



Knowsley Council

Knowsley Council
Sustainable Energy Action Plan

sustainableknowsley
Low carbon and renewable energy

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1. INTRODUCTION

1.1 Development of a Sustainable Energy Action Plan for Knowsley

Knowsley has a strong track record in addressing climate change having developed the following commitments, strategies and plans over the last six years:

- 2007 – Signed the Nottingham Declaration on Climate Change
- 2008 – Scrutiny Review of Climate Change undertaken
- 2008 – Knowsley Council Climate Change Strategy approved
- 2009 – Knowsley Renewable & Low Carbon Energy Study undertaken
- 2011 – Knowsley Council Carbon Management Plan approved
- 2012 – Signed EU Covenant of Mayors
- 2012 – Signed Climate Local
- 2013 – Knowsley Partnership Climate Change Strategy approved
- 2014 – Joined Association of Public Service Excellence (APSE) Energy Collaboration

We have seen a 22% reduction in the borough's carbon emissions since 2005 with the Government highlighting that Knowsley has seen one of the highest reductions in carbon emissions from domestic energy use between 2005 and 2011.

Knowsley Council is also taking a proactive approach with significant investment in two major projects over the next two years:

- a) A £1m investment in improving the energy efficiency of Council buildings using the RE:FIT energy performance contracting initiative; and
- b) Development of a district energy network at the Knowsley Industrial and Business Park with a Strategic Energy Partner.

In 2012, the Liverpool City Region's Local Enterprise Partnership and Low Carbon Economy Committee supported the development of a Sustainable Energy Action Plan for the sub-region, which was launched in July 2012. The Liverpool City Region SEAP programme positions the City Region as an "investment ready" location for the energy sector and a place where the local authorities are working in partnership through a single programme of priority projects and actions. Twelve key projects were highlighted for the sub-region including the proposed energy network at Knowsley Industrial and Business Park.

The LCR SEAP recommended that all districts sign the EU Covenant of Mayors and prepare their own local SEAPs.

ARUP were engaged to support the LCR authorities in the development of their SEAPs and produced the 'Liverpool City Region Sustainable Energy Action Plan Toolkit'. This toolkit has been utilised in developing the Knowsley SEAP in addition to the Covenant of Mayors

guidance 'How to develop a Sustainable Energy Action Plan'. In addition, specialist support was accessed from the Association of Public Service Excellence (APSE) to support the development of further renewable energy options.

1.2 Challenges and opportunities of climate change and the role of energy

One of the greatest environmental threats currently facing the planet is the threat of climate change. Exacerbated by a growing population and a demand for higher living standards, climate change has the potential to fundamentally change the planet and the prosperities of its inhabitants.

The challenge presented by climate change is to reduce the concentration of greenhouse gases in the atmosphere in order to slow the warming process and avoid the worst effects of climate change – some of which are already presenting themselves today in the form of extreme weather events, sea level rises, increase of the arctic ice summer melt and loss of habitats across the planet. The opportunity presented by climate change is the chance to take a path towards a positive, healthy, sustainable and prosperous future.

In 2002, the UK Climate Impacts Programme (UKCIP) published a range of climate change scenarios, derived from a series of climate modelling experiments (commonly known as the 'UKCIP Scenarios'); these were updated in July 2009. The projections contain probabilistic information on the likely effects of climate change and the likely changes in weather patterns.

Key findings for 2020 (given a scenario of 'medium' carbon emissions) for the North West include:

- Warmer winters with increased precipitation;
- Hotter summers with decreased precipitation; and
- Increased severe weather events and storminess.

By 2080 the same trends continue but with higher temperatures, and steeper changes in precipitation patterns.

This message was reinforced following the publication of the UK Climate Change Risk Assessment in 2012 and the ClimateUK report 'A Summary of Climate Change Risks for North West England' which produced very similar findings the 2009 UKCIP Scenarios.

The impacts of climate change such as increased risk of flooding and heatwaves will have a greater impact on vulnerable communities including those on low incomes, suffering from social isolation or disability, limited access to private transport, single elderly persons and lone parents with dependent children.

Traditional energy generation is one of the main sources of emissions contributing to climate change. A step change to an energy generation system based not only on fossil fuel derived sources but also on sustainable energy sources is vital if Knowsley is to play its

part in the global response to climate change whilst sustaining economic growth and community resilience in the long term.

The Low Carbon Action Plan for the Liverpool City Region aims to create 12,000 jobs in the sector. The Knowsley Sustainable Energy Action Plan (SEAP) will help the borough shift towards a low carbon economy and take advantage of this new and emerging economic opportunity. An example of this is the proposals for the Knowsley Industrial and Business Park in Kirkby which should see the development of a large district energy network producing low carbon energy for local businesses.

Further to the economic advantages of sustainable energy is the added benefit of energy security. A more energy efficient and less carbon intense energy network in the borough will increase resilience to volatile fuel prices and improve the competitiveness of the borough within the local economy.

1.3 Spatial and demographic characteristics in Knowsley

Knowsley is located within the Liverpool City Region, to the east of Liverpool and west of St Helens (see Figure 1 below). The borough covers an area of 33km² and has a population of 149,000 residents. Knowsley shares borders with five other local authorities in the North West; Liverpool, Sefton, West Lancashire, St Helens and Halton respectively. A strategic transport hub, Knowsley has as an extensive road network including the M62, M57, A580 and the A5300 in addition to a freight rail terminal to the north of the borough which combined provide direct access to important areas such as the Port of Liverpool, Liverpool John Lennon Airport, the wider city region, Greater Manchester and beyond.

Figure 1. Knowsley Location Map



In Knowsley, 54% of land is green belt and there are 21 managed parks in the borough in addition to allotment sites and managed community woodlands.

There are three main urban areas in Knowsley, with Kirkby to the north, Prescot and Whiston to the east and Huyton which is located in the central western part of the borough. Other smaller urban areas include Stockbridge Village, Cronton, Knowsley Village and Halewood.

Knowsley has several strategically important industrial areas. Key employment sites include Kings Business Park, Prescot Business Park, Huyton Business Park and Whiston Enterprise Park which offer high quality business space. Knowsley Industrial and Business Park in Kirkby is one of the largest in Europe with around 800 businesses and 15,000 employees.

The profile of the local area is considered in more detail in Section 3.

1.4 Links to other plans and strategies

The Knowsley SEAP is part of a wider effort taking place nationally and across the City Region to develop secure low carbon energy supplies and reduce energy use.

Nationally, the Government have set out their proposals in the following key documents:

- **The Energy Efficiency Strategy: The energy efficiency opportunity in the UK** (November 2012), sets the direction for energy efficiency policy for the coming decades;
- **The Future of Heating: Meeting the challenge** (March 2013), sets out specific actions to help deliver low carbon heating across the UK;
- **The Community Energy Strategy: People Powering Change** (January 2014), lays the foundation for the future growth of community energy in the UK; and
- **The UK Solar PV Strategy** (March 2014), sets out the Government's ambition to see a further step change in the amount of solar PV systems both installed and manufactured within the UK.

The Liverpool City Region Low Carbon Economy Action Plan 2011 – 2015 was developed by the LCR Low Carbon Committee (part of the Local Enterprise Partnership). This built on the results of a mini-Stern review for the Liverpool City Region which identified the economic opportunities of the move to a low carbon economy.

The LEP and Low Carbon Economy Committee supported the development of a Sustainable Energy Action Plan for the LCR, which was launched in July 2012. This high level document was aimed at promoting inward investment to the City Region and developing the low carbon skill base. The Liverpool City Region SEAP programme positions the City Region as an “investment ready” location for the energy sector and a place where the local authorities are working in partnership through a single programme of priority projects and actions. Twelve key projects were highlighted for the sub-region including the proposed energy network at Knowsley Industrial and Business Park. The LCR SEAP recommended that all districts sign the EU Covenant of Mayors and prepare their own local SEAPs.

In Knowsley, the Council produced a Carbon Management Plan in 2011 to reduce carbon emissions from its estate and services. This was supplemented by a wider Knowsley Partnership Climate Change Strategy, approved in February 2013. This brings together work across Knowsley by the Council and partners on both climate change adaptation and mitigation.

These strategies and other policy drivers are outlined in more detail in Appendix A of this Plan.

1.5 Knowsley's Baseline Emissions Inventory

This SEAP includes a Baseline Emissions Inventory (BEI) which will provide the basis for measuring the impact of the actions on carbon reduction. The BEI and subsequent annual Monitoring Emissions Inventories (MEI) will be produced using CO₂ data published each year by the Department for Energy and Climate Change (DECC). The earliest data available from DECC is for the calendar year 2005 and this will be the baseline year against which progress will be measured. A detailed examination of the baseline can be found in Section 4 of this document and an inventory report detailing calculation methodologies can be found at Appendix B.

2. PURPOSE OF THE KNOWSLEY SEAP

In December 2012, the Leader of Knowsley Council signed the EU Covenant of Mayors. This is an initiative launched in 2008 to endorse and support the efforts deployed by local authorities across Europe in the implementation of sustainable energy policies. It was recognised that action at a local level was vital to achieve the EU's carbon reduction targets and local authorities play a major role.

By signing up to the initiative, Knowsley Council has made a commitment to:

- Go beyond EU carbon reduction targets and reduce our CO₂ emissions by at least 20% from the 2005 baseline by 2020;
- Produce a Baseline Emission Inventory;
- Develop a Sustainable Energy Action Plan by September 2014;
- Organise community energy days; and
- Report progress at least once every two years.

The Liverpool City Region SEAP also recommended that each district produce their own local SEAPs.

Knowsley has already made good progress in the development of sustainable energy through its energy efficiency programmes both in the Council and the community in addition to the development of low carbon and renewable energy in the borough. Knowsley was the first authority in the LCR to commission a Low Carbon and Renewable Energy Study which has led to progress in the development of a district energy network at Knowsley Industrial and Business Park. Ground source heat pumps have been installed in the Learning Centres, biomass boilers in new-build primary schools and Leisure Park and a solar photovoltaic array at the Municipal Building in Huyton.

This SEAP will therefore build upon this action and provide a framework to develop further low carbon and renewable energy in Knowsley with co-benefits of reducing carbon emissions, developing a low carbon economy, reducing energy costs and improving energy security.

The purpose of this SEAP is therefore to meet the following objectives:

- Reduce carbon emissions in Knowsley to achieve at least a 20% reduction from 2005 levels by 2020;
- Create opportunities for business growth and job creation;
- Reduce energy costs through improvements in energy efficiency and cheaper energy for public owned assets;
- Increase the resilience and potentially the capacity of energy infrastructure, thus providing new economic opportunities;
- Make a substantial contribution to health, equality and fuel poverty agendas through energy efficiency and by delivering renewable and decentralised energy;
- Deliver improvements in public sector low carbon and climate change performance, including making a substantial contribution to CO₂ reduction commitments and sustainability;
- Contribute to the decarbonisation of our energy generation infrastructure, employment and housing stock and transport infrastructure; and
- Make substantial progress towards achieving the LCR transformational action of developing a low carbon economy.

3. KNOWSLEY PROFILE

Knowsley has many challenges to face in the coming years including population decline and fuel poverty alongside the overarching challenge of expanding the local economy whilst reducing carbon emissions. This section builds on the information provided in Section 1 to provide some context to these challenges. The following information has been extracted from the Knowsley Council Local Plan Annual Monitoring Reports 2012 and 2013.

3.1 Economic performance

The Borough's main employment growth sector in recent years has been in public services, but this sector has declined following Government spending cuts. The manufacturing sector (which accounts for 10% of businesses and 20% of jobs in the Borough) has declined as a proportion of total jobs over recent years, but still makes a significant contribution to the local economy. The challenges being experienced by the manufacturing sector are being addressed, for example through the Council's Economic Regeneration Strategy and the Strategic Framework, which has been published for the future development of Knowsley Industrial and Business Park.

The Monitoring Report for 2013 identifies that full-time workers who are resident in Knowsley receive the lowest average weekly wage (£451) on Merseyside, while people who work in Knowsley receive the third highest average weekly wage.

In March 2012, the Borough contained 170.1 ha of land suitable for employment purposes, the vast majority of which was suitable for all employment types. During 2011/12, two developments of new buildings for employment (within Use Classes B1, B2 or B8 which include business, industrial, storage and distribution uses) were completed. These were the first completions of new buildings for these employment uses for three years. The Local Plan will provide sufficient land to meet employment development needs up to 2028. This will require safeguarding of existing employment land from changes of use or redevelopment of sites to other uses together with enhancements to the quality of employment areas.

3.2 Housing Needs and Housing Delivery

There are currently 62,967 dwellings in Knowsley. The number of households in Knowsley is projected to rise by 2,400 between 2011 and 2015.

The Planning for Housing Growth – Technical Report recommends that an appropriate housing target for Knowsley between 2010/11 and 2027/28 would be 8,100 net additional dwellings or 450 dwellings per annum on average. An average of approximately 266 dwellings per annum has been delivered in the past 15 years in Knowsley, though this has varied dramatically across the 15 year period. In 2012 there was a net increase in dwellings of 195.

The Borough has a land supply for 5,681 dwellings within the urban area, between April 2013 and March 2028, including land for 3,017 dwellings available within the first five years of this period. This availability of land is sufficient to meet the Council's pledge on housing land availability, but insufficient to meet the requirement of 8,100 dwellings over the period between 2010 and 2028. The Council's Local Plan: Core Strategy addresses this shortfall by proposing a review of Green Belt boundaries to open up further supply in the long-term.

3.2 Key growth challenges and assets

The UK economy is making a slow and difficult recovery from the global financial crisis and business confidence remains uncertain. Obviously Knowsley is not immune to the ongoing global economic uncertainty, but the Knowsley Economic Regeneration Strategy 2012-2015 and supporting Action Plan set out the key priorities to support growth in the local economy, for example, by increasing public sector spend with local businesses, improvements in infrastructure including green energy, comprehensive broadband access, and developing closer direct links between business, schools and colleges.

3.3 Population

According to the 2011 Census data, the population of Knowsley fell by 3% (over 4,500) from 2001-2011 (150,459 to 145,900). This is part of a longer term trend stretching back since the 1980s. Knowsley is fairly evenly split in terms of gender with 52.6% (76,600) of the population female and 47.4% (69,300) of the population male. There has been a

significant decrease in people between the ages of 5-19 and an increase of in particular males over the age of 85. This suggests Knowsley has an aging population, with the average age of Knowsley residents increasing by two years from 2001-2011.

3.4 Fuel poverty

A household was said to be in fuel poverty if it needs to spend more than 10% of its income on fuel to maintain a satisfactory heating regime (usually 21 degrees for the main living area, and 18 degrees for other occupied rooms). However it should be noted that the Government has recently changed the definition to:

- A household is said to be in fuel poverty if they have required fuel costs that are above average (the national median level); and
- were they to spend that amount they would be left with a residual income below the official poverty line.

Fuel poverty often results from a number of issues including low household income, inefficient and costly forms of heating and poor insulation standards. Of the 63,000 households in Knowsley roughly 9.9% (6,211) were in fuel poverty as of 2011. The development of a SEAP can help to reduce fuel poverty by increasing energy efficiency and reducing energy demand.

4. BASELINES AND CURRENT CO₂ EMISSIONS

4.1 Development of the Covenant of Mayors Baseline Emissions Inventory

The Covenant of Mayors requires the completion of a Baseline Emissions Inventory (BEI) which details the borough's:

- Annual energy consumption;
- Annual CO₂ emissions;
- Local electricity production and corresponding CO₂ emissions; and
- Local heat/cold production (district heating/cooling, CHPs)

The most reliable data available for borough-wide emissions is the CO₂ emission data published annually by DECC and this will be used for the BEI. The earliest year for which the data is available is the calendar year 2005 which will be both the Liverpool City Region's and Knowsley's baseline year. Although the data is published annually, there is an approximate 18 month time lag so for example, 2011 data was received in July 2013.

The DECC data allows the calculation of energy consumption and annual CO₂ emissions but not local energy production. There is no data available for the 2005 baseline year.

A detailed Baseline Emissions Inventory can be found at Appendix C.

4.2 Development of the Covenant of Mayors Monitoring Emission Inventory

The Covenant of Mayors requires an implementation report to be submitted every two years and for a Monitoring Emission Inventory (MEI) to be submitted with every second implementation report (i.e. every four years). However this is the minimum requirement and as DECC provide annual data updates, the Council will calculate the MEI on an annual basis in order to ensure the borough is on track to meet its 2020 targets.

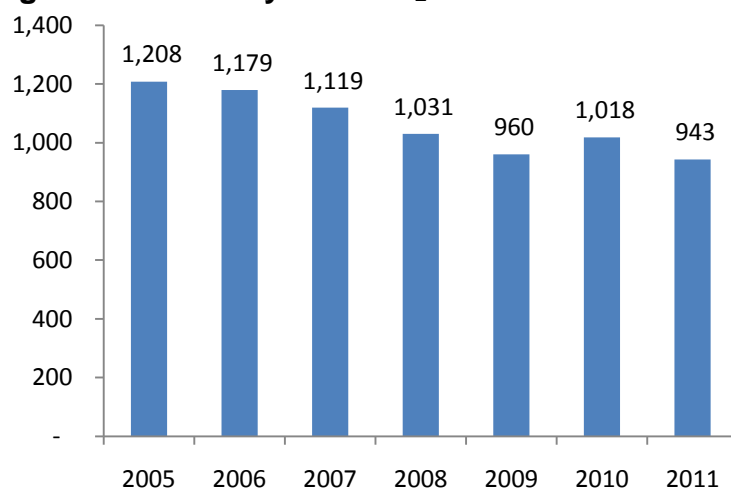
4.3 LCR Energy Demand Datasets

The LCR SEAP recommends that the DECC data is used to monitor and report against five specific datasets. These are outlined below:

(1) *Annual change in CO₂ emissions*

This dataset gives an indication of the performance of the borough in reducing emissions year on year. Figure 2 below shows the annual change in CO₂ emissions from 2005 to 2011.

Figure 2. Knowsley total CO₂ emissions 2005 – 2011 (k/t)



In 2011 there was a reduction of 7% compared to 2010, reversing the increase that was seen between 2009 and 2010. This increase was seen in the majority of boroughs and was attributed to the severe winter weather in 2010 causing increased use of gas and electricity for heating.

(2) *Change in energy use by fuel type*

The main energy sources in Knowsley for power and heating are electricity and gas. Electricity generation emits more CO₂ per kWh than gas, so this data set gives an indication as to whether changes in CO₂ emissions are being influenced by changes to the energy mix rather than demand reduction.

In 2005, 68.5% of Knowsley's energy needs were met by gas but this only accounted for 43% of CO₂ emissions (Table 1). In 2011 the proportion of electricity use had increased slightly.

Table 1. Energy use by fuel type

	2005		2011	
	% of total energy use	% of total CO ₂ emissions	% of total energy use	% of total CO ₂ emissions
Electricity	31.5%	56%	37%	62%
Gas	68.5%	43%	63%	38%

(3) CO₂ emissions by sector

This dataset demonstrates the contribution of each sector to Knowsley's CO₂ emissions. Energy use in the industrial/commercial sector emits the highest proportion of CO₂ in Knowsley, followed by energy use in the domestic sector. The percentage share of the industrial/commercial sector has decreased slightly since 2005, with the percentage share of transport emissions increasing (Figures 3 and 4).

Figure 3. Knowsley sector emissions 2005

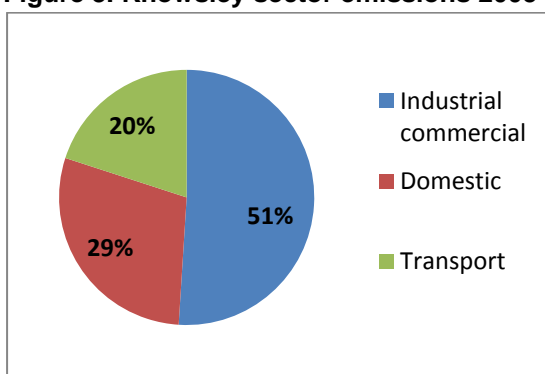


Figure 4. Knowsley sector emissions 2011

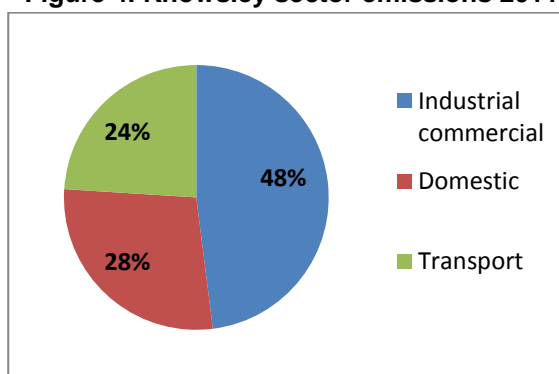


Figure 5 shows that Knowsley's sectoral emissions are in approximately the same proportion to the Liverpool City Region as a whole. However, Figure 6 highlights the different challenges faced by other authorities as in Sefton, the highest proportion of emissions is from energy use in the domestic sector.

Figure 5. LCR sector emissions 2011

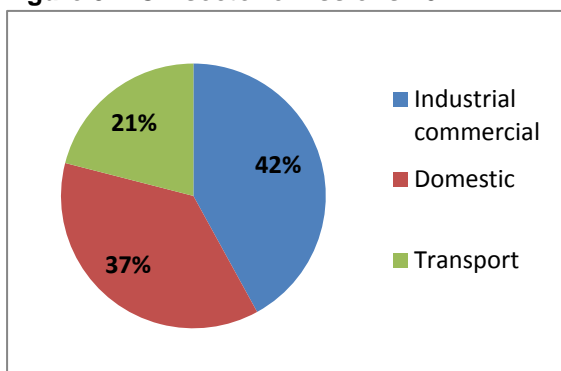
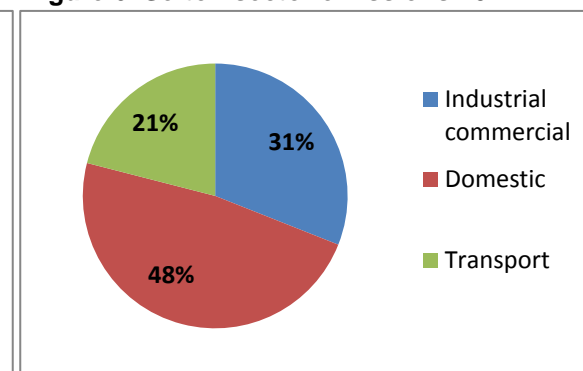


Figure 6. Sefton sector emissions 2011



CO₂ emissions from each of the three sectors were lower in 2011 than in the baseline year of 2005:

Table 2. CO₂ reduction by sector

Sector	2005 (k tonnes)	2011 (k tonnes)	% Reduction
Industrial/commercial energy use	617	450	27%
Domestic energy use	349	269	23%
Transport	242	223	8%

The largest reduction was seen in the industrial/commercial sector (27%). Domestic emissions saw a similar decrease across the period falling by 23% from 2005 levels. This has been highlighted as one of the largest reductions in the country by DECC in the summary document accompanying the data release (Local Authority CO₂ emissions estimates 2011 – Statistical summary, DECC July 2013).

Work in Knowsley around energy efficient housing, engagement with businesses on resource efficiency and work around sustainable travel will have certainly played a significant part in achieving these carbon reductions. However, external factors such as changing economic conditions, increase in fuel prices and weather conditions may also be contributing factors.

Data from the Office of National Statistics indicates that the number of active businesses in Knowsley actually increased by 16% between 2005 and 2011. However as individual businesses vary greatly in size and amount of energy consumed, it is not possible to conclude with absolute certainty that the economic downturn has not been a factor in the carbon reductions observed.

(4) CO₂ emissions per capita

Assessing CO₂ emissions per head of the population gives an indication of scale of emissions compared to size of the borough. However it does have limitations as although emissions from domestic energy use are directly relevant to a 'per capita' calculation, industrial and transport emissions are not. For example a borough such as Knowsley with a small population but disproportionately large industrial sector based there will have high per capita emissions.

This is demonstrated in Tables 3 and 4 below where when compared to other authorities in the Liverpool City Region, Knowsley has relatively high per capita CO₂ emissions, however in terms of total CO₂, Knowsley emitted the lowest amount in the city region. Per capita emissions in Knowsley were also higher than the North-west and UK averages.

Table 3. CO₂ emissions per capita in the Liverpool City Region

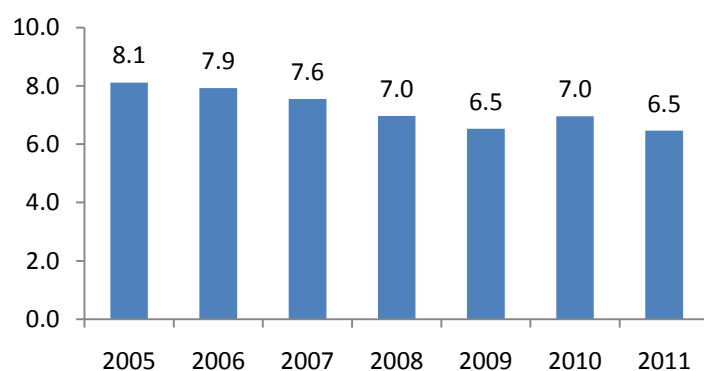
Rank	Borough	CO ₂ per capita (tonnes)
1	Halton	7.9
2	Knowsley	6.5
3	St Helens	6.2
4	Liverpool	5.0
5	Wirral	4.4
6	Sefton	4.3
	NW average	5.5
	UK average	5.9

Table 4. Total CO₂ emissions in the Liverpool City Region

Rank	Borough	Total CO ₂ (k tonnes)
1	Liverpool	2,346
2	Wirral	1,393
3	Sefton	1,168
4	St Helens	1,080
5	Halton	994
6	Knowsley	943

Per capita emissions in Knowsley have decreased by 20% since 2005 (Figure 7). The increase in 2010 is attributed to the cold winter in that year and increased use of energy for heating.

Figure 7. Knowsley Per Capita CO₂ emissions 2005-2011



(5) Change in CO₂ emissions since 2005

Since 2005 Knowsley's total CO₂ emissions have decreased by 22% from 1,208 kilotonnes to 943 kilotonnes in 2011. This equates to an average reduction of 38 kilotonnes per year.

Knowsley's progress is similar to other boroughs in the LCR (Table 5).

Table 5. Percentage change in LCR CO₂ emissions 2005 – 2011

Borough	% CO₂ reduction 2005 – 2011
Wirral	24%
Knowsley	22%
St Helens	21%
Halton	20%
Sefton	19%
Liverpool	17%
LCR average	20%

4.4 Energy supply

In Knowsley the majority of electricity is supplied via the National Grid. Electricity in the UK is generated from a mix of sources including, coal, petroleum, nuclear, natural gas, biogas, biomass and waste and other renewable sources such as wind, wave, hydro and solar. Bulk electricity enters the National Grid at supply points. Electricity NW own and operate the National Grid distribution network in the NW and distribute the electricity to consumers via local supply companies.

Gas supplies are also obtained from a number of sources such as offshore fields, via pipeline from the European mainland and compressed natural gas is received via boat. This is supplied to consumers via the National Transmission System which is owned and operated by National Grid.

Energy and heat can also be generated locally through for example Combined Heat and Power (CHP) plants and renewables such as biomass, solar panels and wind turbines.

Comprehensive data on local energy generated was not available. However, DECC do provide quarterly statistics on current numbers of Feed in Tariffs (FiTs) for small scale generation in place across the borough. At the end of March 2014, there were 1,490 installed measures claiming FIT payments in Knowsley and all of them except two are for Solar Photovoltaic installations. One exception is for a 6kW wind turbine installed in 2011 and the other is for a Micro CHP plant. The current total installed capacity for small scale generation in Knowsley is 4.7MW .

DECC have also recently begun supplying local authority area data on the number of installations utilising the renewable heat incentive (RHI). At the end of March 2014, the number of RHI applications in Knowsley was between 1 and 5. The exact figure is not available to prevent disclosure.

This data will be monitored annually to assess the uptake of small scale renewable energy in Knowsley.

5. SEAP TARGETS

5.1 Rationale for target setting

By signing the Covenant of Mayors Knowsley has made a commitment to reduce carbon emissions by at least 20% from 2005 levels by 2020.

As demonstrated in Table 5 above, in 2011 Knowsley had already achieved a 22% reduction from 2005 levels. However, the reduction may not be permanent as increased housing and economic development may occur in the future offsetting any reductions achieved. The effect of the weather is also unpredictable as seen by the increase in emissions across the country in 2010 due to the severe winter weather leading to an increase in energy use for heating.

No guidance has yet been provided by the Government on setting local carbon reduction targets. There is also inconsistency across the Liverpool City Region, with a range of different targets being set across the boroughs using varying baseline years and target years.

In the absence of guidance and an agreed consistent approach across the LCR, Knowsley has set an interim CO₂ reduction target for 2020, based on the national targets in the Climate Change Act 2008.

5.2 Knowsley SEAP CO₂ reduction targets

Knowsley will aim to reduce borough-wide CO₂ emissions from energy use in domestic, commercial/industrial properties and transport by 31% from a 2005 baseline by 2020

Knowsley Council will aim to reduce CO₂ emissions from its own estate and services by at least 22% from a 2009/10 baseline by 2016

The borough-wide target was agreed by the Knowsley Partnership in January 2013 and is included within the Knowsley Partnership Climate Change Strategy. This demonstrates Knowsley's ambition to exceed our current performance and go beyond the Covenant of Mayor's requirement for a 20% reduction.

The Council target was agreed by Knowsley's Cabinet in July 2011 following approval of the Council's Carbon Management Plan.

5.3 Potential impact of growth on achieving target reductions

As outlined above, an increase in housing and economic development in the borough will offset to some extent the CO₂ savings achieved by the carbon reduction projects within the SEAP.

In 2010 ARUP were commissioned by local authorities in the Liverpool City Region to undertake a Renewable Energy Capacity Study. In their Stage 2 Report, ARUP undertook some estimations of projected increases in energy consumption due to future growth. However this was based on data set out in the now abolished Regional Spatial Strategy (RSS).

Knowsley's emerging Local Plan: Core Strategy will outline updated policy targets for residential dwellings, economic land and town centre commercial uses up to 2028. These will supersede the targets outlined in the RSS which is no longer extant. However, the targets in the Core Strategy are only proposed at the moment and subject to potential change. Once the Core Strategy and targets have been approved (expected early 2015) further work will be undertaken to assess the impact on Knowsley's carbon emissions and reduction target.

In respect of transport, the Third Local Transport Plan for Merseyside modelled the impact of the Plan in terms of CO₂ emissions. It was predicted that emissions would initially increase in Merseyside by 3% due to significant forecast increases in traffic growth. Through to 2024 it is predicted that this will be offset by advances in cleaner vehicle technology, with CO₂ rates falling back to 2008 levels.

5.4 Impact of grid decarbonisation

In calculating CO₂ emissions, energy use in kWh is converted to kg of CO₂ using conversion factors provided by DECC. For example, in 2005 using 1 kWh of electricity would emit 522 g of CO₂. This figure is updated each year as electricity is produced from a number of different sources with differing CO₂ emissions such as coal, gas, renewable, nuclear etc and the proportion of these varies each year.

As the use of fossil fuels to produce electricity reduces and the amount of renewable energy increases (referred to as grid decarbonisation) the emission factor will reduce. So for example we could see the level of electricity use stay the same but CO₂ emissions decrease because of a change to the emission factor.

Defra and the Committee on Climate Change both state that they expect the emission factor to reduce to around 333 g of CO₂ per kWh in 2020.

Calculations have been undertaken to determine the impact of this on Knowsley's CO₂ emissions in 2020. If our energy use in 2020 was the same as in 2005 (i.e. demand had not reduced at all), we would still show a 15% reduction in CO₂ emissions solely due to decarbonisation of the grid and change in emission factor.

It should be noted that this is an estimate based on current decarbonisation plans and may be influenced by future developments in energy production (for example the future contribution of shale gas to the UK's energy mix is currently unknown). However it supports Knowsley's decision to set a carbon reduction target beyond the minimum 20% required by the Covenant of Mayors.

5.5 Meeting the proposed target

The Knowsley SEAP target is to achieve a 31% reduction in CO₂ emissions in the borough by 2020 from a 2005 baseline. Table 6 below indicates how that target can be met based on current information. It should be noted that a significant number of projects could not be quantified in terms of carbon reduction but will still have a positive impact. Similarly economic growth and additional housing are as yet unquantified but will increase carbon emissions. The impact of grid decarbonisation is predicted to make a significant contribution but is outside of the Council's control.

In addition, as this is a Council document, the sustainable energy projects being undertaken by partners have not been included which will potentially make a significant contribution to carbon reduction.

Given Knowsley's performance on carbon reduction to date and based on current information, it appears that we are well placed to meet the current 2020 target. This will be reviewed as new information becomes available.

Table 6. Meeting the 2020 target

	Estimated k tonnes CO ₂
2005 Baseline CO ₂ emissions	1208
CO ₂ reductions 2006-2011	-265
SEAP Quantified actions 2012 – 2020	-13.5
SEAP Unquantified actions	Not known
Grid decarbonisation*	-131
Economic development	Not known at present
Additional housing	Not known at present
Partner actions	Not known at present
Predicted 2020 emissions	799
% reduction from 2005 baseline	34%

*This has been calculated by estimating electricity use in 2020 if all the quantified actions were completed, and calculating the difference in emissions by using the 2011 CO₂ emission factor compared to the predicted CO₂ emission factor for 2020.

5.6 Overall annual reductions required from 2012 onwards to achieve 2020 target

To achieve the target we need to reduce our emissions to 833 ktonnes per annum (i.e. 31% below 2005 baseline).

Taking the reduction already achieved in 2011, the overall annual reductions that would be required have been estimated (Table 7).

Table 7. Overall annual CO₂ reduction targets

Year	Target CO ₂ emissions (kTonnes)	% reduction from 2005 baseline	% reduction from previous year
2011	943 (actual)	22%	N/A
2012	929	23%	1.5%
2013	915	24%	1.5%
2014	902	25%	1.5%
2015	888	27%	1.5%
2016	874	28%	1.6%
2017	860	29%	1.6%
2018	847	30%	1.6%
2019	833	31%	1.6%

5.7 Sectoral annual CO₂ reduction targets

Sectoral targets that would need to be achieved each year have been estimated based on their percentage contribution to the overall emissions (Tables 8, 9 and 10).

Table 8. Industrial/commercial annual CO₂ reduction targets

Year	Target CO ₂ emissions (kTonnes)	% reduction from 2005 baseline	% reduction from previous year
2011	453		
2012	446	28%	1.5%
2013	439	29%	1.5%
2014	433	30%	1.4%
2015	426	31%	1.6%
2016	420	32%	1.6%
2017	413	33%	1.6%
2018	407	34%	1.5%
2019	400	35%	1.7%

Table 9. Domestic annual CO₂ reduction targets

Year	Target CO ₂ emissions (kTonnes)	% reduction from 2005 baseline	% reduction from previous year
2011	264		
2012	260	25%	1.5%
2013	256	27%	1.5%
2014	253	28%	1.4%
2015	249	29%	1.6%
2016	245	30%	1.6%
2017	241	31%	1.6%
2018	237	32%	1.5%
2019	233	33%	1.7%

Table 10. Transport annual CO₂ reduction targets

Year	Target CO ₂ emissions (kTonnes)	% reduction from 2005 baseline	% reduction from previous year
2011	226		
2012	223	8%	1.5%
2013	220	9%	1.5%
2014	216	11%	1.4%
2015	213	12%	1.6%
2016	210	13%	1.6%
2017	206	15%	1.6%
2018	203	16%	1.5%
2019	200	17%	1.7%

Section 8 describes the process for monitoring performance and targets up to 2020.

6. ENERGY ACTIONS

6.1 Development of the Action Plan

The Covenant of Mayors Office provide a standard template which must be completed to record the actions included within the Action Plan under a range of sector headings. The Action Plan is attached at Appendix D, and a summary of key actions for each sector is provided below. As the latest available data on carbon emissions relates to 2011, actions that were implemented in 2012 have been included within the Action Plan.

6.2 Municipal buildings

Reducing carbon emissions from Council buildings is a key priority within the Council's Carbon Management Plan 2011-2016. A number of carbon reduction initiatives have already been undertaken including:

- Installation of voltage optimisation at seven sites
- Installation of a solar PV array at Huyton Municipal building
- Installation of LED lighting at Huyton Multi-storey car park
- A staff behaviour change programme
- Biomass boilers at Knowsley Leisure and Culture Park, Stockbridge Leisure Centre and five primary schools

Our main project going forward is a £1m investment programme to improve the energy efficiency of up to 20 Council buildings utilising the RE:FIT Energy Performance Contracting scheme.

6.3 Tertiary buildings

This relates to buildings occupied by other public bodies that would not be classified by the Covenant of Mayors as industrial/commercial. The Council has engaged with all major partners on carbon reduction during the development of the Knowsley Partnership Climate Change Strategy and this will continue through the Sustainable Knowsley Board. A number of key partners (for example Merseytravel, Merseyside Fire and Rescue, Merseyside Police and Knowsley Chamber) have Carbon Management Plans/Environmental Management Systems in place. Knowsley Council will provide support to those that have not yet addressed carbon emissions from their own buildings.

6.4 Residential buildings

Knowsley Council, Registered Landlords such as Knowsley Housing Trust and Villages Housing and utility companies have a strong track record in improving the energy efficiency of the borough's housing stock. Numerous schemes have been implemented and funding utilised such as Warmstreets, Warmfront, Community Energy Saving Programme (CESP) and the Carbon Emissions Reduction Target (CERT). The Government have highlighted Knowsley as one of the boroughs with the greatest reductions in carbon emissions in energy use from residential properties between 2005 and 2011.

Improvements are expected to continue through the Government's Green Deal Scheme, the Energy Company Obligation (ECO) and Project Viridis (a LCR project).

6.5 Street lighting

The Council is currently implementing a borough-wide street lighting replacement programme utilising a Private Finance Initiative. The replacement lighting is energy efficient with variable lighting capability.

6.6 Industrial/commercial buildings

The Merseyside Business Support Programme is a project funded by the European Regional Development Fund and co-ordinated in the borough by Knowsley Council. The support offered includes carbon footprinting and advice on carbon reduction measures.

The Knowsley Chamber host an environmental support network for businesses – The Environment Network (TEN), which is supported by Knowsley Council. Opportunities for support and funding is promoted via the Network.

The Renewables and Energy Efficiency in Community Housing (REECH) initiative has secured additional funding from the European Regional Development Fund (ERDF) to extend the scheme to part fund energy and resource efficiency assessments on a number of businesses (SMEs) premises across Merseyside and Halton. Partner agencies including the Environment Agency and Groundwork Trust have provided match funding to make the

assessment a free offer to small local businesses. REECH will offer grants towards the cost of installing a range of energy efficiency measures.

To encourage SMEs on the Knowsley Industrial and Business Park to reduce their environmental impacts, the feasibility of an Environmental Award Scheme is currently being investigated.

6.7 Municipal fleet

Reducing carbon emissions from the Council's fleet vehicles is included within the Council's Carbon Management Plan. Actions include the implementation of a fuel management system, procurement of fuel efficient vehicles and 'Smarter Driver' training for fleet drivers.

The Carbon Management Plan also includes actions to reduce carbon emissions from staff who use their own vehicles on Council business (the 'grey fleet'). This includes implementation of the Staff Travel Plan, changes to mileage rates and introduction of car parking fees.

6.8 Public transport

Merseytravel are responsible for the co-ordination of public transport in Merseyside and actions to reduce carbon emissions from this source are set out in the Third Local Transport Plan for Merseyside which was produced in conjunction with the five Merseyside authorities. Key projects for Knowsley include the introduction of new bus services funded by the Government's Local Sustainable Transport Fund and electrification of the railway lines through Huyton.

6.9 Private and commercial transport

The Local Sustainable Transport Fund has also provided for the appointment of two Business Travel Advisors who are working with Knowsley businesses to produce Green Travel Plans. Merseyside has also recently received funding from the Government's Office of Low Emission Vehicles (OLEV) to install electric vehicle charging points across the sub-region. Eight points are proposed for Knowsley in areas that are publicly accessible.

6.10 Local electricity production

The Council has installed a solar photovoltaic array at the Huyton Municipal building, producing electricity for use within the building. In addition solar panels have been included in the new Prescot Leisure Centre.

The Council is currently pursuing additional potential opportunities for the development of sustainable energy sources in Knowsley. A key project will be to commission a feasibility study to determine the potential for the development of small to medium wind turbines and ground mounted solar installations in Knowsley, to generate income for the council,

contribute to energy security and reduce the borough's carbon emissions. An assessment of the viability of installing additional solar panels on Council buildings is also proposed.

The development of community energy schemes is another key opportunity to be explored. One potential project being investigated is for the Council to establish a Community Energy Supply Company to provide competitive and green energy to residents and businesses. There is also the potential for community investment in any renewable energy projects developed by the Council.

6.11 Local district heating/cooling

A major project for Knowsley is the development of a district energy network at the Knowsley Industrial and Business Park (KIBP). This was identified as a potential project in Knowsley's Low Carbon and Renewable Energy Study and was subsequently included in the Strategic Framework for the re-development of the Industrial Park. It was felt that this would have economic benefits as it will enable KIBP to be branded as a 'Green Energy Park' which will differentiate it from other industrial and businesses parks elsewhere in the region, and attract new businesses whilst facilitating sustainability objectives.

A feasibility study was completed in 2011 and the Council has appointed a Technical Advisor to provide support in the commissioning of a Strategic Energy Partner to deliver the project. It is anticipated that a Partner will be appointed by the Council for September 2015.

The Council also has a Combined Heat and Power (CHP) plant at Kirkby Leisure Centre. Re-commissioning of a CHP plant at Halewood Leisure Centre is under consideration as part of the proposed RE:FIT initiative.

A study undertaken by ARUP for the Council on renewable and low carbon energy options in 2009 considered the opportunities for biomass production in the borough. It was concluded that Knowsley has significant potential to become a regional location for the production, storage, distribution and consumption of biomass fuels. Development of a Biomass Centre was included as an action within the Strategic Framework for the regeneration of the Knowsley Industrial and Business Park. Consideration is now being given to the feasibility of this project.

6.12 Land use planning

Physical development and regeneration in Knowsley is governed by policies and strategies in the Unitary Development Plan (UDP), which was adopted in 2006. The UDP contains a number of policies on energy, transport and waste that support the reduction of carbon emissions from development. Since adoption of the UDP the planning system has changed and Knowsley's UDP will be replaced by a Local Plan. The Core Strategy of the Local Plan is expected to be adopted in early 2015.

The Government has recently stated that energy efficiency standards for residential properties in future will be mainly set through national building regulations, not locally set standards, with a new zero carbon homes standard coming into force from 2016. The

Council is currently considering the most appropriate way of incorporating sustainable design principles within the Local Plan, in light of new Government policy.

6.13 Public procurement of goods and services

Sustainability is addressed in the Council's procurement process. A specific review will be undertaken of Corporate Procurement Policy and Guidance to ensure that requirements around energy efficiency are incorporated where appropriate.

6.14 Working with citizens and stakeholders

The Council has a Home Energy Efficiency Officer that provides advice to residents through leaflets, events and direct contact. The Council's Environmental Sustainability Service also attend major events to promote action on climate change, support The Environment Network for businesses and undertake awareness raising with schools. A major project from 2012 to 2014 was Knowsley Community Energy Fit, funded by E.ON, which has trained and recruited residents to act as Energy Champions in their local areas.

6.15 Partner organisations

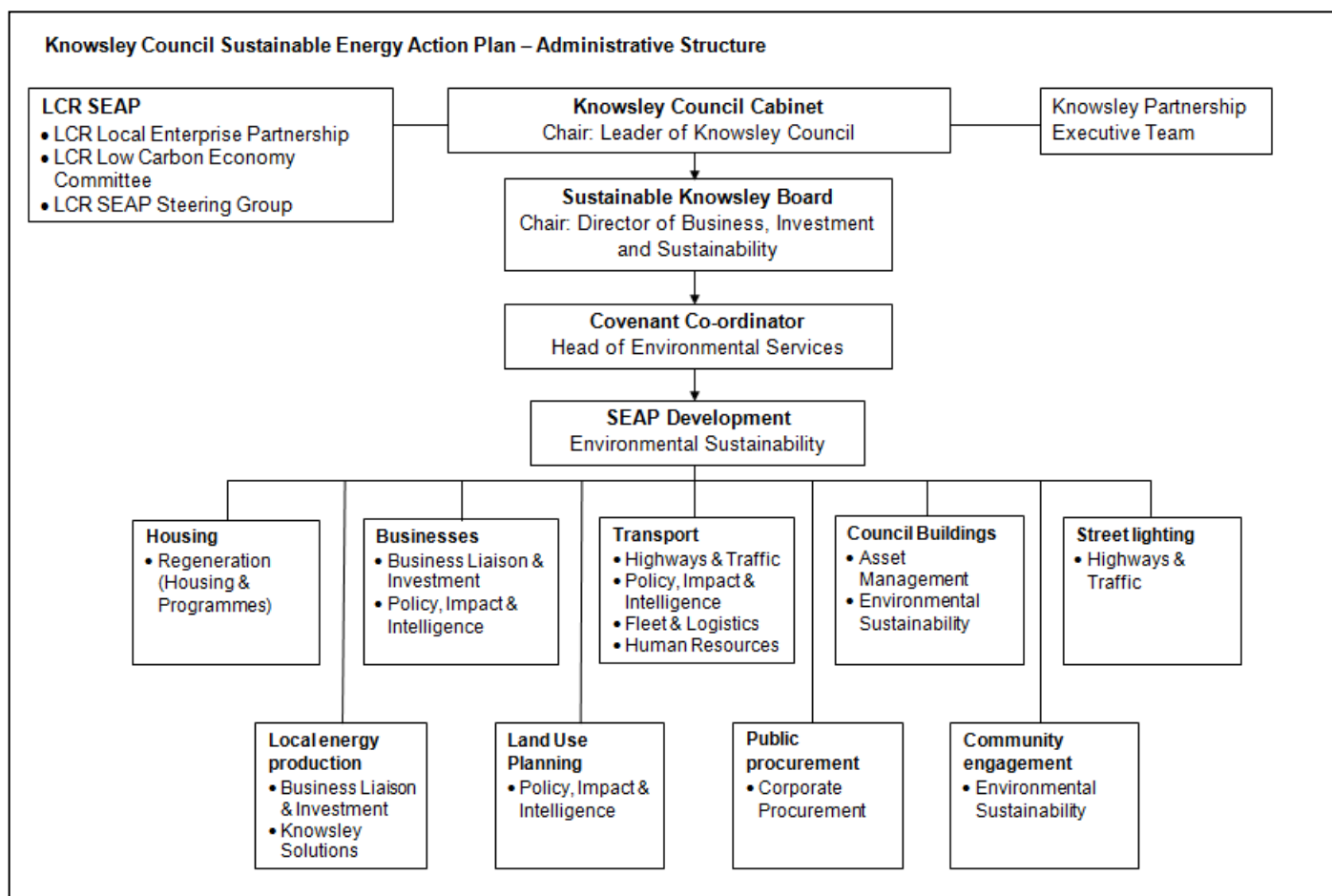
It is recognised that the Council is not the only organisation that is facilitating carbon reduction in Knowsley. Our partners are taking action to reduce carbon emissions from their own estates in addition to supporting reduction in the community. For example, Registered Landlords such as First Ark and Villages Housing have improved the energy efficiency of their housing stock and engage with residents; Merseytravel have a key role in reducing transport emissions; and Knowsley Chamber work with businesses to reduce their carbon footprint.

7. ORGANISATIONAL AND FINANCIAL ASPECTS

7.1 Co-ordination and organisational structures

Development of the SEAP and subsequent monitoring will be undertaken by the Council's Environmental Sustainability Service, working with services across the Council and partners. The work will be overseen by the Sustainable Knowsley Board, Chaired by the Council's Director of Business, Investment and Sustainability which report to the Council's Cabinet. This is summarised in Figure 8 below.

Figure 8. Knowsley SEAP Administrative Structure



7.2 Staff capacity allocated

The Climate Change and Sustainability Manager and Environment Officer from the Council’s Environmental Sustainability Service will provide capacity to co-ordinate the SEAP and monitoring/implementation reports.

7.3 Involvement of stakeholders and citizens

Knowsley’s stakeholders and citizens were involved in developing the Knowsley Partnership Climate Change Strategy during 2012. Consultation on climate change issues was undertaken with Knowsley’s Thematic Partnerships within the Knowsley Partnership, businesses, residents, environmental groups, staff, young people, and elected members.

Partners have been engaged in the development of the SEAP through the Sustainable Knowsley Board. Citizens are regularly engaged on energy issues via attendance at events by the Council’s Home Energy Officer and Environmental Sustainability Service. In addition citizens have been engaged through the Knowsley Community Energy Fit Programme, funded by the energy company E.ON. Through this programme an Energy Volunteer Co-ordinator was based at the Knowsley Council for Voluntary Services and provided training on energy issues to local residents and supported them to volunteer as Energy Champions in the local community.

7.4 Overall estimated budget

It is difficult to specify an overall budget for the SEAP. Information where available has been included in the Action Plan at Appendix D. Many projects are on-going and already funded. Although the purpose of some projects may be to solely reduce energy use and carbon emissions, for others this is just one element. For example, the cost of replacing all the street lighting in the borough cannot solely be attributed as a cost to reduce energy use. The project was required to replace an ageing street lighting system.

7.5 Foreseen financing sources for investment in the action plan

As outlined above, a significant number of projects within the Action Plan are already funded. The Council has recognised the benefits of 'invest to save' measures and economic benefits to be gained from a low carbon economy and has made funding available for improving the energy efficiency of its estate through the RE:FIT programme and the co-ordination of a district energy network at Knowsley Industrial and Business Park (which would be developed using private funding from a Strategic Energy Partner).

The Council has also proactively pursued partnership working with the private sector and in January 2012 signed a 'Memorandum of Understanding' with the energy company E.ON. This has led to funding being provided by E.ON for projects in Knowsley such as engagement with schools on energy and climate change and the Knowsley Community Energy Fit programme as outlined in Section 6 above.

The Liverpool City Region Local Enterprise Partnership's EU Structural Funds and Investment Funds Strategy 2014 – 2020 highlights the blue / green economy as one of five key areas for investment to gain maximum impact: *delivering jobs and business value by exploiting commercial opportunities from the Low Carbon and Marine Economy to be a more resource efficient and sustainable City Region*. An indicative budget of £28m from the European Regional Development Fund (ERDF) and European Social Fund (ESF) has been allocated to this portfolio. There is also the potential for funding for local authority renewable energy feasibility studies from the Growing Places Fund which is currently being discussed.

There is the potential for the Council to provide funding for renewable energy schemes from reserves or low cost public sector borrowing on an 'invest to save' basis, subject to a robust business case being developed.

Other funding sources that will be investigated in the future include:

- UK Green Investment Bank
- European Investment Bank including the ELENA programme of technical assistance
- Low Carbon Network Fund
- European Commission Programmes: Intelligent Energy Europe
- European Regional Development Fund (ERDF)
- Public/private partnerships

8. MONITORING AND REPORTING

8.1 Indicators

A monitoring framework will be developed for the SEAP. The key indicators will be based on the five datasets outlined in Section 4 above. Other Performance Indicators have been identified which will support the monitoring of progress with SEAP implementation. Monitoring Indicators have been developed for the Local Plan which will be reported on annually (these are currently in draft and may be subject to change). Relevant indicators to this plan will be utilised as outlined in Table 11 below.

Table 11. Proposed Indicators

Key Performance Indicators	
KPI 1	Annual change in CO ₂ emissions
KPI 2	Change in energy use by fuel type
KPI 3	Change in CO ₂ emissions by sector
KPI 4	CO ₂ emissions per capita
KPI 5	Change in CO ₂ emissions since 2005
Performance Indicators	
PI 1	Number of renewable installations utilising the Feed in Tariff
PI 2	Number of renewable installations utilising the Renewable Heat Incentive
PI 3	Number of residents attending energy/climate change events
PI 4	Change in CO ₂ emissions from the Council's estate and services
Local Plan Monitoring Indicators (draft)	
MI 37	Number of households in fuel poverty
MI 47	Total CHP energy generation capacity per annum within Knowsley Business Park/Knowsley Industrial and Business Park
MI 48	Number of permissions granted for decentralised energy schemes with Knowsley Business Park/Knowsley Industrial and Business Park
MI 59	New houses meeting the Code for Sustainable Homes/BREEAM standards
MI 65	Increase in length of well connected walking and cycling routes
MI 67	Travel to work modal share
MI 69	Public transport patronage in Merseyside
MI 79	Renewable energy generation
MI 80	Allowable Solutions
MI 81	Total number of permissions granted for decentralised renewable and low carbon energy sources

8.2 Monitoring

Monitoring against project progress and Performance Indicators will be undertaken by the Council's Environmental Sustainability Service and Policy, Impact and Intelligence Service annually.

8.3 Reporting

A progress report will be submitted annually to the Sustainable Knowsley Board, Knowsley Council's Cabinet and uploaded to both the Council's and Covenant of Mayors web-sites.

9. NEXT STEPS

The Sustainable Energy Action Plan for Knowsley contains a range of actions to reduce carbon emissions in the borough. Many of the actions are currently being implemented or are to be taken forward in the short term. Also included are proposals for further feasibility work around increasing the amount of energy generated from renewable sources and developing community energy schemes. Completion of this work will place the Council in a better position to develop the medium to long term actions required, and this action plan will be updated on annual basis to reflect the development of additional projects as this agenda is moved forward in Knowsley.

Appendices

Appendix A – Key Policy Drivers

Appendix B – Baseline Emissions Inventory Calculation Methodology

Appendix C – Knowsley Baseline Emissions Inventory

Appendix D – Knowsley Action Plan

APPENDIX A – KEY POLICY DRIVERS

International

International action on sustainable energy is currently being driven by the **Kyoto Protocol** as agreed by United Nations Framework Convention on Climate Change. The current protocol period will last until 2020, beyond that a new greenhouse gas reduction protocol will take effect which is to be agreed by 2015.

The **Intergovernmental Panel on Climate Change** (IPCC), published two reports in 2014. ***Climate Change: Impacts, Adaptation and Vulnerability*** was prepared by over 300 experts from 70 countries who reached their conclusions by reviewing thousands of peer reviewed scientific papers. The report shows how climate change is already having an impact on the natural environment and the human population. It warns that increasing magnitudes of warming will increase the likelihood of severe, pervasive, and irreversible impacts in the future. It was found that in Europe, key impacts would be increased economic losses due to increased flooding in some areas, increased water restrictions due to decreasing availability in other areas, in addition to losses as more people are affected by extreme heat events. Further impacts predicted to affect Europe were sea level rises, peak river flow increases, impacts on health and well being, labour productivity, crop production and air quality.

The second report from the IPCC ***Mitigation of Climate Change*** indicated that greenhouse gas emissions are still rising mainly being driven by increasing global prosperity. On a business-as-usual pathway, global mean temperatures will increase by 3 to 5 degrees over pre-industrial levels by the end of the century. A wide range of changes, including changes in technology, institutions and behaviours will be required to achieve the internationally agreed 2°C limit for avoiding dangerous levels of climate change. Many countries already have policies in place to reduce emissions, but much more needs to be done – investment in clean technology needs to be massively scaled-up and mitigation policies need to be integrated into broader political considerations, such as growth, jobs and the environment. International action is crucial.

The European Union has committed its members to reduce carbon emissions by 20% (on 1990 levels) by 2020 with long term aspirations of an 80-95% cut by 2050. Also under the **Directive on Renewable Energy**, the European Union has a target to have 20% of its energy come from renewable sources by 2020. Under the legislation, the UK has a target of sourcing 15% of its energy from renewables (such as wind power and solar energy) by 2020. The Government has introduced incentive schemes for small scale renewable electricity and heat generation in the form of the Feed in Tariff (FIT) and Renewable Heat Incentive (RHI).

National

The **UK Climate Change Act 2008** sets legally binding carbon budgets with the long term goal to reduce CO₂ emissions by a very challenging 80% by 2050. As part of the Act, the Carbon Reduction Commitment Energy Efficiency Scheme (CRC) has established a new mandatory

carbon reduction scheme designed to drive public and private organisations to improve energy efficiency and reduce the amount of carbon dioxide emitted in the UK.

The Government's **Carbon Plan**, released in December 2011, gives even greater detail about how the Government intends to achieve the challenging targets set out in the Climate Change Act 2008. The plan states that the Government is determined to address the twin challenges of tackling climate change and maintaining our energy security in a way that minimises costs and maximises benefits to our economy.

The **Energy Act 2011** brought forward the roll out of the '**Green Deal**' to householders (enabling householders to invest in energy efficiency improvements at no upfront cost – this will be recovered from energy bill savings).

The **Energy Company Obligation (ECO)** is the Government's domestic energy efficiency programme which has replaced the existing CERT and CESP programmes, both of which came to a close at the end of 2012. ECO works alongside the Green Deal to provide additional support for packages of energy efficiency measures. ECO also provides insulation and heating packages to low income and vulnerable households and insulation measures to low income communities.

The **UK Energy Efficiency Strategy** was published in 2012; this document sets out the direction for UK energy policy and includes the significant benefits that energy efficiency can bring, the barriers that need to be addressed and the steps being taken now. It is estimated that the UK could be saving 196TWh of energy through energy efficiency measures by 2020, which is equivalent to 22 power stations.

The **Energy Act 2013** enables a massive decarbonisation of the power sector by 2030, with the emissions intensity of the power sector rapidly reduced, and a new generation of clean power plants to be built, ensuring the UK can cut its greenhouse gas emissions by 50% by 2030. All the elements of the Act which include the introduction of a Capacity Market, long-term Contracts for Difference, and an Emissions Performance Standard to prevent use of unabated coal, have been designed to keep the lights on, reduce emissions and unlock private sector investment in a low-carbon energy mix of renewables, new nuclear, CCS and gas.

The **Feed in Tariff** scheme which provides financial support to business and domestic consumers to generate electricity from renewable sources such as solar photovoltaic (PV) panels and wind turbines continues but this is at a reduced rate to when the scheme was originally launched. The **Renewable Heat Incentive** is a Government scheme that provides financial support to non-domestic renewable heat generators and producers of biomethane. The scheme has now been extended to domestic consumers for the installation of technologies such as biomass boilers, solar thermal panels and ground source/air source heat pumps.

The role that local communities can play in sustainable energy generation has not been overlooked by Government and a **Community Energy Strategy** was launched in January 2014. This included the announcement of a range of financial incentives that will be made available to local communities in 2014/15.

'The Future of Heating: Meeting the challenge' was published by the Department of Energy and Climate Change (DECC) in March 2013, and outlines the implications and opportunities presented for local authorities in terms of carbon reduction from heat production. In particular the publication highlights opportunities that may support the implementation of large scale renewable heat projects in the borough.

The Government has recognised that solar PV is an important part of the UK's energy mix and in April 2014 published **the UK Solar PV Strategy**. Despite the significant increase in deployment over the last few years, the Strategy sets out the Government's ambition to see a further step change in the amount of solar PV systems both installed and manufactured within the UK. The Strategy promotes the further development of solar PV deployment on buildings, particularly industrial/commercial buildings which have been to date under-utilised. This has the advantage of utilising the existing built environment rather than previously undeveloped land. In addition, the electricity can be both generated and used on site, with the benefits of reduced energy bills, reduced pressure on the grid and lower distribution losses.

Regional

Launched in July 2012 the City Region SEAP was approved by the LCR Local Enterprise Partnership (LEP). Included as a key recommendation was that all LCR authorities sign the EU Covenant of Mayors and develop their own local SEAPs. The proposed district energy network at Knowsley Industrial and Business Park is identified as one of 12 key projects for the LCR and the Council's Cabinet approved the City Region's SEAP on 23rd January 2013.

Local

Action on climate change and sustainable energy across Knowsley is driven by the Knowsley Partnership Climate Change Strategy which was approved by the Knowsley Partnership Board in February 2013. The strategy outlines the key targets and projects which will help Knowsley to achieve its goal of a 31% reduction in emissions by 2020.

Further, Knowsley Council has signed the LGA's Climate Local initiative (which replaces the Nottingham Declaration on Climate Change) which requires the council to submit a number of actions on climate change of which the Knowsley SEAP is one.

The council also has a Carbon Management Plan which covers emissions from energy, waste, water and staff travel across the Council's estate. The target for the plan is to reduce CO₂ emissions by at least 22% by 2016.

Finally the Council has produced an economic strategy for the borough which identifies the low carbon economy as one the key growth sectors in Knowsley.

APPENDIX B – BASELINE EMISSIONS INVENTORY CALCULATION METHODOLOGY

Introduction

This report provides details on the data and methods used to produce the baseline emissions inventory (BEI) at Appendix B. It includes information on emission factors, data sources and assumptions made so that it is clear how the baseline figures were derived. This should be considered if comparisons with other local authority areas are to be made as different approaches may have been taken, making direct comparisons difficult.

The geographical boundaries of Knowsley

Knowsley is one of six metropolitan districts in the Liverpool City Region, and is located between Liverpool and Manchester. It is connected to these cities by the M57 and M62 motorways, and the A580 East Lancashire trunk road. Knowsley covers an area of 33 square miles and has a population of roughly 150,000 residents. The BEI covers emissions from the whole borough, not just Knowsley Council's estate.

Choice of emission factor approach

There are two types of emission factors that could be used, 'Standard' or 'Life Cycle Assessment'. Standard emission factors cover CO₂ emissions from energy use within the local area either directly due to fuel combustion or indirectly from the use of electricity. Life Cycle Assessment emission factors also take into account emissions from the supply chain, for example from exploitation, transport and processing of the fuel prior to final combustion, which may take place outside the local area.

The Standard emission factor has been used in Knowsley's BEI, as this is the emission factor used in the national production of the local CO₂ figures by AEA and DECC.

Emission reporting unit (CO₂ or CO₂-equivalent)

There are also two types of emission units that could be used, CO₂ or CO₂ equivalent (CO₂e). Although the main greenhouse gas commonly referred to is carbon dioxide (CO₂), there are in fact six main greenhouse gases covered by the Kyoto Protocol, carbon dioxide (CO₂), methane (CH₄), hydrofluorocarbons (HFCs), nitrous oxide (N₂O), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆).

For example, the burning of fossil fuel will release CO₂, CH₄ and N₂O into the atmosphere. The calculation of CO₂e takes into account that each of the above gases has a different potential to cause global warming, and applies a weighting so that the emissions for each greenhouse gas are expressed in terms of the global warming potential for CO₂. This allows for the emissions for all of the 6 greenhouse gases above to be reported as a single figure, referred to as CO₂e.

The emission unit used in Knowsley's BEI is CO₂ as this is the unit used in the national production of the local CO₂ figures by AEA and DECC.

Choices made regarding inclusion of sectors and sources

The Covenant of Mayors' guidance 'How to develop a Sustainable Energy Action Plan' includes recommendations regarding which sectors to include within the BEI and SEAP. The table below indicates the full range of potential sectors, whether they have been included in Knowsley's BEI and the reasons.

Sector	Included	Notes
<i>Final energy consumption in buildings, equipment/facilities and industries</i>		
Municipal buildings, equipment/facilities	YES	For the 2005 BEI this is included within the CO ₂ emissions for 'Industries' as reported by DECC. From 2009/10 the Council has collated data on carbon emissions from its estate and services so this will be reported separately in future Monitoring Emission Inventories.
Tertiary (non municipal) buildings, equipment/facilities	YES	For the 2005 BEI this is included within the CO ₂ emissions for 'Industries' as reported by DECC.
Residential buildings	YES	DECC provide the CO ₂ data for residential buildings.
Municipal public lighting	YES	For the 2005 BEI this is included within the CO ₂ emissions for 'Industries' as reported by DECC. From 2009/10 the Council has collated data on carbon emissions from its estate and services which includes street lighting, so this will be reported separately in future Monitoring Emission Inventories.
Industries involved in EU ETS	NO	The Covenant of Mayors guidance recommends that these industries are not included as their emissions fall under the EU trading scheme. This is consistent with advice from DECC as local authorities have no control or influence over these emissions.
Industries not involved in EU ETS	YES	DECC provide the CO ₂ data from industrial/commercial premises.
<i>Final energy consumption in transportation</i>		
Urban road transportation: municipal fleet (e.g. municipal cars, waste transportation, police and emergency vehicles)	YES	These three sectors are included by in DECC CO ₂ Transport emissions data.
Urban road transportation: public transportation	YES	
Urban road transportation: private and commercial transportation	YES	
Other road transportation	NO	This relates to transportation on motorways. Knowsley Council has no control over motorway transport and the majority of transport on the M62 and M57 will be passing through Knowsley. It is therefore not included in the BEI. This is consistent with the Covenant of Mayors and DECC guidance.
Urban rail transportation	NO	Knowsley Council has no control over local rail transport in the borough. There are however plans to electrify the Liverpool to Manchester line which runs through the borough. Merseytravel and Network Rail are responsible for this project.

Sector	Included	Notes
Other rail transportation	NO	Knowsley Council has no control over national/intercity rail transport through the borough.
Aviation	NO	No CO ₂ data is available for these sectors. Also Knowsley Council has no control over emissions in these areas. They are therefore not included in the BEI. This is consistent with the Covenant of Mayors and DECC guidance.
Shipping/fluvial transport	NO	
Local ferries	NO	There are no local ferries in Knowsley
Off-road transport (e.g. Agricultural and construction machinery)	NO	There is no available data on off-road transport in Knowsley.
Other emissions sources (not related to energy consumption)		
Fugitive emissions from production, transformation and distribution of fuels	NO	The Covenant of Mayors guidance recommends not including the adjacent emissions sources.
Process emissions of industrial plants involved in EU ETS	NO	
Process emissions of industrial plants not involved in EU ETS	NO	
Use of products and fluorinated gases (refrigeration, air conditioning etc.)	NO	
Agriculture (e.g. enteric fermentation, manure management, rice cultivation, fertilizer application, open burning of agricultural waste)	NO	
Land use, Land use change and forestry	NO	It is recommended by Covenant of Mayors not to include land use change within the SEAP.
Wastewater treatment	NO	Knowsley Council has no control over wastewater treatment in the borough. United Utilities are responsible for Wastewater treatment.
Solid waste treatment	NO	Knowsley Council has no control over solid waste treatment in the borough.
Energy Production		
Fuel consumption for electricity production	NO	There are no electricity producing plants under the control of Knowsley Council.
Fuel consumption for heat/cold production	NO	A relatively small CHP plant at Halewood Leisure Centre is gas fired and therefore included in the industrial commercial emissions for the borough.

Local electricity generation plants

There are no local electricity generation plants controlled by Knowsley Council within the borough.

Local heat/cold plants

There is a relatively small CHP plant at Halewood Leisure Centre however there is no separate data for available for 2005 it is included in the borough emission data published by DECC each year.

Information on data collection methods

CO₂ Data for the UK is collected nationally by the Department for Energy and Climate Change (DECC) and published on the UK government's website. The data is then narrowed down to local authority area and covers activities which fall under the scope of influence of local authorities. Activities covered include:

- Transport Emissions;
- Industrial/Commercial Emissions from energy use and
- Domestic Emissions energy use

Whilst included within the wider industrial and commercial section detailed data on Knowsley Council's own emissions (CMP data) is not available for 2005 but will be available for future Monitoring Emissions Inventory.

Emission factors used and their sources

Emissions factors used for the BEI have been taken from the AEA Technical document (Local and Regional Carbon Dioxide Emissions Estimates for 2005-2011 for the UK, 31 May 2013) released alongside the DECC local authority CO₂ emission and are produced in line with the requirements of UNFCCC (United Nations) reporting standards.

Assumptions made

Assumptions made when collecting the data are outlined in the accompanying technical document - as mentioned above - to the DECC local authority CO₂ emissions spreadsheet which can be found [here](#).

Calculation Methodology

The suggested calculation method for CO₂ emissions put forward by the covenant of mayors involves using energy data available at a local authority level and converting it to carbon dioxide. The calculation methodology used here reverses this process due to the way DECC publishes the data in CO₂ format. CO₂ figures will be entered in the first instance and converted back into energy data using the same conversion factor used by DECC to convert energy use to CO₂. The methodology used to calculate the BEI is outlined below.

Data used:

CO₂ emissions within the scope of influence of Local Authorities (previously called National Indicator 186: Per capita CO₂ emissions in the LA area) – published on the 11th July 2013 via DECC

AEA Technical document, Local and Regional Carbon Dioxide Emissions Estimates for 2005-2011 for the UK, 31 May 2013

Process

- Use tab: Subsetdetailed in excel sheet mentioned above
- Enter CO₂ emissions for Industrial and Commercial Electricity, Gas and Other Fuels into table B in the BEI spreadsheet (enter in appropriate white cells only)
- Enter Domestic Electricity, Gas and Other Fuels into appropriate white cells into the same table

- Add together Transport data for A roads, Minor Roads and Other Fuels – enter this into Transport Section of table B under Private and Commercial Transport row and Other Fuels column (improvements are made each time the data is released but currently no breakdown by fuel is available so the best option is to place them all under one section)
- If any additional CO₂ or energy data is made available it should be added in at this point
- Fill in 'Total' cells (the green ones) using SUM formula in excel
- Identify current conversion factors available using AEA technical report or other sources (current factors below are from the 2013 AEA Technical document):
 - Electricity 0.522k/tonnes of CO₂ per GWh
 - Gas 0.187 k/tonnes of CO₂ per GWh
 - Conversion factors are not currently available for total fuel consumption
- Use conversion factors to calculate energy data for both Electricity and Gas CO₂ data in table B by dividing the CO₂ data by the conversion factors to get the number of GWh used. This process may be reversed if only energy data is available
- If other conversion factors are available calculate other energy data (non are currently available)
- Multiply figures in Table B white cells by 1000 to convert from kilo tonnes to tonnes*
- Multiply figures in Table A white cells by 1000 to convert from GWh to MWh*

*If there are formulas present then copy white cells, paste special and choose 'values only' to remove formulas

Recalculation Policy

The BEI will be recalculated if the council receives new information on any of the following:

- Industry delocalisation (if representing more than 1% of the baseline);
- New information on emission factors (only if this information improves the accuracy of the BEI);
- Methodological changes (only if the changes improve the accuracy of the BEI);
- Changes in the local authority's boundaries.

References used

Department for Energy and Climate Change,

<https://www.gov.uk/government/organisations/department-of-energy-climate-change>

Knowsley Metropolitan Borough Council, www.knowsley.gov.uk

AEA, Technical methodology summary, <https://www.gov.uk/government/publications/local-authority-carbon-dioxide-emissions-methodology-notes>

Covenant of Mayors guidance, http://www.covenantofmayors.eu/IMG/pdf/seap_guidelines_en-2.pdf

Names and contact information of people who provided information for the inventory

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APPENDIX C – KNOWSLEY’S BASELINE EMISSIONS INVENTORY

Sustainable Energy Action Plan (SEAP) template

BASELINE EMISSION INVENTORY

1) Inventory year

For Covenant signatories who calculate their CO2 emissions per capita, please provide here the number of inhabitants during the inventory year:

[Instructions](#)

2) Emission factors

Please tick the corresponding box:

- Standard emission factors in line with the IPCC principles
 LCA (Life Cycle Assessment) factors

Emission reporting unit

Please tick the corresponding box:

- CO2 emissions
 CO2 equivalent emissions

3) Key results of the Baseline Emission Inventory

Green cells are compulsory fields

Grey fields are non editable

A. Final energy consumption

Please note that for separating decimals dot (.) is used. No thousand separators are allowed.

Category	FINAL ENERGY CONSUMPTION [MWh]														Total		
	Electricity	Heat/cold	Fossil fuels							Renewable energies							
			Natural gas	Liquid gas	Heating Oil	Diesel	Gasoline	Lignite	Coal	Other fossil fuel	Plant oil	Biofuel	Other biomass	Solar thermal		Geothermal	
BUILDINGS, EQUIPMENT/FACILITIES AND INDUSTRIES:																	
Municipal buildings, equipment/facilities																	
Tertiary (non municipal) buildings, equipment/facilities																	
Residential buildings	271,590		1,055,561														1,327,151.54
Municipal public lighting																	
Industries (excluding industries involved in the EU Emission trading s	684,540		1,020,160														1,704,701
Subtotal buildings, equipments/facilities and industries	956,130.77		2,075,722														3031657.19
TRANSPORT:																	
Municipal fleet																	
Public transport																	
Private and commercial transport																	
Subtotal transport																	0
Total																	1,021,852

Municipal purchases of certified green electricity (if any) [MWh]:	
CO2 emission factor for certified green electricity purchases (for LCA approach):	

B. CO2 or CO2 equivalent emissions

Please note that for separating decimals dot (.) is used. No thousand separators are allowed.

Category	CO2 emissions [t]/ CO2 equivalent emissions [t]															Total	
	Electricity	Heat/cold	Fossil fuels								Renewable energies						
			Natural gas	Liquid gas	Heating Oil	Diesel	Gasoline	Lignite	Coal	Other fossil fue	Biofuel	Plant oil	Other biomas	Solar therma	Geothermal		
BUILDINGS, EQUIPMENT/FACILITIES AND INDUSTRIES:																	
Municipal buildings, equipment/facilities																	-
Tertiary (non municipal) buildings, equipement/facilities																	-
Residential buildings	141,770.0		197,390.0									9,920.0					349,080.0
Municipal public lighting																	-
Industries (excluding industries involved in the EU Emission trading s	357,330.0		190,770.0									68,900.0					617,000.0
Subtotal buildings, equipments/facilities and industries	499,100.0	-	388,160.0	-	-	-	-	-	-	-	-	78,820.0	-	-	-	-	966,080.0
TRANSPORT:																	
Municipal fleet																	0
Public transport																	0
Private and commercial transport												241,700.0					241700
Subtotal transport	0	0	0	0	0	0	0	0	0	0	0	241700	0	0	0	0	241700
OTHER:																	
Waste management																	
Waste water management																	
Please specify here your other emissions																	
Total	499,100.0	-	388,160.0	-	-	-	-	-	-	-	-	320,520.0	-	-	-	-	1,207,780.0

Corresponding CO2-emission factors in [t/MWh]

CO2 emission factor for electricity not produced locally [t/MWh]

C. Local electricity production and corresponding CO2 emissions

Please note that for separating decimals dot (.) is used. No thousand separators are allowed.

City (excluding ETS plants, and generated electricity)	Generated electricity [MWh]	Energy carrier input [MWh]										CO2-eq emissions [t]	Emission factors for electricity [t/MWh]	
		Fossil fuels					Steam	Waste	Plant oil	Other biomass	Other renewable			Other
		Natural gas	Liquid gas	Heating oil	Lignite	Coal								
Wind power														
Hydroelectric power														
Photovoltaic														
Combined Heat and Power														
Other (Please specify: _____)														
Total														

D. Local heat/cold production (district heating/cooling, CHPs...) and corresponding CO2 emissions

Please note that for separating decimals dot (.) is used. No thousand separators are allowed.

Locally generated heat/cold	Generated heat/cold [MWh]	Energy carrier input [MWh]										CO2-eq emissions [t]	Emission factors for heat/cold [t/MWh]	
		Fossil fuels					Waste	Plant oil	Other biomass	Other renewable	Other			
		Natural gas	Liquid gas	Heating oil	Lignite	Coal								
Combined Heat and Power														
District Heating plant(s)														
Other (Please specify: _____)														
Total														

4) Other CO2 emission inventories

If other inventory(ies) have been carried out, please click [here ->](#)

Otherwise go to the [last part of the SEAP template ->](#) dedicated to your Sustainable Energy Action Plan

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More information: www.eumayors.eu.

APPENDIX D – KNOWSLEY COUNCIL'S ACTION PLAN

SECTORS & fields of action	KEY actions/measures per field of action	Responsible department, person or company (in case of involvement of 3rd parties)	Implementation [start & end time]		Estimated costs per action/measure	Expected energy saving per measure [MWh/a]	Expected renewable energy production per measure [MWh/a]	Expected CO2 reduction per measure [t/a]	Energy saving target per sector [MWh] in 2020	Local renewable energy production target per sector [MWh] in 2020	CO2 reduction target per sector [t] in 2020
BUILDINGS, EQUIPMENT / FACILITIES & INDUSTRIES:									18255 + unquantified actions	7.638 + unquantified actions	4530 + unquantified actions
<i>Municipal buildings, equipment/facilities</i>	CMP - Voltage optimisation phase 2	KMBC/Asset Management	2012	2012	£0.036m	82.4	0	45			
	CMP - LED lighting Huyton Multi Storey	KMBC/Asset Management	2012	2012	£0.011m	56.3	0	30.8			
	CMP - RE:FIT programme (Energy Performance Contracting)	KMBC/Asset Management	2013	2014	£1.0m	2450	0	725			
	Biomass boilers at 7 new build sites	KMBC/Asset Management	2012	2013	New building	New building	New building	New building			
<i>Tertiary (non municipal) buildings, equipment/facilities</i>	Engage with partner organisations to promote development of Carbon Management Plans	KMBC/Environmental Sustainability	2013	Apr-15	N/A	Not known	Not known	Not known			
<i>Residential buildings</i>	CESP Kirkby - External wall insulation installed at 1745 privately owned properties	KMBC/Housing Strategy	2012	Nov-12	£13m	10267	N/A	1920			
	CESP Kirkby Mitigation Programme - External Wall Insulation measures installed at 358 privately owned properties	KMBC/Housing Strategy	Jan-13	Apr-13	£3m	2107	N/A	394			
	Warm Homes Scheme 2012-2013 assisted 102 residents included 22 boiler replacements, 15 full central heating installations	KMBC/Housing Strategy	Dec-12	Mar-13	£0.094m	6.29	N/A	1.2			
	Warm Homes Scheme 2013-14 Stats on the completed scheme are tbc after March 31st 2014	KMBC/Housing Strategy	Dec-13	Mar-14	£0.080m	tbc	N/A	tbc			
	DECC Fuel Poverty Scheme 2013 - assisted 58 residents included 18 boiler replacements, 6 full central heating installations	KMBC/Housing Strategy	Jan-13	Mar-13	£0.063m	4.08	N/A	0.8			
	Temporary Accommodations Liverpool Road Solar PV installation	KMBC/Housing Strategy	Mar-14	Apr-14	£0.017m	7.638	7.638	1.4			
	Temporary Accommodations Liverpool Road ERAD Infrared Heating System is a replacement for conventional Gas and Electric heating systems and are ideal for off gas and small properties with expected household energy savings of around 70 to 90%	KMBC/Housing Strateg	Mar-14	Apr-14	£0.010m	7.2	N/A	1.3			

SECTORS & fields of action	KEY actions/measures per field of action	Responsible department, person or company (in case of involvement of 3rd parties)	Implementation [start & end time]		Estimated costs per action/measure	Expected energy saving per measure [MWh/a]	Expected renewable energy production per measure [MWh/a]	Expected CO2 reduction per measure [t/a]	Energy saving target per sector [MWh] in 2020	Local renewable energy production target per sector [MWh] in 2020	CO2 reduction target per sector [t] in 2020
	Cosy Knowsley - loft and cavity wall insulation to 145 properties in partnership with British Gas (CERT scheme)	KMBC/Housing Strategy	Apr-12	Nov-12	Not known	1000	N/A	187			
	Provision of an advisory role in relation to the Government's Green Deal energy efficiency programme	KMBC/Housing Strategy	Jan-13	Not known	none	Not known	Not known	Not known			
	ECO Stockbridge Village - Marled Hey Programme - External Wall Insulation measures to be installed at 44 Privately owned properties	KMBC/Housing Strategy	Apr-14	Oct-14	£440,000	Not known - Actual figure will be released post works	N/A	Not known			
	Project Viridis Home Energy Saving project, which has been set up by the local councils and Registered Social Landlords (Housing Associations) in Merseyside to help people become more energy efficient	KMBC/Housing Strategy	2013	Not known	£0.015m	Not known	Not known	Not known			
	Potential Prescott / Whiston ECO Programme - Initial targeting of approximately 400 homes to receive External Wall Insulation and other efficiency measures Subject to final funding agreement	KMBC/Housing Strategy	2014	2014	£4m	Not known - Actual figure will be released post works	N/A	Not known			
Municipal public lighting	Knowsley Street Lighting Replacement Programme	KMBC/Highways & Transportation + SSE	Apr-11	Apr-16		2237	N/A	1223			
Industries (excluding industries involved in the EU Emission trading scheme - ETS) & Small and Medium Sized Enterprises (SMEs)	ERDF Merseyside Business Support Programme offering free advice to SMEs on resource efficiency and carbon reduction	KMBC/Business Support	Jan-13	Sep-14	ERDF funded	Not known	Not known	Not known			
	REECH Business Support Programme for SMEs	KMBC/REECH Sefton Council	2013	2014	ERDF funded	Not known	Not known	Not known			
	Feasibility assessment for the development of an Environmental Award Scheme for SMEs on Knowsley Industrial Park	KMBC/Environmental Sustainability	2014	2014	None	Not known	Not known	Not known			
TRANSPORT:									Unquantified actions	Unquantified actions	Unquantified actions
Municipal fleet	CMP - annual refresh of Smarter Driver training for fleet drivers (to maintain savings already made)	KMBC/Environmental Sustainability	Mar-12	Mar-16	£0.001m pa	N/A	N/A	N/A			
	Fleet Replacement Plan	KMBC/Fleet and Logistics	2014	2014	Not known	Not known	N/A	Not known			
	CMP - Staff Travel Plan actions	KMBC/HR/ Environmental Sustainability	2011	2016	Not known	Not known	N/A	Not known			

SECTORS & fields of action	KEY actions/measures per field of action	Responsible department, person or company (in case of involvement of 3rd parties)	Implementation [start & end time]		Estimated costs per action/measure	Expected energy saving per measure [MWh/a]	Expected renewable energy production per measure [MWh/a]	Expected CO2 reduction per measure [t/a]	Energy saving target per sector [MWh] in 2020	Local renewable energy production target per sector [MWh] in 2020	CO2 reduction target per sector [t] in 2020		
Public transport	Introduction of new bus services in Knowsley 2012/13 funded by LSTF to service Huyton Business Park, Leisure & Culture Park, Huyton Town Centre in evenings and weekends	Merseytravel	2012	2013	£0.30m	Not known	N/A	Not known	26.285 + unquantified actions	26.285 + unquantified actions	14.4 + unquantified actions		
	Electrification of railway lines through Huyton	Network rail		2014	Not known	Not known	N/A	Not known					
Private and commercial transport	Business Travel Advisors - two travel advisors will be working with 70 Knowsley businesses to produce green travel plans (Local Sustainable Transport Fund)	KMBC/Transportation & Knowsley Chamber	Apr-12	Apr-15	£0.210m	Not known	N/A	Not known					
	Development of new cycle and walking routes in Knowsley - approx 24km	KMBC/Transportation	2012	2015	£4.0m	Not known	N/A	Not known					
	Install 6 electric vehicle charging points in key locations around the borough (funding from Office of Low Emission Vehicles)	KMBC/Transportation & Merseytravel	2013	2015	£0.045m	Not known	N/A	Not known					
	Knowsley Council staff cycle to work scheme and public transport ticket loans	KMBC/Human Resources	2012	2014	0 (applicant pays back loan monthly)	Not known	N/A	Not known					
LOCAL ELECTRICITY PRODUCTION:													
Wind power	Feasibility of small to medium wind turbine schemes on Council land	KMBC/Environmental Sustainability	2014	2015	£0.012m	Not known	Not known	Not known					
Photovoltaic	Knowsley Council Huyon Municipal Annex Solar PV Array	KMBC/Asset Management	Mar-13	Mar-13	£0.075m	26.285	26.285	14.4					
	Knowsley Council Solar PV cells at the new Prescot Leisure Centre	KMBC/Asset Management	2013	2014	New building	New building	New building	New building					
	Feasibility of additional solar PV panels on Council buildings	KMBC/Asset Management	2014	2015	None	Not known	Not known	Not known					
	Feasibility of ground mounted solar PV panel schemes on Council land	KMBC/Environmental Sustainability	2014	2015	£0.003m	Not known	Not known	Not known					
Community Energy	Feasibility of Community Energy Schemes	KMBC/Environmental Sustainability	2014	2015	None	Not known	Not known	Not known					
LOCAL DISTRICT HEATING / COOLING, CHPs:													
District heating plant	Engagement of a Strategic Energy Partner to develop a District Heating Network at Knowsley Industrial Park	KMBC/Environmental Sustainability Business Liaison & Investment	2012	2015	£0.275m	33894 (Cluster 1) 18878 (Cluster 2)	N/A	7040 (Cluster 1) 1568 (cluster 2)	52772	N/A	8608		

SECTORS & fields of action	KEY actions/measures per field of action	Responsible department, person or company (in case of involvement of 3rd parties)	Implementation [start & end time]		Estimated costs per action/measure	Expected energy saving per measure [MWh/a]	Expected renewable energy production per measure [MWh/a]	Expected CO2 reduction per measure [t/a]	Energy saving target per sector [MWh] in 2020	Local renewable energy production target per sector [MWh] in 2020	CO2 reduction target per sector [t] in 2020
Biomass Supply	Feasibility of Biomass Supply and Distribution Centre in Knowsley	KMBC/Environmental Sustainability Business Liaison & Investment	2014	2015	None	N/A	N/A	Not known			
LAND USE PLANNING:									Unquantified actions	Unquantified actions	Unquantified actions
Strategic urban planning	Prepare and adopt the Local Plan	KMBC/Policy	2012	2015	Not known	Not known	N/A	Not known			
Transport / mobility planning	Implement the existing Knowsley Local Implementation Plan under the Merseyside Local Transport Plan (Goal 2 interventions)	KMBC/Transportation	2012	2015	Funded via LTP	Not known	N/A	Not known			
	Prepare new Knowsley Local Implementation Plan under the Merseyside Local Transport Plan (current plan runs 2011-2015)	KMBC/Transportation	2015	2015	Funded via LTP	Not known	N/A	Not known			
	Transport modelling/studies to provide a better understanding of congestion on the network and consider where improvements to the network can be made	KMBC/Transportation	2012		£0.010m	Not known	N/A	Not known			
Standards for refurbishment and new development	Consider the most appropriate way of incorporating sustainable design principles within the Local Plan, in light of new Government Policy	KMBC/Policy & Environmental Sustainability	2015	2015	None	Not known	N/A	Not known			
PUBLIC PROCUREMENT OF PRODUCTS AND SERVICES:									Unquantified actions	Unquantified actions	Unquantified actions
Energy efficiency requirements/standards	Review Corporate Procurement Policy and Guidance to incorporate energy efficiency requirements	KMBC/Procurement & Environmental Sustainability	2015	2015	None	Not known	N/A	Not known			
Renewable energy requirements/standards	Review Corporate Procurement Policy and Guidance to incorporate energy efficiency requirements	KMBC/Procurement & Environmental Sustainability	2015	2015	None	Not known	Not known	Not known			
WORKING WITH THE CITIZENS AND STAKEHOLDERS:									1398	N/A	377
Financial Support and Grants	Sustainable Travel Grants of up to £0.010m per business for those engaged with Travel Plan Advisor funded by LSTF	KMBC/Transport & Knowsley Chamber	2013	2014	Not known	Not known	N/A	Not known			
Awareness raising and local networking	Cosy Knowsley energy efficiency behaviour change programme	KMBC/Housing Strategy	Apr-12	Dec-20	Not known	Not known	N/A	Not known			
	Knowsley Community Energy Fit - recruiting volunteers to become local Energy Champions	KMBC/Housing Strategy & Environmental Sustainability, KCVS, KHT, Villages	Feb-12	Mar-14	£0.020m 2013/14	Not known	N/A	Not known			

SECTORS & fields of action	KEY actions/measures per field of action	Responsible department, person or company (in case of involvement of 3rd parties)	Implementation [start & end time]		Estimated costs per action/measure	Expected energy saving per measure [MWh/a]	Expected renewable energy production per measure [MWh/a]	Expected CO2 reduction per measure [t/a]	Energy saving target per sector [MWh] in 2020	Local renewable energy production target per sector [MWh] in 2020	CO2 reduction target per sector [t] in 2020
	Walk Once a Week initiative	KMBC/PCT	2013	2014	£0.001m	Not known	N/A	Not known			
	Bike IT initiative LSTF	KMBC/Transport & Sustrans	2013	2015	£0.150m	Not known	N/A	Not known			
	Quarterly sustainable business travel events in Knowsley LSTF funded	KMBC/Transport & Knowsley Chamber	2013	2015	£0.020m	Not known	N/A	Not known			
	CMP - Staff Behaviour Change Programme	KMBC/Environmental Sustainability	2012	2016	£0.003m p.a.	1,399	N/A	377			
	Provision of The Environment Network (TEN) for local businesses	KMBC/Environmental Sustainability & Business, Chamber	Nov-12	On going	Not known	Not known	N/A	Not known			
	Participation in the Merseyside Energy Club and promotion to large commercial/industrial businesses in the borough	KMBC/Environmental Sustainability	Jul-05	On going	None	Not known	N/A	Not known			
Training and education	Provision of an Environmental Support Package for schools	KMBC/Environmental Sustainability	Feb-14	On going	Traded service	Not known	N/A	Not known			
	Cycle training for adults and children (3 schemes funded by LSTF/LTP, DfT and KMBC)	KMBC/Transport	2013	2015	£0.032m	Not known	N/A	Not known			