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Distributed Energy - Initial proposals for more flexible market and licensing arrangements - 295/07

Submission by

Land Securities

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Land Securities Response to Ofgem's Consultation on Distributed Energy

1. Introduction

1.1. Background to the Response

Large scale projects, particularly those comprising new settlements and the Governments objectives for Eco Towns are both well suited for Distributed Energy (DE) and in some respects DE could be a prerequisite for such developments proceeding. As these major schemes appear to be the most likely platform for the deployment of DE in the near future we would encourage Ofgem to specifically consult with the development sector in determining their strategy as it is clear that developers will be critical stakeholders in the successful implementation of DE. As the Governments stated objective is to reduce carbon emissions particularly on new developments by using the Town and Country Planning system and the Code for Sustainable Homes, this issue must be addressed in a proactive and creative manner.

As developer we are not part of Ofgem's normal audience and we have only recently become aware of the current consultation. In submitting this response we have specifically not attempted to respond on a technical basis or in depth. Instead we have aimed at outlining some of the key issues from a development perspective that we believe will have a significant impact not only on the success of DE but critically as to whether DE even starts to be a viable and practical consideration. We trust that Ofgem will appreciate the sentiment of this submission.

This submission is made in specific connection to our Ebbsfleet Valley Development as a means of practical illustration; however the issues raised are common to similar major regeneration schemes and Eco Town developments.

In addition to the specific challenges for Ebbsfleet Valley there are underlying concerns that barriers to DE which impart barriers to achieving Code for Sustainable Home targets will naturally stifle development and undermine Government objectives for the provision of new homes, the development of Eco Towns, and ultimately challenge the UK's ability to meet CO₂ obligations.

1.2. Background to Land Securities

Land Securities is the UK's leading Real Estate Investment Trust, a member of the FTSE 100, the Dow Jones Sustainability and FTSE-4Good index. We are leading urban renaissance through our multi-billion pound development programme, transforming Exeter, Bristol and Cardiff City Centres as well as key sites in Central London.

Land Securities is one of the leading names in property partnerships and through its Urban Community Development division; the company is involved in long-term, large-scale development projects such as Ebbsfleet Valley.

Land Securities has been at the forefront of the drive to improve performance with regard to environmental issues and to put sustainability at the heart of the development process and is consistently ranked as a sector-leader in terms of environmental engagement and performance.

Land Securities is ranked in the sector vanguard in the annual Business in the Environment (BiE) Survey of Corporate Environmental Engagement and is ranked in the top 20 corporations globally (and the only real estate company) for corporate sustainability.

Further information can be found at: www.landsecurities.com

1.3. Background to Ebbsfleet Valley

Ebbsfleet Valley, a mixed use development, covers 1,000 acres and is located near the award-winning Bluewater shopping centre and incorporating the new Ebbsfleet International station. Ebbsfleet Valley includes plans for 10,000 new homes and up to nine million sq. ft of commercial offices, retail, leisure and community facilities in the largest private developer-led scheme to be undertaken in the UK. It is designated by the Governments as one of the key projects for the Thames Gateway.

Since conception, it has always been our intention to ensure that Ebbsfleet Valley is at the forefront of sustainability and fully compatible with our corporate objectives.

Ebbsfleet Valley has full outline planning for the whole development and has commenced in earnest with the first homes now available for sale.

Further information can be found at: www.ebbsfleetvalley.com

1.4. Ofcom Example

Information and communication technology has advanced globally with the advent of optical fibre technology. Whilst other countries around the world have embraced mass deployment of fibre to end users, notably Japan, Korea, USA and selectively in the EEC, UK has struggled to initiate fibre connectivity to consumers.

Land Securities have been instrumental in making 'Fibre to the Premises' (FTTP) a reality in the UK on a mass scale where Ebbsfleet Valley will be the first major development connected by fibre on an open access basis.

Ofcom have recognised the importance of FTTP as being in the broader benefit of 'UK plc' and have been active in encouraging its promotion by designating Ebbsfleet Valley as a pilot without seeking to resolve every regulatory issue. This has enabled FTTP to proceed at Ebbsfleet Valley by the resolution of key technical and commercial issues.

DE is in a very similar category to FTTP with regulatory, technical and commercial challenges. FTTP has struggled for some considerable period in a regulatory hiatus which has been resolved by an informed and proactive developer in open dialogue with Ofcom with a 'real time' opportunity.

We see that a similar approach for DE would be helpful for Ofgem.

1.5. Land Securities' Position

Considering the points above we believe that Land Securities is in a unique position to contribute to Ofgem's consultation on DE. Our experience will not only be of value to Ofgem in considering the challenges posed by DE, but will also be of interest to other developers of major regeneration schemes.

2. Implication for Distributed Energy in Ebbsfleet Valley

2.1. Code for Sustainable Homes

Since its inception Ebbsfleet Valley has seen the introduction of the Code for Sustainable Homes as one of the key drivers for sustainability to residential developments. In addition the Building Research Establishment plans the introduction of similar provisions to its commercial building scheme, BREEAM. Whilst fully supporting the underlying drive for 'carbon responsibility' and active address to climate change it is acknowledged that there is a general industry concern on the practical and cost effective measures to achieve Code for Sustainable Homes Levels 5 & 6 targets on a mass scale.

Our own analysis has concluded that for Ebbsfleet Valley it is technically virtually impossible to achieve Code for Sustainable Homes Level 6 (zero net emissions of carbon dioxide from all energy uses in the home) with either existing statutory provision for energy or in any combination of viable and practical micro solutions. The conclusion we have reached is that a macro solution involving DE holds the best potential for delivering the energy demands of the new settlement and achieving a low / zero carbon development by viable and practical means.

We are currently investigating the possibility for biomass CHP on adjacent land with river access which technically could provide 'green' electricity and heat and promote a low / zero carbon development.

However, there are critical commercial and legislative / regulatory barriers that could effectively discount recognition for sustainability, preclude DE and prevent the achievement of Level 6 Code for Sustainable Homes in Ebbsfleet Valley.

2.2. Energy Centre Location

The location and site constraints of Ebbsfleet Valley are such that a DE Centre within the 'red line' planning boundary would not be tenable for a number of reasons, traffic access for feed stock delivery, proximity to residential development, environmental considerations and economics.

The only possibility is to locate the DE Centre on an adjacent site with appropriate serviceability, land form and adjacent uses that are fully compatible with DE functions such that planning approvals and EA / HA endorsement can be reasonably expected.

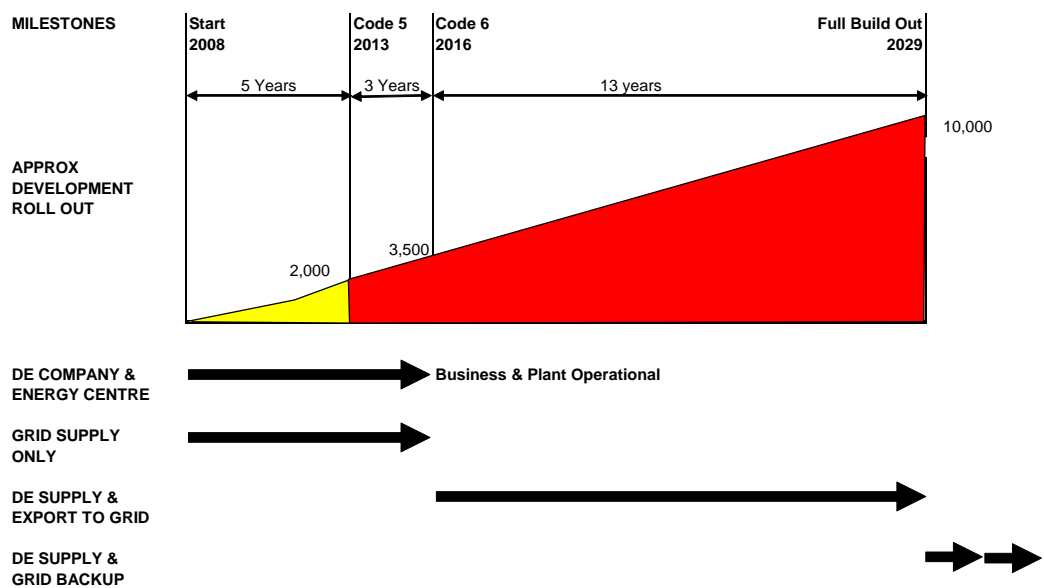
Legislative requirements that mandate DE to be accommodated 'on site' almost certainly could not be met at Ebbsfleet Valley primarily as it is envisaged that there is little possibility that an on site DE Centre would be sanctioned by the planning Authorities, Environment Agency (EA) or the Highways Agency (HA).

To facilitate the promotion of DE it must be recognised that where DE is established for a specific development then for all legislative requirements it must be considered the same irrespective of where the DE Centre is established 'on site' or 'off site' recognising that 'off site' may require a degree of proximity.

2.3. Phasing and Security of Supply

Ebbsfleet Valley will be built over a prolonged period, approximately 20+ years which provides a major phasing challenge for DE. For maximum efficiency and to meet the targets for the Code for Sustainable Homes and the non domestic equivalent that will follow, DE will need to be sized to suit the full build out programme on annual demand basis. As such there will only be a supply and demand match in approximately 20+ years resulting in the necessity for grid connection supply in the early years whilst the DE Company is established and DE commissioned and net export to the grid after DE commissioning until full build out, as illustrated below.

Distributed Energy at Ebbsfleet Valley



In addition to the DE supply, the National Grid supply will need to be maintained to accommodate peak load spikes and critically, as Ebbsfleet Valley will be effectively a new town with significant businesses and public services (education, health care etc) where it will be untenable to have a single source of energy supply, a robust connection to the National Grid is essential to provide immediate back up.

2.4. Licensing

By definition, for DE in Ebbsfleet Valley there needs to be a single DE Company that covers generation and supply of both heat and electricity. Whilst it is appreciated that heat generation and supply are not regulated the current licensing regime for electricity cover separately generation, distribution and supply and is therefore not specifically supportive of the DE Company concept.

For reasons driven by phasing and security of supply, irrespective of the limitations already in place on private wire supply and the proximity issues, it will be critical for Ebbsfleet Valley to be supplied via grid connection. As such it is not envisaged that the DE Company will be a DNO or IDNO, this role falling to others.

Also, to accommodate phasing demands, it will be necessary for the DE Company to be able to sell electricity at both a wholesale level as a generator and as a retail supplier direct from source generation.

As such, a licensing or licence exemption structure is required that permits the DE Company to:

- Generate electricity
- Sell generated electricity at wholesale level
- Sell generated electricity at retail level
- Buy electricity at wholesale level and sell at retail level
- Have the self-generated power recognised as genuinely renewable where produced by the DE Company's biomass CHP plant at all times.

2.5. Economic Considerations

The capital expenditure for the establishment of a DE centre and appropriate District Heat (DH) networks to suit the demands of Ebbsfleet Valley is substantial as are the ongoing operational costs. To fund these costs the DE Company needs to have a sound business case with an identifiable and manageable risk profile. This can only be achieved with a secure customer base, secure supply chain and a secure pricing structure.

Within Ebbsfleet Valley there is the potential for a secure customer base. However, this does require occupiers within the development to procure energy from the DE Company. It is appreciated that this does pose regulatory challenges but we believe that some form of mandatory procurement will be critical to create the economic parameters that will support the substantial investment the DE Company will have to make. However, a sole supply arrangement need not necessarily disadvantage customers, in fact with a secure supply base it is entirely foreseeable that the reduced risk would see the DE Company being able to offer highly competitive terms. It is also foreseeable that a form of pricing control indexed to prevailing market rates (as is common in many Energy Supply Agreements) could be made to work such that customers are guaranteed competitive rates and the DE Company guaranteed a reasonable return.

In the substantial period that the DE Company will be supplying electricity to the grid at wholesale rates, this supply must be ROC compliant as additional income is necessary to support the investment and underpin the overall viability of the undertaking.

2.6. Private Wire Conflicts

The current options to address licensing and economic issues are through the provision of 'private wire' supplies. The Code for Sustainable Homes also effectively mandates 'private wire' solutions.

Private wire solutions are limited in capacity to a fraction of the energy requirements of Ebbsfleet Valley and cannot under any circumstance address the phasing and logistic requirements. Whilst a generators as large as 100MW may be exempt from generation licence requirements only 1MW is allowed to be supplied to domestic customers on a private wire on a single generation site and only 5MW (of which only 2.5MW can be supplied to domestic customers) in aggregate export over public wires for all of its sites together.

For Ebbsfleet Valley and development of scale, including Eco Towns, private wire solutions as currently provisioned are simply not an option.

However, many of the attributes of a private wire supply are necessary to address the licensing and economic challenges. For DE to begin to be a viable and practical consideration, a virtual private network that incorporates both the economic and technical demands will be pre-requisite.

2.7. Heat Conflicts

Ebbsfleet Valley comprises two major planning applications, one a predominately residential area of 270 ha of a lower density (some 6,500 homes), and the commercial centre around Ebbsfleet International Station 148 ha at higher density (5,700,000 sq ft of built space and some 3,500 homes).

Currently the major heat load for domestic properties is in space heating with a limited percentage of the overall demand coming from hot water demand. The Code for Sustainable Homes (CSH) will mandate CO₂ reduction requirements achievable in part through energy efficient homes with minimal demands for space heating driven in particular by stringent and prescriptive limits on air tightness and heat loss factor. Renewable Obligation Certificate compliance mandates prescriptive limits for the use of heat from DE production of electricity. In order to achieve compliance with CSH levels 5 & 6 a low carbon electricity supply is required; the responsible provision of this electricity from a biomass CHP plant requires that the generation plant is sized based upon the heat demand, thereby limiting the quantity of low carbon electricity that can be supplied to the development. As such there appears to be conflicting drivers on heat; one mandating its use, the other mandating reduced demand. In the context of Ebbsfleet Valley poses a number of complex challenges.

The first is in connection to phasing, where DE is sized for full build out but is operational considerably in advance of a supply / demand match. The balancing of production of electricity can be accommodated by import / export from / to the grid, this option is not available for heat. Prior to the DE Centre becoming operational heat can be supplied by alternative means subject to economic considerations. However once operational there will be a substantial degree of waste heat unless forms of temporary use can be found, which is unlikely. This situation could be mitigated to a degree with the restructuring of the electricity / heat production ratios to reduce heat waste, where any resulting inefficiencies will need to be accepted. In any circumstance the result will be non compliance with 'good quality' CHP requirements and a loss of ROC status that will impact viability.

The second is one of economics to justify the significant costs required for the use of the heat in district heat networks (DH) both from a capital and operational perspective. It can be reasonably expected that the higher density commercial centre at Ebbsfleet International Station will support DH investment.

This is not the case in the residential area particularly in the context of CSH requirements, where solar hot water with supplementary 'top up' and general heating demands met by 'green' electricity or gas fired condensing boilers would be a far more cost effective solution (and a potentially lower embodied energy). DH costs could be offset by savings through a relaxation of the CSH Levels 5 & 6 built forms (where there is significant industry concern regarding the costs) recognising that such a relaxation will not denigrate CO₂ efficiency.

The solutions to the heat conflicts, where DE is designated for a single development, is to consider the purpose and design for DE in context of the development as a whole focusing on satisfying the electricity demand whilst defining the best practical and viable use of heat within the given demands, exercising forbearance in build up stages and recognising the benefits of that can be achieved by not detracting from ROC status.

3. Way Forward

It is recognised that this submission does not specifically respond to the questions raised by Ofgem in their consultation: we will be reviewing these with our consultant team; however, the exercise will not be complete for the submission date. We would be pleased to forward these detailed views if Ofgem would be willing to accept them at a later date.

In a broader context DE, like FTTP, represents a significant investment for stakeholders requiring a 'sea change' in the industry the promotion of which will require the establishment of proper commercial and technical arrangements against known and consistent legislative and regulatory frameworks that recognise risk and suitably reward undertakings.

Large scale regeneration projects and Eco Towns have specific challenges for DE where a broad based review of the regulatory framework alone may not be sufficient to effectively instigate substantial investment. The address for such projects needs to be specific to the development as no two sites are the same and particularly for CSH on a development wide basis focusing on CO₂. The most pragmatic approach being to:

- Analyse the site / development specific constraints
- Broadly resolve the technical issues, including likely planning consents
- Establish the business case to support the investment
- Analyse current legislative and regulatory frameworks in the context of the commercial and technical proposals specific to the site and major development constraints
- Address conflicts in the legislative and regulatory frameworks both across the various forms and where they are incompatible with the establishment of either the business case or technical solution for DE.

Applying this approach to a 'real time' project is likely to lead to the effective deployment of DE.

Although we have used the Ebbsfleet Development as an example case for this submission we face similar challenges across our development portfolio. The challenges are particularly difficult to overcome in central London where the Mayor has proposed a target of generating 25% of London's energy from decentralised sources by 2025 in the new London Plan. We along with many other leading businesses are currently contributing to a research initiative led by London First on the feasibility and barriers to implementation of large scale DE in central London. The research paper should be completed by June this year and its findings will be jointly launched by London First and the GLA.

The team is in the consultation stage with key stakeholders and a dialog with OFGEM as part of this process would be very beneficial to reflect any issues arising from the regulatory and competition viewpoint particularly with regard to private wire, continuity of supply, step in procedures and consumer protection etc. Our Head of Engineering, Neil Pennell is chairing the Steering Group for the study and would be pleased to facilitate a meeting with the study research team.

4. Contact

We would be pleased to answer any questions in connection with this submission, please contact:

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