

## **APPENDIX A**

### **A summary of evidence which has been received during the review**

#### **Tonnes of carbon (gas and electric) emitted from Council buildings and street lighting**

- Academies – 10,941
- General Fund – 9,023 (Civic Centre accounts for 50% of General Fund emissions)
- Housing Revenue Account – 237
- Street Lighting – 5,387
- LA Schools – 8,949

The total from the above came to 34,536 tonnes of carbon.

#### **Levels of energy costs for this Council.**

Energy contracts were approximately £21m over 4 years with the Council's Carbon Reduction Commitment (CRC) allowances cost being £357,000 per annum.

The Council's Climate Change Levy was estimated at £280,000 per annum. The Levy was an environmental tax on energy supplies and was levied to encourage greater energy efficiency and lower energy use.

Reference was made to the total annual budget resource for the Council which was £2,047,324 for gas, £3,218,196 for electricity (total £5,265,520).

#### **Improved environmental performance**

The Council had saved money with an improved environmental performance with energy related works, electrical energy reduction comparisons between March 2008 and March 2013, had indicated that the daily energy costs for the Civic Centre would still be approximately £2,546 per day, as opposed to the current day comparison of £1,819. However, this energy saving work had resulted in a reduction in carbon usage from approximately 14.34 tonnes to 10.43 tonnes.

Energy efficiency measures which had taken place in the Civic Centre included:- improving the building fabric and insulation, an extensive lighting programme which included the installation of LED tubes. Reference was made to the energy efficiency improvements made through a Chiller replacement which had taken place with the air conditioning system in the Civic Centre.

Upgrading the boilers and pipe work for direct hot water services meant the main boilers at the civic were not needed all year round. This also led to a saving on the annual gas costs at the Civic Centre.

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ICT upgrades had taken place which reduced energy costs and usage. PCs in the Civic Centre automatically shut down in the evenings

Reference was made to the greener approach which the Council had taken to energy in the form of renewable power. These included:-

- Solar Photovoltaic which had been installed at Sibley Court and the Civic Centre.
- Solar Thermal power which had been installed at Botwell Leisure Centre.
- Combined Heat and Power systems which had been installed at Hillingdon Sports Centre and Triscott House and which had been considered for the Civic Centre.
- Anaerobic digestion which could be considered as an energy source at New Years Green Lane.

**Carbon Offsetting work.** Subject to evaluation these works could include-

- Displacing energy from power stations.
- Would there be a scope for sharing the district's heat and power through a district system, i.e. with other public authorities?
- On-site and off-site generation – Looking at investing facilities elsewhere?
- The use of rural Hillingdon to offset carbon emissions? Increased planting of trees and anaerobic digestion as a renewable energy source.
- Receiving credits for fuel poverty initiatives – This could include the improvements which have (and would) be made to the Council's housing stock.

### **Reducing domestic carbon emissions**

The Committee was made aware of a Fuel Poverty Project which the Council worked in partnership with energy providers on. The Council had bid for £106,500 funding from the Department of Energy and Climate Change.

Reference was made to the Energy Company Obligation (ECO), which was a new Government led energy savings scheme which was funded by energy suppliers. There was an Energy Company Obligation of £327,000 with a minimum target of achieving 120 heating measures, 10 solid wall insulations, 60 loft and cavity wall insulation and 5 hard to treat cavity wall insulations.

The main purpose of ECO was to reduce the amount of carbon emissions and to help reduce fuel poverty.

With ECO, Energy Companies were obligated in three ways:

- Home Heating Cost Reduction Obligation (HHRCO) – This would fund boiler replacements for those on certain benefits but was only for private sector housing. The Council would be looking at finding additional funding for this.

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- Carbon Emission Reduction Obligation (CERO) – This focused on solid wall or hard-to-treat cavity wall insulation and applied to all tenures. This amounted to around £8-10k per property.
- Carbon Savings Community Obligation (CSCO) – This focused on loft and cavity wall insulation within 15% of the most deprived Lower Super Output areas in the Borough, and applied to all tenures.

Other initiatives which included:

- Training and local job creation – the Council was working with Job Centre Plus, Uxbridge College and Dyson Energy Services. Work was taking place at introducing apprenticeships for young people of the Borough to be employed by those organisations involved in these energy conservation works.
- Green Deal Communities Fund - Members were informed that a new £20 million Green Deal Communities scheme had been introduced by Department of Energy and Climate Change (DECC) to help local authorities drive street-by-street delivery of this scheme. There was a potential for Hillingdon to bid for £1m. The Council would identify target streets and areas in the Borough that could most benefit from the Green Deal, and then offer incentives to households in these areas to encourage them to install energy efficiency home improvements under the Green Deal. The Council would propose incentives as part of their bids for funding, which would be assessed by DECC.
- Warmth 4 Winter – The Council was working with local partners to reduce excess winter deaths amongst the most vulnerable residents.
- Council Housing – The Council was accessing ECO funding for solid wall insulation.
- A Steering Group would be set up to develop a Strategic Action Plan for energy efficiency and affordable warmth.

Reference was made to the typical lifetime carbon saving per measure:-

- Solid wall insulation = 44.4 tonnes of carbon
- Cavity wall insulation = 27.6 tonnes of carbon
- Loft Insulation = 4.8 tonnes of carbon
- Gas boiler replacement = 6 tonnes of carbon

The Committee was provided with a graph which provided details of the carbon saved by measure and the funding spent to achieve this (3,086 tonnes of carbon saved). This proved that with a relatively small pot of funding the Council, on behalf of its residents, could potentially unlock a lot of funding.

### **Publicity for ECO**

A national advertising campaign had taken place. The Council had also publicised the scheme through its public website, through Hillingdon People and at numerous community events.

Areas the Committee expressed an interest in were:-

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- How could the ECO initiative be better communicated to residents from the Council?
- What could the Council do to broker the best energy deals for residents?

### **Helping residents and local businesses switch energy supplier–**

As a result of Members discussions, officers reported that a press release was to be released which would inform residents that practical advice on switching energy providers and getting the best energy deals would be available from a Council backed helpline. The Council had teamed up with the Energy Helpline to provide this free and impartial service.

Residents who were worried about the impact of rising energy prices which had recently been announced by gas and electricity suppliers would be encouraged to find out if they could save money by swapping to a different company. The Council's website contained information for residents on energy efficiency and savings which could be made.

Members were informed that this press release would be passed to local newspapers and consideration could also be given to producing flyers for local libraries and for street champions to distribute.

This initiative was asked to be extended to also helping local businesses switch energy supplier. Officers agreed and this initiative would also be promoted on the Council's website for local businesses. Practical advice on switching energy providers and beating price hikes would be made available to businesses in the Borough in an attempt to save businesses energy costs.

### **Street Lighting and Illuminated signs**

One of the future developments of Carbon Reduction was the removal of Academies and Schools from the reporting requirements of the Carbon Reduction Commitment (CRC) from 2014/15, with Street Lighting coming in. This would impact on the level of CRC allowances.

The Borough's street lighting, illuminated signs and CCTV was projected to consume 10,388,332 Kwh of electricity in 2013/14 financial year which would produce an estimated 5,620 tonnes of carbon. This would be from 23,300 street lights, 4,800 illuminated signs, bollards and zebra crossing and from lighting in 12 subways and under passes in the Borough.

### **Current activities relating to energy saving and the reduction of on going maintenance costs**

These included work on Zebra Crossing Beacons and associated spot lights, LED lanterns for lighting on residential roads, the use of electronic ballasts for discharge lamps and illuminated bollards.

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“Keep left” signs on bollards – These were now unnecessary and providing there was no confusion these could now be replaced with plain reflectorised bollards. This provided an obvious energy saving.

The replacement of Thermal Photoelectric photo cells with electronic units of street lights. Electronic photo cells reduced the length of time that street lights were on (50 hours per annum) compared with thermal cells. Electronic photo cells were used on all new installations and would replace any thermal cells that failed for the last fifteen years.

### **Future Energy Savings**

An energy saving option could be the replacement of old street lanterns on residential roads with new LED lanterns, utilising the existing columns. Much of the existing lighting on residential roads was currently low sodium, which produced an orange monochromatic light that did not allow colours to be seen. This was a very efficient light source but the light was poorly controlled and contributed to sky glow. Many of the lanterns were showing wear and tear which reduced their efficiency. It would be possible to replace these old lanterns with modern LED lanterns and that this had been carried out at a few locations to provide lighting improvements where new traffic calming schemes were built; however, the savings were relatively small compared to the investment. This would typically result in a payback period in excess of 20 years.

With 13,000 of these types of lights within the Borough, the lantern replacement would cost around £350-400 per column, which would be a total cost of £4.5m (65,000 kwh per annum or £6,045 and 35 tonnes carbon saving). This would be prohibitive.

### **Procurement - Energy Contracts 2013/14**

The Council's Energy Manager provided Members with the background to the Council's current energy contracts and the proposals for the Council to procure energy on a greener tariff. This would have obvious consequences of reducing CO<sub>2</sub> and reducing this Council's Climate Change Levy. The Committee was encouraged by this strategy and the move to greener energy.

### **Profiled lighting on traffic routes**

This was whereby the lighting levels and uniformity of the lighting for street lighting on traffic routes was determined by the average daily traffic flow.

A detailed analysis of the hourly traffic flow data for various sections of road could be carried out and it could be possible to reduce the level of lighting at the times when there was less traffic. This would reduce the energy consumption and produce a carbon reduction. For this to happen, the control gear in each lantern would have to be replaced with dimmable units and a method of controlling the dimmer function either through a central control system or at each unit.

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Members expressed an interest in having additional information on profiled or part night lighting in residential areas. It was noted that where new lighting had been installed in residential areas, the lanterns did have the facility to be dimmed at various times of the night. This would involve the installation of an additional control unit to enable the dimming to take place.

### **Using Development Planning to Reduce the Carbon Footprint**

The Council's Principal Sustainability Officer provided a paper which informed Members that the Council had been implementing the London Plan requirements for carbon reductions in new development. Until 1 October 2013 these required new major development to reduce emissions by 25% from building regulations (minimum standard). However, from 1 October 2013 all new major development must demonstrate a 40% reduction in CO<sub>2</sub>, which would be difficult to achieve.

The Committee was informed that where a developer could not achieve the savings onsite, the Council would ask for offsite contributions via Section 106 (i.e. developer funds). This would then enable the Council to make carbon reductions elsewhere.

Members were provided with examples of what work had been carried out to ensure developments met the 40% target with off site contributions. Particular reference was made to the Council's School Building Programme which had saved £100k and ensured improvements to inefficient buildings

### **Urban greening and Off-setting work**

Reference was made to the carbon off-setting work (carbon sinks) which was taking place through the planning system. It was recognised that the plantation of more trees in the north of Borough would be a useful method of providing more carbon sinks. However, of more benefit would be the planting of more trees in the south of the Borough as this area suffered some harmful air quality and was acknowledged that vegetation not only removed carbon dioxide from the atmosphere, but also other harmful emissions such as those from transportation.

In the last planting season (November - March) the Council planted 704 street and roadside trees.

The amount of Carbon a tree would offset depended on a number of factors, such as the type of tree, where it was planted and the amount of room it had to grow. On average, one broad leaf tree would absorb in the region of 1 tonne of carbon dioxide during its full life-time (approximately 100 years).

Therefore with an estimated 16,000 trees planted alongside the Borough's roads and highways this would absorb around 16,000 tons of carbon.

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### **Decentralised Energy – Heat and Power**

Reference was made to the Energy Centre and heat network at Bunhill, in the London Borough of Islington. The Centre provided a heat network in the Bunhill ward and provided cheaper, greener and locally produced energy. The heat network was fed by a local energy centre which produced electricity and heat.

This Energy Centre produced more efficient electricity than the central power stations because the normally wasted heat which occurred in central power stations was captured and piped around the heat network in the Energy Centre. The Energy Centre was generally much more efficient, cheaper and greener and provided residents with affordable warmth and helped reduce carbon emissions.

The Pimlico District Heating Undertaking which had been around since the 1950s and was the first major initiative to combat London's air pollution, ahead of the Clean Air Act 1956. The scheme provided heating and water services to 3,256 homes, 50 commercial premises and three schools within the area at a reduced energy cost.

In addition, Pimlico reduced carbon emissions by 11,000 tonnes per year.

### **Potential heat and power networks within the Borough**

These included an area close to Uxbridge High Street, Hillingdon Hospital and Brunel University. For such a network to work, the Council would have to work closely with both partners and customers. Reference was also made to the site of the former EMI vinyl factory in Hayes and officers were asked to give this site consideration as a potential network.

Reference was made to the different technologies used:

- Gas Fired Central Boilers
- Combined Heat and Power
- Energy from Waste
- Anaerobic Digestion
- Solar Power
- Air and Ground Source Heating

It was noted that for such a facility to be implemented within the Borough, it would require high level technical feasibility and financial modelling. It was acknowledged that as part of a long term strategy, initiatives such as at Pimlico and Bunhill would provide long term energy savings and benefits for the Council, its partners and its residents.

Absorption chilling was used in the summer to convert hot water to cool water and officers were asked to consider this in any considerations of Decentralised Energy as absorption chilling was cost effective and more economical than electrical chillers and therefore would reduce energy costs.

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### Anaerobic Digestion (AD)

This was where organic waste, food, grass, slurry etc, was mixed and broken down to form gas. The gas was then used to power an engine which generated heat and electricity, which was then sold to the grid and local users through a district heat and power network. Reference was made to a new AD plant which had opened in County Durham. This new plant produced 1.56MWh which was enough energy to power 2,000 homes from processing up to 50,000 tonnes of commercial food waste.

The plant in County Durham cost £8m to construct.

The Council's Energy Manager referred to the number of farms within the Borough which could be used for this anaerobic process. Discussion took place on the use of residents' kitchen caddies and the possible use of food waste for this anaerobic digestion.

The benefits of AD to the Council would be:

- Reducing the amount of food waste which would go to landfill which was one of the key waste management targets. AD would be a cost effective alternative solution to landfilling
- Income from electricity production by means of renewable energy sources. Energy companies were legally obliged to buy energy produced from renewable energy sources. This would be a revenue stream for the Council and could provide payback on medium scale AD plants of around 6-8years
- There would be income to the Council of gate fees which would be a type of "toll" on allowing waste over a weighbridge
- The Borough had a large proportion of Green Belt in the region which could give the authority the ability to utilise or sell the digestate to the occupiers
- Generating heat from an AD plant could help supply heat to nearby housing developments. This would again be a source of revenue to the Council and provide lower energy bills for residents.

Reference was made to the possible utilisation of a site near New Years Green Lane. This would be dependent on the planning use of the land and whether an AD plant would be a permissible use.

Reference was also made to the proposed HS2 route and what impact this would have on New Years Green Lane.

Members were informed that to produce a feasibility study into this area, officers would require information on the amount of slurry produced at the farms in the Borough, tonnage, collection frequency and costs etc. In details of the volume and type of organic waste that was collected annually in the Borough and could the Council utilise these waste streams, longer term as part of an AD facility. Officers were asked to provide details, if possible, on these areas.



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### **Council's Vehicle Fleet**

The Council's vehicle fleet comprised of around 170 vehicle and included 40 Large Commercial vehicles, 75 Light Commercial vehicles, 18 Passenger Vehicles, 26 items of Plant, 5 Diesel Cars, 3 Petrol Cars, one Electric Car Peugeot Ion, two Electric Vans Ford Transit Connects and one Hybrid Car Toyota Prius.

All the Council's large commercial vehicles were compliant with Transport for London (TfL) low emissions zone, with some vehicles having been fitted with particulate filters to comply.

Reference was made to vehicle procurement over the last 2 years which had led to a number of new vehicles on the Fleet with Euro 5 engines and reductions in emissions. These included new vehicles for the Waste Collection Service, Street Cleaning and Highway Maintenance.

The total fuel usage for the Council's vehicle fleet was around 65,000 litres per month, with the vehicles calculated at undertaking 1.5 million miles per year.

The Committee was informed that the fuel was supplied under a procurement contract from Hall Fuels and was an ultra low sulphur diesel and was stored at Harlington Depot. Reference was made to the new refuse vehicles which had shown improved miles per gallon figures compared to the older vehicles (up to 10%).

### **Electric Car Charging Points**

There were 15 electric vehicle charging point sites in Hillingdon available for the public to use and details of their location were provided. These units were provided and managed by two companies; Chargemaster and Elektromotive.

Over the past three years £14,893 had been spent towards facilitating the use of electric vehicles with the funding coming out of the Transport for London, Local Implementation Plan budget. With regard to the electric charging points, the original cost of installing these had been funded by the Government's Technology Strategy Board and by Scottish Southern Electric. This had been part of the Ford Battery and Electric Vehicle Project of which this Council was a partner.

Electric cars were limited in their use mainly because of the perception of the range limitations of a full charged vehicle. However, there was a place for electric cars, particularly in urban Cities such as London, because average car trips were less than 10 miles, which were suitable for electric cars.

Possible incentives which could be offered to residents to use electric cars included:- free parking in car parks for electric cars where electric charging points were located and free parking permits within controlled parking zones.

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Also consideration could be given to encouraging businesses such as estate agents to use electric vehicles which would reduce carbon emissions for the many short journeys across the Borough which were made.