up.

- Industrial ESCO business models are often underpinned by high volume/low margin long-term operation and maintenance contracts. These often realise little benefit from energy savings and therefore provide less incentive to save energy than they do to provide a good Operation & Maintenance service. In reality several factors contribute to the commercial attractiveness of a project for a service provider and for many of these the provision of finance is low priority.

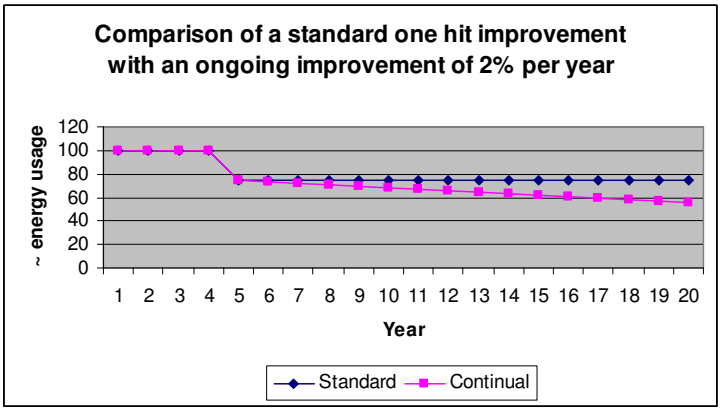

Figure 1: Short term vs long term financial savings

- The graph above illustrates a common situation where a typical ESCO Chauffage contract focuses on the initial short term saving and pays less attention to long term continual improvement. The second line illustrates the long-term benefits to be had from achieving a 2% improvement each year ~ 25% over 20 years.
- There may be real risks as well as perceived risks attached to outsourcing critical services. These may prove to be deterrents whether or not they are justifiable. Risks therefore need to be effectively assessed and managed.
- Research undertaken for this report has made it clear that there is a lack of understanding across many stakeholders and that this will inevitable constrain the adoption of ESCOs. As a result many organisations that chose to appoint an energy service company may be committing to a resource intensive learning process both before and during the contracting process. In turn, this is likely to have associated legal costs.
- The contracting party is vulnerable to the commercial sustainability of its service provider. The business models of ESCOs are highly dependent on the effective evaluation of current and potential operating efficiencies, technical expertise and realism is therefore essential since both parties will lose out if the ESCO goes out of business. This technical assessment also requires realism from both parties in terms of assessing changes in demand and usage patterns. For example a final fully constructed and inhabited scheme may make commercial sense for an ESCO but the three years during which it is constructed and gradually occupied could be commercially crippling.
- Many ESCO contracts will require clients to sign up for long contract periods and this can often deter customers who have short term horizons or a natural inclination towards maintaining flexibility.
- There are currently plenty of opportunities for the relatively small number of established ESCOs. To date this has meant that the main players have 'cherry picked' projects, with companies such as Dalkia dominating the health sector and placing little priority on schools or prisons. Less attractive clients have been left with fewer supply opportunities.

6.6 Barriers to uptake and implementation and potential solutions

To date a number of barriers have limited the widespread adoption of energy service companies. Through desk-based research and discussions with key stakeholders and steering group members, the project team has identified the following barriers.

6.6.1 Lack of understanding of ESCOs

Many of the potential clients of energy service companies have little understanding of which companies are able to supply services and of what service offerings are available. Even in some 'circles' where the term ESCO seems to represent a virtual 'holy grail', many remain unclear about exactly what an ESCO is. To some extent the lack of understanding reflects the activities of companies that have operated as energy service companies to date. Their sales activity has focussed on organisations for which their historical business model has made commercial sense. Other organisations with different requirements have been left unaware of the services on offer.

Within the energy sector, and particularly the renewable energy sector, the term ESCO is often used and many are familiar with projects such as Scandinavian biomass district heating schemes that operate as community energy service companies. There is however little understanding of the detail behind these schemes and critically there is a lack of innovation in considering how energy service contracts could be used to deliver customer focused services.

There is also a fundamental lack of understanding in relation to how energy service companies need to be involved in the project development process if they are to provide an effective service. This knowledge gap lies with developers, engineers and financiers and as a result projects often cannot be made attractive to a service provider. Some financiers have no experience of dealing with energy service or supply contracts therefore experienced providers need to be available to potential clients whilst other providers develop the expertise.

There is an issue involving organisational structure that is causing problems in the way many organisations are dealing with new energy and climate change related decisions. This derives from the fact that at board or senior management level there is often no natural place or established decision making process to deal with some of the questions being raised. Organisations will need to restructure as manufacturing companies did to deal with improving quality in the 1970s and 80s. But in the mean time if energy service companies are to be employed then several functional and process areas will need to be educated and kept informed.

6.6.2 Lack of innovation

There are established energy service companies that have tried and tested delivery models; there have also been a number of projects that have tested more innovative operating models. Fundamentally though, the minimal number of projects employing significant variations on the most common models demonstrates a lack of entrepreneurial innovation.

The following have been identified as prerequisites for a successful and innovative process: there needs to be a desire to explore concepts that by virtue of their novelty are of greater risk, there needs to be a group of complimentary stakeholders who have a desire to 'make something happen', there needs to be a facilitating resource with some level of budget and finally, there needs to be a process of disseminating the accumulated experience.

6.6.3 Absence of good practice

The implementation of energy performance contracts and energy supply contracts can be highly complex. Under certain circumstances, where the required services match those regularly provided by an existing supplier and the site/project is relatively straightforward, implementation is at its most simple. However, where bespoke services are required and/or a project is being considered at an early stage of its development, a number of factors need to be considered. Under circumstances such as these there exists a lack of experience and documented case studies.

Energy service companies need to be introduced to projects at a very early stage and design and development programmes need to be structured to accommodate the risks and set up costs of their contracts. This requires there to be a common understanding between all parties of the roles and risks assumed by energy service companies so that they can be spread or mitigated. If projects are to move ahead on a regular basis then there needs to be an established methodology for driving projects through to fruition.

Often, there is also a lack of understanding amongst project developers of the realistic expectations they should have of energy service companies. It can be the case for example that within PFI projects, ESCOs are incorporated conceptually with the tender but providers are introduced to the project too late for a commercially viable business model to be employed.

The recently released London Energy Partnership document, 'Making ESCOs Work'[7] provides guidance and advice on the set-up and delivery of ESCOs in London. Despite its London focus, this guide is a useful tool for established energy service companies, those seeking to establish ESCOs and for potential clients. Local authorities considering the implementation of ESCOs can find details of the legislative and regulatory framework within which they must work.

The Energy Saving Trust (EST) released an 'Energy Services Directory'[8] in January 2007. This document provides guidance on setting up three different schemes involving an ESCO approach. In addition, it sets out a methodology for engaging and 'selling' energy services to decision makers and tenants/end users.

The ESCO sector and market is likely to evolve significantly over the coming years and more guidance documents will be released. However, the above guides provide a current picture of the sector and guidance to support its further development.

6.6.4 Size of projects

Existing energy service companies tend to prefer medium- to large-scale projects since these offer better economies of scale, less sensitive business models and, critically, offer better returns on investment.

New business models could possibly provide alternative services for smaller projects or the clustering of smaller projects (e.g. several projects within one local authority) could develop economies of scale and therefore improve commercial viability.

6.6.5 Delivery capacity

The current shortage of appropriate personnel is a significant constraint to any organisation providing energy related services. The vast majority of successful companies are operating at full capacity and therefore have limited motivation or resource to diversify. Having said this, a time when businesses are profitable and the market is expanding is exactly the right time for companies to consider innovation and controlled risk taking.

6.6.6 Policy & legislation

Up until recently, there has been little significant encouragement, guidance or support from central government. However, ESCOs are now high on the public sector agenda and have attracted commentary. David Miliband, in his previous role as Secretary of State for Defra, recently said in a speech: "over the next year, I want to work closely with each of

[7] Making ESCOs Work: Guidance and Advice on Setting Up & Delivering an ESCO, Brodies LLP for London Energy Partnership, February 2007. Available from http://www.london.gov.uk/mayor/environment/energy/partnership-steering-group/docs/making-escos-work.pdf (Accessed March 2007).

[8] Energy Services Directory, A guide for local authorities, housing associations and community groups. Impetus Consulting Ltd, (2007). Available from http://www.energysavingtrust.org.uk/uploads/documents/housingbuildings/ESDirectory.pdf (Accessed in March 2007).

the 8 core cities, and the RDAs, to explore the potential to set up ESCOs"[9]. The results of this project will be fed back to government where they will inform the action to which David Miliband refers.

A number of documents have recently been released that illustrate an increasing interest and serve to support this new drive for the use energy service companies. These documents are discussed in Section 6.7.

The 28 day rule, whereby consumers of gas and electricity are able to switch suppliers once a 28 day notice period has been served, has been cited as a major barrier to the provision of energy services by ESCOs (DTI, 2003). A two-year pilot scheme involving the relaxing of the 28-day rule to encourage energy services in the domestic sector commenced in 2004. During the pilot, energy suppliers could register up to 4 per cent of their customer accounts or 50,000 customer accounts (whichever is the larger) to deliver a range of energy services. This study has been rolled on for another year.

Consumers may not want to buy into a medium- or long-term commitment as another supplier may prove to be cheaper. They may also not have confidence in the security of supply. It is important that when domestic consumers are the service end users, there should be a full consultation programme established in order to gain buy-in from the tenants/owners and allay any fears or misconceptions they may have. The EST publication Energy Services Directory, released in January 2007 describes how both decision makers and end users can be engaged.

The Utilities Act 2000 enables electricity to be generated, distributed and supplied by those that are licensed to do so or are exempted. Small suppliers, i.e. most site specific ESCOS, are authorised to generate, distribute and supply electricity under The Electricity (Class Exemptions from the Requirement for a Licence) Order 2001. It is difficult for new suppliers to enter into the energy wholesale market. However, through partnership with energy suppliers, this problem can be reduced.

6.6.7 Financing and costs

High start up costs can limit the viability of smaller projects. Whilst technical due diligence will always be site specific, economies of scale can be achieved if relatively standard financial and legal structures are deployed across several projects.

With regard to initial capital costs, a lower carbon system may cost more than a conventional scheme. Since there is currently little evidence that householders are willing to pay more for housing with lower environmental impact (outside of the niche Ecohomes market), it may be that the initial costs have to be borne by the builder.

Administrative burdens can be high relative to the savings if they are carried by smaller projects. However, overheads and the costs of sales can be minimised if they are carried across a large number of sites.

Similarly commercial business models may not be suited to smaller schemes. The return on investment expected by a commercial enterprise may be unachievable but the project may be viable if progressed on a not-for-profit basis. There should still be an element of operating surplus to insure against unexpected costs.

There is a lack of knowledge in relation to the grants, subsidies and other funding that may be available to parties seeking to establish ESCOs or simply implement low carbon technologies.

Credit ratings, trading histories and public sector regulations are all factors that can constrain the extent to which ESCOs can be used to assist with projects financing.

[9] http://www.defra.gov.uk/corporate/ministers/speeches/david-miliband/dm061026.htm

6.6.8 Time resources

A complex organisational structure of departments, reporting lines and budgets often makes the outsourcing of energy services difficult and resource intensive.

Engaging with and contracting energy service companies can require high levels of staff time and resources. The absence of a dedicated member of staff within the client organisation to drive the internal decision making process can be a major barrier to implementation.

During the research stages of this study, the project team encountered many individuals who were keen to participate in the study but, due to their busy workloads, were unable to commit their time.

The nomination of a dedicated ESCO champion within the client organisation would speed up the internal decision-making process and thus ease the outsourcing of energy services.

6.6.9 Responsibility

Much commercial property is rented and tenants often purchase utilities from the landlord who charges some level of management fee. In this arrangement the landlord always at least breaks even and the tenants have little incentive to reduce their usage. In the worst cases the landlord charges a fixed service charge including utilities per square foot so there is absolutely no commercial incentive for the tenant to reduce energy usage.

In other cases, the tenant may rent the property but pay for their energy bills. In this instance, the tenant is reluctant to pay for improvements to the building; similarly the landlord is reluctant to pay for improvements to the building because they will not benefit from the reduced cost of energy bills.

Housing and many commercial property developers rarely have a long-term commitment to their development sites because their role is generally to build and sell on. This can mean that at the early stages of development and potentially beyond, there is no party with any long term responsibility for a site and therefore with any interest in reducing ongoing operating costs.

6.6.10 Private Finance Initiative contracts

Private Finance Initiative (PFI) projects represent a barrier to the use of ESCOs. Because projects of this nature require a very significant amount of work and commitment at the tendering stage, third party suppliers to PFI contractors tend not to involve themselves to any great extent until the contract is let. This enables them to avoid wasting time contributing to unsuccessful tenders. The disadvantage of this is that suppliers to PFI contracts are presented with opportunities that they have not helped to shape and are therefore not always commercially attractive.

6.6.11 Publicity and reputation

Most domestic and commercial energy users are used to purchasing electricity and gas from a large, reliable utility company. The step of changing over to a relatively insignificant supply company may cause concern, particularly given the mixed feedback surrounding micro wind turbines, other technologies and the fact that contractors are struggling to give away energy services funded through the EEC commitment. The public is sceptical about organisations that claim on the face of it, to be undermining their own businesses!

In the case of projects such as retro-fitted domestic district heating schemes, public consultation is essential if commitment of all occupiers is to be secured. This process can be highly time-consuming. Various documents are available to provide guidance on how to effectively engage with stakeholders. Examples include the EST's 'Energy Services Directory' and the DTI's 'Protocol for public engagement with wind farm developments'[10]

[10] Protocol for public engagement with wind farm developments, (Feb 2007). Centre for Sustainable Energy for DTI. Available from http://www.cse.org.uk/pdf/pub1079.pdf. (Accessed in March 2007).

which, although wind specific, can be used as a guidance document for other large scale renewable energy developments or CHP plant.

6.7 Enablers for ESCOs today

The previous section has covered the range of barriers faced by ESCOs and their clients. It also offers potential solutions to lessen, if not mitigate, their impact. A large and diverse range of enablers and drivers for the widespread establishment of ESCOs also exists. These have been/are being established in the form of new guidance and policy documents, schemes and monitoring and evaluation tools and are considered below:

6.7.1 Home Energy Certificates

The Home Information Pack will be an essential requirement for all domestic new-build developments and existing properties sold. The pack will provide details of all aspects of the property for prospective buyers. Section H will cover energy in the property and include the Home Energy Certificate, rating the properties level of energy efficiency and carbon emissions on a scale of A to G.

This rating scheme represents a major incentive for new-build developers to maximise the energy efficiency ratings of their properties. It has the potential to encourage developers to think longer-term about their developments and engage service providers to finance energy efficiency measures and low carbon energy generation.

Private wires, district heating schemes and community CHP plants become increasingly attractive with incentives such as this.

6.7.2 Local Government White Paper

Central Government's backing of ESCO development at a local scale is evident in paragraph 4.85 of the Local Government White Paper which advocates the use of ESCOs as a mechanism for local authorities working together with other agencies to tackle climate change, stating "we particularly encourage partners in our major cities to take up the challenge locally"[11]. Ongoing PFI projects and the lead taken by Woking Borough Council suggest that private sector involvement will be encouraged.

6.7.3 Support from central government

Although no funding commitment or timetable for implementation has been confirmed, the Government's statement of intent sends a clear signal of support to those involved with energy service companies.

6.7.4 Code for Sustainable Homes

The launch of the Code for Sustainable Homes (and the planned Code for Sustainable Buildings) is a major driver for raising energy efficiency levels in new-build developments and gives specific mention to the role ESCOs can play in delivering low or zero carbon developments.

Section 9.4 of the report 'A cost review of the Code for Sustainable Homes'[12] discusses the potential for involving ESCOs in site-wide energy efficiency measures such as CHP. It describes the scenario of an ESCO owning the plant and equipment and taking responsibility for maintenance and efficient operation. In this case, occupiers would be free to use other energy suppliers but the ESCO would offer a lower charge (by around 10%) as an incentive to purchase energy from the onsite source.

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[11] http://comunities.gov.uk/index.asp?id=1503999

[12] A cost review of the Code for Sustainable Homes, A report for English Partnerships and the Housing Corporation by Cyril Sweett (February 2007). Available at http://www.housingcorp.gov.uk/upload/pdf/Code_for_sustainable_homes_cost_analysis_160207.pdf (Accessed in April 2007).

The SixtyK house designed to level 4 of the Code avoids additional cost for the developer by including a contract with an ESCO for the provision of carbon saving measures such as CHP.

Implementation of the Code presents a large potential market for new and existing ESCOs, although the cost review document points out the limiting factor of size: "typically, the threshold at which an ESCO managed energy centre becomes viable equates to a development size of around 350 residential units"[13]. This can be fewer if the development includes retail and leisure units and clearly this refers specifically to a project involving centralised supply.

6.7.5 London Energy Partnership report 'Making ESCOs Work' & EST's Energy Services Directory

These two reports represent the first clear steps to provide guidance for those setting up energy service companies and those considering entering into a contract with such an entity, either as a client or technology provider.

6.7.6 Revised Building Regulations

Application and enforcement of Part L of the Building Regulations means that, at the outset, buildings have to be designed and built to a much higher specification of energy efficiency. This is a positive step but reduces the opportunity for energy savings companies to offer guaranteed savings. Instead, as discussed with reference to the Code for Sustainable Homes, there is potential for distributed community energy systems to be built, owned and operated by energy service companies thereby reducing costs through economies of scale and potentially through the additional benefits of operating a private wire scheme. In addition, renewable energy technologies can be included in an ESCO's remit.

6.8 Service providers (ESCOs)

The range of service providers currently operating in the UK and abroad is just as diverse as the definitions of ESCOs and the contract and finance models associated with them.
Large energy suppliers have been incentivised to offer energy service provision under the Energy Efficiency Commitment (EEC) as they receive a 50% uplift for the energy efficiency measures they promote through energy service activity. Although this is limited to 10% of the overall activity, suppliers have been actively pursuing this line of service[14]. Ofgem has also released guidance on the regulatory issues facing energy service provision in the domestic sector and opportunities for energy services[15]. Examples of projects are provided in below.

6.8.1 Examples of energy suppliers involved in energy service activity

EDF Energy works closely with the Greater London Authority to provide sustainable solutions to enable private and public sector bodies to work together. In 2006, EDF was chosen as the preferred bidder to partner the London Climate Change Agency in projects such as combined heat and power (CHP) plants. EDF manage three CHP plants in the UK and the CHP plant at Imperial College, London was designed and constructed by EDF. The

[13] A cost review of the Code for Sustainable Homes, A report for English Partnerships and the Housing Corporation by Cyril Sweett (February 2007). Available at http://www.housingcorp.gov.uk/upload/pdf/Code_for_sustainable_homes_cost_analysis_160207.pdf (Accessed in April 2007).
[14] Energy Services Working Group (2003), The Development of Energy Services under the Energy Efficiency Commitment. Available at http://www.dti.gov.uk/files/file20140.pdf (Accessed March 2007).
[15] Ofgem (2002). Energy services in the domestic sector, a guidance note on regulatory issues, Opportunities for energy services. Available at www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/1677_escos2002.pdf?wtfrom=/ofgem/whats-new/archive.jsp (Accessed March 2007).

college owns the assets and EDF have a contract to operate and maintain the plant for 15 years.

Thames Valley Power is a joint venture between EDF and Atco Power. This venture provides a CHP unit at Heathrow, which supplies a cargo area with potential to expand to Terminal 5. The current contract to supply British Airways with heat and power runs until 2010. A further example is Barkantine Heat and Power Company set up to supply a housing estate in South East London with heating and cheaper electricity.

Ecotricity: Merchant Wind Power (MWP) is an attractive method of providing green credentials to organisations. Energy suppliers such as Ecotricity build, own, operate and maintain wind turbines on customers' sites or at a remote location. They take on all the capital cost of the installation including the turbine costs and planning applications. The client then agrees to purchase the electricity generated from the turbine at a reduced price. In 2004, Ecotricity completed the installation of two turbines with a combined capacity of 3.6MW at the Ford Motor Company's Dagenham site.

Scottish Power is the preferred supplier for the Black Country Energy Services Club which offers members cheaper electricity and gas as well as energy efficiency advice. Scottish Power was also involved in setting up Heat Light and Power Company (HELPCO) run by the Greater London Energy Efficiency Network. When a property becomes vacant, the Council transfers the energy supply to Scottish Power who then acts as guarantor for the tenants enabling them to access cheaper tariffs and energy advice. Scottish Power then pays the local Council a commission which is put in a fund to provide energy efficiency measures for the householders.

6.8.2 Large companies involved in energy service activity

There are examples of large companies set up purely for the purpose of service provision;

Dalkia is one of these. It is a large European company with a focus on delivering Technical Facility Management and Energy Management Services. They work in a wide range of sectors such as commercial, industrial and public sector. An example of their work is at South London and Maudsley NHS Trust where Dalkia provide estates support for 54 of their buildings, taking responsibility for the Building Energy Management System, building fabric, heat and ventilation, lighting management and control and hot water supplies.

Vital Energi specialises in providing CHP and community energy solutions to both private and public sector clients. They offer a wide range of services including design, installation, finance, operation, maintenance and ongoing support such as metering. In 2002 they were employed by Oldham Metropolitan Borough Council to replace an ageing heating system. They undertook a feasibility and design study and installation of a new heating distribution mains supplies 225 houses. They are currently in negotiation with the Council to provide a maintenance package for a new CHP system. They were also involved in partnership with the Peabody Trust and Countryside in Partnership to design and implement a gas CHP system to provide low cost heating to a social housing scheme in Peckham, London. Vital Energi also installed heat meters as part of the project to compare the gas usage of individual users.

Utilicom provide outsourced building and energy management solutions and are part of the French energy management company IDEX. They work with both private and public sector companies to provide finance and full contract energy management packages. They take full responsibility for the energy generation plant on a contract basis ranging from 10 to 30 years, taking full responsibility for plant efficiency. They recover the capital costs via the energy savings made as a result of the new plant. Utilicom are currently working with Barratt Homes and Sanctuary Housing Association to develop over 250 dwellings, which are powered by sustainable means using a centralised heat and electricity network. Utilicom also own and operate the Southampton District Heating Scheme, which supplies over 40 major consumers, and hundreds of domestic consumers, making it the largest commercially

developed district heating scheme in the UK. The scheme is unique as it incorporates geothermal resources. Utilicom are also responsible for the University of London's CHP schemes which incorporate over 4.5 MW of CHP over the main campus site.

6.8.3 Examples of medium- to small-scale energy service provision

There are a number of medium scale companies, which offer energy service provision in addition to other services.

Renewable Energy Systems (RES) design, build and operate wind farms and have recently begun to develop renewable heat and power technologies for the private and public sector. They are part of the RES group which is led by Robert McAlpine Enterprises Ltd. RES enter into long term contracts with both producers and consumers to provide sustainable energy resources without risk to the consumer. Their head office is Beaufort Court which is a zero carbon emission building incorporating wind and solar energy generation. RES own and operate a number of wind farms including Four Burrows in Cornwall, Forss in Caithness and Dyffryn Brodyn in Dyfed.

EcoCentroGen was established in 2001 to deliver low carbon and energy efficient solutions to businesses. They provide funding towards design and construction in addition to taking responsibility for the on-going operation and maintenance of on-site energy generators. They have been involved with Urban Splash who are property developers specialising in inner city regeneration. They were commissioned to assist in the Budenberg Haus Projeckte in Altrincham, which is to provide nearly 300 high specification apartments. EcoCentroGen are to provide finance, design services and supervision of the construction of an energy service solution. The energy plant will consist of 200kWe CHP as well as a gas fired boiler plant.

6.8.4 Examples of local authority involvement in energy service provision

Local Authorities are involved in energy services contracts in a number of ways, including setting up and employing specifically constructed ESCOs to finance, operate and maintain either existing or proposed energy plant. Examples are described below.

The Nottingham District Heating Scheme has been running since 1973 providing heat and power to 4,800 homes, schools, residential homes, etc. through an energy to waste scheme which incinerates 145,000 tonnes of waste annually and a 15MW CHP plant. In order to ensure that the plant continues to run efficiently, Nottingham City Council contracted Dalkia to optimise, maintain and operate the scheme. Dalkia also run the Pimlico District Heating Scheme which first opened in 1950 using waste heat from Battersea Power Station. When the power station closed down in the 1980s, Westminster Council had to make alternative arrangements to supply heat to the scheme. Dalkia financed and designed three new boilers which generate hot water which is supplied to over 4,200 dwellings. Dalkia also bulk buy fuel for the Council to enable them to make savings and offer ongoing energy efficiency advice.

The most well publicised example of a local authority involvement in energy service provision is Woking Borough Council's ESCO, Thamesway Energy Ltd. Thamesway Energy Ltd was set up in 1999 to enable the expansion of an existing private wire network. This project was initiated by Woking Borough Council's energy manger with support from senior management. Thamesway Energy is a public/private joint venture consisting of Woking Borough Council and the energy company Xergi A/S. The company has enabled Woking to increase its energy generation by 800% since 2002.

Despite the range of entities specialising in energy service provision and those specific to a particular project or aspect of service provision, the current take-up of energy services is limited and slow.

6.8.5 Stakeholder dilemmas

The first group work session at the Stakeholder Workshop involved gathering information from delegates about the kind of energy problems they face in their jobs. The wide range of delegates gave an insight into many areas ranging from strategy and policy development to driving progress and implementation.

Responses have been collated and grouped below, effectively creating part of a wish list for energy service companies as well as identifying some of the barriers encountered by various stakeholders.

- There is a requirement for strong leadership, more effective communication and policy enforcement from regional bodies to advance the cause of energy service companies and associated contracts.
- There is a requirement to engage and educate individuals and organisations to create a sense of ownership in relation to energy use. This change in culture will, in turn, change energy usage patterns and establish more energy efficient operations.
- It is critical to implement effective monitoring programmes and produce accurate consumption information in order to evaluate energy use and identify where savings could be made.
- There are practical problems associated with large and small capital projects, for example exchanging new equipment for old and fitting new equipment into existing building infrastructures. This requires effective project management, manpower and expertise as well as management of the problems associated with downtime.
- There tends to be a lack of available technical expertise and experience in terms of developing a plan for energy service provision, understanding the many technologies on offer, their suitability and associated costs, and relevant national, local and regional policy and regulations.
- Problems are sometimes encountered when locating design, construction and M&E engineers and contractors. Technical expertise, availability and experience can all be problematic.
- Even if users wish to investigate or employ new technologies there are often supply chain issues. These may relate to the availability of expertise, technology, installers, operation and maintenance people or the provision of feedstock, e.g. fuel for biomass installations.
- Some consumers wish to contract the supply of green energy but experience difficulties in understanding the options available.
- At a policy level, some local authorities are experiencing problems creating effective local policies to provide guidance and support for energy efficiency and renewable energy technologies, particularly for the planning community.
- Purchasing energy has become more complex, in particular now that issues such as security of supply, rising prices and the option of green energy are drawn into the equation.
- The capital for investing in improved energy measures can be significantly constrained within local authorities. Furthermore there is a significant perceived risk associated with investing in new energy efficiency and renewable energy equipment and measures. These risks are not understood and need to be realistically managed.
- Often the resources or expertise required to implement basic energy management initiatives do not exist and the development of carbon management plans can be well beyond the resources available.
- Problems are encountered in relation to developing an accurate financial argument for investing in schemes. Understanding and comparing project finance options and

calculating the related energy costs, payback, returns on investment, tax, eligibility for grant assistance, etc. can all stretch the experience of many of those involved.

- Energy managers are frequently faced with the problem of how to reduce fuel consumption when the demands associated with computers and air conditioning, etc. continue to increase.
- Decision making is a common problem. It is often unclear who needs to be involved in making decisions, who makes the final decisions and how the complex decision making process in local authorities can be simplified.
- The implementation of even the most basic project can be dogged by resource problems including staff numbers, availability, knowledge and finances.

6.8.6 Characteristics of an attractive environment for an ESCO project

This section draws upon findings from earlier in the report to develop a characterisation of the conditions that would be likely to exist for an ESCO to be successfully implemented. This characterisation is linked to the phases through which an ESCO might pass during its development.

A. Scoping

- There will be external policy/legislative drivers motivating stakeholders to consider and adopt innovative energy/carbon solutions
- There will be a senior level champion capable of carrying influence across the stakeholder groups
- There will be a multi-disciplinary development group that incorporates willing and able representatives from critical public and private sector stakeholders
- Low carbon/energy characteristics will be a high priority condition for the development.

B. Project development

- All critical stakeholders including the original scoping team will remain fully involved
- A very close, motivated cross disciplinary team will form to deliver the project
- The project will retain a strong champion.

C. Financing

- Leadership remains strong
- An appropriate mix of public and private sector finance is found and structured
- The local public sector assists by providing whatever grants, finance, expertise or other resources it has available
- The public sector provides support and commitment.

D. Implementation, installation, operation and maintenance

- The contractor is committed to making the project work
- Community groups are involved to maximise local benefits.

6.8.7 Ideal ESCO project attributes

Having identified the characteristics of an attractive environment for the application of an ESCO approach, the following list outlines the range of project attributes sought by service providers:

- There will be potential for significant savings of cash, carbon or energy and these are likely to become more accessible with increasing project size
- For an ESCO involving significant capital investment there will be an attractive balance of loads ideally involving domestic, industrial, social and commercial property. Buildings with significant requirements for heating and cooling are ideal
- The site is off grid or has an inadequate primary supply infrastructure
- The project has access to local resources such as energy dense waste, biomass or surplus process heat from adjacent industry
- The project represents long term potential for the energy service company
- The project has community buy-in
- Long term contracts are preferred
- The client would prefer a 'one-stop-shop' solution
- The client is relatively risk averse
- The client has insufficient internal capital resources to realise the full potential of the energy opportunities
- The client has a desire to retain flexible access to internal capital at the risk of incurring additional operating costs
- An innovative approach is actively sought to reduce energy or carbon costs
- The client has a good credit reference
- Short term resources are available to cover legal and financial set up costs
- The client is receptive to education so that he can be assisted in the decision making process
- The client has a clear internal decision making process
- The local public sector will actively support the project
- A local credible champion is involved in the project
- Energy services would be delivered through a robust partnership of credible players
- The energy service company is prepared to be solution focussed.

7 Energy service companies for the North West

Typically the established energy service companies and their offerings have evolved from organisations whose core business is to supply technology or provide services. The business models of these organisations reflect this in that their fundamental drivers are either to sell equipment or hours.

The consultation process has indicated that the primary requirements of the public sector are for access to finance solutions and contractual relationships that fit with their own constraints. It seems appropriate therefore to contemplate ESCO models that are driven by a desire to provide appropriate finance and easy-to-access mutually acceptable contracts. In reality if the financial resources are available and the relationships can be established, appropriate equipment and technical service providers are relatively easy to introduce to the project.

The other critical factor is the approach to implementation and the early involvement of critical parties so that they can develop long term mutually beneficial working relationships. Clearly the organisations providing project finance are involved from the very beginning and therefore appear ideally placed to take responsibility for establishing early relationships.

To facilitate the widespread adoption of successful ESCO projects, an ESCO model based on a partnership between a financier, local authorities and a management company is considered below.

A major hurdle to the public sector being a beneficiary of ESCOs is the development and definition of their constitutions. This barrier can be overcome by adopting one of the following two models which offer flexibility in terms of the public body's preferred level of involvement whilst always allowing them to experience significant benefits.

There is a generally held view that buy-in and transparency are critical factors to the success of ESCOs linked with most parts of the public sector. For both of the following two models local stakeholder involvement is both a prerequisite to development and an inherent advantage.

7.1 A Generic Public Sector ESCO

The concept of having a generic ESCO derives from the fact that the potential market for providing guaranteed energy services to the public sector is huge but is currently constrained by the limited extent to which existing providers are attracted to these projects and the resources associated with the implementation.

A generic ESCO could offer substantial benefits in terms of economies of scale:

- Relatively standard contracts could be developed and handled by experienced people who can help the client to work quickly
- The initial legal and financial costs could be built in as an overhead rather than being born by a single project
- The economies of scale associated with a large number of projects could provide access to attractive project finance
- A 'joined up' approach could enable attractive and less attractive projects to be 'bundled' so that all projects can benefit from an overarching package of services
- Long term working relationships can be established
- A concept of this nature should attract the level of commitment and leadership required to accelerate implementation within the public sector
- Provision of a one stop shop advisory resource.

7.1.1 Limitations

Clearly the public sector does not have universal rules so variations would need to be developed for specific types of entity. The following examples relate specifically to ESCOs set up in partnership with local authorities.

7.1.2 Key elements

Both of the following models involve the following fundamental elements:

- A third party financier to gap fund projects when required
- A managing company (the ESCO) to manage the process through which the parties will need to pass and with whom services will be contracted
- A local authority partnership to steer, advise and secure mutual benefits from the structure
- A group of approved service providers with whom the ESCO will contract
- A series of established generic contracts and terms that will accelerate the contractual process whilst offering a degree of flexibility
- Clear social and economic objectives
- A remit to work closely with the existing base of funded service providers who provide services such as Warm Front, the Fuel Rich Insulation Discount Scheme, the Fuel Poor Energy Efficiency Schemes and the Condensing Boiler Scheme.

7.2 Option 1: Local Authority Co-Financed ESCO

This model is a development of the Thamesway ESCO, which has been operating successfully for many years supplying energy and energy services to customers in Woking, Surrey.

Such an ESCO would be a public/private joint venture with backing from all the LA's involved and, if needed, an external financier. The objective would be to realise energy and environmental goals across the area served. This could include local authority targets such as reducing fuel poverty as well as 'softer' targets such as increasing awareness of renewable energy.

It is anticipated that this model may best be deployed when ESCO services are being provided to a single council only. Bringing together several councils to agree and make investments into a pooled 'pot' is likely to be an extremely difficult process.

7.2.1 Objectives of the ESCO

- To promote and increase energy efficiency, energy conservation and environmental objectives by providing energy and/or environmental services
- To develop and implement projects for the production and supply of energy
- To produce and supply energy (and any related by-products) in all its forms
- To provide financial, managerial and administrative advice, services and assistance

7.2.2 ESCO Structure

Under this ESCO model it is proposed that the financier (local authorities, third party, or both) provides the necessary project financing to the ESCO via a loan contract, the ESCO provides the service via a performance contract, the customer pays the ESCO if the project meets its performance standards, and the ESCO repays the financier for the project loan.

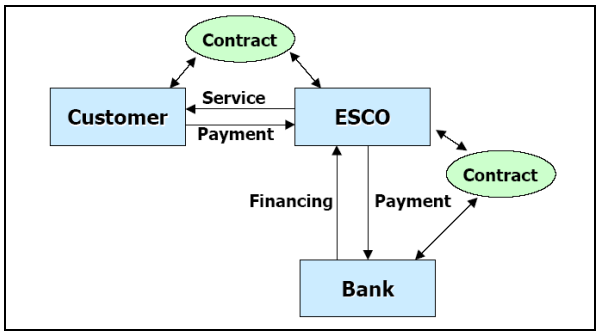

Figure 2: ESCO arranges the financing and bears the financing risk

In this case the customer repayment risk is borne by the ESCO. As a consequence, the financier will manage its risk by "looking through the ESCO" to ensure the viability of projects. As the ESCO is also financed by the councils and serving council areas there is a mutual benefit in ensuring projects are sustainable.

The contract between the Customer and the ESCO is often made up of two parts:

1. Key Performance Indicator payments – the contract will specify a number of KPIs against which the performance of the ESCO will be measured. These could be in terms of equipment installed or reduction in energy use or cost. If these targets are met then the full amount is payable. Typically KPI payments constitute 30% of the total bill.
2. Baseline Costs – these spread costs cover the initial set up and purchase of capital equipment (capital investment) necessary to achieve the energy savings and cost reductions guaranteed. These costs may also cover the provision of energy sourced from a supply/utility or other distributed generation.

The ESCO contract will be structured to provide incentives for continual improvement rather than simply rewarding an initial step change in performance. The ESCO will commit to guaranteed maximum levels of energy usage subject to the use of the facilities.

The ESCO will subcontract the delivery of services and energy supply to partner companies with the necessary expertise. These companies will supply a range of services including:

- Energy management services
- Energy efficiency technologies
- On-site generation expertise and technologies
- Renewable energy expertise and technologies
- Energy sourcing

7.2.3 Advantages & disadvantages of model

This model derives benefits from the level of buy-in of participating councils. Total commitment will reduce many of the problems and delays associated with the traditional supplier/client relationship and normal tendering processes. In particular if an 'open book' approach is used right from the beginning, there should be an objective of working together within the partnership to establish a win-win situation for everyone.

A project of this nature that involves local authorities providing an element of the finance, having a degree of accountability for the performance of the ESCO, and providing the project base, would be very attractive to lenders. This arrangement, along with the potential scale of the project portfolio, would enable attractive finance rates to be secured.

Often projects are delayed by high initial costs incurred even before contracts are drawn up. It is likely that this model would reduce these initial costs by virtue of a growing base of experience and expertise. Subject to the agreement of the steering group it may be possible for the ESCO to cover these initial costs on the basis that they are later bundled into the final finance package.

7.2.4 Legal issues for consideration

As local government finance is strictly controlled by Central Government, councils do not have the same flexibility as private sector organisations in determining the capital and revenue budgets. In addition, the Local Authorities (Companies) Order 1995 states that local authorities cannot invest more than 20% in private companies, otherwise the company would be treated as a local authority controlled company and be limited by central government's capital controls.

7.3 Option 2: Independently Financed ESCO

This model is very similar to the previous one with the exception that the Local Authorities do not contribute financially to the ESCO. Instead, the ESCO relies entirely on private finance and the local authorities (LAs) contribute by way of providing direction, project ideas, and making legal commitments to 'buy in' to the model.

The involvement of LAs in the ESCO formation is important in that it will focus the ESCO on providing client value. If LA derived stakeholders are effectively involved in the ESCO development then there is no excuse for any shortfalls in terms of the ability of the ESCO to meet its clients' needs.

It is envisaged that this model would be suitable for the development of a 'Greater Manchester ESCO' which would have the commitment of the ten Greater Manchester local councils. Although this level of inter-council cooperation is unusual and can be difficult to operate, these councils already collaborate through membership of the Association of Greater Manchester Authorities (AGMA). AGMA is a partnership between the ten local authorities within the Greater Manchester area who co-operate on issues, both statutory and non-statutory, where there is the possibility of improving service delivery by working together.

The joining together of the ten councils on a basis where they are required to pool investment could be highly problematic and time consuming. There would also be complexities associated with how differing levels of investment and uptake are taken into account.

The ten authorities are listed below:

- Bolton MBC
- Bury MBC
- Manchester CC
- Oldham MBC
- Rochdale MBC
- Salford CC
- Stockport MBC
- Tameside MBC
- Trafford MBC
- Wigan MBC

7.3.1 ESCO characteristics

In order for the ESCO to be worthwhile it is important to ensure that ownership of the capital equipment, bought to bring about the required energy savings, defaults to the LA after its has been paid off (typically after 15 – 20 years).

The ESCO can manage the Operation and Maintenance (O&M) contract for all the capital equipment installed.

7.3.2 Advantages & disadvantages of model

This model has the obvious advantage that it does not require capital commitment from the participants although this will consequently increase the financing costs.

Fundamentally though, the advantage of this model in relation to the potential application being discussed is that it is likely to be much quicker and less complicated to set up and operate in financial terms.

A disadvantage is that the lack of financial commitment could lead to less ongoing commitment from the local authorities. The establishment of an ESCO champion within each local authority (LA), acting on behalf of the their LA on the ESCO steering group, may mitigate this problem.

8 Pilot Projects

8.1 Bickershaw Colliery

8.1.1 Infrastructure and scope of the site

The development of the former Bickershaw Colliery site in Leigh, on the edge of Wigan Borough in Greater Manchester, represents an interesting opportunity for the development of an ESCO, either community or council led.

The development itself comprises approximately 190 hectares of brownfield land incorporating the spoil tip areas of the former Bickershaw Colliery, along with a lake and other undeveloped land. Despite being predominantly brownfield land its development is restricted as it lies within a designated Green Belt. Consequently, it is proposed to develop the land, largely for leisure and amenity uses, post reclamation. The development is being funded by English Partnerships, the Government's National Regeneration Agency, via its National Coalfields Programme (NCP).

The development area is split into two halves with the North Site being owned and developed by Wigan Metropolitan Borough Council and the South Site by the NWDA. Whilst it would be ideal, in the context of this work, to consider both projects as a whole, the energy supply options for the South Site are already being considered by an external consultant. Wigan Council is the local planning authority for both parts of the development and is also leading on community engagement, employment, training, and healthy living issues. The South Site will include a new waterfront neighbourhood with up to 650 new homes, with the potential to attract commercial and leisure activities such as bars, restaurants and shops.

Wigan Council has been very supportive of the ideas discussed with them during the course of this project and is happy for the development of the North Site energy supply and services to be considered.

Bickershaw North represents a significant strategic opportunity for the National Coalfields Programme (NCP) to contribute to the wider physical and social regeneration of the Leigh area and Wigan Coalfield in general. The development of a visitor centre and major leisure and recreation facility on the North Site, together with considerable investment on the South Site, demonstrates an important strategic intervention by English Partnerships to provide a high quality sub-regional leisure asset, aimed at improving the image of the Leigh area.

The sustainable energy options being considered for the North Site include the following:

- Generation of energy for export
- Supplying sustainable energy to the South Site (integration of sites)
- Providing a sustainable solution for the visitor centre
- Providing ongoing investment

The majority of approved expenditure is allocated for the re-use of approximately 3/5ths of the site where dereliction is at its worst and where the land is incapable of beneficial use. The project will include the creation of:

- 18 holes of golf on a pay as you play basis
- A driving range
- A pitch and putt course
- An activity centre with water based activity, climbing zone, aerial adventure walkway, etc.

- A multi-use country park including events arena, forest zone (with native arboretum, activity mounds, woodland walks, running trails, cycle trails), nature reserve, free play facility and community meadows
- A visitor centre building of 1,150 m^2 gross internal floor area serving the country park, golf club house and activity zone
- A 2MW wind turbine.

8.1.2 The opportunity

A feasibility study has concluded that it is viable to install a ~2MW wind turbine on the Bickershaw North site. Whilst there is very little electricity demand on Bickershaw North, there is significant demand on Bickershaw South.

There is an opportunity to install a wind turbine and either use the electricity generated to power the Bickershaw South development or alternatively use the associated income to finance other energy services.

The provision of electricity directly from the turbine to the site would require the installation of a private wire network that could distribute the wind generated electricity. In addition, there would be the potential to draw from the grid or alternatively export to the grid when there is a mismatch between supply and demand. This is an innovative proposition but would be expensive and complex to implement. TNEI has not been given access to sufficient information in relation to the plans for South Bickershaw to be able to make a judgement as to whether this option is at all viable. However if a private wire system with the inclusion of a CHP plant is being considered then the inclusion of a wind turbine may make sense.

If the prospect of a private wire system is too ambitious or commercially unviable for the development then the alternative would be to use the income derived from the wind turbine to finance energy related initiatives. Potentially the income could be used to finance the inclusion of technologies that could not be accommodated within the existing budgets and/or technologies that do not provide the performance characteristics that would make them financially viable under normal evaluation criteria.

The scheme offers an opportunity to develop a community ESCO that could even pass over to a community based management group over a period of time. This type of approach could help engender a greater level of community involvement between the two sites.

The waterfront developments on the Bickershaw South site may offer an opportunity to utilise innovative water source heat pump systems which amongst other things could be managed by the ESCO. The key opportunity for these projects is to develop an over arching ESCO that can provide energy management services across the two sites.

8.1.3 Advantages and disadvantages of ESCO implementation

Although this project is relatively advanced in the design stages, issues around renewable energy technologies and funding options are yet to be clarified. The adoption of an ESCO approach would be suitable for ensuring the developments obtain zero carbon status, the standard aspired to by the project managers. In addition, the involvement of an ESCO could enable a selection of renewable energy technology options to be included at the Visitor Centre, on surrounding land and on the Bickershaw South land. This would not only reduce the carbon footprint of the development but reduce operating costs of the site and provide an educational resource for local schools and members of the public to view renewable energy technologies in action. There is potential for this development to be a flagship example of quality zero carbon design and renewable energy application.

A disadvantage of this approach is that it could slow down the process of installing a wind turbine relative to working with a commercial developer to put a machine up as quickly as possible.

8.1.4 Business case

8.1.4.1 Overview

The position of local grid connections mean that connecting a wind turbine will be relatively expensive and the feasibility study has indicated that the cost of installing a 2MW wind turbine would be in the region of £2.4m. Given relatively low wind speeds of 6.2m/s the net annual income would be approximately £300,000. This excludes any project finance costs.

Clearly the payback time is not particularly attractive in commercial terms however there is the potential to put together a business model whereby there is a net annual income over the course of the 20 year life-span of the machine.

Assuming the cost of finance is approximately base rate plus 2% then the net annual income could be expected to be in the region of £120,000 per annum.

8.1.4.2 Benefits

Given an annual income of £120,000 over the course of 20 years, the operating organisation could invest in carbon/energy reduction technologies to reduce the carbon footprint of the adjoining Bickershaw South development. This could be through an agreed long term programme of energy saving and micro renewable projects. This type of approach could establish Bickershaw as a high profile best practice project in terms of the gradual reduction of its relative carbon footprint.

8.1.4.3 Risks

As with any wind project, prior to complete feasibility work there are certain assumtions that need to be made. These represent project risks and include:

- Confirmed wind speeds
- Final installation costs
- Successfully securing planning consent
- In terms of long term variables, the primary issue concerns the value of power purchase agreements
- In the short term the commercial terms of the operating lease will need to be confirmed.

8.1.4.4 Operation

In terms of the practicalities of owning and operating the site this should require very little resource as the wind turbine manufacturer will maintain the machine.

Regular board meetings can be held to monitor the project and confirm how the income stream is to be invested.

Probably the greatest resource will be required to project manage the implementation of the investment projects and it is important that this is cost is minimised to enable as much as possible to be invested in capital projects.

8.1.4.5 Legal issues

As has been highlighted earlier in the document, strict conditions apply to the ability of public sector organisations to have stakeholdings in commercial ventures. Therefore the structure of the project will need to be considered in great detail. A model similar to that employed in Woking may be viable whereby the Council has a minor (less than 20%) shareholding in a separate company or alternatively the Council may be able to secure an operating lease for the machine.

An alternative may be for the project to be owned and operated by a third party with a not-for-profit constitution, to reinvest the revenue under certain predefined conditions.

8.1.4.6 Key milestones of an implementation plan

- Secure the commitment of both sites to consider developing an integrated approach to energy.
- The initial phase of development would be to establish in principle a legal structure to install, own and operate the project. Clearly this would need to involve a number of key stakeholders and fundamentally would be subject to the constraints and objectives of the council.
- It needs to be borne in mind that this organisation will need to provide initial investment at risk. It is likely for example that the cost of securing planning permission and installing a wind mast will amount to around £100,000 without any guarantee that permission will be secured.
- An option would also be to create a structure whereby local residents are able to invest in the project and in return benefit from specific energy saving measures.
- Subsequent to securing planning permission there will be significant legal costs associated with setting up the legal and financial framework and establishing the organisation.
- Prior to investing in securing planning consent a financial structure needs to be agreed with a provider put in place as a development partner.
- Subject to confirming the initial stages, planning permission needs to be secured. This will be a 6 to 8 month process and will involve significant local consultation. The consultation process can be used to secure local commitment and interest in the objectives of the project which should in turn help in reducing opposition to the project.
- Following the receipt of planning permission the legal structure can be set up and the finance put in place.
- Contracts will then be let to supply, construct and operate the wind turbine.

8.2 Building Schools for the Future: Manchester

8.2.1 The programme

The national Building Schools for the Future (BSF) initiative will be rolled out in 15 waves depending on funding over approximately 20 years. The aim of the scheme is to provide 21st Century learning facilities for school students; a key aspect of this includes the design and construction of environmentally and socially responsible buildings and education.

The table below details the local authorities in the North West and their proposed phases of the redevelopment:

Table 2: Proposed dates for redevelopment phases of schools in North West local authorities under the BSF programme.

Local Authority	Proposed dates (years)
Blackburn	4-6
Blackpool	4-6
Bolton	7-9
Bury	13-15
Crewe	10-12
Ellesmere	10-12
Vale Royal	10-12
Chester	13-15
Congleton	13-15
Macclesfield	13-15
Cumbria	10-15
Burnley and Pendle	1-3
Lancashire	7-15
Liverpool	1-6
Manchester City North/East	1-3
Manchester City South/West	4-6
Oldham	4-6
Salford	1-3
Rochdale	4-6
St Helens	10-12
Stockport	13-15
Tameside	10-12
Trafford	13-15
Warrington	13-15
Wigan	10-12

Source: Building Schools for the Future[16]

[16] Building Schools for the Future website. Available at http://www.bsf.gov.uk/what_about_me/leas.htm (Accessed in March 2007)

Six local authorities in the North West have been selected for inclusion in Waves 1, 2 & 3 of the national programme as illustrated in table 3 below:

Table 3: Local authorities involved in Waves 1, 2 and 3 of the national BSF programme **Local Authority**	**Wave**	**Actions**
Burnley Borough Council through Lancashire County Council	1	• Replacement of 8 secondary schools • Build 5 new secondary schools • Build a new sixth form to replace existing school sixth form • Provide learning support units at each school • Locate a special needs school within one of the new schools
Pendle Borough Council through Lancashire Council	1	• Build 2 new secondary schools • Provide learning support units at each school • Locate a new special school within one of the new secondary school sites • Potential reorganisation of 4 other schools, pending decision
Manchester City Council	1	• Rebuild or remodel 9 secondary schools • Rebuild or remodel 7 Special Educational Need schools • Total of 33 schools planned for investment
Knowsley Metropolitan Borough Council	1	• Replace 11 existing secondary schools with 7 new learning centres
Liverpool City Council	2	• Plans include 8 secondary schools and 3 special schools: • Build new secondary school and special school adjacent to Sports Centre site • Replacement of 1 secondary school with new build on same site • Refurbishment and part new build of 4 schools, with a special school included on one site • Replacement and/or refurbishment of significant parts of one school with new joint sixth form • Replacement of 1 school on new site, with new build special school on same site
Salford City Council	3	• Improvement of 9 secondary schools • Conversion of 1 secondary school into an academy

Sources: Lancashire County Council[17], Manchester City Council[18], Knowsley Metropolitan Borough Council[19], Liverpool City Council[20] & Salford City Council[21]

[17] Lancashire City Council, Schools for the Future (website) (no date). Available at http://www.lancashire.gov.uk/education/bsf/index.asp (Accessed March 2007).
[18] Manchester City Council, Schools for the Future (website) (no date). Available at http://www.manchester.gov.uk/children/projects/bsf/ (Accessed March 2007).

8.2.2 Potential provision of services

The above list of projects presents a number of opportunities that could be realised through a service provider:

- Increased levels of energy efficiency attained through the improved design and operation of buildings
- Reduced levels of energy use in buildings through the education of staff and students
- Increased opportunities for the inclusion of renewable energy technologies on site.

As with all projects, there are budgetary limits for these projects and in some cases these constraints run the risk of sub-optimisation with projects not being designed and constructed to their full potential.

For example, as a result of budgetary constraints, new build or refurbishment projects may include schools having gas or oil boilers with multiple single-point electric water heaters and radiators located around the building. This solution would not be as effective as a slightly larger primary system (potentially biomass fuelled) but would be less technically complex and expensive in the short term. However, in the long term, a single complete system generally works out more cost effective and more energy efficient than the use of many single-point installations.

8.2.3 Advantages and disadvantages of ESCO implementation

Introducing an energy service company could increase operating costs; however this depends upon the level of resource local authorities are currently committing to the management of energy across their site portfolios. If this overhead cost is high then a service provider may not be significantly more expensive and is likely to add additional benefits in terms of capacity, expertise and flexibility.

The additional benefits of contracting with an ESCO would create greater flexibility and remove a degree of risk:

- Third party finance may enable the overall capital expenditure to be increased to include improved energy options that would make commercial sense over a long contract period. Potentially this could include the provision of renewables or traditional systems that require greater initial costs. Given that the national curriculum takes some interest in renewable energy and that it is important that younger generations are exposed to them, this prospect seems very attractive.
- A provider would remove part of the risk attached to operating costs in that they could provide a guaranteed capped energy consumption so that cost variations are only linked with fuel prices.
- Some service providers will provide replacement guarantees; again this means that there is no risk of the client being required to provide any further capital to replace pieces of equipment within the contract period.

In summary, contracting with a service provider on a long term contract could remove some of the short term constraints to provide reduced longer term energy costs and minimised risks.

If there is no need for capital investment there may still be an opportunity for a niche company to provide services in relation to awareness raising and/or monitoring and targeting. At relatively low cost this may result in lower operating costs, greater awareness

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[19] Knowsley Metropolitan Borough Council, Schools for the Future (website) (no date). Available at http://www.knowsley.gov.uk/education/bsf/ (Accessed March 2007).
[20] Liverpool City Council, Building Schools for the Future (website) (no date). Available at http://www.liverpool.gov.uk/Education_and_learning/Schools_and_colleges/Schools_for_the_future/index.asp (Accessed March 2007).
[21] Salford City Council, Building Schools for the Future (website) (no date). Available at http://www.salford.gov.uk/learning/bsf.htm (Accessed March 2007).

and a third party taking an incentivised approach to improving the carbon footprint of the sites.

The disadvantages of contracting with an energy service company in this instance are much as highlighted earlier in the report.

Fundamentally the viability will depend upon whether or not an existing provider can make the scheme fit within their evaluation criteria and if that is not the case whether the resources are available to explore and/or develop an alternative model.

Manchester has been considered for the focus of activity of this nature simply by virtue of stakeholders expressing an interest and contributing to the project to date. The concept could however be equally applicable to the BSF programme in Liverpool.

Manchester BSF

Manchester City Council was one of the first local authorities to participate in BSF. The programme being delivered under Wave 1 of the national programme consists of the re-build or remodelling of 9 secondary schools and 7 special educational needs schools in Manchester. In addition, Expressions of Interest have been submitted for 3 Academies and a further 3 are currently being written.

BSF Manchester is a design and build contract to be delivered via a framework arrangement. The main partners are Laing O'Rourke with Ellis Williams Architects and Gifford M&E and Balfour Beatty with Aeadas Architects and Whitby Bird M&E. The programme will be split 50/50 between them.

Investment is planned for a total of 33 schools over the coming years under the Manchester BSF programme. The schools from Wave 1 that have already been designed and on which construction has already begun have all been designed with the option of retrofitting renewable energy technologies.

In the case of the Manchester BSF programme, the key barrier to the implementation of innovative energy technologies described by stakeholders has been a lack of funding. Both schools and the BSF programme have not had the capital to fund outright installations or locate match funding for grants and loans.

The Manchester BSF programme has an advantage in that it has not been let as a PFI contract so will not be subject to some of the problems associated with PFI contracts that have been described earlier in the document.

The adoption of an innovative ESCO model has the potential to manage energy demand costs and make renewable energy generation on site a viable option in several ways:

- The ESCO/third party financier could finance the capital cost of the measures and the school could repay this investment through a shared savings contract
- The ESCO/third party financier could finance the capital cost of the measures and charge the school for the energy generated
- The ESCO could provide a range of energy efficiency services, potentially including education and monitoring schemes, and the savings generated by the services could then be invested in renewable energy technologies.

8.2.4 Developing the opportunity

The Manchester BSF programme has several advantages in terms of furthering the use of energy service companies:

- It has not been let as a PFI contract and there is a degree of flexibility in terms of the contractual arrangements that can be explored
- The programme embraces a very broad range of projects that represent opportunities to develop a portfolio of solutions
- The long-term roll out programme offers time to develop tried and tested models that will offer long term solutions

- There are long-term partners with whom working relationships can be developed to arrive at mutually acceptable solutions
- There is a large portfolio of projects that could justify the development and employment of a bespoke business model. The scale of the portfolio could also be used to provide solutions for sites that in themselves are commercially unviable but within a larger range of sites could work
- There is significant interest from a number of the key stakeholders and an expression of interest in relation to employing innovative approaches to deploying enhanced energy efficiency measures and renewable energy technologies.

8.2.5 Potential barriers and risks

Each school would need to have a separate contract with the service provider and this could prove difficult and time consuming to implement. However, a large degree of procedural standardisation would help mitigate this.

The contractual terms of the Building Schools for the Future's development of partnerships also need to be reviewed since they may constrain the terms on which an ESCO could operate.

8.2.6 Project development

Information gathered on individual school developments was limited due to difficulties in engaging stakeholders, despite their evident interest in the study. In many cases this is due to individual developments being at the early stages of design. As mentioned above, any ESCO entity targeting BSF projects will need to engage programme managers, contractors and school project managers.

The following methodology is proposed for achieving this:

- Gain senior level commitment to explore the opportunities from all of the key stakeholders
- Evaluate the portfolio and classify the types of opportunities that exist in terms of size, usage, energy demand, services required, new build, refurbishment, etc.
- Broadly quantify the scale of opportunity that exists
- Discuss with potential providers and solicit high level proposals in relation to how they could be involved in development and service provision
- Agree preferred partners
- Identify how attractive packages can be constructed
- Develop high level memorandum of understanding
- Develop basis of contracts
- Set up development resource/project facilitator
- Undertake internal awareness raising and communication with key individuals and parties
- Work with partners to assess sites in detail, also consider sites in the context of the larger portfolio
- Work with partners to produce a mutually acceptable economic and operating model
- Consult with individual schools, contractors and programme manager
- If schools wish to proceed, draw up contracts
- Detailed work plans to be produced by ESCO delivery body and preferred contractors as appropriate.

8.2.7 Examples of schools renewable energy projects

The following case studies provide examples of schools that have installed renewable energy technologies on their sites. These illustrate the financial savings, community and educational benefits and positive environmental impact achievable. In most cases, the introduction of renewable energy to the site accompanies efforts to reduce energy consumption on site:

Photovoltaics (PV)

- Gunnersbury Catholic School in Hounslow has a 1.5kWp PV system installed. A display unit provides details of energy savings and carbon emissions, enabling students and teachers to monitor the equipment.
- Eastchurch Primary School in Kent has developed a culture of 'Good Energy Housekeeping'. This is led by classroom Energy Monitors and an 'E-team' of Year 4 pupils who monitor classrooms during the lunch hour. Since 1998, the school has operated a programme for improving the efficiency of the fabric of the school including: the use of low-energy lighting; installation of covered areas to reduce heat loss from doors; and the replacement of old kitchen equipment with energy-efficient devices. After considerable time and effort, a 3 kWp photovoltaic (PV) array was installed in 2005. This is linked to a prominent display outside the canteen which shows current and cumulative energy generation and CO_2 savings.
- St Joseph's Infant School, Croydon sells the excess electricity created by its solar panels back to the National Grid. Teachers say the school is setting an example to the community by providing a working example of renewable energy technology. A display unit allows pupils and visitors to monitor energy production, giving children the chance to learn about the environment, technology and economics.

Wind power

- Cassop Primary School, County Durham - Over the last eight years, a dedicated team of pupils, teachers, caretaker, parents, energy companies and members of the wider community have transformed the school into a pioneering Eco School, inspiring others to follow. Pupils at the school have become the driving force promoting sustainable energy use in their community, acting as Energy Monitors in the classroom and Eco Ambassadors demonstrating their impressive knowledge and approach to local and overseas visitors. The school has drastically cut its carbon emissions by using a host of renewable sources and energy efficiency measures. A third of electricity needs are met by a wind turbine erected in the school playing field, with surplus electricity going back to the grid. The wind turbine was installed in the school field as a joint project with Durham County Council and Northern Electric. Pupils led a consultation process in the two villages the school serves, resulting in 90 percent support for the installation, despite attempts from outside the area to influence the community against it. The wind turbine installation produces 50,000 KWh per annum – saving 122 tonnes of CO_2.
- Nidderdale High School in Harrogate raised more than £90,000 in funding to install its wind turbine two years ago. The school says the installation has saved nearly £3,000 a year with the turbine meeting 15% of its electricity needs.
- Beaumont Primary School in Suffolk installed a wind turbine two years ago that generates enough electricity each day to run all the computers in the ICT suite.

Ground Source Heat Pumps

- Morgan Academy in Dundee received £100,000 of Scottish Government funding to install vertical ground source heat pumps that heat the atrium and assembly hall.

The school was also awarded funding under the photovoltaics (PV) programme to install a solar energy system to power the pumps.

- Alexandra Park School used ground sourced cooling in the new school extension. The school is a mixed community comprehensive with ~1,380 pupils. The system, completed in 2004 has an 80kW cooling capacity using a vertical closed loop system. A PV system was also installed. The client was Harringey Education Services with the main contractor being Wilmott Dixon.

Biomass

- Florence Brown Special School in Bristol has installed a 283kW wood chip boiler. Not only does it benefit from a heating system running on a carbon neutral fuel but it also benefits financially as wood chip is almost half the cost of natural gas. The biomass boiler is expected to save over 100 tonnes of CO_2 and £10,000 per year.
- Orchard Community Primary School in Derbyshire has installed a biomass heating system. Energy is created when trees, crops or animal dung are burned. Though carbon emissions are produced, this is balanced by the fact that the material being burnt is - unlike fossil fuels - quickly replaceable.

8.3 Oldham housing ESCO

8.3.1 Introduction to the project

The Borough of Oldham has a population of 220,000 and has a total housing stock of 96,000. 14,000 houses are managed by First Choice Homes Oldham Council's ALMO, 7,000 are managed by housing associations and 75,000 are in private ownership. Critically, 18% of Oldham's households are victims of fuel poverty.

Oldham Council is keen to explore the possibility of developing an ESCO model that could be used to reduce fuel poverty by helping householders reduce their energy usage and costs.

The Council has previously had preliminary discussions with Scottish Power with respect to establishing an affinity scheme whereby vacant households were transferred to Scottish Power and/or households using prepayment meters were transferred onto an alternative cheaper basis of payment in exchange for a nominal monthly change.

Additional energy related services were also considered and these included:

- Energy awareness raising
- Energy saving measures
- Assistance with financial and payment management
- Assistance with reducing fuel rates

Unfortunately a key element of the concept was the provision of Energy Efficiency Commitment (EEC) funding from Scottish Power. When the basis of EEC changed, Scottish Power withdrew from the project.

Oldham Council remains very keen to explore opportunities to deliver a project of this nature but an alternative financial model would need to be developed. In the event of a viable ESCO being established they would be keen to brand it and role it out across the borough with the potential of working with housing associations and private householders.

Scottish Power would be keen to restart discussions in terms of the supply of cheaper energy, however the following points should be noted:

- An alternative income stream would need to be developed to fill the EEC gap
- Payment risk would need to be covered
- Administration costs and resources would need to be covered
- Cash flow would need to be supported.

8.3.2 Potential ESCO model

The ESCO would have the following objectives:

- Reduce the cost of energy
- Reduce energy usage
- Improve the quality of homes

An ESCO could be developed on the following basis:

- Householders are given access to guaranteed reduced cost energy supplied through the ESCO in exchange for a monthly management fee paid by the householder
- The energy provider would also pay the ESCO a one-off transfer fee
- The ESCO would undertake billing and responsibility for debt collection
- Payments would be made to the ESCO and the ESCO would in turn pay the energy supplier

- The ESCO would offer economically attractive technologies to reduce energy costs including insulation, ground source heat pumps, solar hot water and micro wind turbines (all where viable)
- The ESCO would secure long-term external finance so that energy upgrades are paid through the energy savings experienced by the householders. In exchange for the installation of technology the householder would agree to pay a reduced but fixed monthly fuel cost
- The overall cost of the installed technology would include a management cost for the ESCO and this would be included within the long term repayment scheme
- The ESCO would access grant funding to subsidise the installation of technologies
- The ESCO would link up with other energy efficiency help provider such as Warm Zones and the EST's Energy Efficiency Advice Centres to provide ongoing energy related help to householders
- Even without building up a detailed financial model it is clear that the economics are marginal until significant numbers of houses are signed up. There would probably be a requirement for at least 2,000 homes to be brought into the scheme before the income streams covered the delivery costs with a provision for bad debts
- The viability of the model will be subject to the ability to derive extra income from services that compliment the core energy supply offering.

8.3.3 Advantages of an ESCO model

The implementation of energy improvement measures requires some level of financial investment and resource in terms of co-ordination and delivery. This resource is not currently available and can only be drawn from energy savings that can be achieved over a long time scale. An ESCO with the right financial structuring to manage long term cash flows could deliver this assistance.

By developing an ESCO that has community association and commitment, the level of uptake required to achieve financial sustainability could be achieved. It could overcome the wariness that householders have of the free services offered by utilities.

A bespoke local ESCO could capitalise on other initiatives that are available to householders through schemes such as Warm Front.

An ESCO set up on a not-for-profit basis would be able to deliver services under terms that would not be attractive to a commercial entity.

8.3.4 Potential barriers and risks

Whilst the HELPCO ESCO has been set up in London, several bodies have attempted to set up models of this nature and have failed. They have tended to rely on EEC funding and not worked with third party finance. Whichever model is employed the only way these schemes can work is with very high levels of buy-in from householders and this takes a long time to achieve.

The payback times on renewable energy technologies are relatively long so financing can be expensive, also not all of the systems are tried and tested over long timescales and therefore long term maintenance costs are relatively unknown.

The administration of projects of this nature where billing of large numbers of households are involved requires robust and efficient systems and this is likely to involve significant set up costs. Software will need to be developed, implemented and managed by competent individuals. The consumers upon which a model of this type would focus are a relatively high credit risk so debt collection and debt provisions could also be expensive.

8.3.5 Project development

HELPCO has delivered an ESCO for some years, on a basis similar to the one proposed. In the first instance it would be worth talking to HELPCO to develop a clear understanding of how they have operated and what they have learned. HELPCO were invited to talk at the first stakeholder meeting but other commitments meant they were unable to attend. They have however expressed an interest in being involved with any future projects.

Following discussions with HELPCO, potential project partners need to be brought together to work through any variations that could follow from their involvement. This will lead to the development of a financial model.

If a viable financial basis can be established for the ESCO then this needs to be developed in conjunction with an appropriate local delivery partner.

8.4 Local Authority Buildings

8.4.1 Scope of opportunity

Section 5.2.4 introduced the operating buildings of local authorities as a potential package of projects suitable for introducing to energy service companies.

In order to learn approximately how many buildings are included in these categories, the project team undertook a survey of the 10 councils of Greater Manchester, however the findings can be applied to any collective of local authorities, i.e. Merseyside, Lancashire, Cheshire, Cumbria. Figures were requested for the number of staff offices the council in question owns/operates and the number of operating buildings the council owns, operates or provides energy to. The results of the survey are presented below:

Table 4: Local authority buildings

Council	No. of staff buildings owned/operated	No. of operating buildings owned, operated or energy provided to
Bolton	10	400-600
Bury	Data not provided	
Manchester	4	800 including schools, sports centre, libraries etc.
Oldham	25	212 including schools, libraries, depots, etc.
Rochdale	Data not provided	302
Salford	7 major offices including town hall. 32 smaller offices	788 including schools, sports centre, care homes, libraries, depots, community centres, homeless shelters
Stockport	Data not provided	
Tameside	Data not provided	
Trafford	12	140
Wigan	29	724 including schools, education establishments, adult services premises, leisure services and admin buildings

The table above reveals that there are approximately 3,500 buildings in which the local authorities have at least some degree of responsibility for energy provision (nb. This figure could double depending on the figures not provided).

8.4.2 Advantages and disadvantages of ESCO implementation

Two of the main limitations for local authorities attempting to reduce their energy use are employee time and financial resources. The appointment of an energy service company could, in theory, help resolve both of these problems.

However, the same applies to the appointment of ESCOs in that for a council with no prior experience of appointing an energy service company this process can in itself be highly time consuming and expensive in terms of external fees. Whilst for various reasons third party finance may be attractive, the process of complying with public sector conditions can be highly tortuous.

There is an argument to say that to make any significant impact upon a council's fuel consumption and associated costs, a strategic approach needs to be taken and to do this difficult decisions need to be made and complex processes need to be dealt with. On this basis the decision to work with a third party provider must be considered and probably in the context of a portfolio of sites, the complexities of the process are a necessary evil of taking a strategic approach as well as appointing an ESCO.

If councils are to take a strategic approach to energy then they should consider the opportunities they have for generation as well as energy reduction. This should involve the evaluation of their assets to see what opportunities they hold for wind, ground source heat,

PV, biomass, etc. Generation assets (and particularly renewable energy) often have longer payback periods and involve greater levels of capital investment than their traditional equivalents. Incorporating these into the scope of an energy services contractor could enable previously impossible projects to be considered and also increase the attractiveness of the project to the contractor.

If a strategic approach is taken then some of the objectives set out in regional and sub-regional strategies may be easier to achieve. This may be as a result of economies of scale and/or the ability to capitalise on synergies between different projects.

8.4.3 Project development

The methodology proposed below is the same as that suggested for the Building Schools for the Future programme. Fundamentally the first stages must involve scoping the opportunity, developing buy in and agreeing a way to move forward.

The following methodology is proposed for achieving this:

- Gain senior level commitment to explore the opportunities from all of the key stakeholders
- Evaluate the portfolio and classify the types of opportunities that exist in terms of size, usage, energy demand, services required, new build, refurbishment, etc.
- Broadly quantify the scale of opportunity that exists
- Discuss with potential providers and solicit high level proposals in relation to how they could be involved in development and service provision
- Agree preferred partners
- Identify how attractive packages can be constructed
- Develop high level memorandum of understanding
- Develop basis of contracts
- Set up development resource/project facilitator
- Undertake internal awareness raising and communication with key individuals and parties

- Work with partners to assess sites in detail, also consider sites in the context of the larger portfolio
- Work with partners to produce a mutually acceptable economic and operating model
- Consult with individual schools, contractors and programme managers
- If parties wish to proceed, draw up contracts
- Detailed work plans to be produced by ESCO delivery body and preferred contractors as appropriate.

8.5 Benefits of carbon savings, environmental improvements and business/supply chain opportunities

The NWDA's energy action plan, published in 2003, estimated that 7,600 jobs would be created in the energy industry. This would bring about a growth in sales from regional suppliers in the region of £800 million per annum and additional investment of over £5 million.

The development of opportunities for energy service companies in the North West has the potential to bring social, economic and environmental benefits to the region. The development of a range of ESCOs will propagate an experience and capacity base including energy advice, new technologies, installation companies, development of contracts, financial structuring and fuel provision, critically it will develop highly valuable expertise in developing innovative approaches to employing ESCOs.

Given the interest in ESCOs and the high profile achieved by Woking, it is likely that any innovative developments could not only help achieve regional targets but also help raise the sustainability profile of the North West region. Flagship projects are always powerful sales tools.

The type of initiatives proposed in this document will enable the public sector to demonstrate clear leadership in responding to climate change. Initiatives of this nature can help to clearly quantify and demonstrate achievements.

Given that some of the potential opportunities are difficult to implement but offer significant gains, expertise and models developed could be highly transferable to other regions.

The North West Development Agency is aiming to make the North West a leader in addressing the causes of climate change and addressing business risks and opportunities that climate change may bring. They aim to make the region low carbon by 2020.

By virtue of their incentives, ESCOs will assist in helping the North West achieve targets of carbon reduction and aims which have been set out in regional policy documents. The opportunities identified within this research are substantial and whilst some of them are 'hard nuts to crack', success could significantly impact upon the carbon footprint of the North West.

ESCOs can be used as tools to help meet the targets set out for the provision of energy from renewable sources. The Government supports the development of renewable energy schemes through the Renewables Obligation which requires electricity suppliers to progressively provide greater quantities of electricity from renewable sources over the next 10 years, rising to 10% of UK electricity by 2010 and continuing to increase to 15% by 2015. The Renewable Energy Targets document by AEA Technology published in January 2006, recommends a regional figure of 857MW for the North West[22].

The ability of ESCOs to support the implementation of distributed energy systems can lead to significant environmental benefits. This has been demonstrated through various case studies including Woking which reduced its carbon emissions by 77%. The introduction of district heating systems can reduce carbon emissions as well as helping to decrease fuel poverty.

Centralised electricity plants can waste up to 65% of energy through transmission and heat losses; through the installation of localised energy plant, transmission losses are minimised. Through the use of ESCOs to facilitate distributed systems such as Combined Heat and Power (CHP) generation efficiency can be almost doubled. Localised systems also reduce reliance on the National Grid and thereby reduce susceptibility to supply problems and variations in price.

[22] Renewable Energy Targets for the North West (2006). Future Energy Solutions, AEA Technology for NWRA. Available at http://rpg.nwra.gov.uk/uploads/rpg_docs/rp_4Zzd_RENEWABLE_ENERGY_TARGETS_FOR_T.pdf. (Accessed May 2007).

9 Potential Markets for Developing ESCOs

Research has revealed a substantial amount of interest in the services ESCOs have to offer. This section details a range of public sector areas with significant levels of new and refurbishment development in the coming years. In addition, the following section highlights the potential for an ESCO industry to develop through considered market targeting and active selling of services. The list of market areas is by no means exhaustive but it is indicative of the region-wide potential for the implementation of ESCO approaches.

9.1 Housing

There are some 29 million dwellings in the North West of England. Most of the existing stock of housing will provide the Region's housing requirements over the next 20 years through renewal and upgrading of buildings. In addition to the existing stock, new developments are planned to accompany the economic growth of the area.

The North West has 8,420 ha of previously developed and derelict land, which represents 24% of the total for England. The development of this will be carried out in phases in accordance with the Local Development Framework. The Draft Regional Spatial Study has determined the distribution of housing provision from 2003-2021 as shown below.

Table 5: Distribution of Regional Housing Provision 2003-2021

Area	Total Maximum Housing Provision 2003-2021 (net of clearance replacement)	Annual Average rates of housing provision (net of clearance replacement)	Indicative target proportion of housing provision to use brownfield land and buildings
NORTH WEST	**411,160**	**22,844**	**At least 80%**
Manchester/Salford			
Manchester	63,000	3500	At least 90%
Salford	28,800	1,600	
Pennine Manchester			
Oldham	7,200	400	At least 80%
Rochdale	7,200	400	
Tameside	13,500	750	
Southern Manchester/North East			
Cheshire	8,100	450	
Stockport	7,740	430	At least 80%
Trafford	5,400	300	
Congleton	7,200	400	
Macclesfield	9,000	500	
Vale Royal			
Northern Manchester			
Bolton	9,200	511	
Bury	10,800	600	At least 80%
Wigan	16,200	900	
Liverpool/Knowsley			
Knowsley	8,100	450	At least 90%
Liverpool	35,100	1,950	
Mid Mersey			
Halton	9,000	500	
St Helens	10,260	570	At least 80%
Warrington	6,840	380	
Wirral			
Wirral	4,500	250	At least 80%
South West Lancashire			

Sefton	9,000	500	At least 80%
West Lancashire	5,400	300	
Greater Preston			
Chorley	6,500	361	
Preston	9,120	507	At least 80%
South Ribble	8,600	478	
Central East Lancashire			
Blackburn with Darwen	8,800	489	
Hyndburn	3,400	189	At least 80%
Ribble Valley	2,900	161	
East Lancashire			
Burnley	2,340	130	
Pendle	3,420	190	At least 80%
Rossendale	4,000	222	
Fylde Peninsula			
Wyre	3,700	206	
Blackpool	8,000	444	At least 80%
Fylde	5,500	306	
West Cumbria and Furness			
Allerdale	4,800	267	
Barrow in Furness	2,700	150	At least 80%
Copeland	4,140	230	
Lakes & Morecambe Bay			
Eden	4,300	239	
South Lakeland	7,200	400	At least 50%
Lancaster	7,200	400	
Lake District National Park	2,100	117	
North Cumbria			
Carlisle	8,100	450	At least 50%
South Cheshire			
Crewe and Nantwich	8,100	450	At least 55%
West Cheshire			
Chester	7,500	417	At least 80%
Ellesmere Port and Neston	7,200	400	

Source: The North West Plan: Submitted Draft Regional Spatial Strategy for the North West of England (January 2006)[23]

Priority 3.1 of the North West Regional Housing Strategy 2003[24] is to

> 'Improve the condition of housing stock with a sustainable future as part of broadly based regeneration strategies, particularly in areas of concentrated unfitness and disrepair.'

The involvement, open support and financial commitment of local authorities has the potential to be a key driver for the renewal and upgrading of housing stock by entities such as arms length management organisations (ALMOs), council housing departments and housing associations. Therefore, the establishment of housing focused energy service companies with local authority commitment and leadership could encourage these organisations to implement ESCO based approaches to maximise the impact of their own budgets.

By offering innovative service solutions, energy service companies can contribute to this improvement in housing stock condition, quality and design, thereby supporting the

[23] The North West Plan: Submitted Draft Regional Spatial Strategy for the North West of England (January 2006). Available at http://rpg.nwra.gov.uk/uploads/rpg_docs/rp_kMqZ_Submitted_Draft_Regional_Spati.pdf (Accessed in March 2007).

[24] North West Regional Housing Board, North West Regional Housing Strategy 2003. Available at http://www.nwrhb.org.uk/pdf/RegionalHousingStrategyfinal.pdf (Accessed in March 2007).

attainment of the following benefits as set out in the North West Regional Housing Strategy 2005[25]:

- Improving energy efficiency and reducing fuel poverty
- Improving public health through reduction in incidence of damp, cold, overcrowded and unsanitary living accommodation
- Contributing to the achievement of the Government's Decent Homes targets
- Improvements in community cohesion
- Improvements in the design and quality of the physical environment in neighbourhoods
- Strengthening of sustainable local communities

9.2 Prisons

The HM Prison Service's Sustainable Development Report for 2005-2006 includes the following policy aim under section 9: Energy efficiency:

'To ensure that the Prison Service contributes positively to the Government's commitment to reduce carbon dioxide emissions nationally by 20% from 1990/91 levels by 2010 and to reduce water consumption. The Prison Service is committed to making savings by more efficient management of energy and water consumption."[26]

Within the section, 13 aims (set out in the previous year's report) are evaluated. A number of these are of interest to ESCOs, including:

- District heating and combined heat and power systems
- Continue to pursue the installation of pilot wind turbines
- Service-wide awareness campaign
- Ensure building management systems are effective
- Introduce arrangements for electronic data collection

Energy efficiency is high on the agenda of the Prison Service, with Key Performance Targets including a Sustainability Target for each prison's CO_2 and water consumption. A number of initiatives are already active, including a project to promote energy efficiency and carbon saving in prison establishments through training for staff and prisoners, and working with the Carbon Trust to develop proposals for the extension of the Carbon Trust's Local Authority Energy Finance Scheme (LEAF) to other areas of the public sector.

Prisons, along with schools, have traditionally been regarded as "high maintenance – low value" by some of the existing energy service companies. However they are notoriously in varying states of repair and possibly represent significant opportunities for suitable and motivated providers.

Given that the quality of the internal environment can be significantly improved by effective energy management, the quality of life within prisons as well as energy costs could potentially be improved by effective service provision.

[25] North West Regional Housing Board (2005), North West Regional Housing Strategy 2005. Available at: www.nwrhb.org.uk/articleimages/RHS%20-%20final%20version%20signed%20off%20Final.doc (Accessed in March 2007).
[26] HM Prison Service Sustainable Development Report 2005-2006 (September 2006). Available at http://www.hmprisonservice.gov.uk/assets/documents/1000229FPS_sustainable_dev_rpt_06.pdf (Accessed March 2007).

Table 6: Prison establishments in North West England in 2007

Name of establishment	Type
Altcourse	Contracted
Buckley Hall	Male
Forest Bank	Contracted
Garth	Male
Haverigg	Male
Hindley	Young Offenders Institute/Juvenile
Kennet	Under construction
Kirkham	Male
Lancaster Castle	Male
Lancaster Farms	Young Offenders Institute/Juvenile
Liverpool	Male
Manchester	High Security
Preston	Male
Risley	Male
Styal	Female/Young Offenders Institute
Thorn Cross	Young Offenders Institute/Juvenile
Wymott	Male

Source: HM Prison Service 2007 Establishment Map.[27]

Research has identified the development of at least one new prison in the North West: HMP Kennet, Merseyside. The prison will accommodate up to 350 individuals and is due to begin operation in May 2007. The development involves the conversion of land owned by the Mersey Care NHS Trust into a Category C prison. There are some existing buildings on site and it will have residential blocks, catering facilities, and workshops. Although construction is underway the permanent occupancy of the site and the distributed buildings suggests that a CHP linked district scheme may a cost effective long term solution.

9.3 Healthcare

Upgrading healthcare facilities in England is an ongoing task involving very large capital investments. It is now common for developments to be carried out through one of two main public private partnerships used by the Department of Health: Private Finance Initiatives (PFI) and NHS Local Improvement Finance Trust (LIFT)[28].

9.3.1 PFI contracts in the healthcare sector

A PFI contract in the public healthcare sector involves the design, development, build, and often management of projects by a private consortium. The building is leased by a relevant local authority over a contract period of usually 30 years. This contract would cover every aspect of a development, including the installation and delivery of energy services. This aspect of the PFI contract represents a potential market for third party energy service companies. A contract could be established with either the local authority in question or, more likely, the consortium holding the PFI contract, to deliver a range of energy efficiency services.

The following table details projects that may be of interest to service providers in the North West:

[27] HM Prison Service 2007 Establishment Map (2007). Available at http://www.hmprisonservice.gov.uk/assets/documents/1000290E2007_hmps_establishment_map.pdf (Accessed in March 2007).
[28] http://www.dh.gov.uk/en/Procurementandproposals/Publicprivatepartnership/index.htm

Table 7: Selection of current healthcare projects in the North West

Strategic Health Authority	PFI scheme	Capital value (£m)
PFI projects which have released OJEU notices but not yet reached financial close		
Cheshire & Merseyside	St Helens & Knowsley Hospitals NHS Trust	338
Greater Manchester	Salford Royal Hospitals NHS Trust	190
Greater Manchester	Tameside & Glossop Acute Services NHS Trust	91
PFI projects which have not yet placed OJEU adverts		
Cheshire & Merseyside	Aintree Hospitals	50
Cheshire & Merseyside	Royal Liverpool & Broadgreen University Hospitals	500
Cheshire & Merseyside	Mersey Care	192
Cheshire & Merseyside	Royal Liverpool Children's Hospital	300
PFI projects which have been signed but not yet completed		
Greater Manchester	Central Manchester & Manchester Children's University Hospitals NHS Trust	380

Sources: Department of Health[29] and PPP Forum[30]

9.3.2 NHS Local Improvement Finance Trust (LIFT)

In order to encourage and develop a new market for community based and primary care facilities and services, a joint venture company called Partnerships for Health (PfH) has been formed by the Department of Health and Partnerships UK. Through a newly formed limited company comprising PfH and the local health authority, NHS LIFT is delivered on behalf of the Department of Health. This limited company (the LIFTco) both owns and maintains the building which it leases to the likes of Primary Care Trusts and GPs, etc[31].

Figure 7 details a sample of signed projects yet to be completed under the NHS LIFT regime. All of the projects involve the provision and management of new build and refurbished serviced community-based health and social care facilities except the Ashton, Leigh and Wigan NHS LIFT which consists of new build community health facilities.

[29] Department of Health website, http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4139931.pdf (Accessed March 2007).
[30] PPP Forum website http://ppp.squareeye.com/projects/dept.asp?d=DoH&type=signed (Accessed March 2007).
[31] Department of Health website, How LIFT works http://www.dh.gov.uk/en/Procurementandproposals/Publicprivatepartnership/NHSLIFT/DH_4126226 (Accessed March 2007).

Table 8: Signed NHS LIFT projects in the North West

Project name	Date signed	Capital value (£m)
East Lancashire NHS LIFT	Jan 2005	19.3
Oldham NHS LIFT	Nov 2004	17
Manchester, Salford and Trafford NHS LIFT	July 2004	75
Liverpool & Sefton NHS LIFT	June 2004	25
Ashton, Leigh and Wigan NHS LIFT	Dec 2003	15

Source: PPP Forum[32]

A key priority for projects developed under this regime is to ensure they are delivered efficiently, presenting an opportunity for the services by an ESCO.

The Generic Public Sector ESCO is likely to be favoured (over individual private ESCOs) by both the PFI and NHS LIFT project managers; this style of approach would be a stable, reliable and transparent method for the provision of efficient energy services to a site, with both support and representation by the local authorities of the area in question.

9.4 Local Authorities

The potential for upgrading local authority (LA) non-domestic properties through the provision of energy services via an ESCO has already been noted in Section 8.7. There are 45 local authorities in the North West.

The setting up of a Generic Public Sector ESCO would increase the ability of local authorities to access funding for their own properties, enabling them to lead the way as an exemplar for energy efficiency and energy use reductions. This ESCO could then be implemented in Merseyside, Cheshire, Cumbria and Lancashire.

9.5 Universities

The North West Universities Association comprises 16 universities:

- University of Bolton
- University of Central Lancashire
- University of Chester
- Cumbria Institute of Arts
- Edge Hill University
- Lancaster University
- University of Liverpool
- Liverpool Hope University
- Liverpool John Moores University
- University of Manchester
- Manchester Metropolitan University
- The Open University in the North West
- University of Salford
- St Martin's College
- The Royal Northern College of Music

[32] PPP Forum website, http://ppp.squareeye.com/projects/dept.asp?d=DoH&type=signed (Accessed March 2007).

- The Liverpool Institute for Performing Arts

Energy awareness and saving is becoming a key aspect of facilities and estate management for these institutions. This is reflected in the policies, plans and projects implemented by the universities, samples of which are provided below:

University of Manchester
Plans and projects
New Build Projects: The Energy Team liaises with consultants and contractors regarding new buildings and refurbishments. Their aim is to promote energy efficiency and if necessary will transfer "top up" monies from their budget to projects to allow energy efficiency equipment to be installed, e.g. budget constraints may not allow lighting controls – as they are much more expensive to retrofit, money can be transferred upfront to pay for them at build time.
Purchasing and Billing: The university's utility portfolio is approximately £11m. As energy prices increase, new and innovative methods of purchasing energy are being constantly assessed.
Benchmarking: Three league tables have been established for Science Buildings, Non-Science Buildings and Residences. Energy and water use will be measured and rated for each building in terms of kWh per bed for residences and kWh per m_2 for other buildings.
Lighting: The largest use of electricity on campus is for lighting. Due to the age of some of the buildings, many light fittings are old and inefficient. A large amount of the Energy Team's budget is spent on replacing old lights and fitting automatic controls.

Source: University of Manchester[33]

Manchester Metropolitan University
Uses 20 million kWh of electricity and 42 million kWh of gas per year at a cost of £2m
Service Level Agreement • To be committed to responsible energy and water management • To endorse the principle that energy and water conservation is of paramount importance in terms of reducing costs and protecting the global environment • We will improve and maintain at the highest level possible within financial constraints, energy and water efficiency of Estates buildings • Avoid unnecessary expenditure on energy and water consumption • Provide advice and guidance on matters relating to energy and water consumption • Increase energy awareness of staff and students • Procure energy efficiency equipment • Comply with legislation on reducing carbon emissions and running water to waste

Source: Manchester Metropolitan University[34]

University of Central Lancashire
Implementation of a Carbon Management Plan including the following aspects: • Governance and ownership • Business case for carbon management • Emissions baseline and projections • Carbon reduction targets • Opportunities and implementation plan • Financing and resources

Source: Paul Morris, 2007[35]

[33] University of Manchester, no date. Directorate of Estates, Plans and Projects. Available at http://www.estates.manchester.ac.uk/EnergyandEnvironment/Plans/Plans.html (Accessed in March 2007).

[34] Manchester Metropolitan University, 2005. Estate Planning Services, Service Level Statement Version 1. Available at http://www.mmu.ac.uk/services/estates/PDF/sls.pdf. Accessed in (March 2007).

Both Manchester Metropolitan University and the University of Central Lancashire are participating in Phase 2 of the Higher Education Carbon Management Programme. The programme involves the use of a carbon management product, tailored to the needs of the higher education sector. The focus is on reducing emissions under the control of the university, i.e. academic, accommodation and leisure buildings and vehicle fleets[36]. Phase 2 will run from May 2006 until April 2007. In many ways, the services offered by this programme are similar to those offered by an Energy Services Provider however no funding is offered directly by the scheme and savings are not guaranteed.

Ambitions for energy efficiency within the universities, highlighted by the examples detailed above, present the opportunity to scope the range of services that could be provided by ESCOs in the North West. These include:

- Affinity deals
- Generation of energy on site
- Renewable energy equipment and generation
- Evaluation and monitoring of energy use and systems
- Development of an Energy Plan
- Education of students in energy efficiency
- Education of staff in energy efficiency
- Guidance on use of energy efficient methods and appliances for heating, IT, cooling, water use, etc.
- Transport plans

As well as the above general services, ESCOs could be involved in new build developments. Stakeholders contacted through this project and information on university websites often state that limited funding can restrict the extent to which energy efficiency influences the design and build of new buildings. Given the age and size of many university properties it seems probable that with the help of third party financing, energy savings could significantly increase. The projects listed below illustrate the range of developments (both in budget, physical size and end use) that have recently been completed or are currently under construction at a selection of universities:

[35] Paul Morris, UCLAN (2007). Developing a Carbon Plan, Presentation given at the Northwest Sustainable Construction Conference, 14 March 2007.
[36] See http://www.carbontrust.co.uk/carbon/ for further information.

University of Manchester		
Currently operating a £600m capital programme		
Project	**Budget**	**Date completed or due for completion**
Michael Smith Building	£14.73m	Dec 06
FB1	£9.70m	Feb 06
Smith Extension – Life Sciences/Medical & Human Sciences	£9.70m	Feb 06
Stopford Teaching Laboratories	£2.25m	Sep 05
Relocation of School of Pharmacy	£17.7m	Sep 06
Chemistry extension and refurbishment	£14.11m	Aug 06
SCAN (Student Centre & Nursing) – Student services, catering, the School of Nursing, the Institute of Health Sciences & student accommodation	£64.7m	Dec 07
AMPPS (Astronomy, Mathematics, Physics & Photon Science). Refurbishment and new build project including special building materials for Photon Science building to minimise vibration	£59.70	Sep 07
Humanities new building	£31.5	April/May 07
Electro-acoustic studios	£2.2m	Dec 06
Manchester Interdisciplinary Biocentre (MIB)	£38.80	July 07
John Rylands Library	£17.2m	July 06

Source: University of Manchester[37]

Manchester Metropolitan University	
Project	**Description**
Art & Design Phase 1	Remodelling of Art & Design facilities to collocate workshops and studio spaces
MMU Business School	Provision of a new building to accommodate the business school and provide student hub
Hollings	Provision of a new building to accommodate the Hollings facilities on the John Dalton campus
Didsbury Phase 1	The consolidation of the existing campus and relocation of the Elizabeth Gaskell facilities commences with a new building to accommodate specialist and general teaching facilities and offices

Source: Manchester Metropolitan University[38]

University of Central Lancashire	
Rydal Building	A single storey building used to teach subjects for the care and welfare of small animals and the breeding of rare species. There are administration areas, a dog grooming facility, internal/external aviaries housing small birds, fish and reptile areas, mammal room, iguana cage, courtyard with rabbits and ferrets and general teaching rooms. Budget £1m.
Darwin Building	A 6,500 square metre, 5-storey building for the Faculty of Science. It includes a number of high specification laboratories and teaching areas for Science and Psychology

[37] University of Manchester (no date). Major Projects, website. Located at http://www.estates.manchester.ac.uk/Groups/Capital/Majorprojects.asp (Accessed in March 2007).
[38] Manchester Metropolitan University, (2007). Estate Planning Services, Newsletter Issue 7, February 2007. Located at http://www.mmu.ac.uk/services/estates/PDF/newlestter%20feb%2007%20pdf.pdf (Accessed in March 2007).

	with a large movement analysis laboratory and 'state of the art' lecture theatre.	
Vernon Lecture Theatre	Construction of 3 teaching rooms, a 250 seat lecture theatre and refurbishment of staff offices in Vernon Building. Budget £300,000.	
C&T Building	Three-storey building incorporating teaching and administration areas for the Department of Design and Technology. The building has been designed for 24 hr access to general computer labs and incorporates research facilities and specialist laboratories on the upper floors. Phase II comprises and extension to the rear of the building.	
Campus Development Budgets as Part of Carbon Management Plan		
Computing and Technology	August 2004	£6.8m
Students Union	April 2005	£6.1m
Science (Darwin)	June 2005	£10.5m
Health & LSB (Brook)	August 2005	£10.2m
Dentistry (Allen)	August 2007	£5.5m
Media Factory	August 2007	£15.8m
Pharmacy	August 2007	£1.45m

Source: University of Central Lancashire[39] and Paul Morris[40]

[39] University of Central Lancashire, Facilities & Management, (no date). Development & Maintenance website. Available at http://www.uclan.ac.uk/other/fm/develop/completedprojects/index.htm (Accessed in March 2007).

[40] Paul Morris, UCLAN (2007). Developing a Carbon Plan, Presentation given at the Northwest Sustainable Construction Conference, 14 March 2007.

10 Roll-out options: Conclusions & next steps

10.1 Immediate

The next phase of work needs to focus in on the proposed pilot projects. It is evident from the progress made so far that this will take some time since it is extremely difficult to collect information and meet with the people involved in the projects. However the project does now have several key contacts who will assist the process.

Following the release of the draft version of this report and a proposal for further continued works, the project steering group has approved the following set of actions to be undertaken over a period of 2 months (July & August 2007):

- Reach agreement with the steering group that the proposed projects are progressed further and confirm timetable for next steps
- Create and manage a working group for each project/group of projects
- Liaise with relevant parties to develop detailed business cases for each of the projects
- Present the business cases to relevant key stakeholders with the view to developing commitment and scoping the next steps
- Work with the Co-op Bank to develop a detailed paper covering the Generic Public Sector ESCO concept
- Hold discussions with established providers of energy services contracts to encourage them to be more involved with the project
- Try to identify additional projects with which existing providers could become involved.
- Attempt to provide a brokering service whereby existing providers can be brought into contact with projects that can be realised relatively quickly
- Produce a further information/summary document that can be circulated to stakeholders prior to a stakeholder event
- Run another stakeholder event to talk about progress so far and the next phase of activity.

A second report will be generated following this period, providing details of the membership and actions of the working groups.

10.2 Short term

It is clear from this study that whilst ESCOs have much to offer, the fundamental problems constraining their development in the public sector stem from a complete lack of understanding on the part all parties involved, and a mismatch between the products on offer and the constraints/requirements of public sector clients.

It is the view of the project team that the Generic ESCO would help project stakeholders overcome these barriers. In the first instance it would develop generic finance and contractual frameworks and in the second it would include a resource to educate, facilitate, project manage and promote the use of ESCOs within the region.

Following the greater development of the pilot study business cases and the Co-op ESCO proposal there needs to be a round of senior level consultations to gain local authority support for the Generic ESCO. If this is successful then the first project needs to be chosen and used to set up the ESCO and its surrounding frameworks. Potentially one or more of the pilot studies could be used. This action will be addressed through the preparation of briefing documents for AGMA and the development of a Local Authority ESCO working group.

There is a requirement for an education programme supported by information that focuses on the stakeholder groups involved in implementation. This needs to communicate for example the importance of involving the right parties at the very early stages of projects and how the benefits can be experienced. People in a variety of public sector roles also need to be further educated in relation to the pros and cons of ESCOs as well as the financial and legal structuring.

Existing providers need to be encouraged to engage with the project and be more open to discussing what flexibility they currently offer and the types of project in which they would be interested. Following steering group consultation, it has been agreed that Keith Boxer (M:KC) and Damian Burton (NWDA) will hold talks with service providers.

Critically, as with any innovation roll out programme, success will be derived from involving and committing the right person to facilitate and drive the progress. The size of opportunity would suggest that the creation of a full time role would be easily justified by the potential savings. Alternatively, the various working groups could nominate a champion to lead roll-out actions, although it is unlikely that an existing role could accommodate the significant amount of extra work required to implement a region-wide ESCO roll-out.

It is important that any progress in the development of ESCOs is communicated throughout the Region. This will help educate, engender buy-in and increase the credibility of the project. It may be appropriate to arrange a biannual or annual ESCO seminar for North West stakeholders. Details of current and planned projects could be highlighted and an opportunity for networking provided.

Credibility is important, the subject area is capital and/or time expensive and people do not want to waste time discussing projects that will never come to fruition. It is important that the ongoing project actively demonstrates progress.

APPENDIX A: Briefing document

Energy Service Companies

- Do you have projects that could take advantage of energy service companies?
- Could you contribute to the services of an energy service company?
- Could you help drive the use of energy service companies?

Energy service companies or ESCOs represent significant opportunities to reduce energy costs and climate change emissions.

Manchester: Knowledge Capital has commissioned tnei to undertake this project which has the fundamental aim of helping to facilitate the use of ESCOs in Greater Manchester and the broader North West region.

Paragraph 4.85 of the **Local Government White Paper** advocates the use of ESCOs as a mechanism for local authorities working together with other agencies to tackle climate change, and states "we particularly encourage partners in our major cities to take up the challenge locally".

The project will scope the issues surrounding the use of ESCOs and identify flagship projects that may represent short-term opportunities for ESCO deployment. As a result of this process ESCO business models will be explored and approaches identified that may encourage the use of ESCOs on future projects.

It is hoped that the project will result in the use of ESCOs to supply services to several specific projects in the Region.

ESCOS - an overview

In the UK it is traditional for the owners of buildings and facilities to own and operate their own energy plant, for heating, cooling, electricity generation or combined heat and power (CHP). Typically heating and cooling is generated on site and electricity is drawn from the grid. Alternatively CHP is used.

But there are alternatives:

A third party can be used to own and/or operate plant and sell energy to the occupier. The plant may be site specific or it could supply several buildings within the locality. Various financial models exist but critically they normally reward improvements in energy efficiency.

In addition to these holistic services some organisations also provide niche services specifically designed to help organisations and individuals manage and reduce their energy and environmental and costs.

Fundamentally ESCOs involve third party organisations for whom energy management is their core business and who have business models designed to support various cash and profit profiles.

In terms of benefits, these organisations may have access to:

- expertise to reduce costs
- staff resources to implement change
- cheaper energy through economies of scale or partnerships
- capital to invest in more energy efficient technologies
- alternative investment criteria
- alternative perspectives on risk.

ESCOs are likely to be able to offer:

- reduced operating costs
- reduced capital costs
- capital investment
- protection from fluctuations in energy costs
- Cash flow management.

Key characteristics of an ESCO

- It guarantees the energy savings and/or provision of the same level of energy service at lower cost;
- Its remuneration is directly tied to the energy savings achieved;
- It can either finance or assist in arranging financing for the installation of an energy project the implement by arranging a savings guarantee.

ESCO case studies

Dalkia - a commercial third party

United Leeds Teaching Hospitals NHS Trust & Leeds University.

A 20 year Contract Energy Management (CEM) agreement, which involved a capital investment by Dalkia Utilities Services of over £6 million in new plant, will enable the Trust and University to make significant cost savings. Through a scheduled phasing-in period, Dalkia Utilities Services will assume total responsibility for all utility supplies to both the University campus and the Infirmary site.

The University site, in particular, benefits from the increased capacity, taking some 60% of the power station's output. Both sites benefit from "economies of scale" and income is also generated by sale of electricity to the grid. The two sites benefit from the consolidation of the power supply into a single power station, which has created greater self-sufficiency. The capital investment provided by Dalkia Utilities Services enables the replacement of ageing equipment and additional plant to meet the energy requirements of the new wing.

BENEFITS

- Cost-effective configuration yielding substantial savings between the Trust and University taking into account the cost of capital and operation, and efficiencies.
- Compliance with existing and future environmental legislation.
- Phased replacement of existing plant.
- Capital investment of over £6 million provided by Dalkia Utilities Services means the hospital can use its financial resources on patient care.
- Reliable and uninterrupted energy supply for the hospital at all times.

The contract covers the complete energy requirements of both the Leeds General Infirmary and University main campus, including:

- A single power station to serve both the University and the Infirmary
- A combined cycle Combined Heat and Power (CHP) scheme which adds 4.5MW to the existing generating capacity bringing it to a total of 15MW of power
- Three new water chillers and two conventional steam package boilers
- The provision of steam, hot water, electricity, compressed air and chilled water
- Design, installation and financing of new plant for the power station
- Operation and maintenance of both existing and new plant within the power station
- Existing plant retained: cooling towers, all pipework and ancillary equipment, 5 waste heat boilers, 5 dual fuel reciprocating engines, 5 conventionally fired package boilers, 2 vapour compression refrigerators.

The central boiler house at the University has been decommissioned and existing plant within the power station has been retained. Newly installed equipment includes:

- Two absorption cycle units and one vapour compression unit
- New steam main to connect the University campus to the generating station
- New 4.5 MW gas turbine
- New unfired waste heat boiler
- New steam turbo-generator
- Two new steam package boilers
- Reconfiguration of the high voltage electricity supply to the combined sites
- Separate metering for each site
- Two new 3.4 MWe gas fired CHP engines.

HELPCO Tenants - a not for profit domestic service

Social tenants are generally acknowledged as one of the consumer groups most disadvantaged by liberalised energy markets. The need (or requirement) to use a pre-payment meter for electricity often results in higher fuel costs.

HelpCo:

- Offers social tenants competitive fuel prices, energy efficiency advice and improved billing and payment options
- Offers local authorities improved management of their housing stock and key actions under environmental and social policies
- Provides a dedicated service and point of contact for tenants and Housing Officers with fuel supply questions and issues.

As a result:

- Over 8,500 void properties have been successfully transferred since the scheme began in 2002
- By December 2005, the cumulative fuel cost savings for tenants totalled over £200,000
- Current fuel cost savings to tenants is approximately £12,000 per month across all participating boroughs, including Lambeth, Southwark, Redbridge, Sutton, and Waltham Forest.

Operationally, the housing provider agrees a fuel contract in partnership with HelpCo. When a property becomes void the social housing provider informs HelpCo, who initiates the transfer of fuels to the agreed fuel supplier. For every fuel that successfully transfers a commission fee is paid which helps to support the provision of Eco Club services to new tenants when they move in, as well as building an energy fund for the housing provider, if they so wish.

Woking Town Centre CHP - Phase 1 - A completely new business model

This installation consists of a new 1.35MWe CHP plant together with an existing 110kWe CHP plant, 163,000 litres of thermal storage, 1.4MW of heat fired absorption cooling, 2.5MW of standby and top up boilers and an 11kV/400V private wire, heat and chilled water distributed energy system network.

All buildings are interconnected with heat mains and high voltage/low voltage private wire networks with a single connection point to the local distribution network at the CHP station.

As a small generator/supplier the ESCO is exempt from the Climate Change Levy and is able to sell the electricity (as well as heat and chilled water) directly to customers on the network rather than to a licensed supplier. This approach enables the ESCO to increase its income to fund the investment whilst at the same time providing competitive electricity to customers by cutting out high transmission/distribution losses and use of system charges.

The network enables island generation so that the buildings connected to the system can be supplied at full load in the event of a power cut from the local or National Grid networks.

Surplus electricity is exported over public wires under an enabling agreement (for exempt supplier operation) to other Council buildings and local households. As the system grows, other local businesses and residential customers will be supplied in this way within the limitations of the Exempt Licensing regime.

Sources of information:

www.dalkia.co.uk

www.helpco.org.uk

www.fuelcellmarkets.com/home

APPENDIX B: Stakeholder Meeting Delegates

ESCO Feasibility Study Stakeholder Workshop - Thursday 15 March 2007
Castlefield Rooms, Castlefield

First Name	Surname	Job Title	Organisation
Carl	Rushton	Services Manager	**Balfour Kilpatrick Ltd**
Barry	Simons	Principal Officer - Sustainable Development Team	**Bolton City Council**
Mike	Ingoldby	Director	**Bowland Bioenergy**
Ian	Smith	Energy Manager	**Bury City Council**
Neil	Brackenridge	Project Manager - Mechanical & Electrical	**Crown House**
David	Pye	Company Secretary	**EP Plus**
Simon	Hyams	Business Development Manager	**Galliford Try**
Paul	Stowers	Business Environment Officer	**GONW**
John	Myddelton	Deputy Project Manager, Housing Development Special Projects	**Manchester City Council**
Laura	Needham	Green City Project Officer	**Manchester City Council**
Andy	Gillies	Energy Manager	**Manchester Metropolitan University**
Daniela	Krupowiecka	Capital Projects Coordinator	**Manchester Metropolitan University**
Mark	Hillyard	Director	**Nowatt**
David	Watmough	Business Development Manager	**npower Energy Solutions**
Damian	Burton	Climate Change & Energy Policy Officer	**NWDA**
Robert	Hayes	Environmental Policy Officer	**Oldham MBC**
Howard	Gott	Principal Sustainability Office	**Rochdale MBC**
Jim	Gosney	Energy Manager	**Salford City Council**
Jolanta	Ruzinskaite	Research Assistant	**Salford University**
Tori	Wright	Sustainability Contact	**Stockport Council**
Revathi	Balasubramanyam	Energy Manager	**Tameside MBC**
Andy	Hunt	Principal Sustainability Contact	**Trafford Council**
Matthew	Tidmarsh	Building Services Manager	**Trafford Council**
Denise	Jepson	Energy Officer	**Trafford Council**
Christine	Bainbridge	Senior Regeneration Officer	**Wigan Council**

APPENDIX C: Agenda for ESCO Stakeholder Workshop

Thursday 15 March 2007, Castlefield Rooms, Castlefield, Manchester

Time	Activity
09.00	Tea, coffee and registration
09.30	Welcome and introduction to Manchester Is My Planet and Manchester: Knowledge Capital – *Keith Boxer, MKC*
09.40	Introduction to the project
09.55	Group work session 1: Energy problems
10.15	Examples of ESCOs – *Matthew Lumsden, TNEI*
10.45	Potential opportunities – *Matthew Lumsden, TNEI*
10.55	Tea break
11.05	ESCO project development: The process and issues – *Matthew Lumsden, TNEI*
11.20	Involving major contractors in the process – *Simon Hyams, Galliford Try*
11.40	Group work session 2: Develop the projects
12.00	Feedback from group work session 2
12.20	Next steps and closing words
12.25	Lunch and project networking session

APPENDIX D: Project Details

Oldham domestic energy project
See section 8.3 for details.

Building Schools for the Future: Manchester
See section 8.2 for details.

Bickershaw Colliery
See section 8.1 for details.

Liverpool Waters
This scheme will transform 150 acres of derelict land. 50 buildings are planned, some more than 50 storeys high. These will be powered by integral wind turbines. There will be 4 hotels and homes for 50,000 people. The scheme was unveiled March 2007. It is expected that an outline planning permission application will be submitted in the next 12 months. The construction will be built in phases over 20 years. The work is being undertaken by Peel Holdings. It is a £5.5 billion project.

BBC move to Salford (Media City:UK)
Media City:UK has been developed by a partnership of Central Salford Urban Regeneration Company, NWDA, Peel Holdings and Salford City Council. It is a new media city, an innovative, creative hub, to rival other new media cities emerging around the world. 5 of the BBC's London departments will move to the Salford Quays, development. Work has already begun on the first phase of the development, which includes the BBC buildings, is scheduled for completion in 2011. This will be a £400M project, covering 200 acres of land, with initial investment for phase 1 totalling £350 million not including cost of land. It is planned that a major BBC presence in the North will attract not just other producers; it will stimulate and attract a huge range of media-related activity from advertising to design, video games to music and new media not yet invented. The development will also include an NHS walk in centre, schools, entertainment and residential. Overseeing the project will be an experienced team that was involved in the redevelopment of London's Docklands and Liverpool's Albert Dock.

Wilkinson Eyre has been appointed as the architects of the flagship BBC buildings on the Media City:UK site. The three core BBC buildings will take centre stage as part of the 200 acre Media City:UK development at Salford Quays. Three buildings of 90,000 sq ft, 105,000 sq ft and 185,000 sq ft will provide office and production facilities for the BBC. Totalling 370,000 sq ft, the design of the 3 buildings will reflect the very latest in energy efficiency and environmental excellence.

Barrow Master Plan – West Lakes Renaissance
NWDA has invested £5 million in this project to transform Barrow. The project is expected to cost £60 million but will lever around £100 million of private sector investment to the area. The project will create an employment park, residential areas, recreation and hotels. White Young Green was commissioned by Cumbria County Council to produce a masterplan for Barrow Port. The partnership consists of Cumbria County Council, NWDA, Associated British Ports and BAE Systems. The area of the project is around 200 acres. One of the proposed land uses is to stimulate growth in the wind turbine manufacture industry. The work is to be complete in 2013 with the marina complete in 2008.

Kingsway Business Park
The partners for this are the Northwest Regional Development Agency (NWDA), Wilson Bowden Developments, Rochdale Metropolitan Borough Council and Rochdale Development Agency. It is a 420 acre site in Rochdale costing £315 million. Development work started in 2004, the project is phased and expected to be completed in 2018.

Path Finder

Since 2002, Manchester City Council and Manchester Methodist Housing Association have been working to fund and create a Home Zone area in Northmoor. 35 homes will be developed. This project has come out of the Sustainable Communities Plan which is a programme of housing improvements over 15-20 years. There are 9 pathfinder areas including Manchester and Salford. The Langworthy Project, Salford, forms part of the Salford/Manchester Pathfinder area and comprises 3,300 houses and 4,500 residents. This project includes Urban Splash. Oldham and Rochdale Pathfinder aims to bring more than £2billion worth of investment over the next 15 years. Some of the properties are of Eco Homes with turbines and solar power.

There is also the PFI project undertaken by Manchester City Council at Rusholme. It was undertaken in 1996 with a partnership of the Manchester Energy Company, MJ Gleeson and MCC. 6 blocks of flats were identified which needed heating improvements. As part of its affordable warmth strategy MCC improved the building fabric and installed double glazing. However, they did not have the capital to improve the heating system. A PFI route was determined to be the best way to fund this. Two CHP units were installed with a combined output of 300kWe.

New Islington Millennium Community

The New Islington Millennium Community is a £250m development on a 12.5 ha site at Ancoats, East Manchester. English Partnerships is working alongside New East Manchester, Urban Splash, Manchester City Council, the Housing Corporation and Great Places Housing Group, as well as the local community to develop the project. The first phase is complete. Building new housing commences each year with a 10 year plan. The development is to be sustainable. They charge a flat rate for heating (electricity is metered). There is a CHP system on site.

Morecambe West End

Part of Morecambe Resort Action Plan 2002. The West End is a private housing area with mainly privately rented accommodation. This area suffers from a transient population, benefit dependency and deprivation resulting in it being designated as a Housing Renewal Area. Phase 1 has commenced with support from English Partnerships, City & County Council, NWDA, Housing Corporation, Adactus Housing Association, and consultants Business Design Planning.

Castlefields Partnership

This project is based in Runcorn and is run by the Castlefields Partnership, which comprises Halton Borough Council, Liverpool Housing Trust, CDS Housing, Northwest Development Agency, The Housing Corporation and English Partnerships. Castlefields is a residential area of predominantly social housing, which extends to 126 ha to the east of Runcorn. This is a 4 year project launched in 2004.

Central Lancashire

English Partnerships is currently involved in the following projects in Central Lancashire:
Preston East: A 38.65 ha employment site, owned by English Partnerships. The land, to the east of Preston, adjacent to Junction 31a on the M6, has been earmarked for manufacturing, distribution and commercial uses. English Partnerships aims to create a high quality development business park to maximise the potential of market demand for employment sites in Central Lancashire. As part of the regeneration of East Preston, the development will include a park-and-ride facility linked to Preston city centre and will create investment and jobs.

Countess of Chester

14ha of surplus land at the Countess of Chester Hospital site in Chester is to be transformed as part of English Partnerships Hospital Sites programme in conjunction with Cheshire and Wirral Partnership NHS Trust and Cheshire West Primary Care. It will provide up to 200 homes, a proportion of which will be for key workers. All properties will be built to an Eco Homes standard.

Carlisle Renaissance

Carlisle Renaissance has been created with English Partnerships and Carlisle City Council to combat the problems caused by the floods of 2005 in which 2000 homes and businesses were affected. Consultants involved in this are DTX, Taylor Young and Faber Maunsell. It is a 10-15 year masterplan. The first consultations were held in 2006.

Urban Regeneration Company

This scheme commenced in Sept 2005 to deliver 349 homes in Langworthy in conjunction with Urban Splash. It forms part of the pathfinder project and will redevelop 7 central wards in Salford.

Langworthy is a joint public and private project. The public funding partners are English Partnerships, Salford City Council, the Manchester-Salford Housing Market Renewal Partnership and the Northwest Regional Development Agency (NWDA).

Gorton Monastery Village, East Manchester

Gorton Monastery is subject to a major restoration programme with more than £6m of public funding secured that will see the building converted into a major cultural venue along with new homes and a number of small business units in the adjacent Friary. Project partners are English Partnerships, Gorton Monastery Trust and the Urban Regeneration Company. There will be at least 60 houses built to Ecohomes standards. Developers were appointed at the end of 2006.

Early Hattersley, Greater Manchester

Selective demolition is removing most of the obsolete housing. English Partnerships are working with Tameside Council and Peak Valley Housing Association. This will be a mixed use site of 25 ha.

Hospital Sites Programme (Chester, Lancaster, Preston)

The Department of Health and the Department of Communities and Local Government (DCLG) has seen a large portfolio of former NHS hospital sites transfer to English Partnerships. The £320m transaction will provide 96 sites across England, with land totalling 1,600 ha. English Partnerships will have a key role in determining the best future use for each of the sites in line with the Government's policy to create sustainable communities and make best use of surplus public-sector land.

The following former hospital sites are currently being developed:

- Countess of Chester
- Lancaster Moor (220–400 homes - Planning consent expected shortly)
- Whittingham, Preston

Lime Street Gateway, Liverpool

English Partnerships is working with Liverpool Vision (an Urban Regeneration Company), Network Rail, Liverpool City Council and Merseytravel to transform the area into a 27-storey mixed-use area which will incorporate sustainable design. Carefully designed feature lighting will illuminate the area. Demolition of the old site is to be completed autumn 2007. Construction of the new station entrance at Gloucester Street will be the first major work package to begin and it is hoped that it will be finished by late spring 2008. The remainder will be completed late 2008.

Omega, Warrington

Omega, a 226 ha site will be a mixed-use development comprising offices, industrial space, leisure facilities and hotel and conference facilities. The development is expected to create over 12,000 jobs for the region.

On 20 July 2001, English Partnerships announced that Miller Developments and the Royal Bank of Scotland would be the preferred joint venture developers for Omega. A development agreement was subsequently signed in June 2002.

Runcorn

English Partnerships is currently involved in the following projects in and around Runcorn:

- **Sandymoor Community Centre:** English Partnerships has been involved in the residential developments at Sandymoor for a number of years and as part of their commitment to creating sustainable communities, is funding the construction of a 329m^2 community centre for the people of Sandymoor. The multi-functional centre will be managed and run by the Sandymoor Community Association and aims to be a focus for the community, allowing opportunities for residents to meet and enjoy leisure and community facilities.
- **Sandymoor 6 & 9A:** Badger Homes have been awarded "preferred developer" status to provide 67 dwellings on the Sandymoor 6 & 9A sites in Runcorn which will be developed in accordance with the English Partnerships design brief. The brief includes that density should be higher than the Government minimum of 30 per ha and that all properties should reach BREEAM (the Building Research Establishment's Environmental Assessment Method) Eco Homes rating standard of "Very Good" and NHER (National Homes Energy Rating) of 9.
- **Castlefields**

Skelmersdale Town Centre Regeneration

English Partnerships is working alongside the Northwest Development Agency, West Lancashire District Council and the local community to help regenerate Skelmersdale town centre. The project will provide residential and commercial land. The preferred developer was chosen late 2006.

Kingswood 6 & 7: English Partnerships recently announced the sale of the 4 ha Kingswood 6 & 7 site in Warrington. Following a competitive tender, Bellway has been selected as the "preferred developer" for the brownfield site that once formed part of the old airbase at Burtonwood, to build 149 new homes. The site benefits from its close proximity to the new Junction 8 of the M62.

Whittle Hall: English Partnerships appointed Bett Homes to develop the land at Whittle Hall, north Warrington. Bett Homes describe this development as "one of the most adventurous and designer driven schemes" that they have ever undertaken. Working within development guidelines set by English Partnerships, Bett have transformed the land formally known as Brow Farm, off Lingley Green Lane in Warrington, into a 115-unit development with excellent transport links and a wide choice of dwelling sizes and designs. The development to date has attracted lots of interest, with around 60 of the planned houses already reserved.