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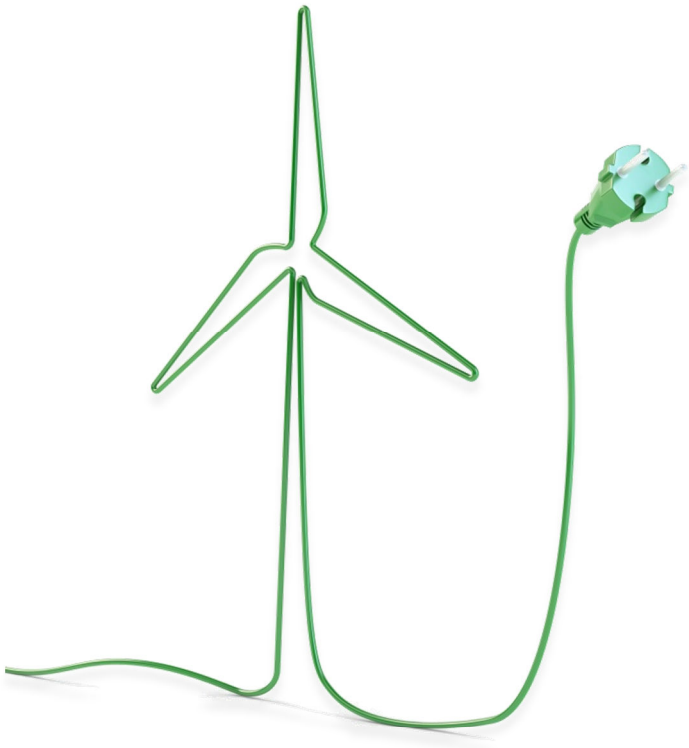
# Electricity Market Reform
# Offtaker of Last Resort

## A report for The Department of Energy & Climate Change



**3 December 2013**

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# Contents

# Glossary of terms

| Term/Acronym | Definition |
|---|---|
| **Baringa** | Baringa Partners LLP |
| **CF** | Cash Flow |
| **CFADS** | Cash Flow Available for Debt Service |
| **CfD** | Contract for Difference |
| **DCF** | Discounted Cash Flow |
| **DECC** | The Department of Energy & Climate Change |
| **DSCR** | Debt Service Cover Ratio |
| **EMR** | Electricity Market Reform |
| **EPC** | Engineering Procurement Construction |
| **IRR** | Internal Rate of Return |
| **MW** | Megawatt |
| **MWh** | Megawatt Hour |
| **O&M** | Operation and Maintenance |
| **OBR** | Office for Budget Responsibility |
| **OLR** | Offtaker of Last Resort |
| **PCG** | Parent Company Guarantee |
| **P&L** | Profit and Loss |
| **PPA** | Power Purchase Agreement |
| **PV** | Photovoltaic |
| **RO** | Renewables Obligation |
| **RtM** | Route to Market |
| **SPV** | Special Purpose Vehicle |
| **VIU** | Vertically Integrated Utility |
| **WACC** | Weighted Average Cost of Capital |

# Executive summary

## Introduction

The Department of Energy and Climate Change ("DECC") has commissioned Deloitte to undertake analysis of the proposed Offtaker of Last Resort ("OLR") policy. The OLR is designed to provide certain eligible generators with a guaranteed route to market for their power under the Contract for Difference ("CfD") mechanism set to be introduced in 2014. The policy has been designed as a support mechanism to promote greater investment by independent renewable generators with precise eligibility currently being considered by DECC.

Priced at a discount to the wholesale electricity price, the OLR seeks to address the problem faced by independent generators in securing commercially viable, long term Power Purchase Agreements ("PPAs") which enable them to secure external debt finance to support project target leverage and generate required equity returns.

Deloitte's work on the OLR has involved both quantitative and qualitative analysis, namely:

- Quantitative - Analyse the effect of various levels of discount applied to the OLR PPA, and how changes to the OLR discount price affect key project financial metrics; and
- Qualitative - Through consultation with DECC and conducting a market sounding exercise with financiers in the sector, understand the qualitative impact of the OLR PPA and whether the OLR PPA might encourage further investment in independent generator projects.

In developing this report, Deloitte has relied on assumptions provided by DECC and their technical advisers Baringa Partners LLP ("Baringa"). In particular, we draw your attention to the following sections of this report:

1. Section 1 outlining the approach, assumptions and limitations of this analysis;
2. Section 2 providing an overview of the project assumptions provided by DECC;
3. Section 3 highlighting the sensitivity analysis performed;
4. Section 4 relating to the qualitative aspects of the OLR mechanism and participant feedback from the market sounding exercise; and
5. Section 5 detailing recommended next steps that DECC should consider to aid development of the OLR policy.

## OLR discount analysis

Based on assumptions provided by DECC, Deloitte has developed analysis to demonstrate the indicative impact of the OLR policy on hypothetical projects across the three technologies. Specifically, the analysis has been used to assess how a project's capital structure and equity returns may vary under different OLR discount levels of £30/Megawatt hour ("MWh"), £25/MWh and £20/MWh to the wholesale price. In developing this analysis Deloitte has relied on DECC's assumptions which have also been informed through consultation with industry stakeholders during the market sounding exercise.

The potential impact of OLR discount levels has been considered across three scenarios:

1. An unlevered project – projects have been analysed on the assumption that they are wholly equity financed and only benefit from OLR PPA revenues and CfD payments to represent a 'worst case' scenario;
2. A levered project benefitting from a 5 year initial market PPA with a creditworthy offtaker followed by expected revenues under a 1 year rolling PPA strategy; and
3. A levered project benefitting from a 15 year initial market PPA with a creditworthy offtaker followed by expected revenues under a 1 year rolling PPA strategy.

For those scenarios which are assumed to benefit from external debt finance, project gearing has been calculated on 'contracted' project revenues only meaning initial PPA revenue followed by OLR PPA revenue in the event the PPA expires within the 15 year CfD term.

Assuming this fixed level of gearing, potential equity returns have been calculated by including expected market revenues over the life of the project which was assumed to be the initial market PPA followed by a series of one-year rolling PPAs thereafter.

Figure 1 below provides a summary of the potential project gearing and equity Internal Rate of Return ("IRR") that could be achieved across each of the OLR discount levels. A number of key assumptions have been made in undertaking this analysis, in particular, we draw your attention to sections 1.2 to 1.4 which outline the approach to developing the analysis and its limitations.

**Figure 1: Summary of OLR discount analysis**

**OLR discount £30/MWh**

| Technology | Solar PV | | Onshore wind | | Offshore wind | |
|---|---|---|---|---|---|---|
| **Scenario** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** |
| **Unlevered** | N/A | 7.35%* | N/A | 7.44%* | N/A | 9.80%* |
| **5 year PPA** | 57.11% | 10.14% | 62.71% | 12.74% | 69.84% | 14.96% |
| **15 year PPA** | 63.94% | 10.33% | 70.60% | 13.11% | 75.56% | 15.20% |

**OLR discount £25/MWh**

| Technology | Solar PV | | Onshore wind | | Offshore wind | |
|---|---|---|---|---|---|---|
| **Scenario** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** |
| **Unlevered** | N/A | 8.07%* | N/A | 8.50%* | N/A | 10.63%* |
| **5 year PPA** | 58.73% | 10.23% | 65.14% | 13.00% | 71.92% | 15.24% |
| **15 year PPA** | 63.94% | 10.33% | 70.60% | 13.11% | 75.56% | 15.20% |

**OLR discount £20/MWh**

| Technology | Solar PV | | Onshore wind | | Offshore wind | |
|---|---|---|---|---|---|---|
| **Scenario** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** |
| **Unlevered** | N/A | 8.76%* | N/A | 9.52%* | N/A | 11.42%* |
| **5 year PPA** | 60.31% | 10.32% | 67.56% | 13.27% | 73.75% | 15.50% |
| **15 year PPA** | 63.94% | 10.33% | 70.60% | 13.11% | 75.56% | 15.20% |

* Represents a project IRR as the analysis restricts returns to equity based upon both available Profit and Loss ("P&L") reserves as well as available cash (refer to section 1.3.2.).

## Market sounding feedback

In addition to the quantitative analysis highlighted above, Deloitte has worked collaboratively with DECC to conduct 6 market sounding meetings to obtain industry feedback on:

- DECC's project assumptions to inform Deloitte's analysis of the OLR PPA projects; and
- The OLR mechanism and the potential impact it might have on increasing the availability of project finance for independent renewable generators.

During the market sounding exercise participants were asked a series of questions relating to DECC's project assumptions and the potential impact the mechanism might have on investors and lenders in the sector. Based on feedback from market participants, the table below seeks to identify which risks the OLR mechanism may reduce from a lenders perspective in the context of RO and CfD projects.

**Figure 2: Project risk assessment.**

Level of risk:


| Risk | RO project | CfD project without OLR | CfD project with OLR | Comment |
|---|---|---|---|---|
| Construction risk |  |  |  | The OLR would have no impact on construction risk which is likely to be considered a critical risk for funders. |
| Technology risk |  |  |  | The OLR is unlikely to have any impact on technology risk. However, if the OLR PPA discount level were to differ proportionately by technology, lenders may neutralise the effect of technology risk in lending discussions. |
| Merchant risk |  |  |  | The OLR PPA may potentially reduce merchant risk by providing a guaranteed route to market providing greater certainty of cashflow, particularly under the CfD regime. Lenders are likely to remain cautious over lending to projects with any uncontracted revenue streams. The reduction in risk under a CfD OLR project is subject to sufficiently certain revenues from the outset of the project. |
| Offtake-risk |  |  |  | The OLR PPA is likely to significantly reduce offtake risk provided the pool of OLR PPA offtakers is deemed acceptable for project financiers. |
| Wholesale price risk |  |  |  | Assuming the OLR PPA is priced at a fixed £/MWh discount and open market PPAs are on a percentage basis, the OLR may reduce wholesale price risk provided that the reference price for CfD and wholesale prices are equivalent. |

| | | |
|---|---|---|
| Credit risk |  | Project sponsor, contractor and PPA offtaker credit risk is likely to remain a key risk for lenders. The credit quality of the OLR offtake providers was cited as a key consideration for lenders during the market sounding exercise. The OLR could potentially impact positively or negatively on the perceived credit risk attaching to PPAs (see 5.1.4). |
| Change in law/policy risk |  | The level of certainty which the OLR PPA affords will be fundamental to assessing the impact of political risk. Without certainty, long term project finance for independent projects is likely to remain constrained. The reduction in risk under a CfD OLR project is subject to sufficiently certain revenues from the outset of the project (see 4.2.4). |

# 1 Background

## 1.1 Introduction

Deloitte LLP ("Deloitte") has worked collaboratively with DECC to undertake analysis of the proposed OLR mechanism. The OLR mechanism is intended to provide eligible electricity generators who hold a Contract for Difference ("CfD") with a guaranteed "last resort" route to market for their electricity, by ensuring power is purchased, albeit at a discount to the market price. This is intended to provide independent generators with a "back stop" route to market under the CfD mechanism, due to be introduced in 2014.

Specifically, the OLR mechanism is being designed by DECC as an 'enabling policy' to support independent electricity generators to obtain private sector finance and facilitate greater participation by independent generators in the market. DECC believes there is evidence to suggest that the availability of long term PPAs issued by offtakers (such as Vertically Integrated Utilities ("VIUs") has been in decline, particularly over the last five years, as a result of increased regulatory uncertainty and reluctance by PPA offtakers to take long term price risk and offer adequate price floors. In addition, DECC believes that the commercial bank appetite for independent generator projects which are subject to merchant risk[1] is likely to remain constrained.

Based on research undertaken by DECC, there is evidence to suggest that the terms being offered by the VIUs (and other offtakers) have been deteriorating over the last few years. DECC's research indicates that:

- There have been a limited number of new offtakers entering the market who are willing to offer long term PPAs on commercially viable terms;
- The appetite for offering long tenor PPAs has declined or, where long term PPAs are available, the terms have become increasingly onerous with, for example, higher Route to Market ("RtM") costs;
- Credit rating agencies are taking an increasingly stringent view on the liabilities under a long term PPAs which has reduced offtaker appetite for entering into such agreements; and
- Price floor discounts and change in law risk transferred under PPAs have become increasingly limited such that they may not offer adequate protection to enable third party finance or support project target leverage.

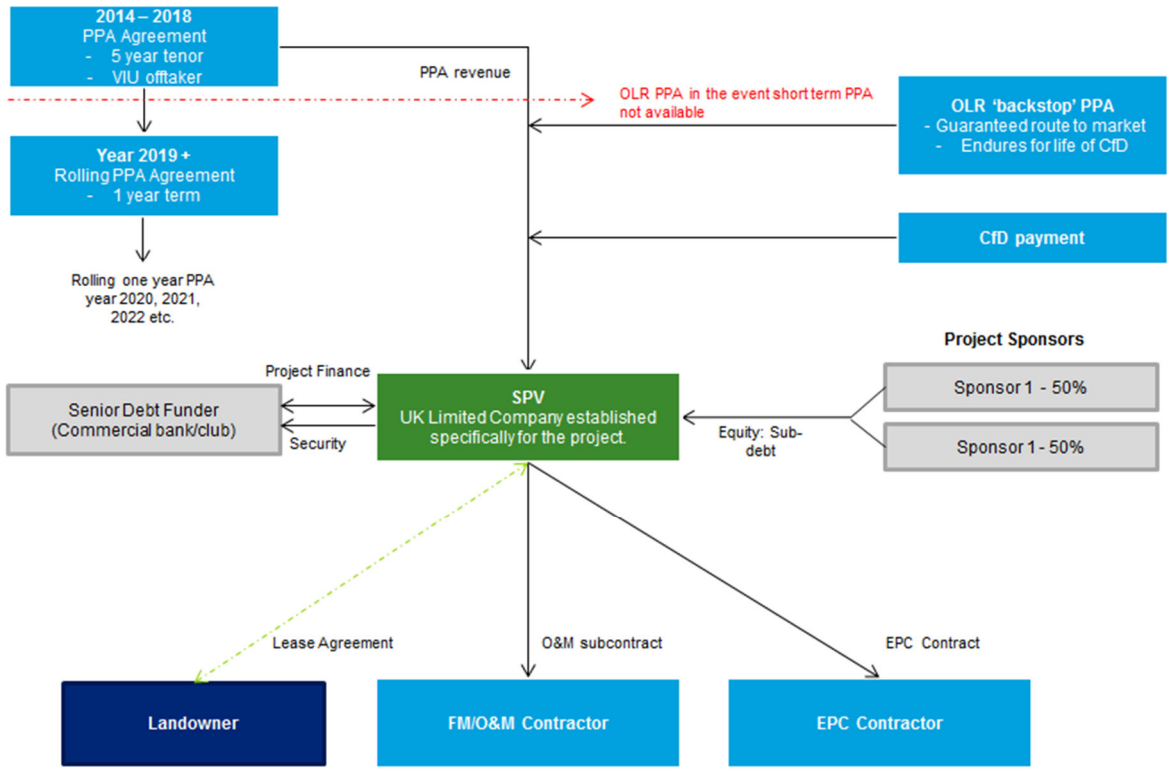
DECC believes that the deterioration in PPA terms has meant that independent generators are reluctant to sign up to long term agreements owing to the lower gearing and equity returns such PPAs offer. DECC's evidence suggests that the shift in the PPA market has also led to a perceived increase in project development risk which may cause independent generators, to seek alternate asset classes. Promoting independent generator investment will be critical for delivering new capacity in the renewable sector.

The OLR mechanism is being designed by DECC to combat this market failure and encourage lending to independent generator projects through offering eligible generators a guaranteed route to market for their power whereby certain suppliers would be required to offer an "OLR PPA". The OLR PPA has been designed by DECC to reduce the perceived need for independent generators to secure a long term PPA, on potentially less favourable terms than a short term alternative offtake agreement, and thereby provide sufficient risk mitigation to financiers to enable independent generator projects to obtain commercial debt finance for their projects. Under the policy, suppliers would be obliged to offer developers a PPA on a commercial basis, albeit at a discount to the market price.

An example of the OLR PPA envisaged by DECC in the context of an onshore wind project is outlined below. Note that this is a simplified project structure for the purpose of demonstrating the mechanics of the OLR PPA.

[1] This is defined as a project which is funded by investors and sells electricity in the competitive wholesale power market.

**Figure 3: OLR Application for a hypothetical onshore wind project.**



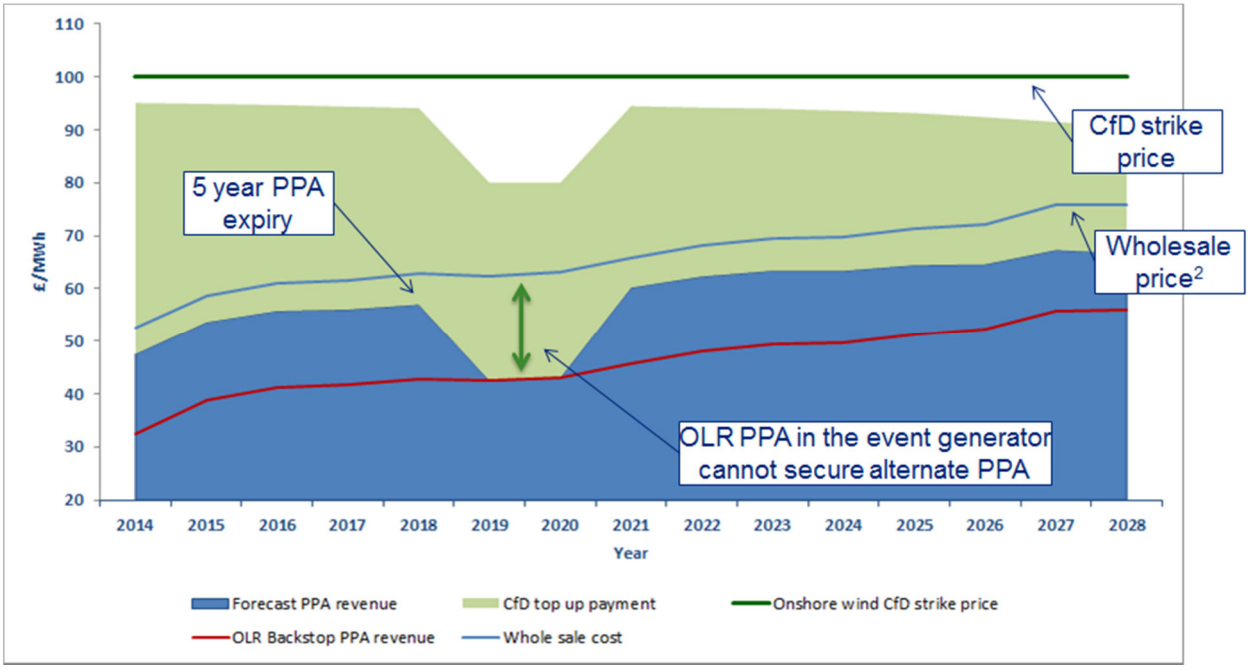

In this example, the independent generator is assumed to incorporate a Special Purpose Vehicle ("SPV") prior to financial close. Rather than entering into a long term PPA, with terms that potentially might not offer the generator sufficient returns, the SPV is assumed to enter into a five year (or other short term) PPA with a suitably creditworthy offtaker. On expiry of the initial 5 year PPA it is assumed the generator enters into another short term PPA.

In avoiding the higher RtM costs which DECC believes are associated with a long term PPA, the SPV equity holders may benefit from improved returns. Importantly, assuming the OLR PPA arrangement endures over the life of the CfD, offtake risk is minimised as the OLR PPA arrangement provides a guaranteed route to market for the generators power in the event that an alternate short term PPA cannot be secured. In providing a long term guaranteed revenue at a discount to market price, DECC considers there may be improved investor appetite for independent generator projects and, in turn, an improved availability to raise debt finance.

DECC intends to set the OLR PPA discount at a level above discounts expected to be available in the market, to ensure the OLR is a "last resort". As noted above, the OLR PPA arrangement is assumed to endure for the life of the generator's CfD so that in a downside scenario (i.e. where an alternative market PPA could not be secured) the OLR PPA is available.

Figure 4 below highlights the indicative revenue streams for a CfD project assuming that the OLR mechanism is utilised upon expiry of the initial 5 year market PPA.

**Figure 4: OLR PPA mechanism.**




While the project is still able to receive revenue from the CfD top-up payment, in the absence of a market PPA project cashflows are reduced as a result of the OLR PPA discount until such time that an alternative market PPA is available.

## 1.2 Scope and limitation of our work

DECC has commissioned Deloitte to undertake analysis and market sounding exercise to:

- Analyse the effect of various levels of discount applied to the OLR PPA, and how changes to the OLR discount price affect key project financial metrics, including:
    - Equity returns;
    - Project gearing;
    - Loan covenant ratios; and
- Through consultation with DECC and conducting a market sounding exercise with financier in the sector, understand the qualitative impact of the OLR PPA and whether the OLR PPA might encourage further investment in independent generator projects.

This work has been performed for three technologies namely:

- Offshore wind;
- Onshore wind; and
- Solar PV.

In order to prepare this report Deloitte has developed a suite of financial analysis to support our advice. Deloitte has relied on DECC and their technical advisor for the project (Baringa) to provide all energy price and scenario assumptions, for the purposes of the analysis. A list of the assumptions provided by DECC and Baringa which formed the basis of Deloitte's analysis is included at Appendix 1.

[2] The wholesale price of electricity is assumed to be equivalent to the CfD reference price for the purpose of this report. In reality these prices may differ.

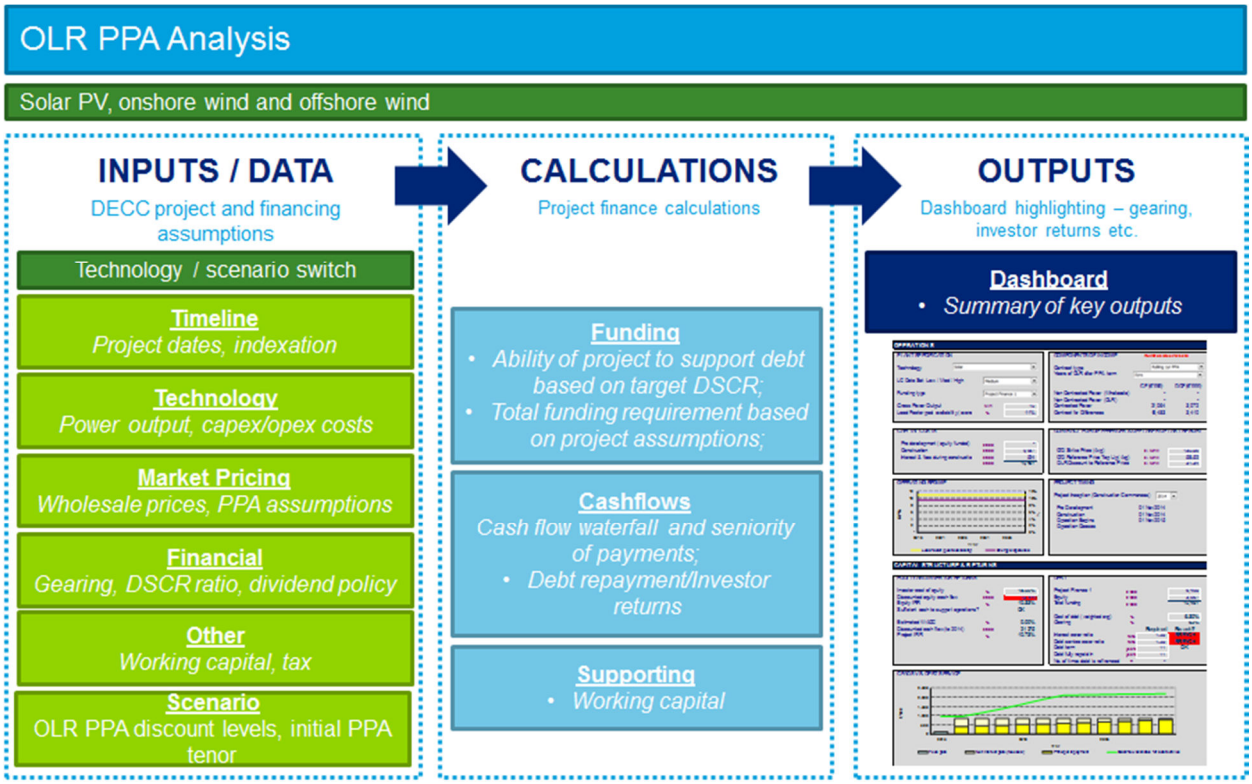
## 1.3 Approach

### 1.3.1 Methodology

The financial analysis comprises a set of integrated financial statements, project cashflows and financial ratios to support the analysis of different OLR PPA discount levels. The key outputs of the analysis are presented herein.

An outline of the structure of the analysis is presented in Figure 5 below.

**Figure 5: Structure of analysis**




The analysis includes differing technologies, low, medium and high input assumptions and considers a range of funding scenarios in order to support sensitivity testing and analyse key project metrics.

The summary output of the analysis includes:

- Plant specification – technology selection, data set, funding type, gross power output and load factor assumptions;
- Capital costs – pre-development, construction and interest and fees incurred in each period;
- Components of income – comprising the initial PPA term and split of contracted and non-contracted power;
- CfD and OLR price assumptions (in real terms);
- Project timings – pre-development, construction and operating timescales;
- Equity and investor returns – including cost of equity, equity IRR and project IRR;
- Debt – including gearing ratios and whether Debt Service Cover Ratios ("DSCR") targets have been breached; and
- Graphical analysis – including net cashflow vs. net income and cash flow available for debt service ("CFADS") vs. debt service[3];

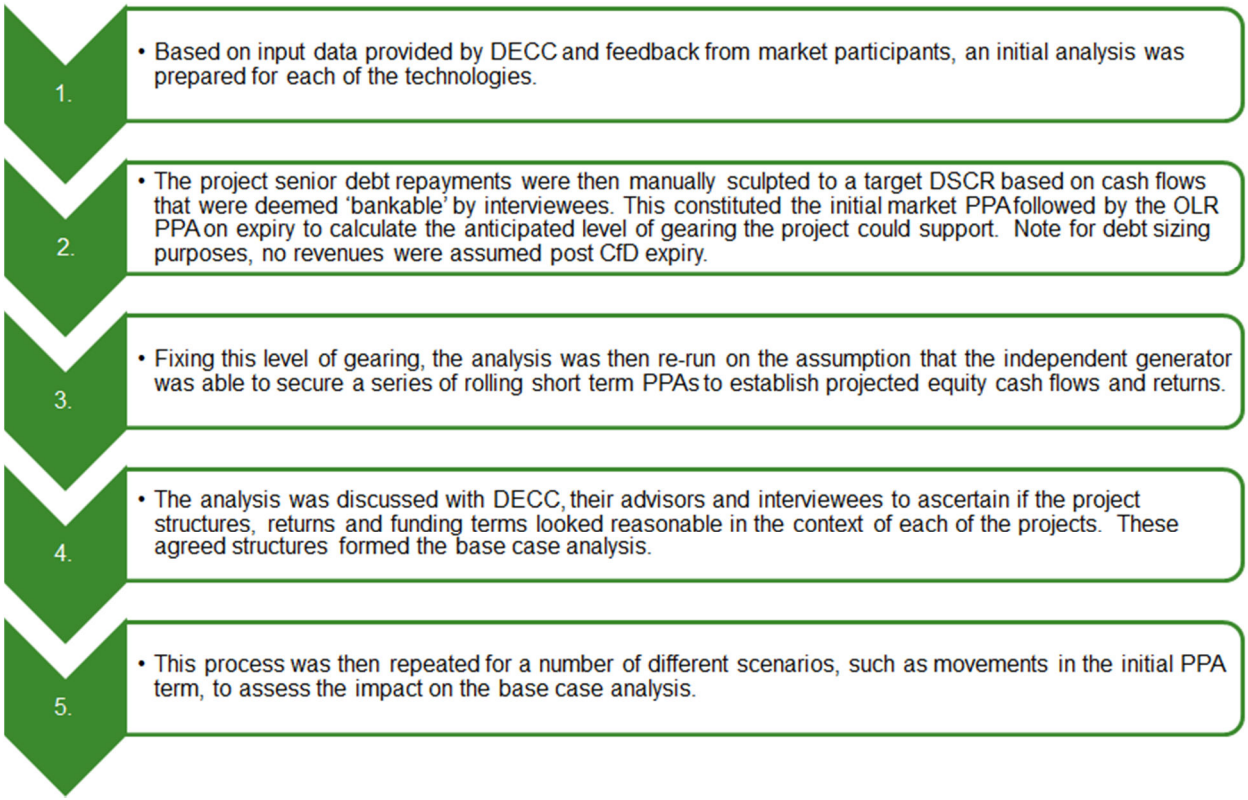
For ease of presentation this report provides discussion and commentary on these summary key outputs.

[3] Note that the CFADS charts depict the 'equity' model runs and includes non-contracted revenue. As highlighted below, gearing has been based on contracted revenues only.

In order to assess the impact of different OLR PPA prices, DECC has provided various project assumptions to enable hypothetical 'base case' projects to be analysed for each of the technologies. A summary of the assumptions used in developing the 'base case' projects is included in Section 2: Base Case Analysis. The assumptions have also been developed based on market feedback during a market sounding exercise. This included how debt and equity providers might approach base case analysis and debt sizing for a CfD project assuming the availability of the OLR mechanism. A summary of lender feedback regarding on the OLR mechanism is included in Section 4: Impact on financing independent power projects. Minutes of discussions with market sounding participants are included at Appendix 2.

Using the assumptions provided by DECC and guided by discussions during the market sounding exercise, the following approach was used in developing the base case Analysis for each of the technologies.

**Figure 6: Methodology**




A summary of the base case inputs and outputs are included in Section 2. Additional scenario analysis commenting on the potential impact of changes to project assumptions, the OLR discount price and initial PPA tenor is included in Section 3.

### 1.3.2 Limitations

In developing the analysis, it has been necessary to make a number of simplifying assumptions, such that it is subject to the following limitations:

- The lowest level of granularity in the analysis timeline is annual periods, therefore all cost and revenue assumptions must be entered on an annualised basis, even where significant movements typically occur within a year, e.g. due to the effect of seasonality on prices;
- As requested by DECC the analysis does not consider the impact of taxation. For example investor cost of equity must be adjusted to a pre-tax level. Tax could materially impact project cash flows and returns to investors;
- Manual debt sculpting has been employed to repay senior debt based on a target DSCR. This approach may result in a lower maximum gearing level than under an automated sculpting calculation;

- The analysis restricts returns to equity based upon both available P&L reserves as well as available cash. No consideration is given to potential structuring of the equity holders investment (e.g. inclusion of subordinated debt) to accelerate returns to equity where no P&L reserves are available to make dividend payments;
- Debt financing is assumed to be obtained once only at the beginning of the construction period. The analysis contains no provision for other financing in addition to the initial project finance or refinancing at a later date in the project. Again, this could materially impact project cash flows and returns to investors;
- The analysis does not support changes to plant generating capacity over time. Similarly, once a period in the project lifecycle has ended, it cannot be restarted (i.e. the project moves from pre-development to construction to operations only);
- On expiry, 5 year and 15 year PPAs are assumed to be replaced by rolling 1 year PPAs or a user-defined period of a contract under the OLR mechanism. The OLR period can be assumed to last between 1 and 10 years or continue until the end of the operational period;
- The O&M costs provided by DECC are fixed in real terms and escalate by RPI over the operating period of the project. No allowance has been made for additional lifecycle expenditure within the analysis the cost of which is assumed to be included in DECC's O&M assumptions;
- The analysis does not consider the impact of Parent Company Guarantees ("PCGs"), letters of credit or other forms of credit enhancement;
- Debt is assumed to be a fixed rate over the life of the project with no 'step-ups' in margins to reflect the term of the loan;
- The analysis has been prepared on the basis that projects are financed via a single tranche of senior debt and does not consider other public sector involvement, for example, debt provided by the Green Investment Bank, Infrastructure UK guarantees or Export Credit Agency support.

## 1.4 Limited recourse financing

### 1.4.1 Funding assumptions

A central assumption in the development of the 'base case' analysis was to assume that projects were developed via a wholly owned SPV and financed on a limited recourse (or 'Project' finance) basis. The foundation for this assumption is that independent generators are unlikely to be able to utilise balance sheet funding and thus require external third party funders.

Under limited recourse financing, an SPV's ability to repay the senior debt is dependent on the cash flows generated by the project. As lenders do not have access to sponsors' financial resources, they would typically seek additional protection to hedge against the downside risks of the project cash flows represented by the DSCR. The DSCR is the amount of cash flow available to meet annual interest and principal payments on debt and is expressed as a minimum ratio which would be acceptable to a lender.

In pricing and sizing the level of debt funders are willing to commit to a project, they will assess the risk to the project cash flows. If project cash flow risk is deemed to be significant, lenders will seek a higher 'cushion' in the forecast of available cash flow beyond what will be needed for debt service. This is required to give the lender confidence that the debt can be repaid even in a downside scenario. Lender's state this requirement via a forward-looking DSCR above a specified minimum level. The value of required DSCR will depend largely on perceived project risk, and variability of cash flows.

Alongside DECC's assumptions, the market sounding exercise has been used to inform potential DSCR requirements and as a forum to discuss lender's approach to debt sizing. As noted above, target DSCR levels have been used to forecast the potential level of gearing that a project could support based on the lenders views of 'bankable' cash flows.

Within the analysis the CFADS is calculated as the sum of:

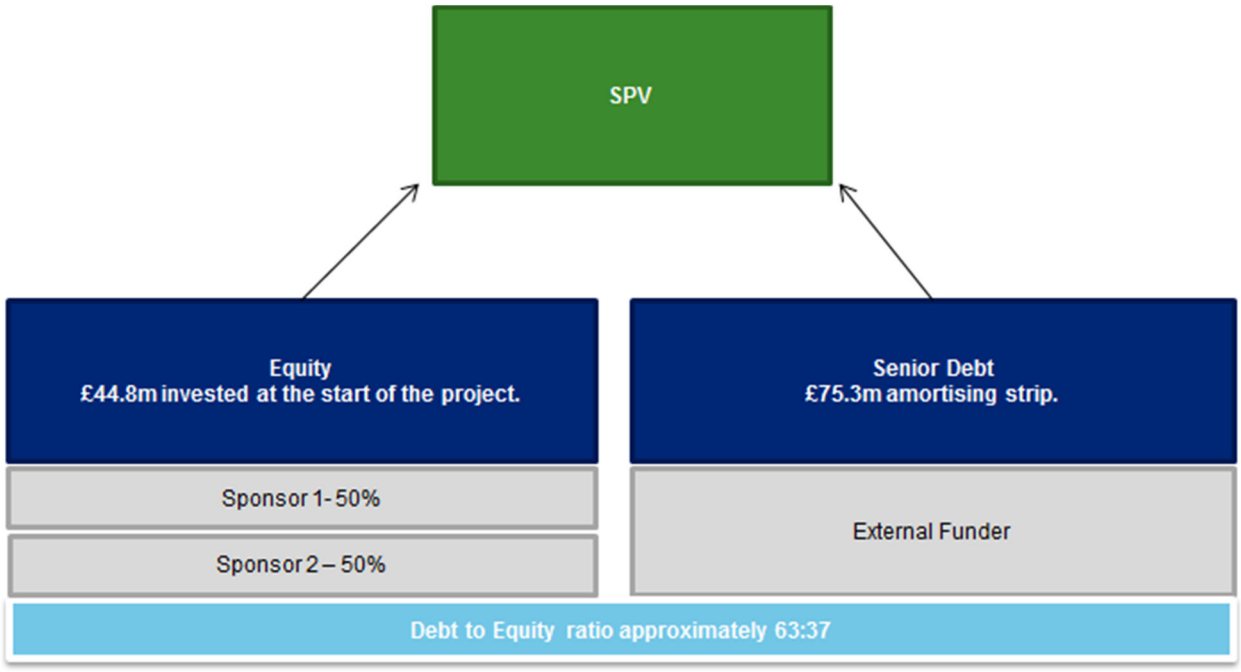
- Cash flow post capital investment – calculated as gross profit in the period, adjusted for movements in working capital, less capital expenditure;
- Debt drawdown – determined by gearing percentage input and capex in the period; and
- Equity drawdown – calculated as the balancing amount required to fund capex after debt has been drawn down.

### 1.4.2 Financing structure

Typically, project finance transactions are highly leveraged and financed with senior debt (as the largest source of funding) and other finance being provided by the sponsors in the form of equity.

Following from the example in Figure 1 where the independent generator is assumed to have a five year initial PPA and an OLR discount of £30/MWh, Figure 7 below highlights the financing structure for a hypothetical onshore wind project. A summary of the funding assumptions for each of the technologies is included in Section 2.

**Figure 7: Onshore wind 'base case' capital structure.**




Each of the technologies is assumed to be project financed. As such the following assumptions have been made:

- Step-in rights - funders are deemed to have normal step-in rights under a typical project finance transaction in the event of default;
- Seniority - senior debt is deemed to take priority over junior ranking creditors;
- SPV risk transfer - it is assumed that risk is passed down under the relevant subcontract agreements with the SPV and supported (where applicable) through suitable security packages;
- Refinancing – for analysis purposes it is assumed that no refinancing takes place after the expiry of the initial PPA; and
- Dividends – these are assumed to be paid subject to both available distributable reserves and maintenance of a minimum cash balance. Cash is retained within the SPV where there are insufficient distributable reserves to make dividend payments.

### 1.4.3 Assess the qualitative impact of the OLR PPA

In addition to analysing the potential quantitative impact of the OLR PPA, Deloitte supported DECC during a market sounding exercise to gauge how the OLR PPA might alter financier's views on investing in independent generator projects. This is seen by DECC as critical to the development of the OLR policy as, historically, particularly for commercial banks, DECC perceives there has been little appetite to invest in independent generator projects.

The following meetings took place.

**Figure 8: Market sounding participants**

| Organisation |
|---|
| **Commercial banks** |
| The Bank of Tokyo-Mitsubishi |
| Lloyds Banking Group |
| Funder round-table (Bank of Tokyo-Mitsubishi, RBS and other institutions*) |
| Commercial bank* 1 |
| Commercial bank* 2 |
| **Equity Investors** |
| Equity round-table* (various) |

*****Respondents wished to remain anonymous

A summary of respondents' commentary is contained in Section 4: Impact on financing independent power projects with detailed supporting meeting minutes provided at Appendix 2.

# 2 Base case analysis

## 2.1 Base case assumptions

Figure 9 below highlights the DECC assumptions used to develop the base case analysis for each of the technologies. These assumptions are based on inputs provided by DECC and developed following feedback from the market sounding. A full set of key assumptions are included at Appendix 1.

### 2.1.1 Technology base case assumptions

The following assumptions are based on the 'medium' case inputs. At DECC's request, certain project assumptions have been removed and included in a separate annex to this report.

**Figure 9: Project assumptions**

| Input | Solar PV | Onshore wind | Offshore wind |
|---|---|---|---|
| **Timeline Inputs** | | | |
| Pre-development period | 0 years | 4 years | 5 years |
| Financial close | 31 October 2014 | 31 October 2014 | 31 October 2014 |
| Construction period | 1 year | 2 years | 3 years |
| Operating period | 25 years | 24 years | 23 years |
| | | | |
| **Inflation** | | | |
| Inflation base date | 1 November 2014 | 1 November 2014 | 1 November 2014 |
| RPI (applied to operating costs) | 2.50% | 2.50% | 2.50% |
| CPI (applied to power prices) | OBR[4] assumption to 2017 and 2.00% flat thereafter | OBR assumption to 2017 and 2.00% flat thereafter | OBR assumption to 2017 and 2.00% flat thereafter |
| | | | |
| **Technical Inputs** | | | |
| Gross power output | Refer to Annex 1 | Refer to Annex 1 | Refer to Annex 1 |
| Availability Profile | Refer to Annex 1 | Refer to Annex 1 | Refer to Annex 1 |
| Load factor profile | 11% | 28% | 40% |
| Auxiliary Power deductions | - | - | - |
| | | | |
| **Cost assumptions (real)** | | | |
| Total pre-development costs | N/A - sunk | N/A - sunk | N/A - sunk |
| Total construction costs ('000) | Refer to Annex 1 | Refer to Annex 1 | Refer to Annex 1 |
| O&M fixed costs | Refer to Annex 1 | Refer to Annex 1 | Refer to Annex 1 |
| Total O&M variable costs | Refer to Annex 1 | Refer to Annex 1 | Refer to Annex 1 |
| Insurance cost | Refer to Annex 1 | Refer to Annex 1 | Refer to Annex 1 |
| Connection/UoS/Set-up charges | Refer to Annex 1 | Refer to Annex 1 | Refer to Annex 1 |
| | | | |
| **Financing assumptions** | | | |
| Project gearing | See section 2.2 | See section 2.2 | See section 2.2 |
| Cost of debt[5] | Refer to Annex 1 | Refer to Annex 1 | Refer to Annex 1 |

[4] Office for Budget Responsibility

| | | | |
|---|---|---|---|
| Arrangement fees (% of total debt) | 2.00% | 2.00% | 2.00% |
| Commitment fees (on undrawn balance) | 1.00% | 1.00% | 1.00% |
| Repayment profile | Annuity | Annuity | Annuity |
| Maximum term of debt (including construction) | 12 years | 12 years | 12 years |
| Loan tail | 1 year | 1 year | 1 year |
| DSCR | 1.25x | 1.25x | 1.25x |
| Working capital | 30 days | 30 days | 30 days |
| Corporate tax rate | | N/A all inputs pre-tax | |
| | | | |
| **OLR Pricing** | | | |
| OLR PPA discount real 2012 prices (to wholesale cost) [6] | £30/MWh | £30/MWh | £30/MWh |
| **CfD Strike Price** | | | |
| Strike price (real 2012 prices)[6] | £125/MWh | £100/MWh | £140/MWh |

Source: DECC

### 2.1.2 Market price assumptions

The assumptions in respect of the wholesale power price and RtM costs for each of the technologies are outlined below. The route to market cost represents a discount applied to a PPA in reference to the wholesale price. In order to calculate post CfD revenues (i.e. after 15 years), the analysis assumes DECC wholesale price assumptions with a wind cannibalisation factor applied. As highlighted below, RtM costs are expected to be higher under a long term PPA than for PPAs exhibiting a shorter tenor.

**Figure 10: Market data assumptions**

All figures £/MWh (real).

**Solar PV**

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | N/A | 5.9 | 6.1 | 6.2 | 6.3 | 6.2 | 6.3 | 6.6 | 6.8 | 6.9 | 7.0 | 7.1 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | N/A | 4.2 | 4.3 | 4.4 | 4.5 | 4.4 | 3.7 | 4.2 | 4.7 | 5.2 | 5.6 | 6.1 |
| RtM Cost Rolling 1yr PPA (£/MWh) | N/A | 2.8 | 3.0 | 3.1 | 3.3 | 3.5 | 3.7 | 4.2 | 4.7 | 5.2 | 5.6 | 6.1 |

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | 7.2 | 7.6 | 7.6 | 7.5 | 8.2 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | 6.6 | 7.1 | 7.5 | 8.0 | 8.2 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |
| RtM Cost Rolling 1yr PPA (£/MWh) | 6.6 | 7.1 | 7.5 | 8.0 | 8.2 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |

| | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |
| RtM Cost Rolling 1yr PPA (£/MWh) | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |

[5] Inclusive of base interest rate and MLAs
[6] Note these have been inflated in the OLR analysis to reflect an October 2014 financial close. Based on strike prices contained in the July 2013 EMR Draft Delivery Plan.

### Onshore wind

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | N/A | N/A | 9.0 | 9.1 | 9.3 | 9.2 | 9.3 | 9.7 | 10.1 | 10.3 | 10.3 | 10.5 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | N/A | N/A | 6.3 | 6.4 | 6.5 | 6.4 | 6.5 | 5.7 | 6.4 | 7.1 | 7.7 | 8.4 |
| RtM Cost Rolling 1yr PPA (£/MWh) | N/A | N/A | 4.0 | 4.3 | 4.6 | 4.8 | 5.1 | 5.7 | 6.4 | 7.1 | 7.7 | 8.4 |

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | 10.7 | 11.2 | 11.2 | 11.1 | 10.8 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | 9.0 | 9.7 | 10.3 | 10.9 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| RtM Cost Rolling 1yr PPA (£/MWh) | 9.0 | 9.7 | 10.3 | 10.9 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |

| | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| RtM Cost Rolling 1yr PPA (£/MWh) | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |

### Offshore wind

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | N/A | N/A | N/A | 9.9 | 10.1 | 10.0 | 10.1 | 10.5 | 10.9 | 11.1 | 11.2 | 11.4 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | N/A | N/A | N/A | 6.4 | 6.5 | 6.5 | 6.5 | 6.8 | 6.4 | 7.1 | 7.7 | 8.4 |
| RtM Cost Rolling 1yr PPA (£/MWh) | N/A | N/A | N/A | 4.3 | 4.6 | 4.8 | 5.1 | 5.7 | 6.4 | 7.1 | 7.7 | 8.4 |

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | 11.6 | 12.1 | 12.1 | 12.0 | 11.7 | 11.7 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | 9.0 | 9.7 | 10.3 | 10.9 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| RtM Cost Rolling 1yr PPA (£/MWh) | 9.0 | 9.7 | 10.3 | 10.9 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |

| | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RtM Cost 15yr PPA (£/MWh) | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| RtM Cost 5yr+rolling 1yr (£/MWh) | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| RtM Cost Rolling 1yr PPA (£/MWh) | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |

### Wind cannibalisation factors

These scalar factors were applied to the post-CfD wholesale price.

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onshore >5 MW | 100% | 100% | 99% | 99% | 99% | 99% | 99% | 99% | 99% | 98% | 97% | 97% |
| Offshore | 100% | 101% | 100% | 100% | 100% | 100% | 100% | 100% | 99% | 99% | 98% | 97% |
| Solar | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onshore >5 MW | 97% | 97% | 95% | 93% | 90% | 91% | 90% | 90% | 90% | 90% | 90% | 90% |
| Offshore | 98% | 98% | 96% | 94% | 91% | 92% | 92% | 92% | 92% | 92% | 92% | 92% |
| Solar | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

| | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onshore >5 MW | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% |
| Offshore | 92% | 92% | 92% | 92% | 92% | 92% | 92% | 92% | 92% | 92% | 92% | 92% |
| Solar | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Source: Baringa.

As highlighted above, this analysis is based on the assumption that the wholesale price of electricity is equivalent to the CfD reference price.

## 2.2 Technology 'Base case' outputs

The sections below provide the summary output for the base case analysis.

For each technology the following scenarios have been run to forecast the level of gearing each project might support assuming the following PPA assumptions:

i. Unlevered project – we have assumed an ungeared project which receives OLR revenue only (over the life of the project not just for the duration of the CfD) to represent the 'worst case' scenario[7];
ii. 5 year PPA – gearing has been calculated on the basis of a 5 year initial market PPA followed by the OLR PPA for the remainder of the project; and
iii. 15 year PPA - gearing has been calculated on the basis of a 15 year market PPA followed by the OLR PPA for the remainder of the project.

Gearing levels were then fixed and non-contracted revenue streams were introduced to calculate an indicative equity IRR. Following the expiry of the initial market PPA, revenue is based on the project securing a series of 1 year rolling PPAs to the end of the project.

Figure 11 below provides an overview of the analysis with project dashboards contained in sections 2.2.1 to 2.2.3 below.

**Figure 11: Summary of base case analysis based on £30/MWh OLR discount**

| Technology | Solar PV | | Onshore wind | | Offshore wind | |
|---|---|---|---|---|---|---|
| **Scenario** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** |
| **Unlevered** | N/A | 7.35%* | N/A | 7.44%* | N/A | 9.80%* |
| **5 year PPA** | 57.11% | 10.14% | 62.71% | 12.74% | 69.84% | 14.96% |
| **15 year PPA** | 63.94% | 10.33% | 70.60% | 13.11% | 75.56% | 15.20% |

* Represents a project IRR as the analysis restricts returns to equity based upon both available Profit and Loss ("P&L") reserves as well as available cash (refer to section 1.3.2.).

[7] This has been included for illustrative purposes only as it is not expected that any project would proceed on this basis.

## 2.2.1 Solar PV

### *2.2.1.1 Unlevered*

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (averag | % | 11% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 12,567 |
| Contracted Power | - |
| Contract for Differences | 19,358 |

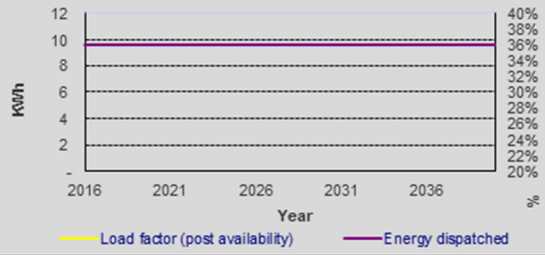
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 9,937 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 31.34 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 4.76% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 13,653 |
| Project IRR | % | 7.35% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 9,937 |
| Total funding | £'000 | | 9,937 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

Assuming an ungeared project, wholly financed through equity and based on OLR PPA revenues only for the duration of the project, the analysis indicates an equity IRR of 4.76% could be achieved generating a project IRR of 7.35%.

Again, this analysis has been run to demonstrate a 'worst case' scenario for the equity investor with no project expected to proceed on this basis.

### *2.2.1.2 Solar PV – initial 5 year market PPA*

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (avera | % | 11% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | 5yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 20,470 |
| Contract for Differences | 19,358 |

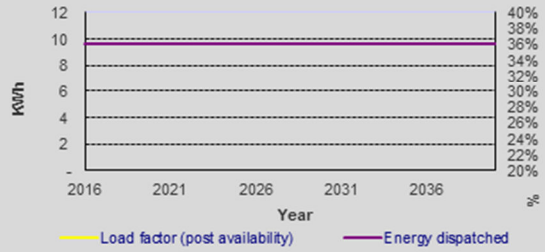
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | 480 |
| | £'000 | 10,418 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 31.34 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

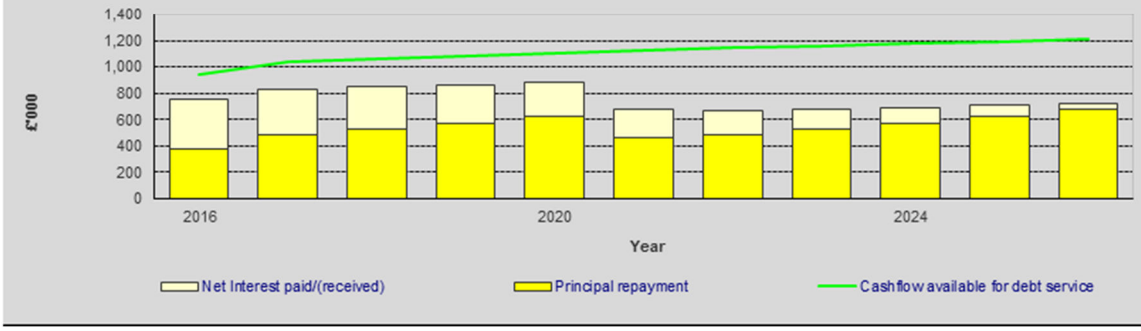
**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 10.14% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 21,556 |
| Project IRR | % | 10.71% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 5,950 |
| Equity | £'000 | | 4,468 |
| Total funding | £'000 | | 10,418 |
| Cost of debt (weighted avg) | % | | 6.30% |
| Gearing | % | | 57% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

**CFADS VS. DEBT SERVICE**




Assuming the solar project was able to secure an initial 5 year market PPA, the analysis indicates that the project would be able to support approximately 57% gearing. Based on DECC's assumptions this would mean the project is financed through £4.5m of equity and £6.0m of senior debt.

### *2.2.1.3 Solar PV – initial 15 year market PPA*

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (avera | % | 11% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 20,239 |
| Contract for Differences | 19,358 |

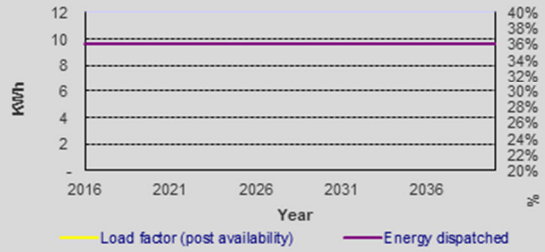
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | 540 |
| | £'000 | 10,478 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 31.34 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

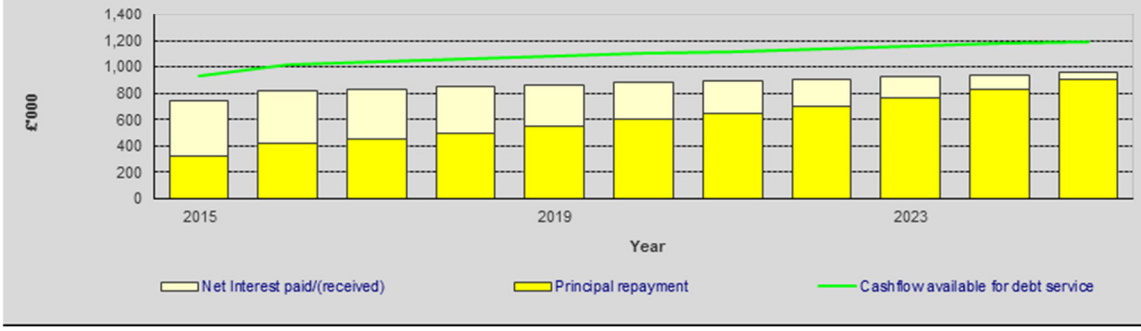
**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 10.33% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 21,326 |
| Project IRR | % | 10.55% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 6,700 |
| Equity | £'000 | | 3,778 |
| Total funding | £'000 | | 10,478 |
| Cost of debt (weighted avg) | % | | 6.30% |
| Gearing | % | | 64% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

**CFADS VS. DEBT SERVICE**




Assuming the solar project was able to secure an initial 15 year market PPA, the analysis indicates that the project would be able to support approximately 64% gearing. Based on DECC's assumptions this would mean the project is financed through £3.8m of equity and £6.7m of senior debt. Based on these assumptions, the analysis indicates an equity IRR of 10.33% and a project IRR of 10.55% would be achieved.

## 2.2.2 Onshore wind

### *2.2.2.1 Onshore wind - unlevered*

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Wind__Onshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 72 |
| Load Factor post availability (averag | % | 28% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 200,350 |
| Contracted Power | - |
| Contract for Differences | 211,322 |

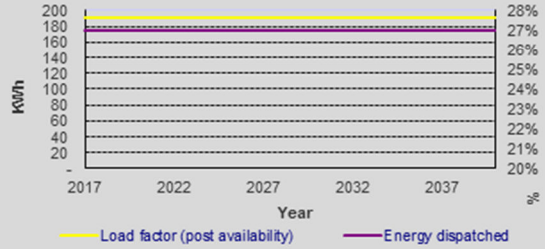
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 110,838 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 110,838 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 104.47 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 31.34 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2010 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2016 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

**EQUITY AND INVESTOR RETURNS**

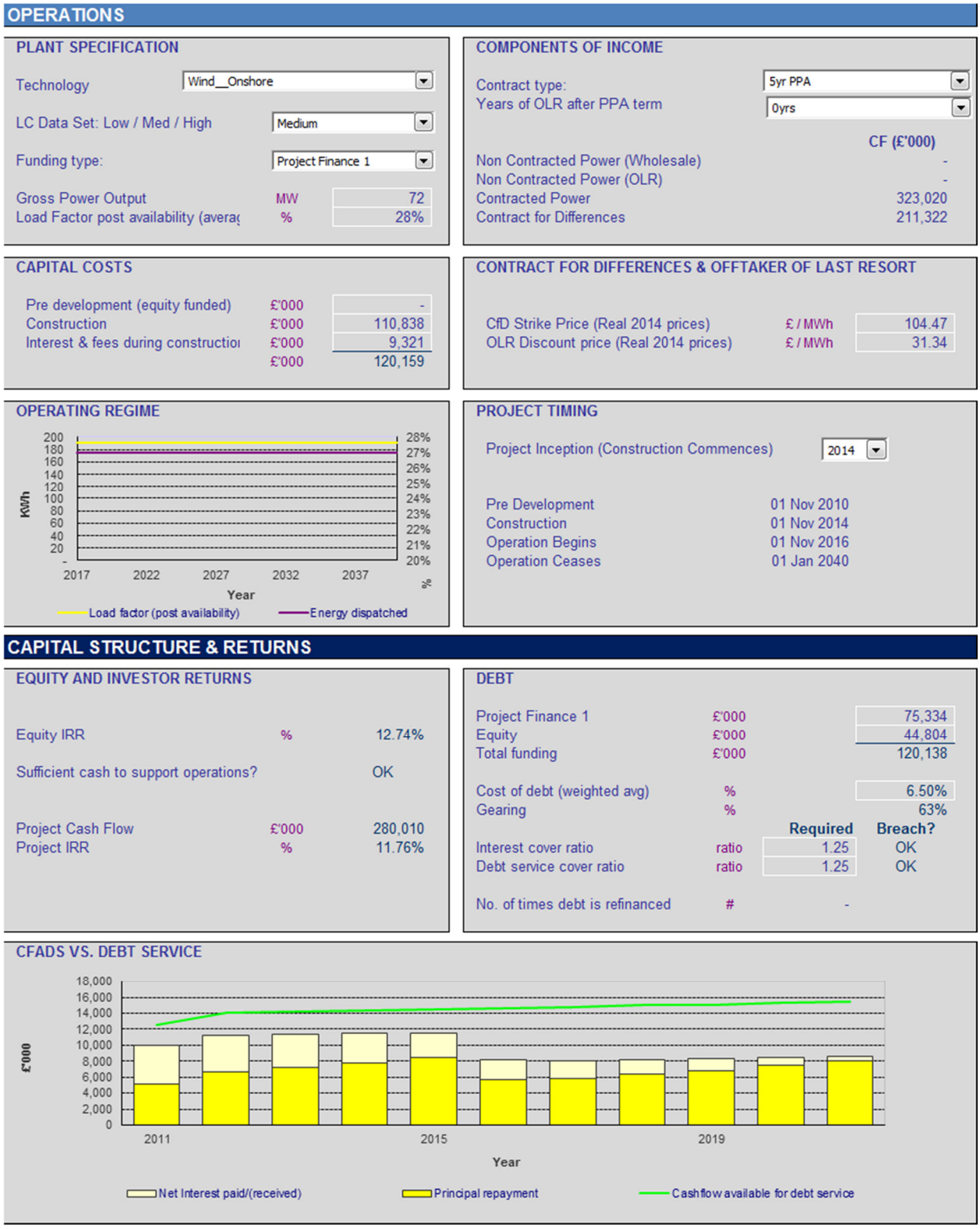
| | | |
|---|---|---|
| Equity IRR | % | 4.93% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 157,340 |
| Project IRR | % | 7.44% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 110,838 |
| Total funding | £'000 | | 110,838 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

Assuming no project debt and revenues based purely on the OLR PPA for the duration of the project, the analysis indicates that the base case onshore wind project would be capable of yielding an equity IRR of 4.93% generating a project IRR of 7.44%.

### *2.2.2.2 Onshore wind – initial 5 year market PPA*




The dashboard above demonstrates that debt sizing has been performed on the basis that the project benefits from an initial 5 year PPA. The analysis indicates that based on these assumptions the project would be able to support a debt to equity gearing ratio of approximately 63:37. At this level of gearing the analysis indicates an equity IRR of 12.74% is achieved with a project IRR of 11.76%. Assuming this level of gearing the project would be funded through a combination of equity (£44.8m) and debt (£75.3m).

### 2.2.2.3 Onshore wind initial 15 year market PPA

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Wind_Onshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 72 |
| Load Factor post availability (avera | % | 28% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 318,774 |
| Contract for Differences | 211,322 |

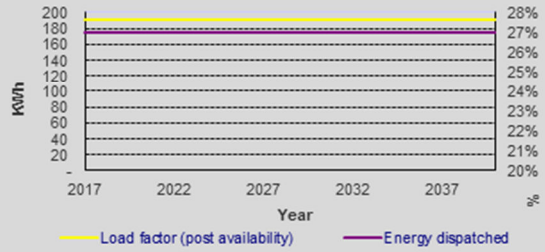
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 110,838 |
| Interest & fees during constructio | £'000 | 10,631 |
| | £'000 | 121,469 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 104.47 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 31.34 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2010 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2016 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

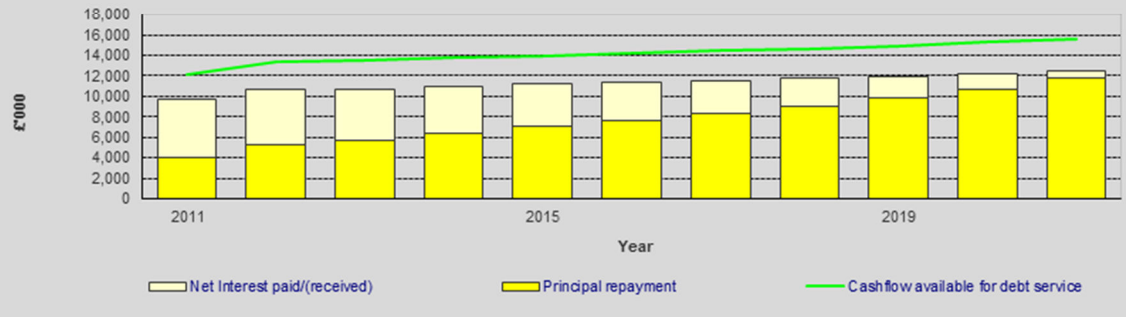
**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 13.11% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 275,765 |
| Project IRR | % | 11.47% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 85,739 |
| Equity | £'000 | | 35,710 |
| Total funding | £'000 | | 121,448 |
| Cost of debt (weighted avg) | % | | 6.50% |
| Gearing | % | | 71% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

**CFADS VS. DEBT SERVICE**




The analysis indicates that assuming a 15 year initial PPA increases the gearing level by 8% to 71% when compared to an initial 5 year PPA scenario. On this basis the analysis indicates that an equity IRR of 13.11% would be achieved based on a project IRR of 11.47%.

## 2.2.3 Offshore wind

### *2.2.3.1 Offshore wind - no PPA*

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Wind__Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (averag | % | 38% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 757,944 |
| Contracted Power | - |
| Contract for Differences | 1,614,739 |

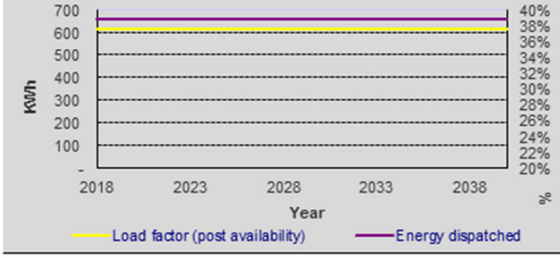
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 470,103 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 31.34 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 6.84% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 938,542 |
| Project IRR | % | 9.80% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 470,103 |
| Total funding | £'000 | | 470,103 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

Assuming that the offshore wind project was financed solely by equity and benefitted from OLR PPA revenue only, the analysis indicates that the project would generate an equity IRR of approximately 6.84%.

As highlighted above during the market sounding exercise lenders indicated that they would not be willing to lend to a project with no initial market PPA.

### *2.2.3.2 Offshore wind - initial 5 year market PPA*

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Wind_Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (avera | % | 38% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | 5yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 1,199,021 |
| Contract for Differences | 1,614,739 |

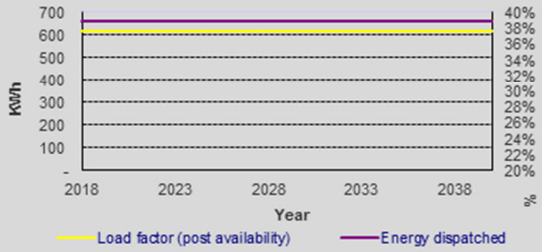
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | 61,820 |
| | £'000 | 531,923 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 31.34 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

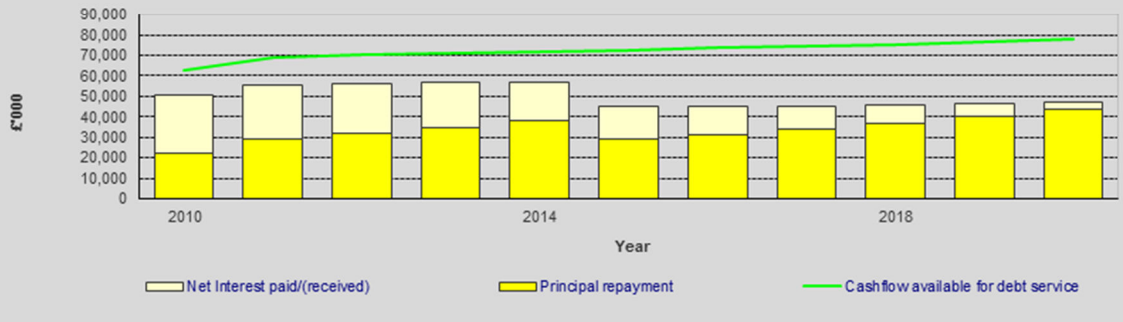
**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 14.96% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 1,379,619 |
| Project IRR | % | 13.13% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 371,113 |
| Equity | £'000 | | 160,263 |
| Total funding | £'000 | | 531,375 |
| Cost of debt (weighted avg) | % | | 7.50% |
| Gearing | % | | 70% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

**CFADS VS. DEBT SERVICE**




Based on DECC's assumptions, sizing the offshore wind project on the basis of an initial 5 year market PPA followed by OLR PPA revenue indicates that the project could sustain a debt to equity ratio of approximately 70:30. The analysis also suggests that at this level of gearing an equity IRR of 14.96% could be achieved and calculates a project IRR of approximately 13.13%.

### 2.2.3.3 Offshore wind - initial 15 year market PPA

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Wind_Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (avera | % | 38% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 1,181,889 |
| Contract for Differences | 1,614,739 |

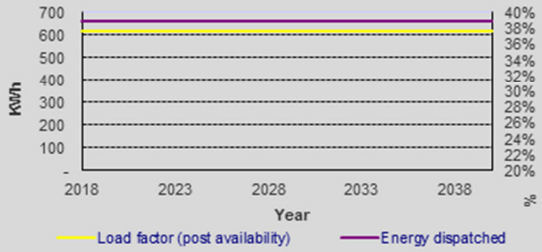
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | 67,872 |
| | £'000 | 537,974 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 31.34 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

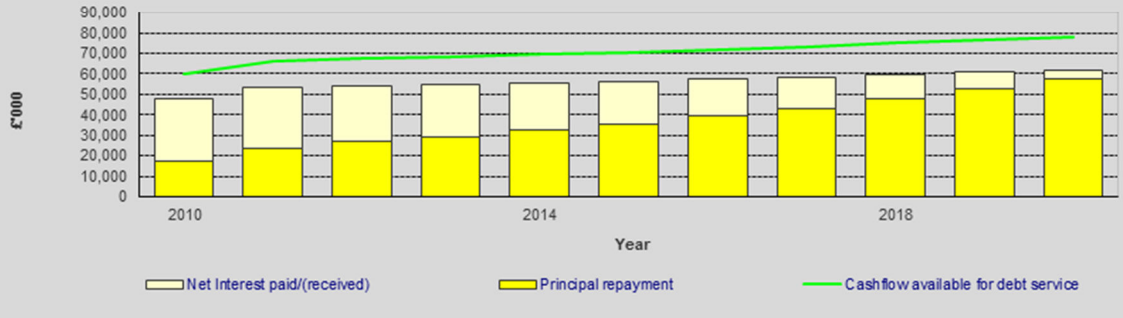
**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 15.20% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 1,362,487 |
| Project IRR | % | 12.87% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 406,127 |
| Equity | £'000 | | 131,337 |
| Total funding | £'000 | | 537,464 |
| Cost of debt (weighted avg) | % | | 7.50% |
| Gearing | % | | 76% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

**CFADS VS. DEBT SERVICE**




To maintain the DSCR requirement of 1.25x over the life of the project assuming a 15 year initial PPA, the analysis indicates that the project could support gearing of approximately 76%. Based on these gearing levels projected equity IRR is 15.2%.

# 3 Analysis of OLR discount levels

## 3.1 Introduction

To assess the impact of different levels of discount to the OLR PPA on key project metrics, DECC has provided the PPA pricing scenarios outlined below. The sensitivity analysis has been run on the same basis as the base case models by running an initial debt sizing calculations based on contracted revenues (i.e. an initial PPA) followed by OLR PPA revenues thereafter. Aside from the assumed OLR discount price, all other project assumptions remain unchanged. At DECC's request, the following OLR discounts have been used:

- A £25/MWh OLR discount; and
- A £20/MWh OLR discount.

A summary of the sensitivity results is included in figure 12 below with full dashboard analysis included at Appendix 2.

While the tables below provide a reasonable approximation of the potential impact of different levels of OLR discount, we draw your attention to section 1.3.2 highlighting the limitations of this approach.

**Figure 12: Sensitivity Analysis**

**OLR discount £25/MWh**

| Technology | Solar PV | | Onshore wind | | Offshore wind | |
|---|---|---|---|---|---|---|
| **Scenario** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** |
| **Unlevered** | N/A | 8.07%* | N/A | 8.50%* | N/A | 10.63%* |
| **5 year PPA** | 58.73% | 10.23% | 65.14% | 13.00% | 71.92% | 15.24% |
| **15 year PPA** | 63.94% | 10.33% | 70.60% | 13.11% | 75.56% | 15.20% |

**OLR discount £20/MWh**

| Technology | Solar PV | | Onshore wind | | Offshore wind | |
|---|---|---|---|---|---|---|
| **Scenario** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** | **Gearing** | **Equity IRR** |
| **Unlevered** | N/A | 8.76%* | N/A | 9.52%* | N/A | 11.42%* |
| **5 year PPA** | 60.31% | 10.32% | 67.56% | 13.27% | 73.75% | 15.50% |
| **15 year PPA** | 63.94% | 10.33% | 70.60% | 13.11% | 75.56% | 15.20% |

* Represents a project IRR as the analysis restricts returns to equity based upon both available Profit and Loss ("P&L") reserves as well as available cash (refer to section 1.3.2.).

# 4 Impact on financing independent power projects

## 4.1 Introduction

Deloitte has worked collaboratively with DECC to conduct 6 market sounding meetings with the participants highlighted in figure 13 below. The purpose of these meetings was to obtain industry feedback on:

- DECC's assumptions in order to inform Deloitte's analysis of the OLR PPA projects (as outlined in Section 2 above); and
- The OLR mechanism and the potential impact it might have on increasing the availability of project finance for independent renewable generators.

**Figure 13: Market sounding participants**

| Organisation |
|---|
| **Commercial banks** |
| The Bank of Tokyo-Mitsubishi |
| Lloyds Banking Group |
| Funder round-table (Bank of Tokyo-Mitsubishi, RBS and other institutions*) |
| Commercial bank* 1 |
| Commercial bank* 2 |
| **Equity Investors** |
| Equity round-table* (various) |

***Respondents wished to remain anonymous

Figure 14 below sets out the questions posed to participants during the market sounding exercise and the rationale for their inclusion in the exercise.

**Figure 14: Market sounding questions**

| Question | Rationale |
|---|---|
| 1. How would you treat expected merchant revenue and OLR 'backstop' revenue when considering how much you would be prepared to lend to the project? | Understanding how the treatment of merchant and OLR PPA revenue was used in the development of lenders' base case Models. If, for example, participants stated that consideration would only be given to 'contracted' revenues for debt sizing purposes, then projected project revenue streams would be limited to the initial market PPA revenues (say for 5 years) followed by OLR PPA revenue for the remainder of the project. |
| 2. Would you expect the PPA requirements to differ by technology – in particular, would you require long term PPAs for solar PV and baseload (e.g. biomass, EfW) projects in the absence of the OLR mechanism? If so, why? | Understanding the lender preferred tenor, discount and pricing of the PPAs across technologies was important for DECC in developing pricing assumptions.<br>DECC also sought to understand if the perceived risk for baseload projects differed from intermittent generating assets. |

| | |
|---|---|
| 3. What do you think a bankable PPA under the CfD would look like for each of these technologies? In particular:<br>– How would you treat any wholesale electricity price risk embedded in any discount priced as a % of wholesale electricity price?<br>– Would you require a floor at zero to mitigate the negative price risk? | Increases the bankability of independent generator projects is a key policy objective. This question was used to guide the OLR PPA assumptions as well as provide DECC with considerations for future development of the policy. |
| 4. What do you think your minimum DSCR requirements would be for merchant revenue and revenue under the OLR guarantee? | The median DSCR requirement of lenders was used in the development of the base case Analysis. Assuming an annuity repayment profile, the median DSCR (1.25x) was used to estimate the potential level of gearing projects could support for a given set of cash flows. |
| 5. How do you anticipate your treatment of revenue streams under the CfD (i.e. top up, contracted, uncontracted and guaranteed) will differ in term of your debt sizing process from how you treat the different revenues under a RO project (i.e. buy-out, Recycle, Floor, market revenues)? | The treatment of revenue streams by lenders was important for the development of project cash flows and thus debt sizing. Responses to this question were also used as a guide for developing sensitivity analysis. DECC also wished to test how the lenders' views of the risk profile of a CfD project benefitting from OLR PPA differed from a RO project. |
| 6. What would be the minimum tenor of the initial PPA you envisage requiring the project to have with the OLR mechanism in place? | It was important for DECC to understand the minimum tenor of a market PPA that would be acceptable to lenders. DECC expected that as the tenor of the PPA would increase, the RtM costs would also be expected to increase to the detriment of independent generator returns. Similarly a short term initial market PPA might not enable projects to be sufficiently geared to attract equity investment. The Responses to this question were also used during scenario analysis to assess the impact on project returns and gearing. |

## 4.2 Market responses - lenders

### 4.2.1 Treatment of project revenue

Lenders commented they would require revenue streams to be fully contracted in order to consider lending to a project. One of the main drivers for this position is banks suffering historic losses on projects carrying merchant risk due to price risk. In addition to fully contracted revenue, lenders also stressed the importance of the credit profile of project stakeholders, particularly of project sponsors and market PPA offtakers. In the absence of contracted revenue streams following the expiry of the initial market PPA, certain participants stated that OLR PPA revenue would form the basis of their base case for debt sizing purposes.

Participants also commented that the finance market for merchant power projects is likely to remain constrained. Certain lenders also indicated that there may be reluctance in the commercial bank market to lend to projects which did not benefit from a long term PPA for the full length of the project finance as such projects by definition would be deemed to be carrying merchant risk whether an OLR PPA was available or not.

The extent to which lenders would consider OLR PPA revenue within their analysis will depend on the perceived policy risk (i.e. the risk that the OLR PPA would not be available when needed in future) and the level of certainty that the OLR PPA provides of timely payment of debt and debt servicing costs. However, assuming that the terms of the OLR mechanism were sufficiently developed certain lenders indicated they might be willing to consider OLR PPA revenues for debt sizing purposes.

### 4.2.2 PPA requirements by technology

Lenders commented that while they would expect the level of discount and pricing to vary by technology, they would still be likely to require a long term PPA for the full length of the project finance in the absence of the OLR PPA even for base load technologies. This is due to the fact that forward pricing, trading and offtake arrangements are considered to be key risks from the lenders perspective. Lenders also cited the difficulty in securing long term feedstock contracts as another risk which could constrain lending to certain technologies whether or not the OLR mechanism were in place.

### 4.2.3 'Bankable' PPA characteristics

Lenders commented that a financeable PPA would ideally incorporate the following aspects in order to reduce the lenders risk exposure:

#### *4.2.3.1 Tenor*

Lenders stated that PPAs should benefit from as long a tenor as possible, ideally beyond (or at least co-terminus with) the term of the debt. Lenders commented that a series of short term PPAs would not be viewed favourably as long term agreements due to the cost, time, business disruption and risk of untimely payments caused by switching between the market and OLR PPAs. One lender commented that having to switch from a market to OLR PPA would be likely to trigger the project being placed onto their 'watch' list as a potential bad debt, thus making any project reliant on the OLR unattractive from the outset.

Lenders broadly agreed that an initial fixed term market PPA, for example for five years, followed by a series of one year expected market PPAs may be a financeable proposition but this would depend on the nature, terms and availability of the OLR mechanism for a given project. Lenders stressed the requirement for an initial market PPA and that they would not be willing to lend to projects with a reliance on the OLR PPA from the outset.

#### *4.2.3.2 Pricing*

Lenders agreed that a fixed discount was preferable to a discount priced as a percentage of wholesale electricity price. This is because if the wholesale electricity price were to be higher than the CfD strike price, then a PPA priced on a percentage discount basis could lead to lower project revenues. Lenders expressed that this inverted position may be an issue for credit committee.

Lenders also commented that a price floor would be welcome in order to mitigate against negative price risk and noted that the market availability of long term PPAs containing adequate price floors has reduced over the last few years. They added that they may be able to get comfortable without a price floor, however their modelling would need to suggest that the risk of negative price risk was minimal.

#### *4.2.3.3 PPA supplier*

Lenders stated that the identity of the market PPA offtaker is a binary 'go / no go' decision when assessing whether a project is financeable. The lenders listed the following considerations in assessing the suitability of the PPA offtaker:

i. Credit quality: the credit profile of the offtaker and the availability of credit protection including (potentially) PCGs or letters of credit;
ii. Strategic alignment: having confidence that the offtaker will be there for the duration of the PPA contract or may be expected to "trade out" of the contract would be key. Whether the offtaking was deemed to be 'core' or 'non-core' to the offtakers business would be an important decision making factor; and
iii. Relationship: whether the lender had a previous business relationship with the offtaker and the nature of that relationship would also be likely to inform opinions.

### 4.2.4 DSCR requirements

Lenders commented that DSCR requirements would marginally differ across the technologies with greater DSCR ratios being required for those technologies exposed to intermittency risk.

**Figure 15: Indicative lender DSCR requirements**

| Lender | Base Case (P50) | Downside (P90) |
|---|---|---|
| Round table (conformed[8]) | 1.20 – 1.30 | 1.10 – 1.15 |
| Lender 1 | 1.25 | 1.10 – 1.15 |
| Lender 2 | 1.15 – 1.20 | 1.10 – 1.15 |
| Lender 3 | 1.25 – 1.30 | - |

Lenders commented that the DSCR ranges were based on a number of assumptions:

i. That the OLR PPA is available for the duration of the project (or as a minimum from the date of expiry of the initial market PPA);
ii. That there is sufficient certainty over the availability and detail of the OLR regime;
iii. The OLR PPA is provided by an offtaker of sufficient credit quality or provide sufficient collateral and ideally an entity for which trading power is 'core' business; and
iv. That these are only indicative DSCRs and their actual requirement may differ based on project specific circumstances.

For a private sector PPA, a contract with a suitable counterparty would generally be considered by lenders as providing an appropriate level of certainty. There is some precedent for lenders to consider the existence of take regulatory regimes to provide sufficient certainty to support lending decisions, e.g. under ROs. However, some lenders have had negative experiences of lending on this basis, e.g. lending for solar projects which were reliant on expected Feed in Tariffs which were subsequently cut. Additional comfort could be provided to lenders by setting out a "grandfathering" mechanism protecting lenders from future changes to the OLR regime (although this mechanism would itself be subject to regulatory risk), or through the terms of the CfD.

It may be possible to achieve a higher level of certainty through an OLR PPA contracted at day 1 subject to suitable conditions precedent, e.g. a "put" contract which could be contracted day 1 and subject to conditions precedent such as default of the initial market PPA holder, or expiry of the initial market PPA before the start date of a follow on market PPA. We understand that DECC has already considered this as an option as part of its work in designing the OLR mechanism, but received negative feedback from suppliers who expressed concerns about potential contingent liabilities and their potential credit impact. We understand DECC intends to consider these issues further (see section 5 below).

### 4.2.5 Treatment of CfD revenue streams

Lenders were unanimous in stating that for any project with a CfD they would only recognise contracted revenue streams when undertaking their debt sizing/analysis. Lenders stated that ideally this would be in the form of a long term PPA, issued by a VIU (or alternatively credit worth entity), the term of which as a minimum is co-terminus with the tenor of the debt.

In the absence of long term revenues, i.e. after the expiry of an initial market PPA, lenders commented that they would not recognise uncontracted merchant revenues but that they may be prepared to lend against OLR PPA revenues provided the PPA was contracted with a suitable offtaker up front.

[8] This reflects a central estimate which the group agreed was a sensible approach to modelling the base case. Participants commented that their own assumptions may differ depending on project specific considerations.

### 4.2.6 Initial PPA tenor requirement

Lenders stated that their preference was for longer term PPAs from the outset of the project to reduce offtake risk. Whilst the availability of long term PPAs would be determined by offtakers and prevailing market conditions of the time, the identity of the offtaker would also be a key consideration, (i.e. whether the offtaker could be considered to be an acceptable credit risk over the long term).

Lenders commented that the requirement for the initial PPA term would also be guided by the level of certainty offered by the OLR mechanism. If, for example, the OLR backstop PPA were to endure for the life of the generator's CfD, one lender stated that they may be able to lend on the basis of a lower initial market PPA depending on the OLR PPA price, terms and whether this generated sufficient cashflows to service and repay debt.

One lender expressed that their appetite to go beyond 15 year lending was constrained by the higher relative cost of long term funding for banks. Lenders added that PPAs beyond 15 years typically suffer from lower pricing and as such are likely to be less attractive to generators.

One lender expressed that, under current market conditions, Japanese banks could be expected to lend 20-25year tenor, European banks 12-15 years and some UK banks less than 10 years.

## 4.3 Lender risk assessment

The table below provides an overview of typical risks considered by lenders in the context of an independent power project. Based on feedback from the market sounding exercise, the table seeks to identify which risks the OLR mechanism may reduce from a lenders perspective in the context of RO and CfD projects.

**Figure 16: Project risk assessment.**

Level of risk:


| Risk | RO project | CfD project without OLR | CfD project with OLR | Comment |
|---|---|---|---|---|
| Construction risk |  |  |  | The OLR would have no impact on construction risk which is likely to be considered a critical risk for funders. |
| Technology risk |  |  |  | The OLR is unlikely to have any impact on technology risk. However, if the OLR PPA discount level were to differ proportionately by technology, lenders may neutralise the effect of technology risk in lending discussions. |
| Merchant risk |  |  |  | The OLR PPA may potentially reduce merchant risk by providing a guaranteed route to market providing greater certainty of cashflow, particularly under the CfD regime. Lenders are likely to remain cautious over lending to projects with any uncontracted revenue streams. The reduction in risk under a CfD OLR project is subject to sufficiently certain revenues from the outset of the project. |
| Offtake-risk |  |  |  | The OLR PPA is likely to significantly reduce offtake risk provided the pool of OLR PPA offtakers is deemed acceptable for project financiers. |

| | | | | |
|---|---|---|---|---|
| Wholesale price risk |  |  |  | Assuming the OLR PPA is priced at a fixed £/MWh discount and open market PPAs are on a percentage basis, the OLR may reduce wholesale price risk provided that the reference price for CfD and wholesale prices are equivalent. |
| Credit risk |  |  |  | Project sponsor, contractor and PPA offtaker credit risk is likely to remain a key risk for lenders. The credit quality of the OLR offtake providers was cited as a key consideration for lenders during the market sounding exercise. The OLR could potentially impact positively or negatively on the perceived credit risk attaching to PPAs (see 5.1.4). |
| Change in law/policy risk |  |  |  | The level of certainty which the OLR PPA affords will be fundamental to assessing the impact of political risk. Without certainty, long term project finance for independent projects is likely to remain constrained. The reduction in risk under a CfD OLR project is subject to sufficiently certain revenues from the outset of the project (see 4.2.4). |

## 4.4 Market responses –equity

A round table meeting with equity investors was held at 3 Whitehall Place on 12 November 2013. At the request of participants, Deloitte and Baringa were not present during the meeting. As such, the comments outlined below are based on an email from DECC on 12 November 2013 which provide a summary of participant feedback.

### 4.4.1 Introduction

Alex Weir provided an overview of the OLR mechanism and DECC's approach to designing the policy and backstop sizing.

### 4.4.2 How do you view route to market risk today – would you accept it under the RO

Participant's appetite for taking route to market risk varied according to the nature of their investors. For example one participant stated that the majority of their limited partners are pension funds who typically have a low risk appetite seeking long term, stable index-linked returns. Another participant stated that they would consider taking route to market risk but that their ability to do so was often constrained by lender's requirements.

One participant also commented that they are able to 100% equity fund projects which adopt a short term PPA strategy, but that their ability to wholly equity finance projects on this basis was restricted to small scale projects.

### 4.4.3 How might financing strategies change / evolve under the CfD

Two participants stated that even if the OLR mechanism were available, they would still require long term PPAs with a credible offtaker in order to invest in a project. These participants added that they might consider a 'blended' return over an asset's life whereby long term non-contracted revenues might be included in their revenue assumptions albeit at a discounted value. For example, participants stated that they may be willing to invest over a time scale beyond the 15 year CfD tenor with any expected revenues after expiry of the initial PPA being significantly discounted.

### 4.4.4 Revenue treatment under backstop PPAs

One participant stated that they would be unlikely to factor OLR revenues into their financial modelling as they would be likely to favour their own modelling assumptions/expectations for market price and imbalance risks. OLR revenue would only be considered in their downside scenario analysis in the event that OLR revenue crossed with their downside revenue assumptions.

Another participant added that although OLR revenue is not likely to feature in their modelling, it might provide greater flexibility if it meant that lenders were more open to the use of shorter term PPAs. Participants stressed that equity returns are key and that if the discount is too large (which £30/MWh was considered to be), equity returns were still likely to be greater under a more expensive long term PPA which enabled higher gearing.

Representatives were not willing to disclose their required equity return in the meeting although one participant added that their return would likely to be higher if they were to take market risk than under a long term (15 year) PPA scenario.

### 4.4.5 PPA terms/other comments

One participant believed that DECC should consider changing its terminology when referring to the policy. The participant argued that under CfD, generators will not necessarily need PPAs in the normal sense (i.e. which provide a price floor and/or fixed prices) as these will essentially be route to market agreements. The participant felt that in doing so they may be able to get their credit committee happy with the nature of route to market risk under CfDs given sufficient evidence on its historic and likely future volatility when compared with wholesale price volatility.

# 5 Next Steps

## 5.1 Introduction

Throughout this project and based on consultation with industry financiers, Deloitte has identified a number of recommended next steps that DECC might consider in developing the policy.

### 5.1.1 Additional analysis

While the financial analysis has been developed to assess the impact of the OLR PPA across the three technologies, we believe there would be merit in developing a more developed project finance model to analyse the impact of the policy. A more developed model could have the following functionality:

i. Periodicity – the model could be developed to be more reflective of a project finance model through adopting monthly periods during the construction period followed by semi-annual operating periods. This would enable a more detailed analysis of project cashflows and support the development of more detailed modelling such as working capital and tax calculations; and

ii. Functionality considerations – additional modelling could consider the following additional elements:
    a. Refinancing - following the construction phase or expiry of the initial market PPA investors may wish to consider refinancing. Refinancing could have a material impact on equity returns. This may also impact on debt margins over the life of the contract;
    b. Taxation – tax assumptions could also have a material impact on project cash flows and more sophisticated tax calculations should be considered in additional modelling development;
    c. Generation capacity - being able to increase or decrease the generating capacity of the asset over its life will materially impact project cash flows. Increasing the assets generating capability may also necessitate additional capex expenditure;
    d. Lifecycle and variable O&M – additional modelling could consider more detailed lifecycle modelling;
    e. Public sector support – additional modelling could investigate additional tranches of debt, for example, from debt provided by public sector entities such as debt provided by the Green Investment Bank, Infrastructure UK guarantees or Export Credit Agency support.

### 5.1.2 Market sizing

Based on a more sophisticated model, DECC should consider testing individual lender appetite to gauge the scale of project finance available and forecast the potential MW volume of projects that might be unlocked as a result of the policy.

### 5.1.3 Supplier behaviour – market sounding

During the market sounding exercise certain participants voiced concerns that the OLR policy might counter intuitively cause PPA offtakers to offer less generous terms for PPAs than is currently the case. They questioned whether members of the pool of PPA suppliers would be suitably incentivised to offer commercially attractive PPAs in the knowledge that they might be able to benefit from a more commercially advantageous agreement under the OLR mechanism. We believe that DECC should conduct additional research into how the OLR policy might impact PPAs for CfD project.

In addition, a market sounding exercise could potentially establish suppliers' appetite for providing PPAs and how they consider the OLR mechanism might impact on the market.

### 5.1.4 Impact on credit risk

As highlighted in section 4.2.4, it may be possible to achieve a higher level of certainty through an OLR PPA contracted at day 1 subject to suitable conditions precedent, e.g. a "put" contract which could be contracted day 1 and subject to conditions precedent such as default of the initial market PPA holder, or expiry of the initial market PPA before the start date of a follow on market PPA. We understand that DECC has already considered this as an option as part of its work in designing the OLR mechanism, but received negative feedback from suppliers who expressed concerns about potential contingent liabilities and their potential credit impact. We recommend that DECC:

- Seeks independent accounting analysis in order to test the views received from suppliers;
- In view of that accounting analysis, tests the credit ratings agencies' views of the potential credit impact of pre-contracted OLR PPAs and how this would differ, from their views of a sufficiently certain regulatory (non-contractual) OLR regime; and
- Takes legal advice with respect to the contracting methods which could potentially be used (we have given the example of a "put" with conditions precedent, but we are not lawyers and recommend DECC seeks legal advice on the possible contracting options).

We understand that DECC is considering the potential impact of the OLR as a form of credit enhancement of market PPAs, e.g. in the event that a PPA offtaker were to become insolvent, then the OLR mechanism would 'step in'. This may open up the PPA market by enabling generators to contract with a wider variety of offtakers (potentially offtakers of lower credit quality). If a large volume of offtake by "weaker" credit quality offtakers comes into the market, then the "stronger" credit quality offtakers may have to step in to a lot of these contracts. This possible exposure of the "stronger" offtakers to potentially large and unpredictable liabilities could weaken the credit quality of the "stronger" offtakers as perceived by financiers and credit rating agencies.

We therefore recommend that DECC considers the potential impact this could have in terms of:

- how the group of potential offtakers may change over time.
- whether deterioration in the average or minimum credit quality of offtakers under the OLR could have a material and negative impact on the perceived credit quality of "stronger" offtakers.
- views from lenders as to their minimum requirements for an offtaker (both in terms of the type of the PPA counterparty and their credit quality).
- whether a charging mechanism may be appropriate for "weaker" offtakers whose PPA may benefit from such credit enhancement (e.g. by making it acceptable to a generator and their financiers where it would not otherwise have been, hence helping them to secure their supply chain).
- whether a charging mechanism may be appropriate for project sponsors or other financiers whose projects / loans would benefit from such credit enhancement in relation to the offtaker.

### 5.1.5 The role of equity

We would recommend that DECC engages further with equity investors to obtain a wider perspective on the OLR PPA. In particular, DECC should consider clarifying how equity investors would seek to model their base case revenues and what protection equity investors might require through the OLR PPA to promote competitive behaviour in the market.

# Appendix 1: Assumptions

The detailed assumptions are as follows.

| Assumption | Value/Unit | Detail | Source |
|---|---|---|---|
| **General Assumptions** | | | |
| Project Inception/ Financial Close | 2014 | Assumed date of construction commencement. Pre-development costs to date are assumed to be sunk. | DECC |
| Inflation Base Year | 2014 | | DECC |
| Year End | 31 October | | DECC |
| CPI | % | Annual CPI percentage. OBR actual/forecast rate to 2017. Assumed as flat 2% thereafter | DECC |
| RPI | % | Assumed as flat 2.5% across timeline | DECC |
| Account Receivable Days | 30 | - | DECC |
| Accounts Payable Days | 30 | - | DECC |
| Capital Creditor Days | 30 | Capital creditor days assumption applies except in the period in which construction ends, when all outstanding balances are assumed to be paid before operations begin. | DECC |
| | | | |
| **Plant Assumptions (Generating technology specific)** | | | |
| Pre-development Period | Years | Length of pre-development period, ending the day before Project Inception | DECC |
| Construction Period | Years | Length of construction period, beginning at Project Inception | DECC |
| Plant Operating Period | Years | Length of operating period, beginning once construction ends | DECC |
| Gross Power Output | MW | Power output capacity of the generating plant | DECC |
| Availability Profile | % | Annual percentage of time the plant is available to generate electricity | DECC |
| Load Factor | % | Annual percentage of generating capacity used while plant is available | DECC |
| | | | |
| **Pricing Scenario (General assumptions applicable to all generating technologies)** | | | |
| Indexation of revenues | - | Revenues indexed at CPI | DECC |
| Wholesale Price | £/MWh | Unescalated average electricity price per megawatt hour, per annum. Provided in 2014 prices. | Baringa |
| 15yr PPA Price | £/MWh | Unescalated average electricity price per megawatt hour, per annum. Provided in 2014 prices. | Baringa |
| 5yr PPA Price | £/MWh | Unescalated average electricity price per megawatt hour, per annum. Provided in 2014 prices. | Baringa |
| 1yr Rolling PPA Price | £/MWh | Unescalated average electricity price per megawatt hour, per annum. Provided in 2014 prices. | Baringa |
| Reference Price | - | Assumed to equal the Wholesale Price | DECC |

| | | | |
|---|---|---|---|
| Offtaker of Last Resort Discount | £30/MWh, £25/MWh, or £20/MWh | Unescalated discount to be applied to Reference Prices in calculating OLR revenues. Provided in 2012 prices. | DECC |
| | | | |
| **Pricing Scenario (Generating technology specific)** | | | |
| CfD Strike Price | £/MWh | Unescalated strike price per megawatt hour, per annum for Contracts for Differences. Provided in 2012 prices. Based on the July 2013 EMR Draft Delivery Plan. | DECC |
| Cannibalisation Scalar | % | Percentage to be applied to post-CfD wholesale prices, per annum. | Baringa |
| | | | |
| **Cost Scenario (General assumptions applicable to all generating technologies)** | | | |
| Indexation of costs | - | Costs indexed at RPI | DECC |
| | | | |
| **Cost Scenario (Generating technology specific)** | | | |
| Construction costs | £ | Total cost to construct generating plant. Provided in 2014 prices | DECC |
| Construction price adjustment | % | Adjustment to allow for change in cost to construct over time | DECC |
| Construction price phasing | % | Phasing to spread cost of construction over construction period | DECC |
| O&M Fixed Fee | £/MW/Year | Fixed fee proportion of O&M charge. Provided in 2014 prices. | DECC |
| O&M Variable Fee | £/MWh | Variable fee proportion of O&M charge. Provided in 2014 prices. | DECC |
| Insurance Cost | £/MW/Year | Insurance cost per MW per year. Provided in 2014 prices. | DECC |
| Connection and UoS charges | £/MW/Year | Connection and UoS charges. Provided in 2014 prices. | DECC |
| | | | |
| **Funding Scenario (General assumptions applicable to all generating technologies)** | | | |
| Cash sweeps | Yes/No Switch | Assumption regarding whether dividends should be paid via cash sweep. Assumed at 'Yes'. Note that dividends are assumed to be paid subject to both available distributable reserves and maintenance of a minimum cash balance. Cash is retained within the SPV where there are insufficient distributable reserves to make dividend payments. | DECC |
| Minimum cash balance | £ | Minimum cash balance required before dividends can be triggered. Assumed at £1,000,000 | DECC |
| **Funding Scenario (Generating technology specific)** | | | |
| Gearing | % | Gearing percentage to be used in calculating the size of debt to be drawn down. Calculated by Goal Seek as the highest level of gearing possible while ensuring Debt Service Cover Ratio does not fall below the stipulated minimum. | Calculated using assumptions provided by DECC, from discussion with lenders |
| Investor cost of equity | % | - | DECC, from discussion with lenders |
| Cost of debt | % | All in rate including base rate | DECC, from discussion with lenders |

| | | | |
|---|---|---|---|
| Arrangement fee | % | Arrangement fee to be incurred on debt finance. Percentage of drawn down amount | DECC, from discussion with lenders |
| Commitment fee | % | Commitment fee to be incurred on debt finance. Percentage of drawn down amount | DECC, from discussion with lenders |
| Debt finance repayment method | - | Assumed annuity profile | DECC, from discussion with lenders |
| Repayment period | Years | Maximum repayment period | DECC, from discussion with lenders |
| Loan term | 12 Years | Maximum loan term | DECC, from discussion with lenders |
| Interest Cover Ratio | 1.25 | Minimum permitted interest cover ratio. Ratio is calculated as cashflows before debt servicing divided by debt service. | DECC, from discussion with lenders |
| Debt Service Cover Ratio | 1.25 | Minimum debt service cover ratio. Ratio is calculated as cashflows before debt servicing divided by cash interest cost. | DECC, from discussion with lenders |

# Appendix 2: Sensitivity analysis

## Sensitivity analysis

The sections below provide a dashboard analysis of the sensitivities

### OLR discount £25/MWh

#### *Solar PV – unlevered*

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (averag | % | 11% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 14,247 |
| Contracted Power | - |
| Contract for Differences | 19,358 |

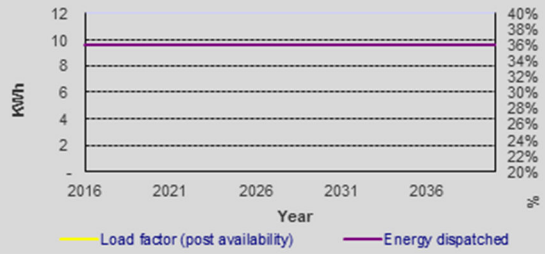
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 9,937 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 5.31% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 15,333 |
| Project IRR | % | 8.07% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 9,937 |
| Total funding | £'000 | | 9,937 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

## *Solar PV – initial 5 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (averag | % | 11% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 5yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 20,470 |
| Contract for Differences | 19,358 |

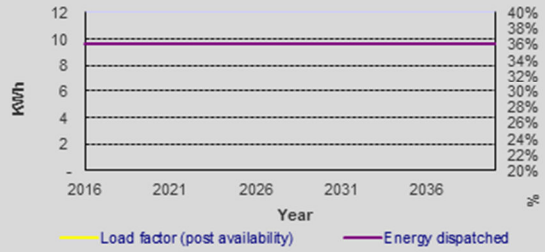
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | 494 |
| | £'000 | 10,432 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

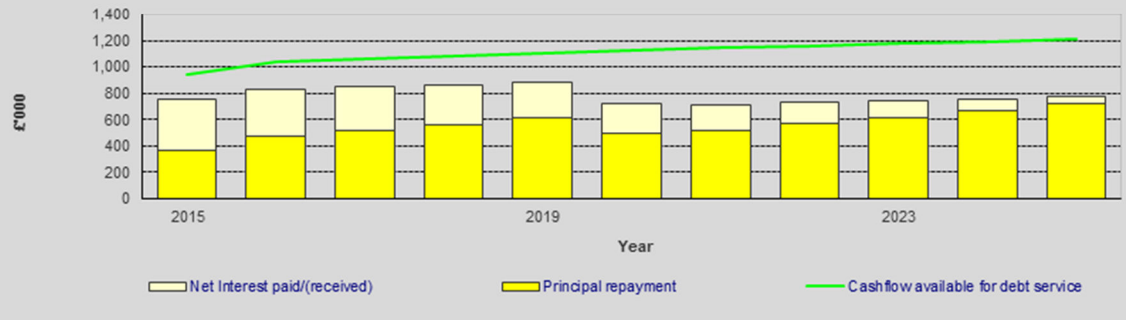
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 10.23% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 21,556 |
| Project IRR | % | 10.71% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 6,126 |
| Equity | £'000 | | 4,305 |
| Total funding | £'000 | | 10,432 |
| Cost of debt (weighted avg) | % | | 6.30% |
| Gearing | % | | 59% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## *Solar PV - initial 15 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (avera | % | 11% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 20,239 |
| Contract for Differences | 19,358 |

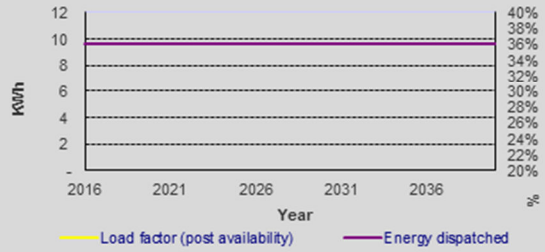
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | 540 |
| | £'000 | 10,478 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

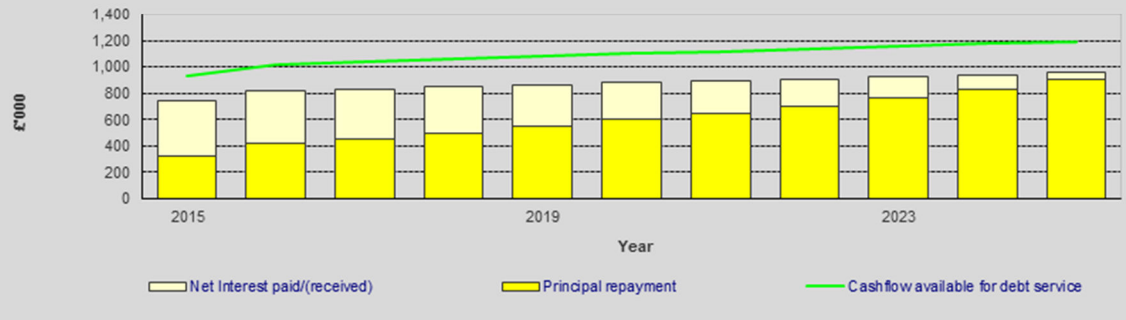
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 10.33% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 21,326 |
| Project IRR | % | 10.55% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 6,700 |
| Equity | £'000 | | 3,778 |
| Total funding | £'000 | | 10,478 |
| Cost of debt (weighted avg) | % | | 6.30% |
| Gearing | % | | 64% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## *Onshore wind – unlevered*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Onshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 72 |
| Load Factor post availability (avera | % | 28% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 229,755 |
| Contracted Power | - |
| Contract for Differences | 211,322 |

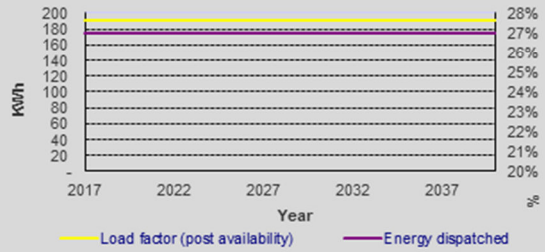
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 110,838 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 110,838 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 104.47 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2010 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2016 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 5.76% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 186,745 |
| Project IRR | % | 8.50% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 110,838 |
| Total funding | £'000 | | 110,838 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

## *Onshore wind - initial 5 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Onshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 72 |
| Load Factor post availability (avera | % | 28% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 5yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 323,020 |
| Contract for Differences | 211,322 |

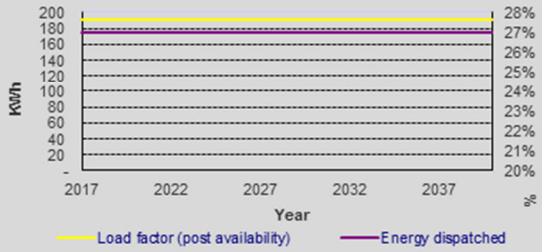
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 110,838 |
| Interest & fees during constructio | £'000 | 9,713 |
| | £'000 | 120,551 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 104.47 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2010 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2016 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

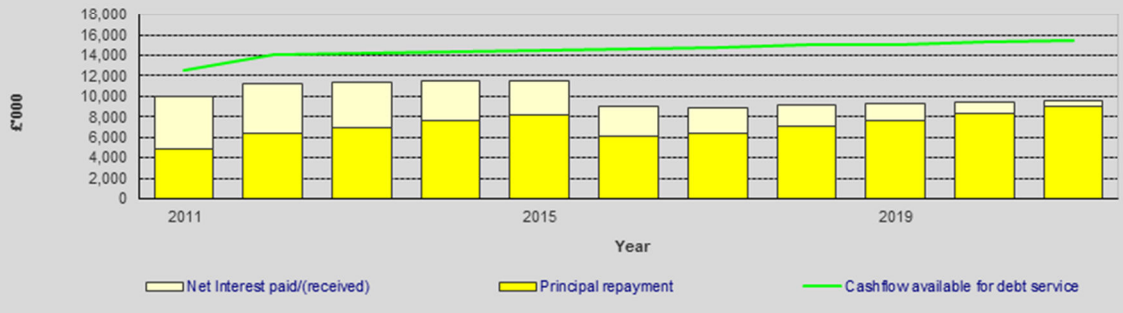
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 13.00% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 280,010 |
| Project IRR | % | 11.76% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 78,514 |
| Equity | £'000 | | 42,016 |
| Total funding | £'000 | | 120,531 |
| Cost of debt (weighted avg) | % | | 6.50% |
| Gearing | % | | 65% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## *Onshore wind - initial 15 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Onshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 72 |
| Load Factor post availability (avera | % | 28% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 318,774 |
| Contract for Differences | 211,322 |

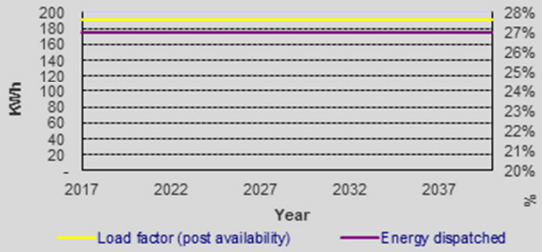
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 110,838 |
| Interest & fees during constructio | £'000 | 10,631 |
| | £'000 | 121,469 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 104.47 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2010 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2016 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

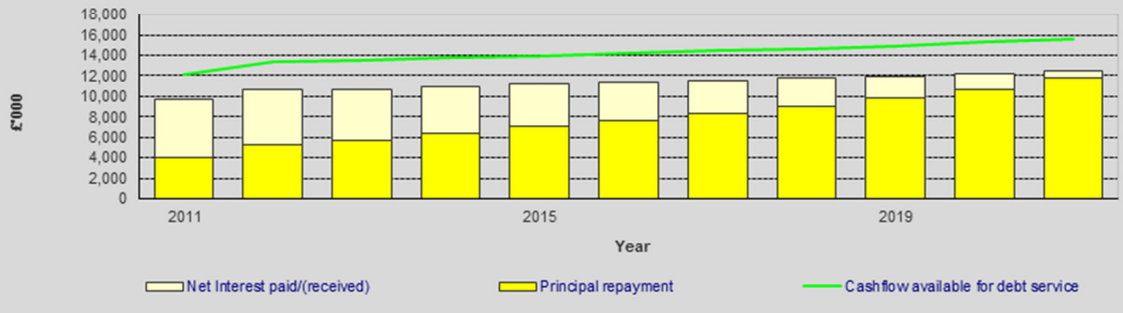
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 13.11% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 275,765 |
| Project IRR | % | 11.47% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 85,739 |
| Equity | £'000 | | 35,710 |
| Total funding | £'000 | | 121,448 |
| Cost of debt (weighted avg) | % | | 6.50% |
| Gearing | % | | 71% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## *Offshore wind – unlevered*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind_Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (avera | % | 38% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 865,793 |
| Contracted Power | - |
| Contract for Differences | 1,614,739 |

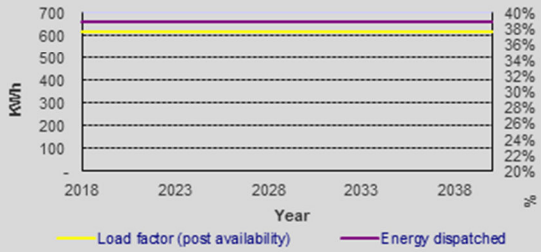
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 470,103 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 7.52% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 1,046,392 |
| Project IRR | % | 10.63% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 470,103 |
| Total funding | £'000 | | 470,103 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

## *Offshore wind – initial 5 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind_Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (avera | % | 38% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 5yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 1,199,021 |
| Contract for Differences | 1,614,739 |

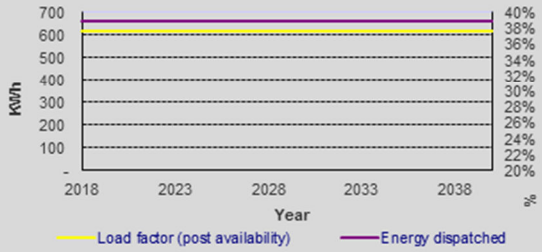
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | 63,993 |
| | £'000 | 534,095 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

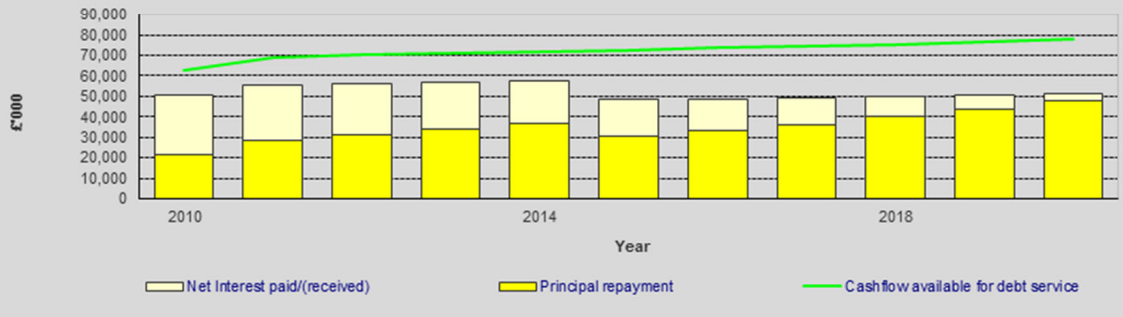
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 15.24% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 1,379,619 |
| Project IRR | % | 13.13% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 383,739 |
| Equity | £'000 | | 149,821 |
| Total funding | £'000 | | 533,559 |
| Cost of debt (weighted avg) | % | | 7.50% |
| Gearing | % | | 72% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## *Offshore wind – initial 15 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (avera | % | 38% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 1,181,889 |
| Contract for Differences | 1,614,739 |

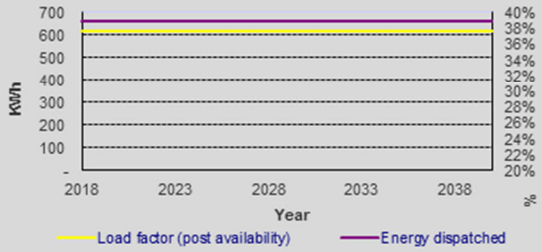
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | 67,872 |
| | £'000 | 537,974 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 26.12 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

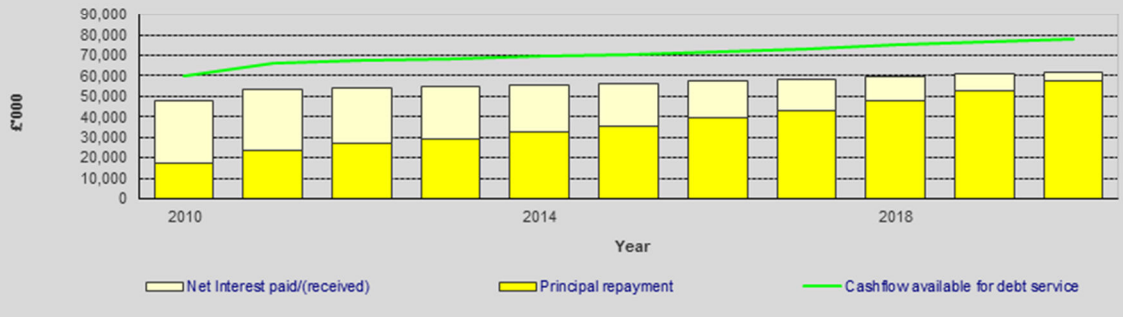
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 15.20% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 1,362,487 |
| Project IRR | % | 12.87% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 406,127 |
| Equity | £'000 | | 131,337 |
| Total funding | £'000 | | 537,464 |
| Cost of debt (weighted avg) | % | | 7.50% |
| Gearing | % | | 76% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## OLR discount £20/MWh

### *Solar PV – unlevered*

**OPERATIONS**

**PLANT SPECIFICATION**

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (averag | % | 11% |

**COMPONENTS OF INCOME**

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 15,928 |
| Contracted Power | - |
| Contract for Differences | 19,358 |

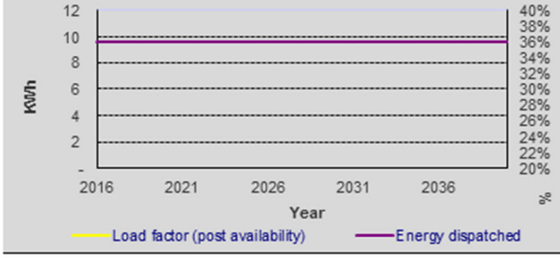
**CAPITAL COSTS**

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 9,937 |

**CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT**

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

**OPERATING REGIME**




**PROJECT TIMING**

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

**CAPITAL STRUCTURE & RETURNS**

**EQUITY AND INVESTOR RETURNS**

| | | |
|---|---|---|
| Equity IRR | % | 5.84% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 17,014 |
| Project IRR | % | 8.76% |

**DEBT**

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 9,937 |
| Total funding | £'000 | | 9,937 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | **Required** | **Breach?** |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

## *Solar PV – initial 5 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (avera | % | 11% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 5yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 20,470 |
| Contract for Differences | 19,358 |

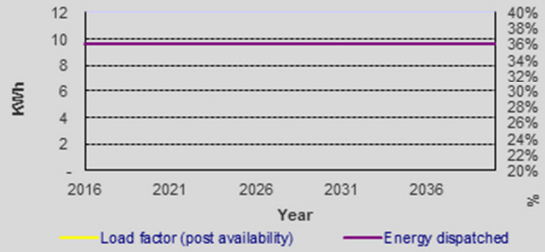
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | 508 |
| | £'000 | 10,446 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

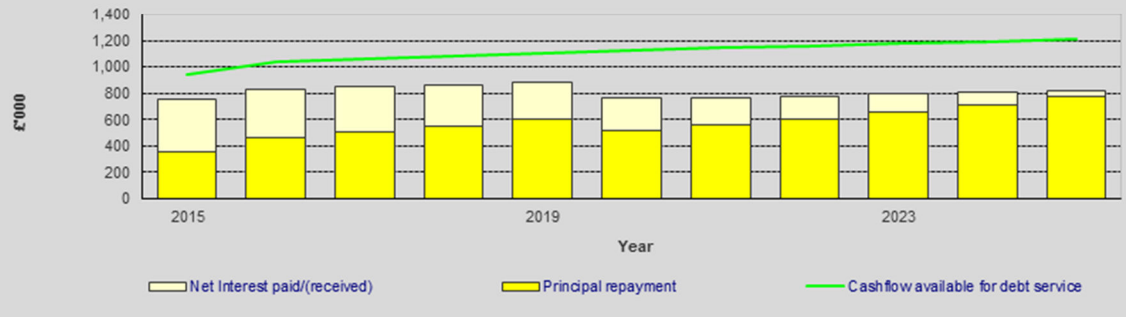
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 10.32% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 21,556 |
| Project IRR | % | 10.71% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 6,300 |
| Equity | £'000 | | 4,146 |
| Total funding | £'000 | | 10,446 |
| Cost of debt (weighted avg) | % | | 6.30% |
| Gearing | % | | 60% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## *Solar PV – initial 15 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Solar | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 10 |
| Load Factor post availability (avera | % | 11% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 20,239 |
| Contract for Differences | 19,358 |

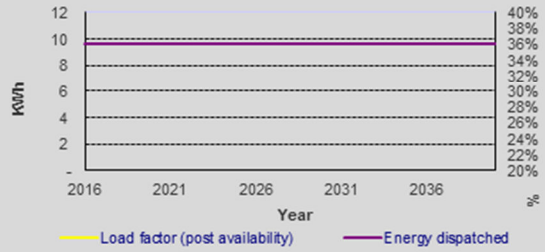
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 9,937 |
| Interest & fees during constructio | £'000 | 540 |
| | £'000 | 10,478 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 130.59 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2014 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2015 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

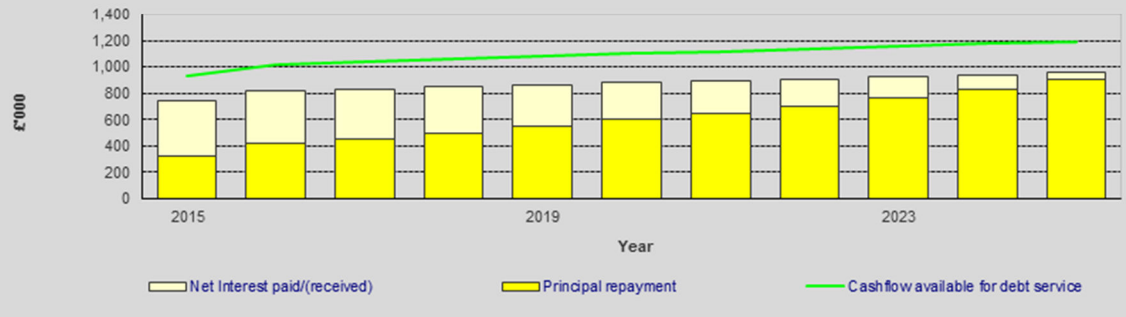
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 10.33% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 21,326 |
| Project IRR | % | 10.55% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 6,700 |
| Equity | £'000 | | 3,778 |
| Total funding | £'000 | | 10,478 |
| Cost of debt (weighted avg) | % | | 6.30% |
| Gearing | % | | 64% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## *Onshore wind – unlevered*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Onshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 72 |
| Load Factor post availability (avera | % | 28% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 259,160 |
| Contracted Power | - |
| Contract for Differences | 211,322 |

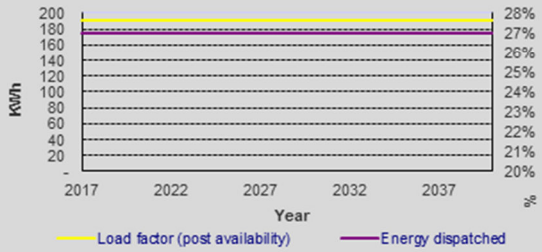
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 110,838 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 110,838 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 104.47 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2010 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2016 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 6.56% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 216,150 |
| Project IRR | % | 9.52% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 110,838 |
| Total funding | £'000 | | 110,838 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

## *Onshore wind –initial 5 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Onshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 72 |
| Load Factor post availability (avera | % | 28% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 5yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 323,020 |
| Contract for Differences | 211,322 |

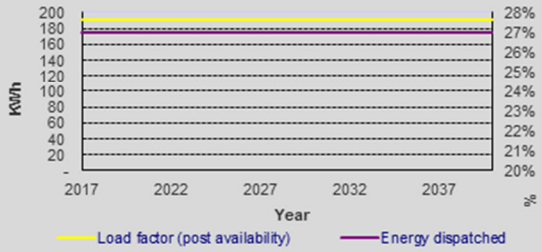
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 110,838 |
| Interest & fees during constructio | £'000 | 10,106 |
| | £'000 | 120,944 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 104.47 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2010 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2016 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

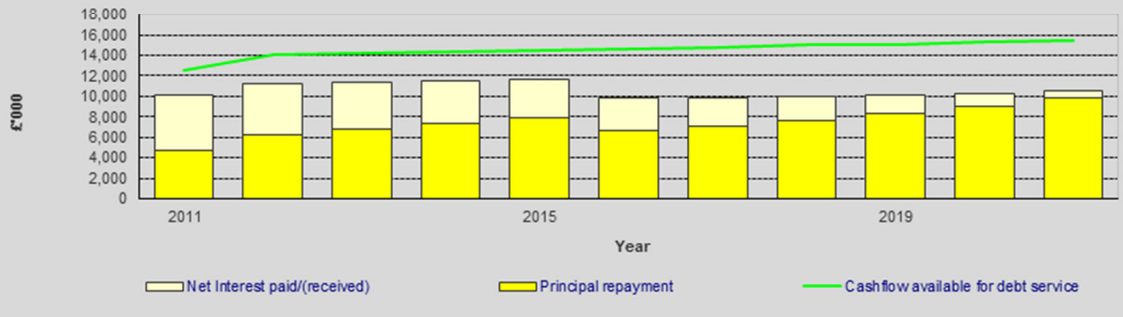
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 13.27% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 280,010 |
| Project IRR | % | 11.76% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 81,699 |
| Equity | £'000 | | 39,225 |
| Total funding | £'000 | | 120,924 |
| Cost of debt (weighted avg) | % | | 6.50% |
| Gearing | % | | 68% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## *Onshore wind –initial 15 year market PPA*

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Onshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 72 |
| Load Factor post availability (avera | % | 28% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 318,774 |
| Contract for Differences | 211,322 |

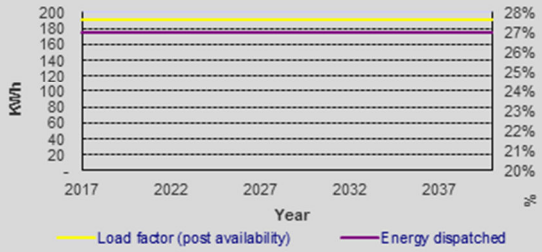
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 110,838 |
| Interest & fees during constructio | £'000 | 10,631 |
| | £'000 | 121,469 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 104.47 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2010 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2016 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

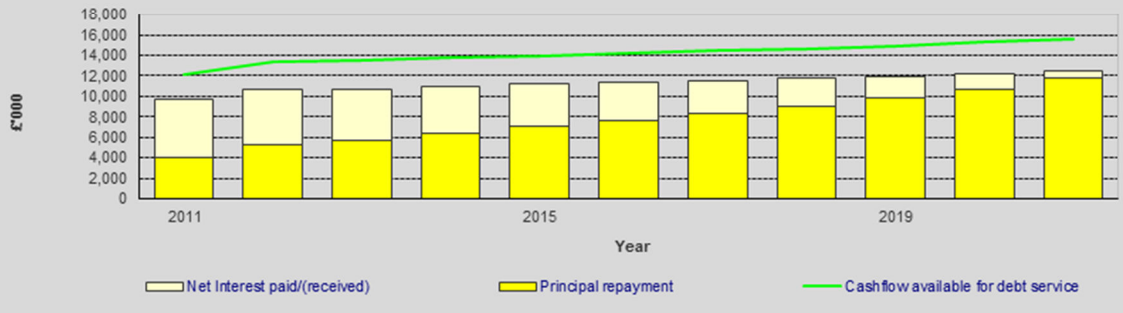
#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 13.11% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 275,765 |
| Project IRR | % | 11.47% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 85,739 |
| Equity | £'000 | | 35,710 |
| Total funding | £'000 | | 121,448 |
| Cost of debt (weighted avg) | % | | 6.50% |
| Gearing | % | | 71% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

#### CFADS VS. DEBT SERVICE



## Offshore wind – unlevered

### OPERATIONS

#### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (avera | % | 38% |

#### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | No PPA |
| Years of OLR after PPA term | To end of operational life |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | 973,643 |
| Contracted Power | - |
| Contract for Differences | 1,614,739 |

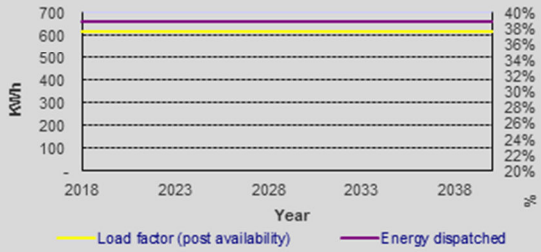
#### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | - |
| | £'000 | 470,103 |

#### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

#### OPERATING REGIME




#### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

### CAPITAL STRUCTURE & RETURNS

#### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 8.18% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 1,154,241 |
| Project IRR | % | 11.42% |

#### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | - |
| Equity | £'000 | | 470,103 |
| Total funding | £'000 | | 470,103 |
| Cost of debt (weighted avg) | % | | 0.00% |
| Gearing | % | | 0% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

# Offshore wind – initial 5 year market PPA

## OPERATIONS

### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind_Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (avera | % | 38% |

### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 5yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 1,199,021 |
| Contract for Differences | 1,614,739 |

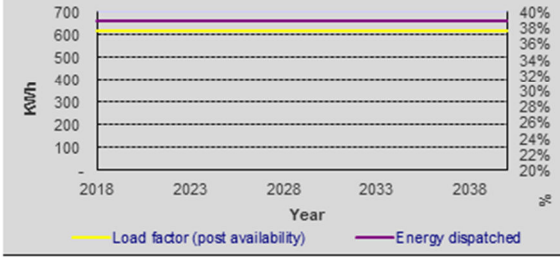
### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | 65,935 |
| | £'000 | 536,037 |

### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

### OPERATING REGIME




### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

## CAPITAL STRUCTURE & RETURNS

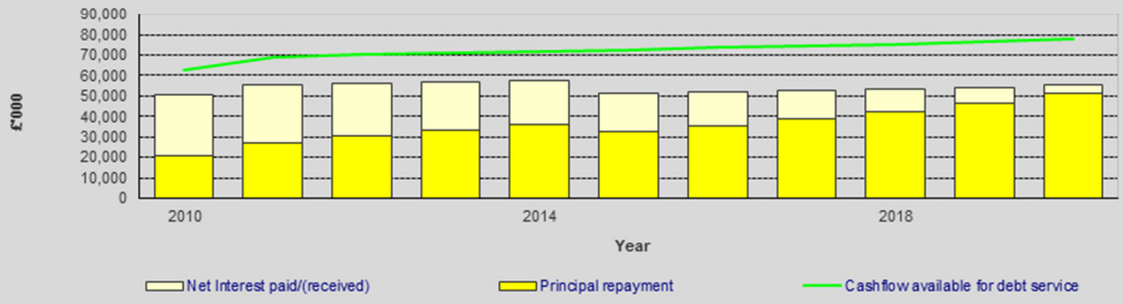
### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 15.50% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 1,379,619 |
| Project IRR | % | 13.13% |

### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 394,959 |
| Equity | £'000 | | 140,554 |
| Total funding | £'000 | | 535,513 |
| Cost of debt (weighted avg) | % | | 7.50% |
| Gearing | % | | 74% |
| | | Required | Breach? |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

### CFADS VS. DEBT SERVICE



# Offshore wind – initial 15 year PPA

## OPERATIONS

### PLANT SPECIFICATION

| | | |
|---|---|---|
| Technology | Wind__Offshore | |
| LC Data Set: Low / Med / High | Medium | |
| Funding type: | Project Finance 1 | |
| Gross Power Output | MW | 200 |
| Load Factor post availability (avera | % | 38% |

### COMPONENTS OF INCOME

| | |
|---|---|
| Contract type: | 15yr PPA |
| Years of OLR after PPA term | 0yrs |

| | CF (£'000) |
|---|---|
| Non Contracted Power (Wholesale) | - |
| Non Contracted Power (OLR) | - |
| Contracted Power | 1,181,889 |
| Contract for Differences | 1,614,739 |

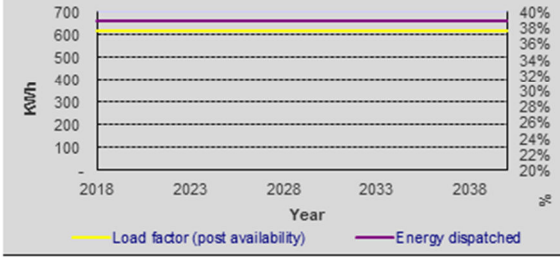
### CAPITAL COSTS

| | | |
|---|---|---|
| Pre development (equity funded) | £'000 | - |
| Construction | £'000 | 470,103 |
| Interest & fees during constructio | £'000 | 67,872 |
| | £'000 | 537,974 |

### CONTRACT FOR DIFFERENCES & OFFTAKER OF LAST RESORT

| | | |
|---|---|---|
| CfD Strike Price (Real 2014 prices) | £ / MWh | 146.26 |
| OLR Discount price (Real 2014 prices) | £ / MWh | 20.89 |

### OPERATING REGIME




### PROJECT TIMING

| | |
|---|---|
| Project Inception (Construction Commences) | 2014 |
| Pre Development | 01 Nov 2009 |
| Construction | 01 Nov 2014 |
| Operation Begins | 01 Nov 2017 |
| Operation Ceases | 01 Jan 2040 |

## CAPITAL STRUCTURE & RETURNS

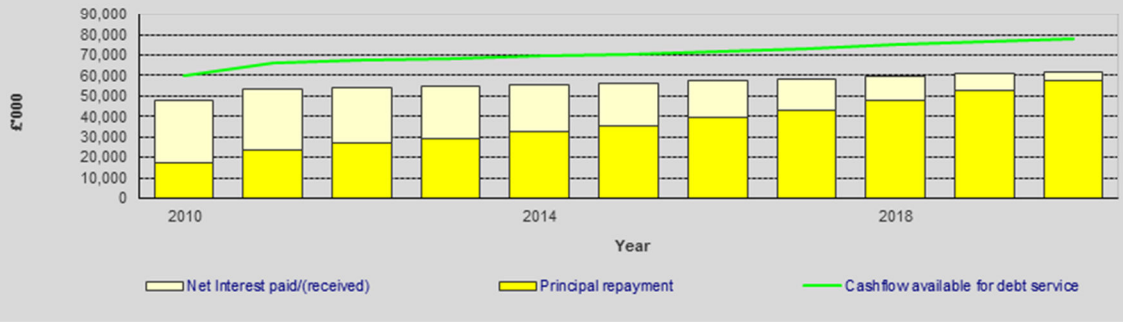
### EQUITY AND INVESTOR RETURNS

| | | |
|---|---|---|
| Equity IRR | % | 15.20% |
| Sufficient cash to support operations? | | OK |
| Project Cash Flow | £'000 | 1,362,487 |
| Project IRR | % | 12.87% |

### DEBT

| | | | |
|---|---|---|---|
| Project Finance 1 | £'000 | | 406,127 |
| Equity | £'000 | | 131,337 |
| Total funding | £'000 | | 537,464 |
| Cost of debt (weighted avg) | % | | 7.50% |
| Gearing | % | | 76% |
| | | **Required** | **Breach?** |
| Interest cover ratio | ratio | 1.25 | OK |
| Debt service cover ratio | ratio | 1.25 | OK |
| No. of times debt is refinanced | # | - | |

### CFADS VS. DEBT SERVICE



# Appendix 3: Meeting Minutes

| | |
|---|---|
| **Meeting:** | OLR Meeting – Funder round table |
| **Held on:** | 24 October 2013 / 08:00 – 09:45 |
| **Location:** | Lender premises |
| **Present:** | Lender 1 Representative<br>Lender 2 Representative<br>Lender 3 Representative<br>Alex Weir (The Department of Energy and Climate Change ("DECC"))<br>Darryl Croft (DECC)<br>Matthew Coyne (DECC)<br>Edward Crosthwaite-Eyre (Baringa LLP)<br>Caroline McGill (Deloitte)<br>James Mellish (Deloitte) |

**Introductory comments**

Alex Weir provided a high level overview of the Offtake of Last Resort ("OLR") mechanism and DECC's perception of the key risks that would remain under the Contract for Difference ("CfD") mechanism supported by the OLR.

Lenders commented that there is unlikely to be lending appetite for merchant power projects (particularly in the short term) as lenders remain unwilling to fund uncontracted projects. The lenders stated this is likely to hold true while there are significant other non-merchant investment opportunities. Additionally, lenders commented that projects which were not fully contracted from the outset, or for the full term over which the project's debt sizing is calculated, would be viewed as carrying merchant risk.

**Lender Questions**

*1. Debt sizing without the OLR*

i. How would you treat different revenue streams? (E.g. contracted, uncontracted, top-up)

Lenders commented that in order for there to be an appetite to lend to projects revenue streams need to be fully contracted. Furthermore, it has been some time since the lenders considered lending to projects carrying merchant risk as some banks experienced significant losses on such projects following the introduction of the NETA trading system in 2001. Uncontracted revenues would be given no credence within base case modelling assumptions and considered upside for equity.

ii. How would you treat residual wholesale risk if the generator has a Power Purchase Agreement ("PPA") priced at a % discount?

Lenders expressed that the use of a PPA with a % discount to the reference price (based on wholesale prices) could, counter-intuitively, result in lower returns to the project if wholesale prices were close to or higher than the CfD strike price. They also commented that a £/MWH discount could be preferable but the likelihood of this pricing scenario and the impact of the different mechanisms would have to be modelled to be fully understood.

iii. Would you require a floor price to mitigate potential negative price risk?

Ideally yes. Lenders commented that the market for long term PPAs containing adequate price floors has reduced significantly. Lenders commented that not only do there appear to be fewer players offering long term PPAs but the terms are becoming more onerous potentially due to perceived uncertainty in the future energy market. However, lenders also reflected that while power prices might be negative in some periods this would hopefully not be often enough to severely affect the average returns over the life of the project. However, month on month

fluctuations are also very important to bankability, due to the potential of creating debt service shortfalls in the short term.

*2. Debt sizing under CfDs with the OLR*

i. How would you treat different revenue streams? (E.g. contracted, uncontracted, top-up)

Again, lenders would not consider uncontracted revenue streams when sizing debt. Respondents also commented that policy risk will have a substantial impact on debt sizing, particularly concerning the certainty of the OLR PPA and counter-party credit profiles.

Lenders commented that the OLR mechanism is (in essence) replacing the 'floor' on a 15-year PPA. If the OLR PPA is priced at a rate below a typical price floor this would naturally reduce the amount of debt available to the project.

Assumptions which lenders thought would be reasonable were:

- Base case P50 cashflows with a DSCR of between [1.25x – 1.30x] assuming the initial PPA is long term; and
- Downside P90 cashflows with a DSCR of between – [1.10 – 1.15] assuming the Initial PPA is replaced by an OLR PPA.

Lenders indicated that these assumptions might not change materially across onshore wind, offshore wind and solar.

ii. What tenor of initial PPA would you require the generator to have?

Lenders would consider this on a project specific basis and would be dependent on numerous factors not limited to sector, debt term and the nature of the OLR PPA (i.e. commercial terms / certainty) from the outset of the project. An initial PPA of 5 years was not considered unfeasible for lenders initial scenario modelling, in which case the base case revenue modelled would be the contracted PPA revenue for 5 years and the OLR PPA thereafter. Lenders acknowledged that there is the possibility of further contracted PPAs thereafter. There was split opinion among lenders as to whether any amount of this "upside" would be reflected in their base case. One lender said no, one lender said possibly but at a lower than p50 basis.

iii. How would it affect debt sizing if the OLR was not available for the first [x] years of a generator's CfD?

Lenders commented that the absence of the OLR PPA from the outset of a project would not have a material impact on debt sizing provided that:

- An initial contracted PPA had been secured with a creditworthy counterparty; and
- That there was a large degree of certainty surrounding the mechanics and availability of the OLR PPA before the end of the contracted PPA i.e. it was certain that it could be relied upon as the base case revenue after the contracted PPA had expired.

Lenders also stated that they would be unlikely to consider lending to a project that did not have an initial contracted PPA in place, even if the OLR was available from day 1 of generation. Also, lenders commented that it is critical to have clarity on the OLR arrangements, and confirmation of their availability, at the time of the project's financial close.

Political uncertainty would be an important factor in deciding whether to lend and in determining how much probability should be assigned to the future OLR PPA revenue.

*3. Eligibility for the OLR – who will need long term PPAs under CFDs and why?*

Lenders stated that ideally the OLR mechanism should cover all technologies, as they expect to require long term PPAs for all technologies. They commented that while this is less of an issue for baseload supplies, given the

difficulty of securing long term feedstock contracts it would be preferable for the OLR PPA to span the renewables sector.

*4. Allocation mechanism*

i. Acceptability of a series of short term PPAs

Lenders commented that a series of short term PPAs would not be viewed as favourably as longer term agreements. However, they agreed that depending on the degree of clarity and certainty over the allocation process, it could be accepted as being financeable.

Lenders also commented that the disruption to the project of having to switch to the backstop PPA should be considered, stressing that the existence of OLR would not automatically make the project financeable because of this disruption. One lender stated that switching to the OLR revenue would likely place the project on their "watch" list for potential bad debts, incurring a lot of additional monitoring and admin within the bank and causing the project to be viewed as "a bad project".

ii. Form of credit support required under backstop PPAs

Lenders commented that this will largely depend on the entity providing the PPA notwithstanding that the provider is likely to come from a pool of potential providers. Letters of credit and PCGs were cited as potential measures that would give the lender assurance over credit quality and timeliness of payments. Lenders stated that timeliness of payments an important point – it was not just important that the lender would be paid out eventually, but that it would be paid out on time.

iii. Does the offtaker identity matter given sufficient collateral requirements as above?

**Offtaker identity in the open market**

Yes, lenders commented that this would form part of a binary 'go / no go' decision of whether the project was acceptable before any modelling of returns would take place. They noted this could be a potential issue for credit committee as lenders need confidence that the offtaker will be there for the duration of the PPA contract. Key lender considerations for the identity of the offtaker were identified as:

- Credit - Credit quality / availability of credit protections such as PCGs, collateral or letters of credit
- Strategic alignment - Whether the offtaking was deemed 'non-core' or core to the offtakers business, e.g. it would be considered preferable if energy trading was core to the offtakers business.
- Relationship - whether the lender had a relationship with or prior knowledge of the offtaker could also be a factor.

**Backstop PPA offtakers**

Lenders appeared to be less concerned with the identity of back stop PPA offtakers, provided:

- Robust credit and collateral requirements were in place under backstop PPAs; and
- Lenders could be assured of being allocated a new offtaker rapidly in the event of default of their first PPA offtake provider.

iv. Would a 'mandatory auction' for backstop PPAs be acceptable as an allocation mechanism?

This subject was not covered, however, DECC asked whether additional contractual protections would be necessary to avoid "misbehaviour" by generators if they were assured of always having access to a PPA which would be mandatory for the suppliers to enter into, particularly if the PPA was short term and may therefore not allow normal contractual protections to run their course. Lenders advised DECC on steering away from trying to control generator behaviour. In addition, the risk of large penalties being imposed on generators is seen by lenders as likely to reduce, or in worst case even prevent, the bankability of the project.

*5. Sizing the backstop discount – do you agree with our proposed methodology?*

*Lenders agreed with the proposed methodology for modelling the backstop which would be achieved through:*

- Development of a project finance model with inherent flexibility to consider the three technologies;
- Structuring hypothetical projects and indicative terms for each based on engagement with funders;
- Applying target DSCR to base case scenarios to calculate the level of gearing project would be able to support (assume no refinancing);
- After fixing gearing, calculation of equity returns through the inclusion of uncontracted revenues; and
- Scenario modelling based on differing OLR PPA pricing to analyse the impact on key project metrics.

Funders also recommended engagement with equity investors to understand their approach to modelling the equity base case.

Funders would be willing to provide indicative terms (likely a range) when approached individually.

It was questioned whether suppliers would be suitably incentivised to provide a competitively priced PPA if the OLR mechanism pricing is known.

*6. Backstop PPA terms*

i. Would the backstop PPA need to protect against negative price risk?

Refer to question 2. (ii) above.

ii. How would you treat a backstop PPA prices at a % discount to the reference price?

Lenders commented that this is a scenario that would need to be modelled and assessed on a case by case basis. Floor pricing is preferred although it was acknowledged that there is less availability of PPAs which contain favourable price floor mechanisms. Refer to question 1. (ii) above.

iii. What obligations for incentivising good performance would be acceptable?

Lenders commented that DECC should not try and counter-act competitive market forces. Generally speaking there is some comfort around the current PPA structure and DECC should avoid building in additional penalty/incentivisation mechanisms. The inclusion of such mechanisms is likely to mean projects are less financeable. Refer to question 4. (i) above.

iv. Would curtailment/constraint rights for offtakers under backstop PPAs pose a problem for bankability?

This is likely to have an effect on bankability. Automatic constraint rights would be viewed as unlimited, and therefore un-financeable.

| | |
|---|---|
| **Meeting:** | OLR Meeting I – Commercial Bank |
| **Held on:** | 23 October 2013 |
| **Location:** | Conference call |
| **Present:** | Lender Representative<br>Alex Weir (The Department of Energy and Climate Change ("DECC"))<br>Edward Crosthwaite-Eyre (Baringa)<br>James Mellish (Deloitte) |
| **Apologies:** | Caroline McGill (Deloitte) |

## Introductions

JM introduced Deloitte's work and outlined the approach to modelling the Offtaker of Last Resort ("OLR") mechanism.

## Lender Questions

*1. How would you treat expected merchant revenue and OLR 'backstop' revenue when considering how much you would be prepared to lend to the project?*

The lender commented that the extent to which merchant revenue would be deemed 'Bankable' would be dependent on a number of factors not limited to the credit profile of project stakeholders and the terms and pricing of key commercial documentation (including the Power Purchase Agreement ("PPA"). The lender also commented that while consideration would be given to non-contracted merchant revenue (i.e. beyond the initial PPA where an OLR PPA was to be made available) sizing e.g. pricing would be impacted on down side scenario modelling.

The lender commented that the treatment of OLR 'backstop' revenue for a given project will depend largely on the availability of the OLR mechanism (i.e. whether it will fall away during the life of the generator's Contract for Difference ("CfD")) and the perceived policy risk. To the extent that OLR 'backstop' revenue is bankable the bank would still require a cash flow buffer (see 4).

*2. Would you expect the PPA requirements to differ by technology – in particular, would you require long term PPAs for solar PV and baseload (e.g. biomass, EfW) projects in the absence of the OLR mechanism? If so, why?*

While the lender commented that they would expect the discount and pricing of PPAs to vary by technology, they would still require a long term PPA in the absence of the OLR mechanism even for base load projects. The lender stated that this is due to the fact that forward pricing and trading and offtake arrangements are considered a key risk.

*3. What do you think a bankable PPA under the CfD would look like for each of these technologies? In particular:*

*i. How would you treat any wholesale electricity price risk embedded in any discount priced as a % of wholesale electricity price?*

The lender commented that an 'ideal' PPA would benefit from the following:

- A small discount with reference to the wholesale price;
- Follow/track a reference price if under CfD;
- Benefit from a long tenor;
- Take away all imbalance risks; and
- Be issued by a credible counter-party.

The lender commented that they were uncertain as to how they would treat wholesale price risk where a PPA was priced on a discount basis (e.g. 10% of the wholesale price), however, they would consider using the Poyry 'high' scenario in their scenario modelling if it looked possible for the power price to exceed the strike price. The lender commented that we should approach PPA providers to comment on this issue further.

*ii. Would you require a floor at zero to mitigate the negative price risk?*

The lender commented that ideally a floor would be included to mitigate against negative price risk, but they doubt this will be available. Lenders commented that they expect that negative price risk will be low when average prices over time are considered.

*4. What do you think your minimum Debt Service Cover Ratio ("DSCR") requirements would be for merchant revenue and revenue under the OLR guarantee?*

The lender commented that for the downside case assuming the OLR was used would need to be 1.10 – 1.15x at P90 wind yield. For FIT type income streams the lender commented that they would typically look for 1.25 – 1.30x coverage for P90 wind assumptions, which could apply to the CfD. The lender said that this could either be the base case, or the base case could be the P50 wind yield, with ratios back-solving to the P90 requirement, both under a scenario that assumed a long term PPA, probably at central prices at that would be likely to result in less revenue than the low cases under a CfD if the discount was at a percentage level.

The lender commented that under the RO they would look for downsides of minimum 1.10-1.15x at P90 low price projections, whilst the base case would be based at P50 central power prices.

*5. How do you anticipate your treatment of revenue streams under the CfD (i.e. top up, contracted, uncontracted and guaranteed) will differ in term of your debt sizing process from how you treat the different revenues under a RO project (i.e. buy-out, Recycle, Floor, market revenues)?*

The lender commented that the CfD will give greater certainty to cash flows than under a typical RO project, albeit with potentially less upside potential. The lender stated that while creditworthy counter-parties will still be critical to secure project debt, uncontracted revenue streams would still be considered within the 'base case' revenue projections assuming the OLR PPA was certain. These uncontracted revenues would be considered within downside scenario modelling and factored into debt sizing.

*6. What would be the minimum tenor of the initial PPA you envisage requiring the project to have with the OLR mechanism in place?*

The lender commented that the minimum term of the initial PPA will be largely guided by providers of these agreements and prevailing market conditions. The lender would naturally favour longer term PPAs with credit worthy counter-parties to reduce offtake risk.

The lender also commented that the length of the required PPA will also depend upon the level of certainty which is provided by the OLR mechanism. If, for example, the OLR backstop PPA was to endure for the life of the generator's CfD, then the lender may be able to get comfortable with a lower initial PPA tenor depending on OLR PPA price and whether this generated sufficient cashflows to service debt repayment.

| | |
|---|---|
| **Meeting:** | OLR Meeting II – Commercial Bank |
| **Held on:** | 23 October 2013 |
| **Location:** | Conference call |
| **Present:** | Lender Representative 1<br>Lender Representative 2<br>Alex Weir (The Department of Energy and Climate Change ("DECC"))<br>Darryl Croft (DECC)<br>Edward Crosthwaite-Eyre (Baringa)<br>Caroline McGill (Deloitte)<br>James Mellish (Deloitte) |
| **Apologies:** | None |

## Introductions

JM introduced Deloitte's work and outlined the approach to modelling the Offtaker of Last Resort ("OLR") mechanism.

## Lender Questions

*1. How would you treat expected merchant revenue and OLR 'backstop' revenue when considering how much you would be prepared to lend to the project?*

The lender would only consider 'contracted' revenues when considering their ability to lend to a project. The lender commented that in the absence of a long term Power Purchase Agreement ("PPA") from the outset of a project, the OLR 'backstop' revenue would form the basis of the base case cash flows once the initial PPA falls away. The contracts are key to underpinning the revenue assumptions for the purpose of debt sizing.

*2. Would you expect the PPA requirements to differ by technology – in particular, would you require long term PPAs for solar PV and baseload (e.g. biomass, Energy from Waste ("EfW") projects in the absence of the OLR mechanism? If so, why?*

Subject not covered.

*3. What do you think a bankable PPA under the CfD would look like for each of these technologies? In particular:*

*i. How would you treat any wholesale electricity price risk embedded in any discount priced as a % of wholesale electricity price?*

The lender commented that a fixed discount is preferable to avoid a situation where the generator receives less revenue following an upward movement in wholesale price. The lender commented that this may cause concern at a credit committee level as generators would benefit from less upside. The lender commented that PPA providers need to develop suitable mechanism to combat this.

*ii. Would you require a floor at zero to mitigate the negative price risk?*

Yes. The lender commented that assuming the OLR mechanism was in place then the bank would consider the mechanism as the price floor for modelling purposes.

*4. What do you think your minimum Debt Service Cover Ratio ("DSCR") requirements would be for merchant revenue and revenue under the OLR guarantee?*

The lender provided examples of DSCR requirements under different circumstances:

- For a project benefitting form a 15 year PPA with a credit worthy counter party (P90) base case cashflows – [1.15x – 1.20x];
- For a project with a 5 year PPA with a credit worthy counter party followed by rolling 1 year PPAs – cashflows after the 5 year PPA would not be considered and the OLR backstop revenue would form the

base case. The lender would still require a DSCR between [1.10x – 1.15x] to factor in wind yield and downside scenarios.

The lender commented that the credit rating of the PPA provider would be critical to make the project 'bankable' in either instance (otherwise analysis would focus on the OLR revenues for the base case projections).

*5. How do you anticipate your treatment of revenue streams under the CfD (i.e. top up, contracted, uncontracted and guaranteed) will differ in term of your debt sizing process from how you treat the different revenues under a RO project (i.e. buy-out, Recycle, Floor, market revenues)?*

Under the CfD the lender stated they would only lend to cash flows which are underpinned by a contract (i.e. the PPA). They commented that in a situation where a project secures an initial short term PPA (say 5 years), only OLR back stop revenue would be recognised following the expiry of the initial PPA.

*6. What would be the minimum tenor of the initial PPA you envisage requiring the project to have with the OLR mechanism in place?*

Typically, the lender would require the project to have secured a long term PPA which as a minimum is co-terminus with the tenor of the debt. They added that this PPA would need to be held with a suitable credit worthy counter party i.e. a utility. They commented that this PPA would need to include a price floor with a break even equivalent to [1.0x cover].

The lender commented that historically the bank was unwilling to take merchant risk.

The lender commented that should the OLR mechanism be in place then the bank would consider lending to projects with a lower initial PPA. In such instances non-contracted revenues would not be deemed bankable and so the bank would base their lending on revenue under the secured short term PPA followed by OLR backstop PPA revenues only.

The lender commented that their appetite to go beyond 15 year lending was constrained owing to capital constraints and upward pricing pressure on long term debt. PPAs beyond 15 years typically suffer from lower pricing and are likely to be less attractive to generators.

| | |
|---|---|
| **Meeting:** | OLR Meeting III – Commercial Bank |
| **Held on:** | 31 October 2013 |
| **Location:** | Conference call |
| **Present:** | Lender Representative<br>Alex Weir (The Department of Energy and Climate Change ("DECC"))<br>James Mellish (Deloitte) |
| **Apologies:** | Edward Crosthwaite-Eyre (Baringa)<br>Caroline McGill (Deloitte) |

## Introductions

JM/AW introduced Deloitte's work and outlined the approach to modelling the Offtaker of Last Resort ("OLR") mechanism.

## Lender Questions

*1. How would you treat expected merchant revenue and OLR 'backstop' revenue when considering how much you would be prepared to lend to the project?*

Uncontracted revenues would not be considered for modelling purposes. In the absence of certain revenue streams such as a market PPA with a suitable counter-party the lender commented that they would be unable to lend to the project.

*2. Would you expect the PPA requirements to differ by technology – in particular, would you require long-term PPAs for solar PV and baseload (e.g. biomass, EfW) projects in the absence of the OLR mechanism? If so, why?*

The lender commented regardless of technology without revenue certainty they would not be prepared to lend to a project. The lender indicated that they would be prepared to lend to a project which had an initial short term PPA (provided a minimum term of 5 years) followed by the OLR backstop PPA but only provided there was sufficient certainty that the OLR PPA could be relied upon.

*3. What do you think a bankable PPA under the CfD would look like for each of these technologies? In particular:*

*i. How would you treat any wholesale electricity price risk embedded in any discount priced as a % of wholesale electricity price?*

Subject not covered. However, the lender stated that their approach to evaluating a PPA would be to consider the guaranteed revenue streams for the project and assess the impact that variability of revenue streams might have on project revenue for debt sizing purposes.

*ii. Would you require a floor at zero to mitigate the negative price risk?*

Yes. The lender commented that a fixed price floor would be preferable as historically they have experienced difficulties on projects which were subject to variable floor prices.

*4. What do you think your minimum Debt Service Cover Ratio ("DSCR") requirements would be for merchant revenue and revenue under the OLR guarantee?*

The lender commented that while this would differ for certain technologies, typically they would assume a DSCR of between [1.25x to 1.30x]. The lender may require the DSCR to be higher for certain technologies, particularly where those technologies are exposed to intermittency risk.

Assuming the OLR PPA was provided by an offtaker with sufficient credit quality then the lender would be likely to model the OLR PPA revenue on same basis as the base case between [1.25x to 1.30x].

The lender commented that their downside modelling would be based on their internal scenarios which largely (though not exclusively, and dependent on technology) related to downside performance assumptions.

*5. How do you anticipate your treatment of revenue streams under the CfD (i.e. top up, contracted, uncontracted and guaranteed) will differ in term of your debt sizing process from how you treat the different revenues under a RO project (i.e. buy-out, Recycle, Floor, market revenues)?*

Under the CfD the lender would give no consideration to uncontracted revenues during the debt sizing process. Modelling would be based on guaranteed revenue streams which in this instance, assuming the availability of the OLR PPA for a CfD project, would be the contracted revenue for the term of the initial PPA followed by OLR PPA revenue.

*6. What would be the minimum tenor of the initial PPA you envisage requiring the project to have with the OLR mechanism in place?*

The lender commented that they would expect a minimum PPA tenor of 5 years assuming the availability of the OLR mechanism. The lender commented that they would expect a project to demonstrate a contracted revenue stream rather than assume reliance on the OLR backstop PPA from the outset.

| | |
|---|---|
| **Meeting:** | OLR Meeting – Equity round table |
| **Held on:** | 12 November 2013 |
| **Location:** | DECC, 3 Whitehall Place |
| **Present:** | DECC<br>Equity Representative 1<br>Equity Representative 2<br>Equity Representative 3<br>Equity Representative 4<br>Equity Representative 5 |

**Introductory comments**

Note that Deloitte did not attend the equity roundtable meeting as certain participants expressed concern at having third party consultants present. The comments below are based on an email provided by DECC on 12 November 2013.

Alex Weir of DECC provided an outline of the OLR mechanism.

*1. How do you view route to market risk today – would you accept it under the RO?*

Participants stated that their appetite for taking route to market risk varies according to their investor's risk appetite. One participant stated that the majority of their Limited Partners are pension funds who generally have a low risk appetite preferring long term, stable index-linked returns. Another participant stated that they would consider taking this risk but their ability to do so was often constrained by lender's requirements. This participant also commented that they will 100% equity fund projects which adopt a short term PPA strategy but that this was restricted to small scale projects.

*2. How important is debt to your financing strategies, and how might financing strategies change / evolve under the CfD? Would you consider shorter-term contracting strategies given the OLR?*

Two participants indicated that even in the event that the OLR were available, they would still require long term PPAs with a credible offtaker in order to invest. The participants added that they might consider a 'blended' return over an asset's life and under such circumstances non-contracted revenues might be included in their revenue assumptions albeit at a discounted value. For example, participants stated that they may be willing to invest over a time scale beyond the CfD tenor and take a view on uncontracted revenues thereafter. Any expected revenues after expiry of the initial PPA would be significantly discounted.

*3. What are your current base case and downside return expectations, and how might they differ in the following circumstances:*

- *Levered project, 15-year PPA*
- *Levered project, 5-year initial PPA*
- *Levered project, 1-year rolling PPAs*
- *Unlevered project, 1-year rolling PPAs*

Subject not covered. Participants were unwilling to disclose specific expectations at the round table meeting.

*4. How would you treat revenue under backstop PPAs in the above scenarios?*

One participant stated that they would be unlikely to factor the OLR mechanism into their financial model as they would be likely to favour their own modelling assumptions/expectations for market price and imbalance risk. The exception to this would be if their downside scenario analysis crossed with the OLR discount.

One participant added although it is not likely to feature in their modelling, the OLR mechanism would provide greater flexibility for their organisation if it meant that lenders were more open to the use of shorter term PPAs. Participants stressed that equity returns are key and that if the discount is too large (which £30/MWh was

considered to be), equity returns are still likely to be greater under a more expensive long term PPA due to the higher gearing that could be achieved.

Though the representatives were not willing to disclose their required equity return in the meeting, one participant stated that their return would likely to be higher if they are taking market risk than under a long term (15 year) PPA scenario.

### *5. PPA terms/other comments*

One participant believed that DECC should consider changing its terminology when referring to the policy. The participant argued that under CfD, generators will not necessarily need PPAs in the normal sense (i.e. which provide a price floor and/or fixed prices) as these will really be route to market agreements. The participant felt that this may impact on people's interpretation of the scheme and , potentially, that they may be able to get their credit committee happy with the nature of route to market risk under the CfD given sufficient evidence on its historic and likely future volatility when compared with (say) wholesale price volatility.

# Appendix 4: Terms of Reference

## Terms of reference

The following sections are taken from our Work package dated 8 October 2013.

2.1 **Services to be provided:**

2.1.1 **Assessing the appropriate level of fixed discount for onshore wind, offshore wind, and solar PV**

We understand that DECC require analysis of the impact of different levels of fixed discount on a backstop PPA for "typical marginal projects" in onshore wind, offshore wind, and solar PV.

DECC, working with other advisers, will provide assumptions in relation to the "typical marginal projects" including project costs and revenues, commercial structure, capital structure, route to market. DECC and its other advisers will also provide scenarios in relation to the level of fixed discount on the PPA.

Deloitte will work with DECC and its other advisers in order to:

- Analyse and advise on the effect of various levels of discount on key financial indicators for the project including gearing, Debt Service Cover Ratio and the cash flows flowing from the project to equity and debt providers.

- Advise on the qualitative impact of a PPA on the risk of financing the project for both equity and debt providers.

**Financial Models**

In undertaking this Work Package we expect to prepare financial models (the "Models", which include the financial model described in section 2.1.1) solely to support our advice and/or analysis to DECC. The Models will contain data and assumptions provided by DECC and its other advisors. The Models will not comprise Deliverables (as set out in section 3.2). However it may be expedient for us in explaining our advice and/or analysis to provide DECC with copies of the Models. Where we do so, we make no representation, warranty or undertaking (express or implied) in relation to and take no responsibility for the accuracy, suitability, adequacy, completeness or reasonableness of the Models for DECC's own use. This in no way removes or reduces our responsibility to DECC for the advice and/or analysis which we give to DECC, which may in part be based on the outputs from the Models.

2.3 **Exclusions**

In connection with Deloitte's provision of the Services the following activities are specifically excluded from Deloitte responsibilities:

- Deloitte will use information obtained from DECC and third party sources, including DECC's other advisors. Deloitte will not independently verify, corroborate or review the reasonableness of the content of this information, some of which will form the assumptions for financial models to be developed by Deloitte to support their advice. Consequently, any errors or omissions in that information could have a material impact on the results of Deloitte's work. If the information is inaccurate or incomplete, the contents of our written or oral advice may be unreliable and Deloitte disclaims any responsibility or liability therefor.

- No party other than DECC is entitled to rely on our report for any purpose whatsoever and we accept no duty of care or liability to any other party who is shown or gains access to this report or any part of it.

- Significant parts of our work will be based upon (or include) certain statements, estimates and projections provided by DECC or its other advisers with respect to anticipated future policies and energy market conditions. Such statements, estimates and projections reflect various assumptions are inherently subject to significant business, economic, regulatory and competitive uncertainties and contingencies, many of which are or may be beyond the control of DECC and its advisers. Accordingly, there can be no assurance that such statements, estimates and projections will be realised. The actual policies and results may vary from those projected, and those variations may be material.

- Deloitte will not provide a formal accounting opinion but rather may provide a discussion of the relevant accounting considerations in relation to the scope set out in 2.1 above.[9]

[9] Note that at the outset of the project DECC removed the accounting scope of work from the Work Package and as such no discussion of the relevant accounting considerations occurred.