



# Harewood Whin GEP

City of York Council

Supplementary Technical Details

Project Report for June 2025



# Contents

## Requirements 8 & 9

- This report provides the results of work undertaken for Requirements 8 & 9 of the solar energy park feasibility study
- This report provide supporting information in the development of the OBC and provides further details and analysis.



# Grid Connection

## Budget Estimate Application



A Budget Estimate provides a preliminary cost assessment for connecting to the electricity network. The estimate is a desktop exercise, rather than a formal offer, and doesn't include site visits or detailed network studies. These estimates are useful for initial planning and understanding potential connection costs, but a formal quotation is needed for a binding agreement. From engagement with NPG in June 2025, the quoted cost of a budget quotation is £700.00 + VAT, and a firm connection offer is £5,050.00 + VAT.

Arcadis has prepared the relevant documentation including:

- G99 - completed for the development at this stage: 9.88MW capacity (two separate 4.94MW arrays)
- SLD diagrams (electrical diagrams that show the two ~5MW arrays)
- G99 Certificate of Compliance for the Solar PV Inverter(s) to be installed
- Site plan showing red line boundary of site
- Previous email correspondence where NPG stated CYC could receive the 5MW and 10MW budget estimates together under one application/cost.

These documents can be submitted to Northern Power Grid by CYC via email. In previous communication with NPG, it was stated that an application for 10MW can include a budget estimate for both the 5MW and 10MW scenarios. The capacity has been adjusted to 9.88MW, which consists of two distinct SEG-compliant arrays at 4.94MW each.

### Connection offer process

The process follows the Northern Powergrid Connection Offer Expenses protocols, which are summarised as follows:

- Customer makes application for Connection Offer or Budget Estimate
- NPG confirms information provided and notifies the customer of the expenses and five-day cancellation period, during which NPG discusses requirements and expenses with customer, confirms intention to proceed
- NPG carries out the work required to produce the estimate or offer – cancellation at this stage will incur a full or partial charge
- The estimate or offer is issued to the customer, as well as the invoice for the expenses incurred

# Grid Connection

## Grid Connection Offer



### Application

CYC has the option to proceed directly with applying for a grid connection offer for ~£5,050.00 + VAT. NPG will send an invoice for the incurred expenses following the offer. It is proposed that this is set at 9.88MW which is the maximum capacity that can be requested for Gale Lane. Within this application a request for 4.94MW can also be made to understand the impact of requesting this lower level of capacity. Further details:

[Connection Offer Expenses Customer Guide May 2025\\_0.pdf](#)

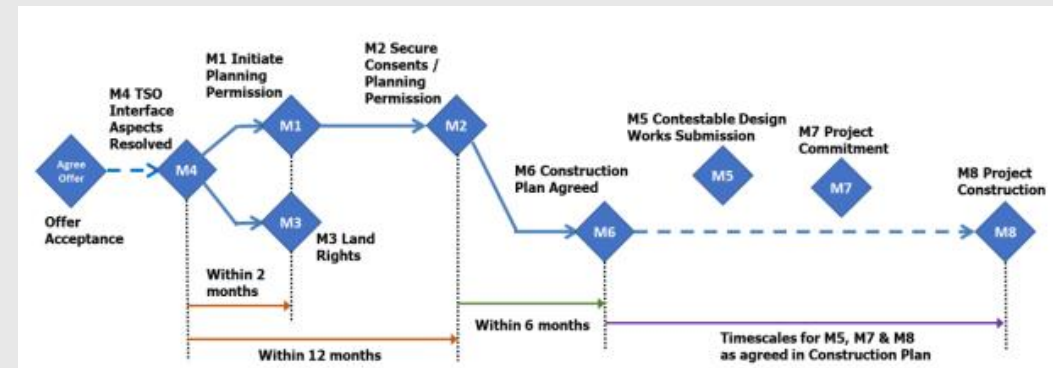
A full grid connection offer is comprised of discussions with the customer, design study, budget options, technical report, creation of plans, costings, and potentially a site visit. Quotations are valid for 90 days and can be accepted by returning the Quotation Acceptance form to [acceptquote@northernpowergrid.com](mailto:acceptquote@northernpowergrid.com). First payment after the quotation is received is considered commitment to full connection.

### Queue management

The connection queue has to be managed to ensure projects stay on track for connection to the grid. Actions and payments made by CYC would be subject to an assessment of the total cost at quotation stage. NPG has stated that capacity cannot be reserved for customers, and so the programme of construction onsite should match the staged payment profile, subject to meeting prescribed queue management milestones. The user guide should be reviewed at each stage [ON21-WS2-P2 Updated Queue Management User Guide \(30 Jul 2021\).pdf](#).

### Next Steps

CYC has the documentation ready to make a grid connection application to be used on either a budget estimate or full connection offer during the full business case stage. It is recommended that CYC wait until more detailed information is known to inform the application and reduce the potential for changes after payment has been made. At the next stage, budget should be reserved by CYC for the grid connection offer process.



## Action 03 Economic Case enhancement



The purpose of the economic case is to identify and appraise the options for the delivery of the 5-10MWp of solar farm and to recommend the option that is most likely to offer best Value for Money (VfM), and social value, to society, including wider social and environmental effects as well as economic value. These wider benefits have been scoped as presented in the below table:

CATEGORY	BENEFIT	BENEFIT DESCRIPTION	PROJECT ACTION	NARRATIVE
Equity & Social	Energy Transition	Create fairer society and implement localised green transition	Install renewable technology	Renewable generation provides climate change adaptation
Resilience (energy)	Enhance energy resilience and security of supply	Energy projects provide local electricity generation	Grid connected solar farm	Energy generation within the local authority boundary will supply green electricity
Resilience (ecology)	Enhance ecological resilience and biodiversity	Solar farms can provide opportunity for local environmental enhancements through planning management and operation	Wildflower meadow creation	Landfill sites can be seeded with wildflowers to protect and improve plant pollinator diversity
Economic opportunity and job creation	Create local jobs and training	Creating opportunities to provide employment in a local area	Job opportunities arising from the construction and management	Main contractors can employ local labour and skilled workers for the design, construction and management
Net Zero	Reduce carbon emissions	Reducing carbon emissions through active changes to energy generation, supply and demand management	Design, build, operation & management of a solar farm	Total installed capacity of ground mounted solar farm

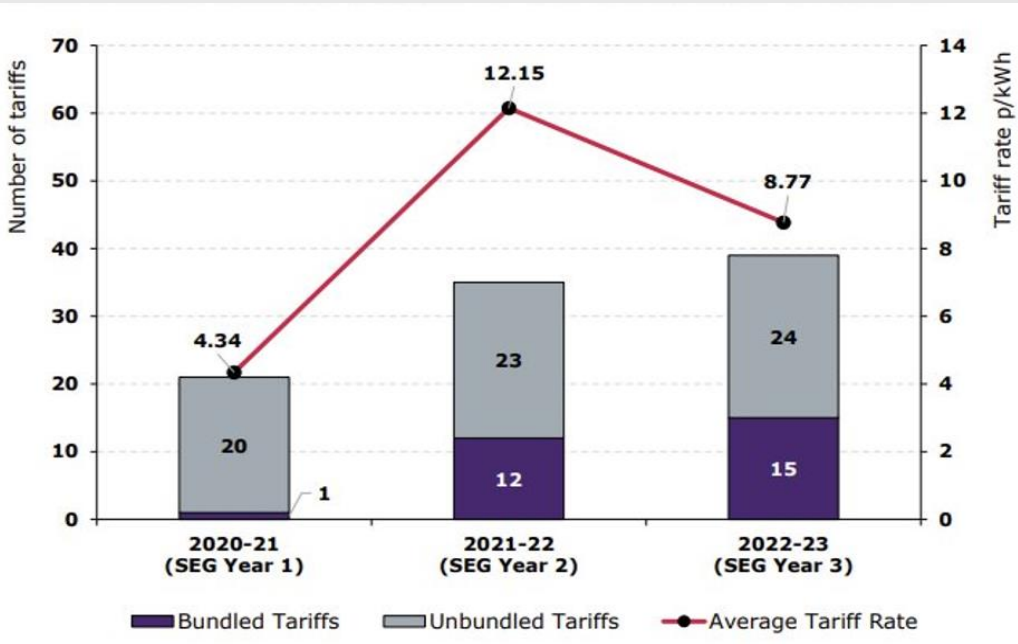
# Action 04

## Historic Energy Market for PPA and SEG Rates and Trends

Income revenue from power generation is a critical component in understanding the project business case. This Section provides an overview of the trends in two market instruments – the PPA and SEG. There is limited information available about future prices and trends.

### REGO's

The Figure below shows how SEG tariffs have changed over time. The number of available tariffs has increased since the launch of SEG, starting at 21 tariffs in Year 2020 and rising to 35 tariffs in Year 3. In line with this, the number of bundled tariffs offered by licenses have also increased. Meanwhile, the average SEG tariff rate has fluctuated from 4.34p/kWh to 8.77p/kWh in Year 3. Source OFGEM [Smart Export Guarantee \(SEG\) Annual Report](#). Based on this information the assumed average rate used in the OBC modelling for the year 2024-25 has been set at **10.81p**.



### PPA's

- The PPA market continues to be stable in 2025. Overall, it would seem that the market is well on the way to recovery following the energy crisis of the previous years, with prices normalising but at lower levels. The increased trend towards risk mitigation may see a continued trend of longer term PPAs, and longer-term price certainty. Whether the market can keep up with demand for such contracts remains to be seen. The start of 2024 has continued the market crash we saw at the end of 2023, but it has stabilised in 2025 with a lower floor for power prices, currently quoted at **7.25p/kWh**.
- We would expect PPA value to level out after months of decline and we have seen a year-over-year change in average Utility PPA prices as presented in the table below. Regardless, PPA strategies will need to evolve with the changing market as each year seems to present unique challenges to renewable generators and offtakers. Table below presents average solar PPA rates since 2020 – prices are exclusive of REGO and for export power only (Single Rate) giving an average of **7.25p/kWh**

Year	Source	PPA Price p/kWh
2020	<a href="https://www.spglobal.com/commodityinsights/plattscontent/_assets/_files/downloads/info/graphics/ppa-series/20200116_ppa_platts-zeigo.pdf">https://www.spglobal.com/commodityinsights/plattscontent/_assets/_files/downloads/info/graphics/ppa-series/20200116_ppa_platts-zeigo.pdf</a>	4.9
2021	<a href="https://www.spglobal.com/commodity-insights/en/news-research/latest-news/electric-power/020322-power-purchase-agreements-stand-firm-in-eye-of-q4-2021-wholesale-price-storm">https://www.spglobal.com/commodity-insights/en/news-research/latest-news/electric-power/020322-power-purchase-agreements-stand-firm-in-eye-of-q4-2021-wholesale-price-storm</a>	5.10
2022	<a href="https://www.solarpowerportal.co.uk/ppa_prices_jump_30_in_the_uk_biggest_increase_in_europe/">https://www.solarpowerportal.co.uk/ppa_prices_jump_30_in_the_uk_biggest_increase_in_europe/</a>	6.86
2024	<a href="https://www.solarpowerportal.co.uk/solar-ppa-prices-stable-after-extended-european-decline/">https://www.solarpowerportal.co.uk/solar-ppa-prices-stable-after-extended-european-decline/</a>	7.57
2025	Commercial Supplier Offer (16/06/25)	7.25



# Action 06

## Sleeving Option Summary



One form or corporate PPA (An agreement for sale of electricity between the generator and the offtaker with a facilitation from the licensed utility supplier) is Sleeving (which requires a third-party intermediary, known as a ‘sleeve’ to facilitate the physical delivery of the electricity from the solar farm to the offtaker).

A sleeved PPA allows the Council to buy electricity directly from their solar farm without a private wire. A licensed supplier will be required. This supplier will enter into back-to-back contracts with the Council . The Council could then 'sell to themselves' at either a fixed or flexible price but still be liable for non-commodity cost plus the sleeving cost, as presented below. **Time of generation and demand will typically be time matched in sleeved PPAs** where the Council would have to purchase any additional electricity from the supplier and surplus generation will be traded by the supplier, with both subject to different prices / fees. The main benefit of a sleeved electricity PPA is that it provides price certainty to the Council but by allocating a proportion of demand to a sleeved PPA **may impact the price** of any remaining electricity requirements.

There are different income streams that CYC could secure as part of the selected financial models (e.g., PPA, SEG or sleeving ). The income route selection will have different implications for viability (e.g., revenue generation, cost-savings, price certainty) and feasibility (e.g., grid connection cost, resource requirements, complexity, contract legal structures). It will also have its own level of risk (e.g., market (price) risk, revenue risk, operational (volume) risk and future policy risk). As a result, some options may be more desirable (of more value) than others to the Council.

Its worth noting that a fixed pricing structure will expose the Council to market risk. If wholesale electricity prices fall, the local authority could end up paying more for electricity through the Sleeved PPA than they may at the retail rate (on a p/kWh basis). This is an important consideration at present as wholesale market electricity prices have fallen recently since record breaking peaks were observed during the energy crisis. Additionally, the Council would have to pay sleeving fees, as presented below, and these fees vary significantly between the suppliers – the assessment of sleeving cost will take a considerable amount of time and should involve external commercial resources to aid the selection of best offer. Also, legal support will be required to implement sleeving option to agree conditions of the selected contract.

As an example – if the 9p/kWh was to be set as an agreed price (equivalent to the current commodity price) - the actual income paid to the solar farm project balance sheet would be reduced in line with charges as presented in the diagram below. The level of this income would need to be modelled in the next stage, based on detailed forecasting of the energy usage vs renewable generation and back up by the quotes from the suppliers offering sleeving as a service.



## Action 05 - Commodity Price

### Income generation assessment



In response to a question about whether a 9p per kWh commodity price of CYC could be achieved in a PPA deal and if that would offer a lower risk/more upfront certainty option than SEG rate, the Council first and foremost should acquire the information necessary to understand the half hourly electricity demand for sites and expected yield from the solar farm generation. The up-to-date assessment of the energy usage has been prepared based on the annual consumption but this needs to be done in sufficient granularity (hourly or half hourly) to understand how much electricity can be consumed directly by authority owned sites, the surplus level and their remaining import needs.

CYC can use this information in FBC commercial modelling to optimise the project design and financial value. Both the scale of the proposed solar farm generation, and how well it matches Council's energy demand are important factors in an energy supply contract negotiation. In order to maximise the benefit of the potential sleeving option, the solar farm project should be actively coordinated with energy supply contract procurement.

The current best market rate for SEG has been confirmed at 12p/kWh whilst a good PPA offer (June 2025) 7.25p/kWh – which presents a large variation. The modelling for the OBC has shown large sensitivity even with a penny difference in the income generation. The market is dynamic and the PPA prices may increase or decrease within the project lifespan requiring an evaluation on each business model (SEG, Utility PPA, Sleeved PPA) containing short- or long-term solutions that could be achieved for the project finance. The terminology used by suppliers may differ, which could make it difficult to compare quotes on a like-for-like basis and could make this activity time intensive – therefore requiring an external experts to analyse the offers.

Typically, the sleeved PPA price is lower than the commodity price (here 9p/kWh). To secure such as relatively high PPA rate in the current market may prove to be difficult or impossible. If the PPA rate was to be agreed at the same level as the commodity price the solar farm project balance sheet would gain secure income stream for the agreed term of the contract. This would need to be **factored into the next energy procurement** negotiations and **assess against the ongoing revenue** cost for the energy usage.



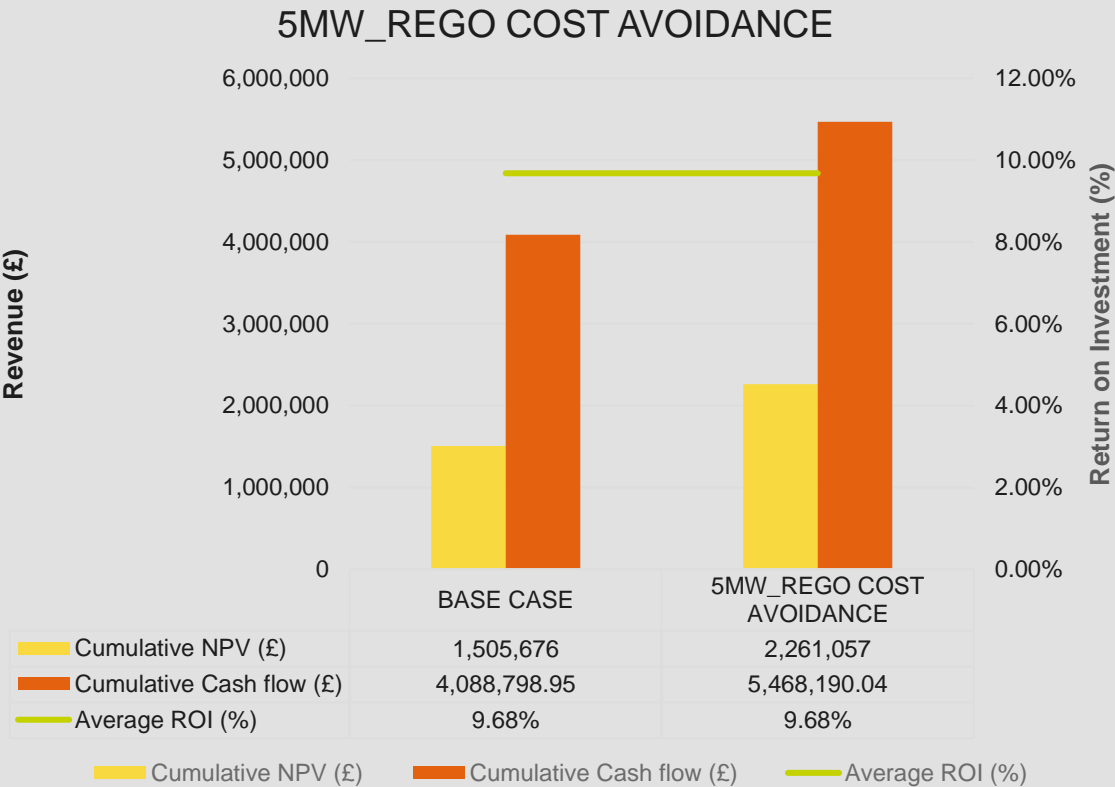
# Action 06

## In depth analysis of REGO

**REGOs:** The Renewable Energy Guarantees of Origin (REGO) scheme provides transparency to consumers about the proportion of electricity that suppliers source from renewable electricity. The REGO certificate is issued per megawatt hour (MWh) of eligible renewable output to generators of renewable electricity. REGOs permit consumers to track the origin of electricity, support renewable sources, and align with environmental standards. Organisations can procure REGOs to provide confidence that energy is provided from renewable sources.

REGOs can be retired or can be sold / purchased on the market. Currently CYC procures REGO’s to cover its electricity supply through YPO at a cost of £12.50 per MWh of electricity consumed. The REGO’s can be ‘bundled’ with the power sold from a solar array built at Harewood Whin to gain additional financial benefit. The REGO can also be ‘unbundled’ from the power sold. In this Section we show the impact of offsetting CYC electricity costs with current REGO rates (£12.5/MWh) compared to the base case of £5/MWh modelled for the future income.

- Baseline model within the presented cashflows includes REGO as an additional benefit/income stream. The rate used within the model is a conservative rate of 0.5p/kWh which has been assumed as the forecasted trend shows a reduction in rates since the implementation of green policies and market saturation with renewable technologies.
- To enhance the business case and to address comments from the Programme Board a cost avoidance ‘income’ has been modelled to include for additional benefits as REGO savings and outputs have been presented in the incorporated graphs.
- Based on the same assumptions as per base case it has been concluded that by enhancing the income to include the REGO cost avoidance the cumulative cashflow after 25 years of operation will increase from £1.5m to £2.2m for the 5MWp solar installation.
- Since 2016, green tariffs have become increasingly common in the UK and as a result seeing low REGO prices, essentially being negligible in 2016 and marginally increasing over the next few years.
- With the relatively recent and far more significant price rises in 2022 and 2023, some utilities decided to exit the REGO market by no longer offering these green tariffs, thus lowering the demand for certificates over 2024.
- The long-term outlook for the REGO market could have been undermined further by a call to reform the REGO scheme by major UK firms, specifically during Q2 and Q3 of 2024. Calls for greater transparency from industry resulted in an indication from DESNZ (Department for Energy Security and Net Zero) that the certificate scheme is under review, as specified by a government spokesperson, possibly pointing to a more granular verification of renewable generation reporting in the future.



5MWp solar farm's REGO can offer both - cost avoidance & additional income

# Action 04 - Impact of grant

## Business Case assessment



In the baseline Scenario it is assumed that all the capital investment for the solar farm project is borrowed. This section shows the impact on cashflow and NPV on the assumption of different levels of interest free funding are available.

The financial model for the solar farm is sensitive to the Capex, especially when 100% of cost is to be borrowed from a loan Provider, for example:

- NWF or PWLB – either option will require the CYC to repay the principal capital alongside the interest rates.
- Therefore, any amount of interest free grant funding would impact on the overall business case viability and derisk the project given the uncertainty of the income stream.

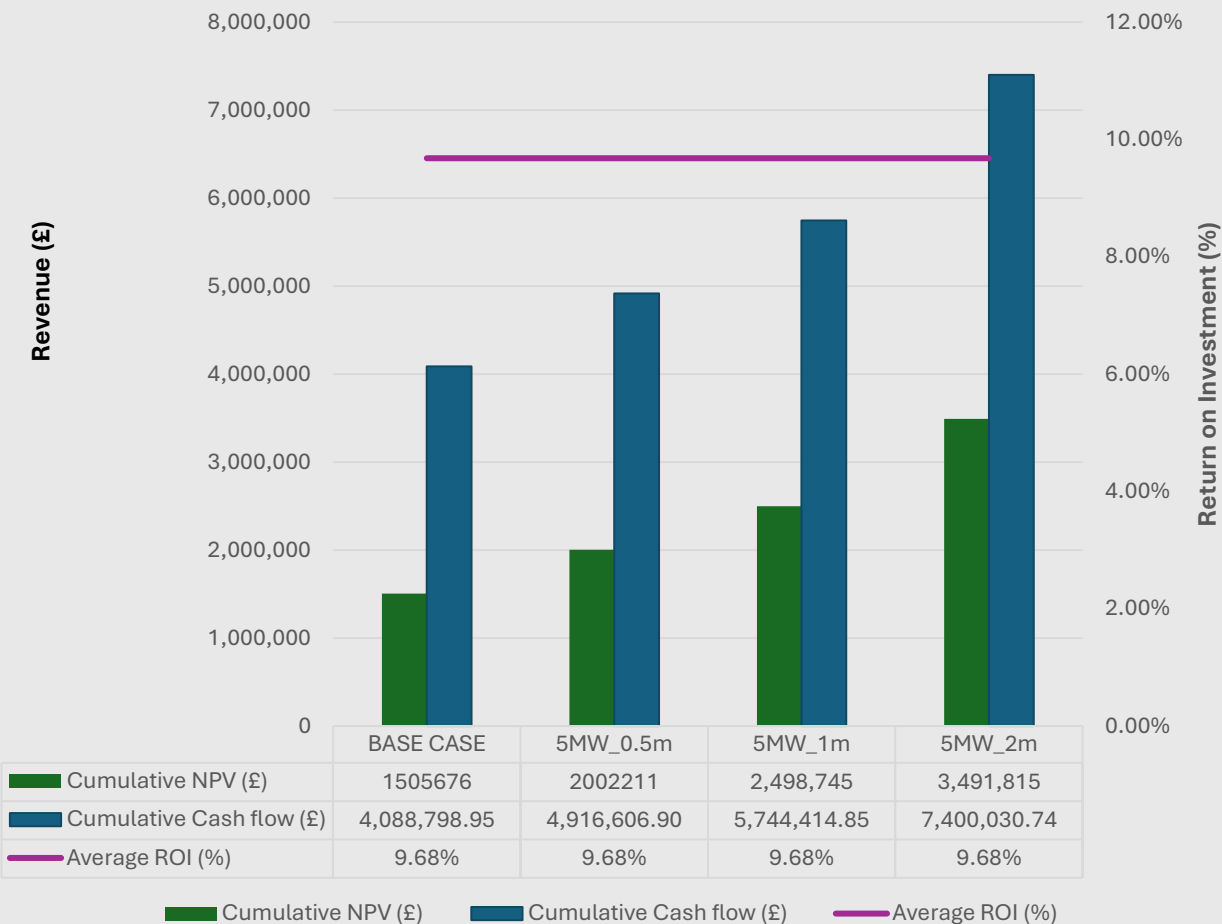
The graph on the right presents the outputs of the three scenarios with different intervention rates for the 5MWp solar farm.

- The Base Case does not include for any external funding, and it models the cashflow based on the 100% capital outlay being financed from a loan.
- If the Council was to inject 0.5m and therefore reduce the borrowing capital outlay, the cumulative cashflow would increase from £4m to almost £5m over the lifespan of the project (almost double the initial investment).
- Similarly, a higher intervention rate at the level of 1m will increase the cumulative cashflow to £5.7m
- Finally, a 47% grant intervention rate, equivalent to 2m, would impact positively on the 25-year cashflow and enable to set it at 7.4, which is £3.5m more than the baseline case.

It is worth noting that a relatively small cash injection from the Council at 500k could almost double in value and result in the cumulative cashflow increase from £4m to almost £5m, This is due to the lower amount of principle loan repayment and its associated interest rate. This shows that looking to provide some initial equity into the development can help de-risk the project and lead to improved levels of returns for the CYC.

It should be noted that some lenders such as the National Wealth Fund have minimum thresholds for their loans for the NWF it is set at around £5m investment.

5MW Subsidy Analysis



# Action 07

## Long-Term Environmental Benefits



The long-term benefits from an environmental perspective including the impact of electricity grid reform and carbon pricing is provided below

### Electricity Market Reform

Electricity market reform is a multi-stranded process to modernise the electricity system to ensure a secure, low-carbon, and affordable energy supply. It includes mechanism such as the Capacity Market and Contracts for Difference. This EMR also includes the Review of Electricity Market Reform.

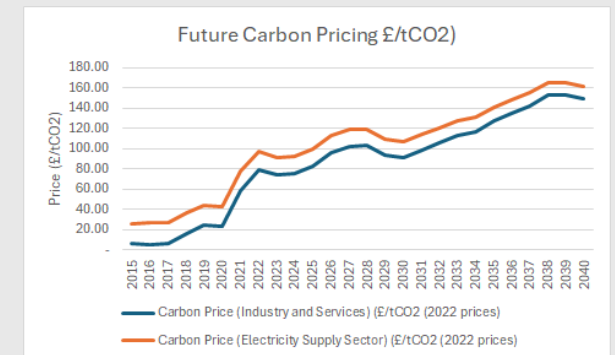
The Recent Review Electricity Market Arrangements (REMA) (2024)<sup>1</sup> in the UK aims to reform the electricity market to support a net-zero power sector by 2035, while ensuring security of supply and fair prices for consumers. Following this review there maybe the introduction of a **locational marginal pricing (LMP)**, where different prices are set in different locations based on transmission constraints. This aims to better reflect the true cost of electricity in different parts of the grid and incentivise investment in areas where it's most needed. For solar generators located in areas with high demand or limited local generation could see higher prices for their electricity, potentially boosting their profitability. Conversely, solar farms in areas with low demand or high local generation might experience lower prices, making them less competitive. The impacts of this pricing approach is uncertain and may impact on profitability of solar generators.

New non-commodity charges have been added to the electricity bills since April 2025 onwards to reflect the costs of Net Zero and the Energy Intensive Schemes – DUoS, CfD, RO, BSUoS and CM charges added extra 0.75p/kWh for a typical public sector customer where for a 10GWh/pa user this equates to circa 75k annually.

Ofgem have also implemented Balancing and Settlement Code: P442 which applies to renewable generation <5MW where the Generator, here **the Council, could seek compensation** on their non commodity charge related to green levies (CM, CfD, FiT and RO). This would have to be negotiated alongside the energy procurement stage as it only applies to the Supplier but could offer additional financial benefit to the project, in respect of the generation being 'sleeved'; or not.

### Carbon Pricing

Carbon pricing should benefit renewable installations as generators are forced to pay higher environmental levies for energy generation from fossil fuels. This is driven from policies such as the UK's Carbon Price Support (CPS) mechanism is a carbon tax on fossil fuels used for electricity generation, designed to encourage a shift towards lower-carbon energy sources. It acts as a top-up to the UK Emissions Trading Scheme (UK ETS), ensuring a minimum carbon price even when the UK ETS price is low. This mechanism is part of the broader Carbon Price Floor (CPF) policy. e CPF taxes fossil fuels used to generate electricity via Carbon Price Support rates set under the Climate Change Levy. The price floor consists of two components which are paid for by energy generators in two different ways: (i) The EU ETS allowance price; and (ii) the Carbon Support Price (CPS), which tops up the EU ETS allowance prices, as projected by the Government, to the carbon floor price target. The Graph to the right shows the DESNZ projected future carbon pricing under existing policies<sup>2</sup> showing an upward trajectory over time. This environmental carbon prices for fossil fuels should drive growth of renewable generation technologies – the impact of costs and pricing is hard to define at this stage.



<sup>1</sup> <https://assets.publishing.service.gov.uk/media/675acc977e419d6e07ce2bc3/rema-autumn-update.pdf>

<sup>2</sup> [https://assets.publishing.service.gov.uk/media/6567a7c15936bb001331671d/Annex\\_M\\_assumptions\\_growth\\_price.ods](https://assets.publishing.service.gov.uk/media/6567a7c15936bb001331671d/Annex_M_assumptions_growth_price.ods)



# Action 10

## Management Case

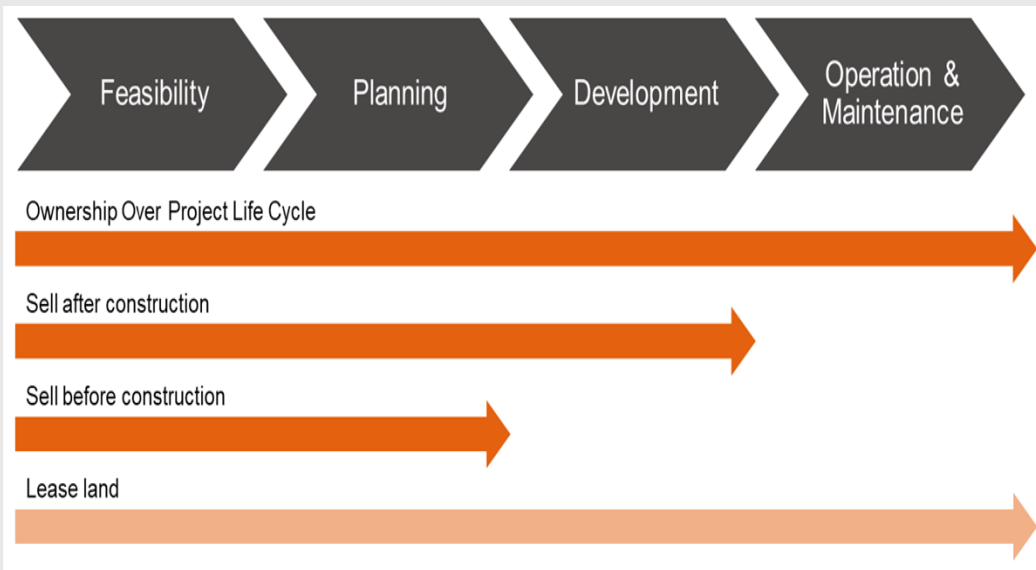


Ownership approach and commercial structures available as options for this project vary depending on the entities involved at the various stages.

Considerations for the preferred structures and approach:

- Financing:** Ability of the Council to finance the project, consideration should be given to own or Government funding. Option to gain third party financial investment or split the capital investment through a Joint Venture (JV). Third party ownership is also an option.
- Experience or Capacity:** The level of experience the Council has in delivering, tendering and partnering with other entities. LAs typically subcontract to an engineering, procurement and construction (EPC) provider or subcontract elements of the Project. It is typical for this type of project to appoint Client Engineer consultant to guide the Authority through the process.
- Risk:** Determine the level of risk that CYC is comfortable with for the Project. Risks are associated with financials, development, market and regulatory aspects with risk generally being largest at the beginning of the Project and reduce in latter stages. This adds project or contractual complexity.
- Benefits:** Key drivers for renewable energy project can include income, renewable generation, clean energy commitment and/or carbon emissions reductions.

## Ownership Across Project Timeline



•**Own, develop, maintain and operate:** Take the project through entire lifecycle from feasibility to operation and maintenance. It can include financing and sub-contract agreements, but all benefits associated with project are retained.

•**Sell after construction:** Take the project through planning and development and then sell. The financials could be self-funded, Government or through finance agreements. The main driver for this would be to generate short-term revenue with reduced long-term risk, benefits would also be reduced

•**Sell before construction:** Sell the project with secured planning permission (acquiring necessary Permits) agreements and certificates) and sell to an investor. Investor responsible to develop, O&M. Harewood Whin project could make an agreement to keep a stake in the Project. Low risk with benefits dependent on maintaining stake in Project.

•**Lease land:** sell the Project (before or after construction) but maintain ownership of the land that the Project is on. Leasing the land has benefits to generate revenue and/or to leverage clean energy/carbon savings. The risk and benefit associated with this would be dictated as to what stage the lease agreement was formed. **Solar 2** has offered a rental deal paid at circa £50-80k per annum for 25 years.

# Battery Storage

## Discussion for the Development



### Context

A Battery Energy Storage System (BESS) is made up of re-chargeable batteries (commonly lithium-ion, but there are alternatives) which can import and store energy and then discharge (export) it when the energy is required. The main benefit of battery storage is that it can balance supply and demand, by storing the site's solar energy when demand is low and releasing it when demand is high. This reduces the grid's reliance on fossil fuels typically used in times of high demand, and can result in optimised export rates on variable contracts.

### Battery Use at Harewood Whin

Optimised behind the meter energy use is another benefit of battery storage (particularly in private wire scenarios). Batteries allow, for example, energy generated during the day to be used onsite at night, smoothing out periods of time where generation is low. However, the scenarios currently being explored for Harewood Whin all involve export to the grid with no energy use onsite.

As the project involves export to the grid, batteries benefit the site in scenarios with a variable export rate, such that energy could be stored and sold to the grid at times where the demand is high. It is also important to note that sleeved PPA scenarios can be optimised by the use of battery storage, allowing greater alignment of the site's supply of solar energy with CYC's demand profile. Further work should be undertaken in the full business case on establishing an estimated half-hourly demand profile for CYC, with comparison to the modelled site generation profile. This will inform the use of batteries onsite by exploring whether the cost of the batteries is outweighed by the benefits of greater control over the supply.

### Risks

Battery storage comes with risks that must be managed, including high CAPEX and safety considerations, as well as noise concerns. Harewood Whin's position in the green belt may add additional planning issues for development of battery storage – however there are previous examples of the technology being implemented in green belt areas due to what the government sees as a pressing need for energy storage to support grid decarbonisation and energy security.

# Summary and Conclusions

## Key Findings and Actions for Business Case



In order to develop the project to the Full Business Case there are a number of areas that need more detailed analysis and development. Some activities and interlinking and (inter)dependent on decision making and tasks being undertaken. As CYC moves forward with the project – key commercial decisions will be framed around the potential risk to the Council in terms of capital, ownership and operation against the potential level of reward. Maximising the benefit of income generation from market instruments is key to financial success of the project. Three main approaches (SEG, PPA Sleeving and Utility PPA) need further review and assessment. However, even once an initial approach is determined continues management of income is needed over the project lifetime in order to leverage changes to the energy market and pricing over time to maximise the benefits to the Council.

This OBC has shown that CYC should take a phased approach to development of solar array at HW. Take the lessons from and support where necessary the 0.5MWp array with Yorwaste and concurrently start to develop an array (5-10MW) in the areas identified. In terms of risk and reward – this approach will minimise the risk, provide time to build knowledge, experience whilst providing a sufficiently large array to attract loans and reward for the CYC in terms of revenue and wider environmental and social benefits. Further activities to progress the Full Business Case are outlined below, and CYC is likely to need support going forward with these next steps including market engagement and contract negotiations (heads of terms, REGOs), technical support , commercial delivery structures and wider FBC development.

- **Ground Condition Assessment:** Initial assessment being undertaken which will inform the design implications, capacity and technical modelling of the solar array on the Harewood Whin Site
- **Grid Application:** Documentation has been prepared for a budget or full grid connection offer of 9.98MW (including 4.99MW capacity) for Northern Power Grid by CYC. It is proposed to wait to submit the full offer as this provides greater detail and the potential to accept a connection offer. Funding should be made available for the connection offer (or payment over time) to secure the capacity. Potential to revisit iDNO or ICP's to understand options for third party delivery and adoption.
- **Solar Technical assessment:** Further work to develop the solar design based on feedback from ground condition assessment. Further review of mounting structures, module layout and orientation to optimise space availability.



# Summary and Conclusions

## Key Findings and Actions for Business Case



- **Electricity Generation Income / Techno-economic modelling:** Further, more detailed analysis of electricity market revenues based on more refined scheme and timescales to support and to develop the business case. The current baseline scheme that has been modelled is close to the break even point – so any additional income and benefit that can be leveraged through further analysis or support will be important.
  - **Modelling of supply vs demand on an hourly basis** will need to be undertaken to assess more accurately likely generation volume and revenue from the market instruments (Reviewing the SEG/ sleeved PPA / 3<sup>rd</sup> party PAA options will require)
  - Further review on the **benefits of battery storage** on benefits vs risks of sleeving and other income generation streams
  - Further details **on capital costs** based on the mounting structure and ground conditions to be developed as well as further understanding of income from market instruments
  - Further engagement with the potential **SEG, PPA** brokers to understand and develop understand contracts, initial heads of terms,
  - YPO Power Contract preparation, Engagement Negotiation: Early preparation for Contract negotiations with YPO for next energy supply contract. Develop and understanding from CYC perspective what elements this contract needs to include whilst ensuring flexibility within the contract to allow CYC to maximise changes in the electricity market and income revenue streams. For example, what does it look like for CYC to be a customer and producer of power (Prosumer), who will the contract allow this and allow flexibility throughout the contract.
  - Review **funding options** including potential for capital to be provided by the Council (from other allocated areas) that could be repaid at zero interest. Also review any central grant funding opportunities and loans.
  - **Private Wire opportunities:** Although this project has been decoupled from the Hazel Court relocation and associated electric vehicle loads, it has been shown that private wire opportunity significantly improves the viability of the project and reduces risk. It is recommended that potential for private wire is kept open if an opportunity is identified.
  - **Sensitivity Assessment:** Further work on sensitivities on TEM and combining sensitivities will support analysis and decision making.
- **Commercial Delivery (Management Case):** Further work is recommended on the ownership structure and delivery approach for CYC based on the relative risk and reward merits. Structures have been identified during the OBC and these need further evaluation and assessment
  - **Solar 2 Option:** Further engagement with Solar 2 – who have outlined the opportunity is still potentially open to use their available grid capacity. Their preferred approach would be simple land rental but other option such as power generation sales could still be feasible
  - **Leasing arrangements:** As part of any commercial structure, arrangements for placing solar assets on Harewood Whin, which is managed by Yourwaste any leasing /rental / arrangements identified and plan for their resolution