EAST PARK ENERGY

East Park Energy

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Preliminary Environmental Information Report
Volume 1 – Main Report

Chapter 3: Alternatives and Design Evolution

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3.0 ALTERNATIVES AND DESIGN EVOLUTION

3.1 Introduction

3.1.1 This chapter of the PEIR describes the consideration of alternatives and design evolution in relation to the Scheme.

3.1.2 This chapter is supported by the following appendices in ***PEIR Volume 2***:

- Appendix 3-1: Site Identification Report;
- Appendix 3-2: Land Identification Report;
- Appendix 3-3: Land Identification Report Addendum;
- Appendix 3-4: Land Identification Report Further Addendum;
- Appendix 3-5: Review of Site Identification Report following designation of National Policy Statement EN-3; and
- Appendix 3-6: Grid Connection Corridor Appraisal.

3.1.3 This chapter is supported by the following figures in ***PEIR Volume 3***:

- Figure 1-1: Site Location Plan;
- Figure 1-2: Site References; and
- Figure 1-3: Environmental Constraints.

3.1.4 Schedule 4 of the EIA Regulations[1] identifies the information for inclusion in an ES, of which paragraph 2 requires: *"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects"*.

3.1.5 It should be noted that the EIA Regulations place no specific obligation on a developer to study alternatives, but simply to describe them in the manner specified, where they have been considered.

3.1.6 National Policy Statement (NPS) EN-1[2] paragraph 4.3.9 states that:

> *"As in any planning case, the relevance or otherwise to the decision making process of the existence (or alleged existence) of alternatives to the proposed development is, in the first instance, a matter of law. This NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option from a policy perspective."*

3.1.7 NPS EN-1 states at paragraph 4.3.15 that:

> *"Applicants are obliged to include in their ES, information about the reasonable alternatives they have studied. This should include an indication of the main reasons for the applicant's choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility."*

3.1.8 Taking into consideration the policy and legal requirements as well as the iterative approach to the design to date, the following alternatives have been considered for the Scheme and are discussed in this chapter:

- Alternative sites;
- Alternative cable route corridors;
- Scheme evolution and alternative layouts; and
- Alternative technologies.

3.1.9 A 'no development' alternative would not deliver the additional electricity generation capacity associated with the Scheme and will therefore not be considered further.

3.2 Need for the Scheme

Climate Change Act 2008

3.2.1 The Climate Change Act 2008[3] set a legally binding target for the UK to achieve an 80% reduction in greenhouse gas emissions by 2050, from the

1990 baseline. However, the UK Government decided that this legally binding target was not ambitious enough to mitigate the nation's activities on climate change. In 2019 the UK Government became the first major economy in the world to pass laws to end its contribution to global warming by 2050, compared to the 1990 baseline.

3.2.2 On 12 June 2019, the Government laid the Climate Change Act 2008 (2050 Target Amendment) Order 2019[4] to amend the Climate Change Act 2008 by introducing a target for at least a 100% reduction of greenhouse gas emissions (compared to 1990 levels) in the UK by 2050. This is otherwise known as the 'net zero' target. The order amended the 2050 greenhouse gas emissions reduction target in the Climate Change Act from at least 80% to at least 100%, thereby constituting a legally binding commitment to end the UK's contribution to climate change.

3.2.3 At the time the legislation was enacted the UK had already reduced emissions by 42% while growing the economy by 72%. However, the new target requires a significant increase in renewable energy, development of carbon capture and storage technology, construction of new nuclear generation capacity, and a transition to hydrogen and electric for heating and transport.

3.2.4 It is clear from the Government's legally binding commitment to net zero by 2050 and recent announcement that significant new investment will be required in renewable energy projects across the UK to deliver these ambitious objectives.

Sixth Carbon Budget (2021)

3.2.5 Since the Clean Growth Strategy[5] was updated in April 2018 the Sixth Carbon Budget[6], required under the Climate Change Act 2008, has been published. On the 20th April 2021 the UK government announced that it would adopt the recommendations and enshrine them in law, and the legislation was set out to parliament on 21 April 2021. The Sixth Carbon Budget provides advice on the volume of greenhouse gases that the UK can emit during the period 2033-

2037. This would involve setting the most ambitious climate change target in the world which would require a 78% reduction in greenhouse gases by 2035. One of the four key steps to achieving this target is the expansion of low-carbon energy supplies (such as the Scheme), with UK electricity production achieving zero carbon emissions by 2035. This is a dramatic step-change and will logically require more emphasis on renewable energy as part of a suite of measures to achieve this target.

3.2.6 The Electricity Generation Sector Summary[7] for the Sixth Carbon Budget sets out on page 14 that:

> *'Large-scale solar currently has 13 GW installed capacity in the UK, which requires 290 km^2. Maximising the potential of solar generation might entail using an additional 1,500 km^2'.*

3.2.7 To maximise the potential of solar generation in the context of the Sixth Carbon Budget and to achieve the Government's Net Zero Target by 2050, there will need to be an additional 150,000 hectares of land used for solar developments. This highlights the scale of the challenge to deliver Net Zero by 2050.

National Policy Statements

3.2.8 The revised Overarching NPS for Energy (EN-1) came into force on 17th January 2024. NPS EN-1 reflects the Net Zero target by 2050 and states at paragraph 3.3.20 that:

> *'Wind and solar are the lowest cost ways of generating electricity, helping reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation). Our analysis shows that a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar.'*

3.2.9 The NPS for Renewable Energy (EN-3)[8] covers renewable energy infrastructure. This document reflects the important role that renewables will play in developing a low carbon economy and meeting government's net zero targets. EN-3 sets out that:

> *"The government has committed to sustained growth in solar capacity to ensure that we are on a pathway that allows us to meet net zero emissions by 2050. As such, solar is a key part of the government's strategy for low-cost decarbonisation of the energy sector."* (Paragraph 2.10.9)

> *"Solar also has an important role in delivering the government's goals for greater energy independence. The British Energy Security Strategy states that government expects a five-fold increase in combined ground and rooftop solar deployment by 2035 (up to 70GW)."* (Paragraph 2.10.10)

> *"Solar farms are one of the most established renewable electricity technologies in the UK and the cheapest form of electricity generation." (Paragraph 2.10.13)*

British Energy Security Strategy

3.2.10 On the 7th April 2022 the Government published the British Energy Security Strategy[9] to the backdrop of soaring global energy prices and increased energy security fears in the wake of Russia's invasion of the Ukraine. The objective of the Energy Security Strategy is to set out a clear way forward to providing the energy we need in a safe, secure and affordable way, and at the same time ensuring that we do all we can to meet our net zero commitments.

3.2.11 The Strategy states that: "*Accelerating the transition from fossil fuels depends critically on how quickly we can roll out renewables. Our 'Ten-point plan for a green industrial revolution' has already put the UK at the forefront of many renewable technologies, delivering £40 billion of private investment in under*

2 years. By the end of 2023 we are set to increase our capacity by a further 15%." Turning specifically to solar, the Strategy recognises the opportunities open to us to harness the sun's power. It states: "*The cost of solar has fallen by around 85% over the past decade…We expect a five-fold increase in deployment by 2035. For ground-mounted solar, we will consult on amending planning rules to strengthen policy in favour of development on non-protected land, whilst ensuring communities continue to have a say and environmental protections remain in place*." (emphasis added)

3.2.12 The five-fold increase in solar deployment referenced in the British Energy Security Strategy means that solar will need to increase from the existing 14GW to 70GW by 2035, if the strategy targets are to be delivered. These targets match the rate of increase forecast in National Grid's Future Energy Scenarios Report 2023[10]. It is clear that the Government solar policy is to support the broad roll out of opportunities where they are not identified in high value protected landscapes and designations.

Powering Up Britain

3.2.13 The Powering up Britain[11] policy papers were published in March 2023, setting out how the government will enhance the UK's energy security, seize the economic opportunities of the transition, and deliver on Net Zero commitments.

3.2.14 Much of the paper is dedicated to outlining strategies for decarbonisation and reducing emissions, and the numerous opportunities for growth within the economy and within industry that this process can create. The UK Government hopes to be a driver behind international collaboration and continue as a world leader in the drive towards Net Zero.

3.2.15 A key message within the policy documents is that taking these opportunities requires a bold approach; "*the transition to net zero will require action across the whole economy fuelled by rapid deployment of low carbon electricity*".

3.2.16 Significance is placed on accelerating the deployment of renewables, with the stated goal "*to quintuple our solar power by 2035*", with the "*need to maximise deployment of both ground and rooftop solar to achieve our overall target*".

Climate Change Committee 2023 Progress Report: Progress in Reducing UK Emissions

3.2.17 The Climate Change Committee (CCC) published their annual report in June 2023, titled 'Progress in reducing UK emissions'[12]. The report is highly critical of UK progress towards reaching Net Zero noting in particular a lack of urgency, a lack of coherent strategy, and that planning policy is not fit for purpose in supporting Net Zero.

3.2.18 The CCC states that: "*It is critical that the UK re-establishes its climate leadership with a clearer strategy to develop Net Zero industries and technologies in the UK and capture the economic benefits of Net Zero, with actions that create demand-pull for the critical technologies that will shape the UK's progress over the next decade.*"

3.2.19 A key element in delivering Net Zero growth and energy security is the provision of renewable energy to ensure a low carbon electricity network that is Net Zero by 2035 and reduces our reliance on international fossil fuels. The CCC consider that the UK is still lacking a credible overall strategy for delivering its objective of decarbonising the energy sector by 2035.

3.2.20 Table 1 of the CCC Report identifies that Solar PV is the only key indicator against which the UK is 'significantly off-track' in delivery to deliver Net Zero energy supply. The CCC Report states that "*In 2022, 0.7 GW of solar was deployed. The deployment of solar capacity is significantly off track to meet the Government's target of 70 GW by 2035. An average annual deployment rate of 4.3 GW is required to deliver 70 GW of solar by 2035.*"

3.2.21 The deployment of all other renewable energy technologies is off-track, but it is only solar PV that is 'significantly off-track'. The CCC Report considers that

"*The planning system must have an overarching requirement that all planning decisions must be taken giving full regard to the imperative of Net Zero.*"

3.2.22 The deployment of Solar PV is critical to meeting the UK commitments on Net Zero and a resilient secure British energy network.

Conclusion

3.2.23 The need for additional renewable energy development, including Solar PV, is very significant and new infrastructure must be delivered as a matter of urgency, if the UK Government is to meet its commitment to Net Zero by 2050.

3.3 Alternative Sites

Site Selection

3.3.1 The starting point for any renewable energy generation project is identifying a part of the National Grid where there is available grid capacity to connect a renewable energy project. To identify suitable sites for solar farms, two principal criteria must both be satisfied:

3.3.2 Firstly, and most importantly, any solar scheme must be located proximate to an existing substation which has the available capacity to import the required amount of power into the National Grid, either directly into the substation or via a point of connection into the nearby transmission or distribution network;

3.3.3 Secondly, solar schemes must be located close enough to the identified substation or transmission line to remain viable both in terms of cable deployment for the grid connection, and to ensure that minimum transmission losses occur.

3.3.4 These principles are supported by NPS EN-3 which states at paragraph 2.10.22 that:

"The capacity of the local grid network to accept the likely output from a proposed solar farm is critical to the technical and commercial feasibility of a development proposal."

3.3.5 A search for a Point of Connection (PoC) was undertaken by the Applicant in 2021, which involved analysis of the National Grid to identify parts of the network with potential available capacity to connect a 400 MW solar scheme. Following an application to National Grid it was established that the Eaton Socon Substation has the available capacity to connect a 400 MW solar scheme, and that this could be completed within a commercially viable timeframe and cost.

3.3.6 The Applicant therefore entered into a connection agreement with National Grid to provide 400 MW of electricity generation to the Eaton Socon Substation and began a site search exercise to identify a land area suitable to accommodate the Scheme.

3.3.7 NPS EN-3 states at paragraph 2.10.17 that

"Along with associated infrastructure, a solar farm requires between 2 to 4 acres for each MW of output. A typical 50MW solar farm will consist of around 100,000 to 150,000 panels and cover between 125 to 200 acres. However, this will vary significantly depending on the site, with some being larger and some being smaller. This is also expected to change over time as the technology continues to evolve to become more efficient. Nevertheless, this scale of development will inevitably have impacts, particularly if sited in rural areas."

3.3.8 Based on the above, as a starting assumption a 400 MW solar farm could be expected to require between 800 to 1,600 acres of land to deliver, which approximately equates to between 325 and 650 hectares. In order to find a land area suitable to meet this need the site selection process followed two broad stages:

- The first stage, set out in the Site Identification Report in ***PEIR Volume 2 Appendix 3-1*** identified the most appropriate location for a large-scale solar NSIP capable of utilising the available grid capacity within the Eaton Socon Substation. A 15km area of search around the Eaton Socon Substation was taken as a starting point, with the land in this area of search reviewed against known planning and environmental constraints in accordance with the 'factors influencing site selection' set out in Section 2.48 of the former draft NPS EN-3 (September 2021) which was the most recent draft of NPS EN-3 at the time. This first stage concluded by identifying a 'Search Zone' to the north-west of the Eaton Socon Substation that was considered the most suitable location for a large-scale solar development. The recommendation given at the conclusion of the first stage was that BSSL (formerly RNA Energy) should approach landowners in the Search Zone to gauge interest in developing a project.
- The second stage, set out in the Land Identification Report (LIR) in ***PEIR Volume 2 Appendix 3-2*** follows on from the first stage and comprised a high-level review of the land offered to BSSL to establish environmental and planning constraints to development of the Scheme and refine the overall landholding to be taken forward. The culmination of the second stage was the identification of the proposed site to be taken forward for the Scheme.

Additional Land

3.3.9 Following the conclusion of the LIR in June 2022 and the identification of the Proposed Site Area, additional land was deemed to be required to account for mitigation and technical constraints that would reduce the developable area and consequently the installed capacity of the Scheme. In order to mitigate for these risks and deliver a Scheme that maximises the 400 MW grid connection and optimises generation, BSSL instructed Axis to review an area of additional opportunity land to the east of the Proposed Site Area which is now East Park Site D. This review was completed in October 2022 as an Addendum to the LIR and is attached as ***PEIR Volume 2 Appendix 3-3***.

Further Additional Land

3.3.10 On behalf of BSSL, AOC Archaeology undertook an Archaeological Geophysical Survey between July 2023 and early January 2024. The Archaeological Geophysical Survey identified the remains of the Roman town in Site C. Early desk-based analysis concluded that the archaeology was likely to be of national importance, and this has since been confirmed through discussion with the County Archaeologists and Historic England, who have expressed a strong preference that this archaeology be removed from the developable area of the Site.

3.3.11 To compensate for the removal of this part of the Scheme, one of the landowners engaged with the Scheme undertook a review of their landholding and offered a parcel of land that had not previously been offered. This 'Further Additional Opportunity Land' parcel was therefore not considered as part of the original LIR.

3.3.12 BSSL consequently instructed Axis to review this area of additional opportunity land to the western side of East Park Site C. This review was completed in late January 2024 as a 'Further Addendum' to the LIR and is attached as ***PEIR Volume 2 Appendix 3-4***.

Review of Site Selection following designation of revised NPS EN-3

3.3.13 The Site Identification Report (***PEIR Volume 2 Appendix 3-1***) was prepared in January 2022 following the publication of the former draft NPS EN-3 in September 2021 and makes specific reference to that NPS. Following the selection of the Site in June 2022, the September 2021 NPS EN-3 was superseded by the March 2023 draft, and subsequently by the November 2023 NPS EN-3 which was designated in January 2024.

3.3.14 The Applicant has reviewed the Site and the decision-making process that led to the selection of the Site against the now designated NPS EN-1 and EN-3

and has determined that there are no differences between the draft NPS EN-3 and the designated NPS EN-3 that would have materially changed the decision-making process, or resulted in an alternative site being selected. A technical note comparing the relevant differences between the two policy documents has been prepared and is provided at ***PEIR Volume Appendix 3-5***.

3.3.15 Paragraph 4.3.24 of NPS EN-1 (November 2023) states that:

> *"The Secretary of State should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals."*

3.3.16 The Applicant has taken a methodical approach to selecting the site and has determined that it is likely to be the most suitable location for the Scheme when considering technical, environmental, and commercial viability factors.

3.4 Alternative Cable Route Corridors

3.4.1 The Scheme has a requirement for a connection with the National Grid. The point of connection provided by the National Grid ESO was the Eaton Socon Substation, however BSSL has also identified and considered a possible alternative; connecting into the overhead electricity transmission lines which cross near to the east of the Proposed Site Area.

3.4.2 BSSL has consulted with National Grid ESO on the possibility of connecting into the overhead transmission lines. National Grid has confirmed that the Point of Connection within the connection agreement is the Eaton Socon Substation, which will be the most economic and efficient for the project and the end consumer (i.e. the public). National Grid are obliged to offer the most economical solution for the end consumer under the obligations of their

transmission licence. Therefore, it was established that the Scheme must provide a direct grid connection to the Eaton Socon Substation.

3.4.3 The grid connection to the Eaton Socon Substation comprises a 400 kV single circuit cable corridor. This cable corridor could be above or below ground, however, to minimise environmental impacts BSSL established that this should be an underground or buried cable connection. An overhead connection has therefore not been considered.

3.4.4 Due to the capacity of the cables and the need for cable jointing chambers the construction corridor for the grid connection is expected to be up to 25m wide and as such it would not be possible to provide a buried connection that followed roads or the public highway. It is therefore a requirement that the grid connection is buried within farmland between the Site and the Eaton Socon Substation.

3.4.5 BSSL therefore established that there were three realistic possibilities for the grid connection corridor between the Site and the Eaton Socon Substation. These three possible corridors were identified as Option 1, Option 2 and Option 3. An appraisal was undertaken for each of the Corridors considering a wide range of factors under the headings of environmental impact, economic impact, and social impact in order to identify the most sustainable solution.

3.4.6 The appraisal of the three possible grid connection corridors is set out in ***PEIR Volume 2 Appendix 3-6***, the conclusion of which was that Option 3 was the most suitable because it would have the least impact on local communities and land uses, and slight benefits over the other options with regards its potential impact on the historic environment, landscape and visual receptors, and noise receptors.

3.4.7 Option 3 was therefore taken forward as part of the Scheme for EIA Scoping and has subsequently been further refined through consultation with landowners and stakeholders.

3.4.8 The selected grid connection corridor is predominantly arable land and it is considered that any slight deviation of the final cable alignment within this corridor would be unlikely to result in any materially different significant environmental effects. The refinement of the alignment of the grid connection corridor has therefore been undertaken primarily in consultation with landowners and their wishes for where the cable is sited across their land.

3.5 Scheme Evolution and Alternative Layouts

Scheme Evolution

3.5.1 The layout of the Scheme has evolved iteratively and will continue to evolve through the EIA process taking into consideration environmental effects, the Scheme's objectives and functionality, and feedback from stakeholders and public consultation.

3.5.2 The purpose of this section is to describe the main layout changes since the non-statutory consultation in October 2023. The following figures illustrate the changes with reference to the 'Indicative Zoning Plan' that was shared at non-statutory consultation and in the EIA Scoping Report:

- ***PEIR Volume 3 Figure 3-1***: EIA Scoping Indicative Zoning Plan; and
- ***PEIR Volume 3 Figure 3-2***: PEIR Indicative Zoning Plan (Scheme Evolution from EIA Scoping).

3.5.3 The key changes to the layout of the Scheme are annotated on ***PEIR Volume 3 Figure 3-2*** and are summarised briefly as follows:

- The identification of an Option 2 BESS and Substation location within East Park Site D, which is discussed further below;
- Solar development removed from the north and east of East Park Site C in response to consultation feedback, and following the discovery of the remains of a Roman town in this area;
- Solar development removed from areas west of Little Staughton in response to consultation feedback;

- Solar development removed from land north of The Kangaroo (a residential property on Staughton Road) in response to consultation feedback;
- Solar development added to the west of East Park Site C to compensate for the loss of developable area in Site C;
- Realignment of solar development fencelines to provide suitable buffers to existing public rights of way, and to remove development from areas identified as being within fluvial Flood Zones 2 and 3;
- Solar development fencelines consolidated across the Scheme to rationalise boundaries and reduce the amount of fencing;
- Change in site access, with the removal of two proposed site access points along the B645 near Hail Weston, and addition of a new site access north of East Park Site D, and a further new site access utilising an existing private access to the north-west of Site C;
- Changes to the alignment of the 400 kV Grid Connection in response to feedback from the affected landowners; and
- Change in position and alignment of the cable corridors between Site B and Site C, and between Site C and Site D.

Alternative Layouts

3.5.4 The East Park BESS and East Park Substation compound are proposed to be located in either East Park Site C or East Park Site D. At the non-statutory consultation and in the EIA Scoping Report it was assumed that they would be located within Site C, however in response to further environmental surveys and consultation with stakeholders it has emerged that Site D could be a preferable location. This would have the following possible advantages:

- Ease of access from the public highway during construction, operation, and in case of an emergency response;
- Separation from the archaeology discovered in Site C that is being treated as equivalent to a Scheduled Monument; and

- Reduced length of 400 kV Grid Connection between the East Park Substation and the Eaton Socon Substation.

3.5.5 A possible disadvantage of locating the East Park BESS and Substation in Site D would be the slightly higher classification of the agricultural land, being partly Grade 3a instead of wholly Grade 3b.

3.5.6 The location of the BESS has therefore not yet been fixed and feedback on the location is specifically sought as part of this consultation. Accordingly, the Options on alternative layout are as follows:

i) **Option 1** – the East Park BESS and East Park Substation would be located within Site C.
ii) **Option 2** – the East Park BESS and East Park Substation would be located within Site D.

3.5.7 Both Option 1 and Option 2 have been assessed in this PEIR. The assumptions around the layout and infrastructure within the facility are the same for either Option 1 or Option 2, it is only the location that is different along with the approach to construction access, cabling, and resulting impacts. Any assumptions relevant to specific environmental topic areas have been made in the relevant assessment chapters.

3.5.8 A summary of the environmental effects for Option 1 and Option 2 is provided in ***PEIR Volume 1 Chapter 18 Summary of Effects***.

3.5.9 A final decision on either the Option 1 or Option 2 location for the East Park BESS and East Park Substation is expected to be made in advance of submission of the application for development consent.

3.6 Alternative Technologies

3.6.1 As described in ***PEIR Volume 1 Chapter 2***, the parameters of the DCO will maintain a degree of design flexibility to allow the latest technology to be utilised at the time of construction. Notwithstanding this, several technological

design options have been considered and preferred options taken forward taking into consideration environmental effects and the Scheme's objectives and need for optimal functionality. Table 3.1 summarises these alternative technologies.

Table 3.1: Technology Alternatives

Technology Element	Considerations
Type of solar array (fixed or tracking)	Fixed arrays are solar panels that are mounted on arrays which are fixed to a single height and axis, i.e. they are generally fixed to face due south. Solar tracking arrays are solar panels that are mounted on arrays which are motorised and automated to track the sun across the sky. In this way they can turn to face the sun as it rises in the east, and track it through to sunset in the west, which allows them to maximise generation across the full extent of the day and deliver better yields. The key differences between fixed arrays and solar tracking arrays are that: • Fixed arrays are substantially cheaper to deploy and a more reliable technology; • Fixed arrays require less maintenance, and as such less traffic is likely to be generated in the operational phase; • Fixed arrays generate slightly less electricity per panel across the day than tracking arrays, and as such have a reduced yield; and • Fixed arrays have a reduced glint and glare impact compared to solar tracking arrays. Considering the factors set out above, the Applicant has chosen to deploy fixed arrays with the Scheme.
Solar array configuration	Two configurations were considered for the solar PV layout: • **South-facing**, where all solar arrays are oriented due south with regular spacing between rows; and • **East-west facing**, where east-facing solar tables and west-facing solar tables are arranged back-to-back. The east-west configuration can achieve a slightly higher installed capacity per hectare of land as arrays can be arranged more densely, with reduced spacing required between rows due to shading impacts. A consequence of the increased density is greater shading of the ground beneath the panels, which has

Technology Element	Considerations
	the potential to reduce grass establishment and impact soil-quality in the long-term. Despite the ability to increase installed capacity per hectare, the increase in generation capacity from an east-west facing array does not increase proportionately with the installed capacity. This is because the panels are not oriented optimally across the middle part of the day when solar irradiance is highest. East-west facing arrays therefore have much higher costs to install, without a proportionate return from a significantly increased yield. Considering the factors set out above, the Applicant has chosen to use south-facing arrays with the Scheme.
String inverters or centralised inverters	There are two principal types of inverter that can be utilised for solar arrays; string inverters, or centralised inverters. String inverters are inverters typically attached to the mounting frames of solar panels and connect together the wiring from different rows for conversion to AC. They are distributed across the solar arrays, with the advantage of being relatively small and easy to mount onto the solar PV tables. Centralised inverters are either small shipping containers or large cabinets that house a single large-capacity inverter to which the solar arrays connect. Fewer centralised inverters are required compared to string inverters, and they would be distributed throughout the solar arrays alongside transformers. The key differences between string inverters and centralised inverters are that: • String inverters can be mounted directly to the solar arrays and do not require foundations or footings – centralised inverters do require foundations or footings; • String inverters are more expensive to install than centralised inverters, but can be more efficient and can result in lower downtime losses; and • String inverters have a lower sound power level – centralised inverters have a higher sound power level. The Applicant is looking to maintain flexibility as to the type of technology utilised in the Scheme, with a final decision on approach expected to be made at the detailed design stage following a grant of development consent. This will enable the Applicant to select the most efficient and economic technology at the time.

Technology Element	Considerations
	Both string inverters and centralised inverters have therefore been assessed in the PEIR.

3.7 References

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