SELECT COMMITTEE - ENERGY SECURITY

MINUTES of a meeting of the Select Committee - Energy Security held in the Wantsum Room, Sessions House, County Hall, Maidstone on Thursday, 26 November 2015.

PRESENT: Mr J N Wedgbury (Chairman), Mr D L Brazier, Mr B E Clark, Mr A D Crowther, Mr C P D Hoare and Mr C P Smith

ALSO PRESENT: Mr M E Whybrow

IN ATTENDANCE: Mr G Romagnuolo (Policy Overview Research Officer), Mr D Price (Kent Graduate Programme – Management Trainee), Ms C McKenzie (Sustainability and Climate Change Manager), Mr A Tait (Democratic Services Officer) and Mr A Saul (Democratic Services Officer)

UNRESTRICTED ITEMS

7. Mary Thorogood & Mel Rogers (Vattenfall)

(Item 1)

(1) *Vattenfall* is one of Europe's main generators of electricity. It is owned by the Swedish state. It generates electricity through Nuclear, Hydro, Coal and Wind power. Its key markets are Germany, Netherlands, Sweden, Denmark and UK.

(2) Power generation in the UK is exclusively through onshore and offshore wind projects. Since the appointment of a new CEO in 2014, *Vattenhal*l has moved in the direction of renewable energy, whilst divesting itself of coal.

(3) Wind Farms have been operational in the Kentish Flats since 2015. Kent had been an important part of *Vattenfall*'s journey.

(4) Taken together, the Kentish Flats and Thanet Offshore Windfarms have 145 turbines with a combined capacity of 449.5k MW. This was sufficient to meet the energy needs of 126k households. *London Array* has 175 turbines with a capacity of 630k MW. The combined total of household energy needs that these three projects can meet is 470k. This is sufficient to power both Kent and Medway. Due to the natural vacillations in output, these can only be an approximate figure. This has been calculated over a five year period.

(5) *Vattenfall*'s ambition is to grow across Northern Europe and to increase its offshore wind capacity to 600k MW per year.

(6) *Vattenfall* has no onshore ambitions in Kent. It has identified the UIK as having the best offshore potential in the World. It has invested £9 billion in offshore projects in the UK. Seabed areas for development are allocated by the UK Government. Site construction takes place in full consultation with the MoD and the Civil Aviation Authority.

(7) Offshore wind projects currently feeds some 10% of the UK's energy needs. The eventual aim of the Government is that 20% should be met by nuclear power, 25% by offshore wind power with the rest coming from a mixture of diverse sources.

(8) *Vattenfall* considers that the UK has one of the most reliable energy systems in the World due to its energy mix of Offshore, Nuclear, Gas, Fossil fuels and Solar Energy. It has the highest energy margin in Europe, although this will get tighter as coal-fired stations are decommissioned. .

(9) *Mary Thorogood agreed to provide written details in relation to the costs associated with renewal energy and on how energy capacity in the UK compared with that in the rest of Europe.*

(10) Local Authorities can do little to influence international events which could jeopardise energy security. They can, however, work with other partners to secure more localised energy generation. They can also play a role in unifying the benefits of renewable energy and gas with other councils and the rest of Europe. At the same time, they are well placed to educate local communities who often find energy security difficult to understand.

(11) *Vattenfall* is bullish about future energy prospects because the UK has the best conditions in the World for energy production, leading to major export and supply opportunities. Other reasons are that the necessary skills are being developed and the support provided by the Government.

(12) *Vattenfall* believes that 20 to 25% of the UK's energy should be produced by Offshore Wind Farms by 2030. This form of energy is a c option and will be competitive with new build gas by the 2020s.

(13) *Vattenfall* is a company whose origins and ownership is Scandinavian. The number of UK employees involved in its Wind Farms has now risen to 33% and will reach 50% by the mid-2020s. When the company first entered the UK market, the building and repair work was carried out by Danish technicians. This work is now mainly carried out by Kentish employees.

(14) There is no European Super Grid. Energy produced in the UK is sent directly to the UK Grid. There is some over-supply which is exported to Ireland.

(15) There are currently 205 technicians and admin staff directly employed on the London Array. There is also a significant if unquantifiable number of jobs which has been created as a result of the company's work. Examples of this are the fuel vessels which are now based in Ramsgate as well as the newly-created *Thanet Fuel Association* which supplies all of *Vattenfall*'s fuel needs.

(16) *Vattenfall* has found KCC to be "fantastically helpful" in promoting opportunities for business with it to local enterprises such as manufacturers, and intends to increase its efforts to involve local industry in its work by engaging with local events such as the recent Kent 2020 Day.

(17) *Vattenfall* is still learning about the lifetime of its turbines. It estimates that each one will last approximately 20 years.

(18) *Vattenhall* does not agree that the cost of serving wind turbines is necessarily greater than the maintenance of other forms of energy sourcing. They have thoroughly researched weather patterns, which has enabled them to carry out the necessary work efficiently at the optimum time.

(19) *Vattenhall* has found *Locate in Kent* to be an excellent networking tool which they intend to make greater use of.

8. Philip Jackson (Daedalus Environmental)
(Item 2)

(1) Philip Jackson is a Director of two companies. The first of these is *Daedalus Environmental Ltd* which is a Kent based environmental consultancy firm specialising in, amongst other things, the sustainable design of new build domestic and commercial buildings. It involves advising both small scale and major developers, including, for example, *Barratt Homes, Persimmon Homes* and *Balfour Beatty*, on achieving high standards of sustainable design, and in particular in relation to the use, management and supply of energy.

(2) The second is *Energy and Enterprise and Education (E3)* Ltd*,* a non-profit company which supports local authorities and the public sector (including housing associations) to deliver energy focused community regeneration projects in existing communities.

(3) Philip Jackson is also retained by KCC and the *Kent and Medway Sustainable Energy Partnership* which aims to procure a Framework of Service Providers who are able to provide expert advice and support in relation to energy focused schemes delivered across Kent and Medway.

(4) Mr Jackson stated that gradual improvements to the standard of new build developments were driven by a combination of regular tightening of the Building Regulations and by planning legislation. These formed the basis of ensuring – as far as possible – that, in principle, new development became more thermally efficient than the existing stock. Improvements to the Building Regulations were published every three years approximately. These were, however, becoming incrementally smaller. Developers had the ability and had always been able to comply with improved Regulations.

(5) Mr Jackson stated that the issue of security of energy supply was two sided. It was about both the supply of energy (from a range of sources) but also the level of energy demand. As such there would be a far lower risk in relation to security of supply if the energy was not needed in the first place. As such, the cheapest form of energy was that which was no longer needed. The focus for addressing energy security therefore should be equally on reducing demand for it in the first place, which was more cost effective than dealing with supply. Given that the existing building stock made up far more of the energy demand than new development each year, the first priority should therefore be to focus on improving the existing building stock.

(6) Only 1% of the UK's properties were replaced each year. This meant that the impact of dealing with new build was minimal in comparison.

(7) When asked about retrofitting Sessions House, Mr Jackson outlined a number of issues that would need to be addressed that were typical of buildings of this type, for example the listed status, the complicated existing infrastructure, and the need to examine “low hanging fruit” such as lighting. He stated that buildings of this age presented a number of headaches that meant they were often less fit for purpose than was ideal. Solutions should also focus on building management and behavioural change of those who used it.

(8) Mr Jackson went on to discuss the *Warmer Streets Project*, which *E3* was delivering in Dartford, Sevenoaks and Dover, which was currently Kent’s largest energy retrofit project focusing on hard-to-treat housing. The primary technology used within this scheme – external wall insulation – was well established both in the UK and across the rest of northern Europe. Crucially, however, the Project also delivered a range of other measures – loft insulation, heating system replacements, cavity wall insulation, and others – which acted to reduce energy demand and reduce reliance and pressure on the gas Grid, thus aiding in ameliorating the security of supply issue.

(9) Funding for energy retrofit had been available in some form or other for the last 15 years or so, but had been disjointed, short term, confusing and inconsistent, often driven by the political cycle. Currently, we were in the Energy Company Obligation round 2, which ended in March 2017. This obligation required energy suppliers such as *British Gas*, *E-On* et al to fund energy efficiency measures to reduce carbon emissions in the domestic sector only. Inevitably, when the control of the funding rested with the utilities, the market for measures was driven to the lowest common funding denominator – i.e. the lowest cost they could “get away with” to achieve the carbon target. This neither addressed those properties most in need, nor the significant proportion of difficult-to-treat households using the most energy per capita.

(10) The original intention had been to spend c £1.3 billion on an annual basis nationally through the ECO (Energy Company Obligation). During the first round, targets and rules were relaxed, meaning that the level of funding fell considerably. Mr Jackson did not have the exact figure but thought that it dropped by over 40% in practice. As a result of this long term inconsistency, from the point of view of the market and residents it was very difficult to present a consistent offer, and it inhibited the ability of the installation sector to invest in a UK labour force - because the industry had no confidence to do so.

(11) A question was raised as to installation standards and whether these had improved. Mr Jackson stated that as a result of the introduction of ECO, and the now defunct *Green Deal,* the required installation standards were far higher and targets could no longer be met using “insulation rolls sold through B&Q”, as was previously possible. The PAS2030 standard – for both installation and equipment – now applied. This was not to say that this had eradicated variations in quality of installation. It had not, but building owners could now have more confidence than previously.

(12) Smart metering did have a role to play in energy conservation, and with half hourly billing and associated variations in tariff, many people could be better off. For example, it could be beneficial for the elderly who potentially used energy during off

peak periods during the day and could pay less as a result. Ensuring that smart meters could help reduce energy demand should be a key priority moving forwards.

(13) Mr Jackson was also involved in a range of District Heating projects in London and the south east (a system for distributing heat generated in a centralized location for residential and commercial heating requirements). The viability of this system varied considerably depending on the location and type of development it was due to serve. District heating was most effective in high density, new build development, with a range of different uses connected to it. It was, however, extremely difficult to retrofit existing buildings where costs and technical complications abounded.

(14) As above, Mr Jackson disagreed that energy security could not be primarily about demand reduction. It was a fundamental fact that if you wished to ensure energy security then you had to reduce the demand for it. Any solution could not just focus on the supply side. The new nuclear power station in Somerset was estimated to cost £23 billion. A fraction of this sum (if spent on energy demand reduction instead) would enable demand to be reduced by a greater amount than the new power plant would be expected to generate. It would also create a far greater number of jobs and economic benefit without recourse to underwriting Chinese investment or guaranteeing an energy price for 35 years ultimately to the benefit of the French government (which was a majority owner of *EDF*, the company planning to build the station). In contrast, Germany would have decommissioned all its nuclear power by 2022 in favour of energy efficiency and renewables. Moreover, 70% of traditionally generated energy at large scale power stations was lost through the generation and transmission process before it was used by consumers. A fundamental rethink of the UK approach to this issue was therefore needed.

(15) There were many ways of reducing impact on the Grid through the use of renewables. The cost of solar energy had been significantly reduced as a result of the development of the technology, the scale of economies in the supply chain and the increased demand for panels, driven by the Feed in Tariff.

(16) The Kent and Medway Sustainable Energy Partnership was doing all it could in promoting energy efficiency within the county in an environment where funding was limited. There was a potentially huge role for Local Authorities and Housing Associations to play in the future. Funding for ECO should be delivered through Local Government, where it could be better targeted, more consistently delivered, and support wider added value activity. The Partnership was therefore ideally placed. Involving local authorities was critical in creating trust in schemes and ensuring proper oversight and quality of work.

(17) New and innovative financial mechanisms were needed iIn addition to ECO type funding. Mr Jackson spoke about the opportunities to link energy efficiency with healthcare, for example. The costs of a hospital admission (potentially resulting from poor quality and cold housing) was over £2,000, and the nightly cost was around £1,000. By contrast, just £7000 to £10.000 could make a hard-to-treat home warmer and healthier; a figure which would be much less for easy-to-treat properties. Such investment would therefore avoid both the medical and social costs associated with cold homes. Arguably, therefore, joint investment by the NHS/Department of Health would make common sense, and a financial solution facilitated.

(18) Nottinghamshire County Council was becoming an energy supplier to its residents, functioning as a not for profit scheme. Local Authorities in Kent might also wish to consider undertaking the same function in order to make the supply cheaper, whilst generating wider social and economic benefits and creating income streams for the community.

(19) It was vital to involve people in energy efficiency projects. Active engagement with communities was essential if projects were to be successful. Support from Local Authorities in doing so, creating the trust required, was necessary.

(20) There were other key opportunities for the future, to further mitigate the security of energy supply issue. These were related to energy storage. If you could store the energy that was derived from solar panels, rather than exporting it to the Grid, the business case for installing the panels became far more attractive because building owners would benefit from a higher cost saving. There were currently EU restrictions on the importation of Chinese PV panels, the removal of which would further reduce costs - although clearly there would be an impact on EU manufacturers. At the same time, battery storage had significantly reduced in cost and the technology greatly improved. Mr Jackson also encouraged the Panel Members to consider more innovative opportunities arising in the county to generate economic, social and environmental benefits – for example, could the newly decommissioned Littlebrook Power Station adjacent to Dartford Bridge be employed in this sector as a centre for battery storage and technology, linked to the on and offshore wind industry? .

(21) Mr Jackson concluded his presentation by saying that KCC should make the case to secure delivery of energy efficiency projects – and associated (obligation) funding locally, because of the far greater benefits that would arise, whilst addressing energy security in a very proactive way.

9. Dr Zach Gill (Willmott Dixon)
(Item 3)

(1) Dr Zach Gill, Senior Energy Solutions Engineer and CoRE (Centre of Refurbishment Excellent) Retrofit Coordinator for Willmot Dixon, had to give his apologies as he was unwell. Dr Gill would have been interviewed alongside Mr Nick Swinford, who kindly offered to be interviewed in Dr Gill's place, in regards to the energy security work Willmot Dixon was undertaking with the University of Kent.

(2) The Chairman welcomed Mr Swinford to the Meeting. He introduced himself as the Assistant Director Estates: Infrastructure & Sustainability at the University of Kent. He gave his professional background as a chartered engineer with work history in the pharmaceutical industry and NHS. He has been working for the University of Kent for the last 24 years.

Mr Swinford then responded in full to the themes and questions suggested in the agenda on page 21.

(3) Mr Swinford opened by stating that he is a chartered engineer who has been working at the University of Kent for 24 years. The University of Kent is working with Willmott Dixon on a £26m project constructing a new business, mathematics and

statistics facility for the University. This is a sustainable building project focusing on energy conservation. Mr Swinford stated that the University's motto for energy use is "*Use less, want less*." The University has recently celebrated its 50 years anniversary and has been undergoing massive growth for years. The student population has increased to around 20,000 and they have also been undertaking large developments on the Medway Campus and the Chatham Historic Dockyard.

(4) Reference was made to Kent's 'Little Blue Book', a book from the University that has compiled key facts and figures about the University of Kent, which gave the following statistics;

a) University and students contributed £600 million to the South East's economy.

b) University of Kent students spend £211 million a year locally.

c) 27,000 University of Kent graduates have remained in Kent.

The University achieved Carbon Trust Standard accreditation in 2009 and Mr Swinford stated that he is certain that it will be reaccredited for 2015. The Carbon Trust Standard is an independently audited service which measures an organisations carbon emission in many areas, including its use of transport. The University of Kent is ensuring its environmental management conforms to ISO 14001 guidelines. The University is Fair Trade accredited.

(5) The University of Kent's Carbon Management Plan for 2010 to 2020 commits to a 23% absolute reduction measured against a 2005 baseline and latest figures have shown a 16% carbon emission reduction. Display Energy Certificates (DECs) are displayed for all University of Kent buildings including halls to publicise energy use.

(6) Mr Swinford then described elements of the strategy in place in the University's building projects that favour energy security, of which a recent example is the over-cladding of the Ingram Building that cost £3.8 million. Roof insulation and cavity wall insulation has been included in all of these building projects. Double glazing and automatic doors have been installed wherever possible to ensure as little heat is lost as possible. They have moved to using natural ventilation in their new builds. Lighting included in the new builds and the street lighting has been entirely LED. Modern boilers have been installed across the estate, and a building energy management system (provided by Honeywell) has been put in place.

(7) In terms of using renewable resources the University of Kent has done its best to explore its options. All new buildings use photovoltaic arrays to generate approximately 10% of their energy. The addition of a 2MW wind turbine on University owned land has been considered. However, there are issues such as; the impact on protected species in the area (such as the great crested newt), the fact it would be in line of sight of the cathedral and the shadow flicker created by the wind turbine blades could be a nuisance to local residents.

(8) Over the course of the past 7 years the University of Kent has run a behaviour change project the first two years, branded Degrees Cooler, was DEFRA funded. The University of Kent was 1 of 20 institutions selected in the first tranche to undertake this project. This year's project - known as Green 15 - and fully funded by the University encourages staff teams to adopt environmentally friendly behaviour and offers awards to the teams who achieve environmental excellence.

(9) Mr Swinford confirmed it was University of Kent policy to take every opportunity where an economic case that includes environmentally friendly options could be made. He reiterated that the new builds were naturally ventilated, used photovoltaic arrays and have a sedum roof. All of the buildings that are constructed are to at least a BREEAM very good standard. The new building being constructed by Willmott Dixon on campus aims for a BREEAM excellent rating. The University of Kent also uses bio-fuelled stagecoach buses in the area. To discourage students who live close by from using their cars, and therefore reducing carbon emissions from travel, the University does not allow students from postcodes that are close to the campus to park their cars at the University.

(10) In regards to University accommodation there is over 300 houses on campus. They have a 10 year refurbishment program on these houses. There had been concerns over using solar-heated water for these houses as there is the risk of bacteria multiplying, of particular concern is Legionnaires Disease, as solar-water systems often cannot keep the water at a high enough temperature to prevent the bacteria proliferating. They have resolved this by having a system where high temperature boiler water is used to heat a small volume of hot water in a coil which is then drawn off as required for students to use.

(11) Mr Swinford explained that in effect the University had two budgets to keep in mind. The first focusing on the University's administrative buildings and laboratories while the second is for the residential halls. Energy security measures are included in both where it is economically sound.
The University has found it approximately 25% more efficient using plate heat exchangers rather than shell and tube calorifiers.

(12) The University's district heating boilers where installed in 1990. The University are looking to replace these with new energy efficient boilers and incorporate a large CHP engine as a part of their 'District Heating Phase 2' project. Previously 'District Heating Phase 1' dealt with upgrading distribution mains; the University invested £3.25m replacing all the pipes in 2012 with a Danish system called 'Logstor'. Water temperature will be reduced to around 90 degrees and the CHP will generate 10% of the electricity for the site. The University's district heating system is used between mid-September to mid-June.

(13) Having secured a Salix loan of £320,000, along with £80,000 of the University's own funds, a £400,000 Recycling Fund was established to invest in energy efficiency projects. Energy cost savings have been reinvested with a total investment of £700,000 so far.
In regards to challenges the University are facing Mr Swinford explained that over-cladding their Ingram Building addressed a major concern because it had been particularly inefficient but now heat losses have been significantly reduced.

(14) Mr Swinford also confirmed that UK Power Networks cannot take electricity exported from the University as their infrastructure is inadequate in the area. Because of this the University aim to generate just enough power so as not to have an excess. Challenges include difficulties around the availability of long-term loans for energy projects, as well as the fact that cheap gas prices currently undermine energy conservation projects.

Mr Swinford finished responding to the themes and questions suggested in the agenda and took questions from the Committee.

Q. Could Officers approach UK Power Networks in regards to the infrastructure and improving it?

(15) Mr Romagnuolo undertook to provide Members with a map of the UK Power Networks infrastructure in Kent.

(16) Mr Swinford highlighted the importance of considering how power would be prioritised should Kent suffer a serious power loss.

Q. In your view, and the University's view, what can KCC do?

(17) Mr Swinford stated that KCC could lobby for more financial support from Central Government for organisations to invest in energy conservation. For the University to pursue energy conservation it has to be economically sustainable due to other budgetary needs.

Q. What is the principle driving force for such projects?

(18) Mr Swinford stated that a lot of money was spent on energy. There was money to be saved in the long term if less energy was required. This money could then be spent on improvements to the core work of teaching and research.

Q. To what extent is this driven by legislation?

(19) Mr Swinford explained that in this the University was no different than any other organisation. Local planners tended to have their own ideas on how to pursue the University's projects. The University had had to refer a planning decision to the Secretary of State.

Q. What plans would you do if you were able to fund more?

(20) Mr Swinford stated that they would go ahead with District Heating Phase 2, which would cost around £7m.

Q. How does the University deal with waste?

(21) Mr Swinford confirmed that they had a waste management strategy in place. The waste was segregated and managed by Cloud Sustainability Software. Non-recyclable waste was incinerated off of the University estate for power generation.

Q. Will there be a return on the CHP investment? Where does the University stand with its peers?

(22) Mr Swinford explained that the Higher Education Statistics Agency collected statistics annually and these were available to the public. The University of Kent were performing well in their benchmarked group of Universities. He agreed to confirm after the meeting exactly where the University of Kent was in this table.

Q. Is there concern of a power cut?

(23) Mr Swinford stated that there was a narrowing margin between available power and demand. This was due primarily to removal of old plant (i.e. nuclear), and a failure on the part of Central Government to invest in new capacity capable of providing a base load for the system.

Q. Coal provides a lot of energy and we are cutting back on this. How is the best way to respond?

(24) Mr Swinford stated that reducing our energy demand was the best response. There should be more incentive for local generation as local generation helps to avoid (energy) distribution loss across the power network.

Q. Does the University get any energy from food waste?

(25) Mr Swinford confirmed that oil from food waste was taken and recycled into biofuel.

Q. Have you noticed a reduction in maintenance costs?

(26) Mr Swinford stated that it had not been more expensive. For example the cost of lighting has fallen now LEDs are used. The quality of the light is better and for CCTV it makes facial recognition far easier. Where University maintenance costs were rising, this was due primarily to the fact that the University of Kent is growing in size as a university.

Q - Following the closure of Chatham Dockyard what we see at Chatham Dockyard today, including those buildings restored by the University, is the result of hard work of Medway people. What is your view?

(27) Mr Swinford agreed that a lot of skilled labour came from the Dockyards. The University of Kent had refurbished the old Drill Hall and the Pilkington Building. These would prove great facilities for the students. The Clock Tower Building and the old Fire Station had also been refurbished into useful accommodation and research facilities.

(28) The Chairman thanked Mr Swinford for speaking in place of Dr Gill.