PHOENIX
SOLAR PARK

WESSEX
SOLAR ENERGY

NON-EIA TECHNICAL ASSESSMENTS

December 2020

Document Reference Number: BL005

PHOENIX
SOLAR PARK

NON-EIA TECHNICAL ASSESSMENTS

December 2023

Document Reference Number: BL005

Revision	Date Issued	Prepared By	Approved By
ORIGINAL	10/12/23	Wessex Solar Energy	Charlotte E Peacock C. E. Peacock

Contents

List of Abbreviations

AC	Alternating Current
AOD	above ordnance datum
BEIS	Department for Business, Energy & Industrial Strategy
BS	British Standard
CEMP	Construction Environmental Management Plan
CO	carbon monoxide
CO_2	carbon dioxide
dB	decibels
DC	Direct Current
DEFRA	Department for Environment, Food and Rural Affairs
DNS	Development of National Significance
EIA	Ecological Impact Assessment
ha	hectare
HGV	heavy good vehicles
km	kilometre
kV	kilovolts
m	metre
mm	millimetre
MW	megawatt
NO_x	oxides of nitrogen
OS	Ordnance Survey
PINS	Planning Inspectorate
PM_{10}'s	particulate matter of less than 10 microns
PV	photovoltaic
SO_2	sulphur dioxide
TAN	Technical Advance Note
VOC	Volatile Organic Compound

1 Introduction

1.1 Background

1 This Document has been prepared in support of a planning application for a Solar Park (which will generate up to 9.99 megawatts (MW) alternating current (AC)) to be located on land approximately 0.7 kilometres (km) south east of Cosheston, and approximately 2.5 km north east of Pembroke. The location of the proposed Solar Park site is shown in Figure 1.1.

2 Solar farm developments are not specifically listed under either Schedule 1 or Schedule developments of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, referred to as the Environmental Impact Assessment (EIA) Regulations. However, the regulations do state that energy development, including "industrial installations for the production of electricity" covering an area exceeding 0.5 hectares (ha), are considered to be Schedule 2 developments.

3 This document considers the following environmental aspects which were 'scoped out' from the EIA as detailed in ES Volume 1 Chapter 2;

- Operational Noise
- Glint and Glare
- Air Quality

1.2 Site Description

4 The Solar Park will be located approximately 0.7 km south east of Cosheston, and approximately 2.5 km north east of Pembroke. There are a small number of scattered houses in the vicinity of the proposed Solar Park site.

5 The location of the proposed Solar Park site is shown in Figure 1.1, and the site boundary (and indicative site layout) is shown in Figure 1.2. The proposed Solar Park site is centred at Ordnance Survey (OS) Grid Reference 201580, 203280. The proposed site comprises 8 fields (arable), covering a total area of approximately 13.84 hectares (ha).

6 The proposed Solar Park site falls within the jurisdiction of Pembrokeshire County Council (the Council), and the relevant Community Council is Cosheston.

7 There are no public footpaths or bridleways that cross the proposed site. The nearest footpaths form the western site boundary.

8 The site is flat for the most part, with a north-south slope which is more exaggerated in the northern part of the site. The site altitude varies from approximately 35 m Above Ordnance Datum (AOD) to approximately 20 m AOD.

9 The nearest landscape designation (or at least designation with landscape implications) is the Pembrokeshire Coast National Park, located approximately 120 m to the north of the proposed site.

10 The proposed Solar Park site is not located within any internationally, European or nationally designated ecological sites. The closest are the Pembrokeshire Marine / Sir Benfro Forol Special Area of Conservation (SAC) (approximately 1 km to the west at its nearest point) and the Milford Haven Waterway Site of Special Scientific Interest (SSSI) (approximately 850 m to the west and 1km to the east).

11 There are no World Heritage Sites within 5 km of the proposed site. There is a Registered Park / Garden located approximately 510 m to the north east of the proposed site. There are no Scheduled Ancient Monuments within the proposed Solar Park site boundary. The closest Scheduled Ancient Monument is located approximately 1.5 km to the south.

12 Site access would be along the A447, turning onto the access road to Lower Nash Farm and entering the site via an existing access point in the south west corner of the south western most field. These roads are used frequently by large farm vehicles and Heavy Goods Vehicles (HGVs).

1.3 Project Description

13 The solar park would use Photovoltaic (PV) technology to generate electricity for export to the local grid network. PV technology is uncomplicated and represents a clear renewable source of electricity. The proposed Solar Park will comprise 25,500 crystalline panels. There will also be up to 5 inverters and transformers that will be housed in dedicated cabins.

14 The PV panels to be used at the site will be of the order of 2210 milometers (mm) (length) x 1200mm (width). The panels will be positioned at an angle of approximately 22º and will have a height of no more than 3.5 m from the ground to the top of the panel. It should be noted however that the final selection of the exact type and size of PV panels and the number of inverters will be subject to confirmation through a competitive tendering process.

15 Inverters will convert the low voltage direct current (DC) electricity generated by the panels to low voltage Alternating Current (AC) electricity. Transformers will then increase the voltage of this electricity.

16 A network of cables will connect the transformers to a set of switchgear, housed in a control building on site. No fluid filled cables will be installed on site. From the control building, electricity will be exported to the regional electricity grid via an underground cable to the existing Golden Hill 33 / 132 kilovolt (kV) Substation located approximately 2.3 km to the south west.

17 To construct and service the Solar Park a new on site track linking the site access points to the fields and electrical buildings will be required. The total length of new access track will be approximately 865m and constructed from compacted stone or aggregate. Construction roads will be about 3 m nominal width and will be placed to avoid known ground hazards and environmental constraints at the site, in addition to steep gradients.

18 The Solar Park would be equipped with a computer control system that would continuously monitor variables such as electrical voltage and current from a central off-site host computer or from a remote personal computer. In the event of any fault at the park the system would

be able to alert operations staff. The control system would always run to ensure that the Solar Park operates efficiently and safely.

19 A 2.5 m tall perimeter fence will be installed, with an access gate at the point of access, to ensure there is no unauthorised access to the proposed Solar Park site. The security fence will take the form of deer fencing with stock proof fencing up to one metre above ground level. Security cameras may also be used which will face into the site and monitor any activity within the site boundary.

2 Operational Noise

2.1 Introduction

20 This Section includes discussion of potential noise impacts during the operational phase of the development.

2.2 Operational Noise Guidance

21 The following planning policy, guidance and standards are of particular relevance to operational noise.

- Planning Guidance (Wales) TAN 11 - Noise; and
- BS 4142:2014+A1:2019; Methods for rating and assessing industrial and commercial sound.

2.2.1 Planning Guidance (Wales) TAN 11 - Noise

22 The Technical Advice Note 11 (TAN 11) provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business.

2.2.2 BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

23 BS 4142:2014 +A1:2019 (referred to as BS 4142) describes methods for rating and assessing sound in order to provide an indication as to its likely effect upon nearby premises (typically residential dwellings).

24 When considering the level of effect, BS 4142 emphasises the importance of the context in which a sound occurs. The standard therefore takes great care in the use of the words ‘sound’ and ‘noise’. Sound can be measured by a sound level meter or other measuring system, whereas noise is related to a human response and is routinely described as unwanted sound, or sound that is considered undesirable or disruptive.

25 The specific sound emitted from equipment (dB, LAeq) is rated by taking into account both the level and character (i.e., tonal elements, impulsivity, intermittency and distinctiveness) of the sound. This can be achieved by applying appropriate corrections to the specific sound level externally at the receptor location, which gives the rating level of the sound in question. This is then assessed against the existing prevailing background sound level (dB, LA90) at that location in order to determine a likely level of effect.

26 The level by which the rating level exceeds the prevailing background sound level indicates the following potential effects:

- A difference of 10 dB or more is likely to be an indication of a significant adverse effect, depending on the context;
- A difference of around 5 dB is likely to be an indication of an adverse effect, depending on the context; and

- Where the rating level does not exceed the background level, this is an indication of the specific sound source having a low effect, depending on the context.

2.3 Noise Sensitive Receptors and Baseline Conditions

27 There are few residential properties in the vicinity of the proposed Solar Park. These are shown in Environmental Statement Volume 3: Figure 11.1. Based on a desktop review the main source of noise likely to influence the environmental sound climate at existing receptors is vehicular movements on the A477.

28 As detailed in Environmental Statement Volume 1: Chapter 11, in order to establish the baseline acoustic conditions across the site, a review of DEFRA's strategic noise mapping has been undertaken. The strategic noise maps are required to be produced every five years. They must be produced for agglomerations with a population of more than 100,000 people; for major roads with more than 3,000,000 vehicle passages per year, and for major railways with more than 30,000 train movements per year.

29 The strategic noise maps indicate that noise levels are likely to be around 55dB LAeq,16hrs at 150 m from the edge of the A477 carriageway.

30 The identified receptors are located at between 50 m and 800 m from the A477. Calculations indicate that baseline sound levels at the identified receptors are likely to vary between 47 dB (A) and 60 dB (A) depending on their proximity to the road. This is a conservative estimate and assumes that the baseline sound environment is dominated by noise from vehicular movements on the A477. At some receptors the baseline sound levels may be higher due to more local traffic on nearby roads.

31 A summary of the predicted ambient levels at nearby receptors are provided below in Table 2-1.

Table 2-1: Predicted Ambient Noise Levels

Receptor	Ambient Noise Levels(dB, $L_{Aeq,T}$)	Approximate Distance From Site Boundary
Mayeston Barn Holiday	47	200m
Lower Nash Farm		300m
Pakeston Lodge		415m
Green Plain		110m
Nash Villa	60	130m
The Crane		370m

2.4 Predicted Impacts during Operation

32 PV developments are inherently quiet. Noise emissions from PV plant are limited to noise associated with the inverters and transformers. Depending upon which model of inverter or transformer is selected as part of the construction contract tendering process, the noise from the equipment may vary. Typical noise values from the equipment which is proposed are in the range of 65 - 70dB(A) at 10m from the equipment.

Given the distance between the site boundary and the nearest properties, operational noise is not predicted to result in an adverse effect on any properties in accordance with BS 4142 as detailed in Section 2.2.2. In addition, many of the inverter/transformer cabins are located away from the site boundary, as detailed in Environmental Statement Volume 3: Figure 1.2 and are therefore located further from the properties detailed above.

2.5 Mitigation Measures and Monitoring Programmes

2.5.1 Operation

33 Given that the development will not give rise to any significant adverse noise effects it is not considered that any additional mitigating measures are required other than good project design. In the unlikely event that complaints are received during the operational phase, the complaint will be investigated and, if it is found that the plant has developed a fault, remedial action to correct the problem will be undertaken.

3 Glint and Glare

34 A detailed glint and glare assessment has been completed for the proposed development by CPA Ltd. A copy of the assessment is provided as Appendix A to this document.

4 Air Quality

35 This Section presents information regarding the potential air quality impacts associated with the proposed Solar Park.

4.1 Potential Impacts

4.1.1 Construction

36 During construction, emissions of dust could arise due to: access road / track construction; earth moving operations; concreting operations; blow-off / spillage from vehicles; and, site reinstatement.

37 The emission and dispersion of dust is weather dependent, and prolonged dry, windy conditions are the most likely to cause appreciable dust migration. Accordingly, the occurrence and significance of any potential impacts will be heavily dependent upon the prevailing meteorological conditions at the time and location of the construction work. Based on the geographical location it is not likely that prolonged dry, windy conditions will be experienced at the proposed Solar Park site.

38 In addition, there may be emissions of carbon monoxide (CO), sulphur dioxide (SO_2), oxides of nitrogen (NO_x) and particulate matter (PM) from vehicle exhausts. However, based on the information on wind speed at the site, these will be easily dispersed.

4.1.2 Operation

39 During operation, there are limited sources for emissions of pollutants to air. Therefore, impacts due to the operation of the proposed Solar Park are considered to be not significant.

4.1.3 Decommissioning

40 During decommissioning, emission of pollutants to air will be similar to those encountered during construction. Therefore, impacts during decommissioning are considered to be as for construction.

4.2 Mitigation Measures and Monitoring Programmes

4.2.1 Construction

41 During construction, WSE will require its Construction Contractor(s) to minimise the impact of construction activities through successful implementation of an agreed and approved Construction Environmental Management Plan (CEMP). Accordingly, in addition to the other measures contained within the CEMP, in order to minimise any potential air quality impacts it is suggested that the following measures be included in the CEMP:

- All construction activities will be carried out so as to minimise the generation and spread of dust in order to prevent levels of atmospheric dust that would constitute a health hazard or nuisance to nearby properties / residential areas.
- Whilst unlikely, if potential for the generation and spread of dust exists (i.e. during particularly dry or windy periods) the following procedure will be followed:
    - All materials within the working area will be tested for moisture content. If any material is dry, then water will be sprayed on to the working area to suppress dust;

- Any materials deposited on stockpiles onsite will be closely monitored and, if required, they will be damped down (i.e. water will be sprayed on) and sheeted or they will be treated with a chemical dust suppressant;
- If required, excavation faces not being worked will be either sheeted or treated with a chemical dust suppressant;
- The amount of excavation faces not being worked / disturbed surfaces left exposed for significant time periods will be minimised; and
- All construction personnel working in areas of potential dust emission will be provided with paper type face masks.
- If finely ground materials are delivered, these will be in bag form or stockpiled in specified locations where the material can be suitably covered or damped down as necessary. All vehicles carrying bulk materials into or out of the site will be covered to prevent dust emission. Minimum drop heights will be used during material transfer.

- Speed restrictions will be imposed on site to minimise disturbance of bare surfaces, and the amount of disturbed surfaces left exposed for significant amounts of time will be minimised.
- If necessary, a temporary wheel / chassis washing facility will be installed at the site access point (and will be used by all heavy commercial vehicles leaving the site) to prevent the transfer of soil onto nearby public roads.

42 Following the implementation of the mitigation and monitoring measures, the potential air quality impacts are considered to be not significant.

4.2.2 Operation

43 Mitigation measures and monitoring programmes are not considered to be required during operation.

4.2.3 Decommissioning

44 During decommissioning, mitigation measures and monitoring programmes are considered to be as for construction.

4.3 Conclusions

45 This Section has presented information regarding the potential air quality impacts associated with the proposed Solar Park.

46 During construction, emissions of dust could arise due to: access road / track construction; earth moving operations; concreting operations; blow-off / spillage from vehicles; and, site reinstatement. In addition, there may be emissions of CO, SO_2, NO_x and PM from vehicle exhausts. Following the implementation of the mitigation and monitoring measures, the potential air quality impacts are considered to be not significant.

47 During operation (i.e. following completion of construction, commissioning and site reinstatement), there are limited sources for emission of pollutants to air. Therefore, impacts due to the operation of the proposed Solar Park are considered to be not significant.

48 During decommissioning, emissions of dust similar to those encountered during construction. Therefore, impacts during decommissioning are considered to be as for construction.

4.4 Additional Discussion on National and Global Air Quality

49 Nationally and globally, a significant benefit of the use of solar power rather than fossil fuels is the reduction of emissions of environmentally harmful gases.

50 These benefits are associated with the prevention of emissions of CO_2, SO_2, NO_x, PM and VOCs arising from the combustion of fossil fuels.

51 There are a number of annual average UK household electricity consumptions quoted by various credible sources. The department for Business, Energy & Industrial Strategy (BEIS) now estimates the average consumption to be below 4,000 kWh with average consumption in 2019 being about 3,731 kWh. It can be calculated using the 2019 figure that the proposed Solar Park will provide up to 3,296 households with renewable energy annually.

52 The generation of electricity from solar power therefore represents a saving on the pollutants that could otherwise be omitted by fossil fuel fired power stations to generate power for this number of homes.

Appendix A Glint and Glare Assessment

PHOENIX
SOLAR FARM

Glint and Glare Assessment

DECEMBER 2023

C P A

Charlotte Peacock Associates

ENVIRONMENTAL CONSULTANCY

PHOENIX
SOLAR FARM

Glint and Glare Assessment

Revision	Date Issued	Approved By
ORIGINAL	21/12/23	Charlotte E Peacock C. E. Peacock

Prepared by CPA Limited for Wessex Solar Energy

CONTACT DETAILS

CPA Ltd
Longridge
Barmoor Farm
Morpeth
Northumberland
NE61 6LB

Tel: 01670 513242
Fax: 01670 503107

CONTENTS

1 INTRODUCTION

1.1 Overview

1.1.1 Charlotte Peacock Associates Ltd. (CPA) was commissioned by Wessex Solar Energy to complete an assessment of the potential for glint and glare effects as a result of the proposed Phoenix Solar Farm.

1.1.2 The purpose of this assessment is to determine whether there are potentially significant glint and glare effects in the vicinity of the proposed solar farm site.

1.2 Basic Principles

1.2.1 The reflection of the sun from solar panels occurs as either diffuse reflection where the light is reflected at many angles (scattered), or, as specular reflection where the light is reflected at a single angle.

1.2.2 The diffuse reflection gives solar panels their general appearance and perceived colour. The potential visual impacts of solar panels are considered within the Landscape and Visual Impact Assessment.

1.2.3 The effects of specular reflection can be experienced in two ways. The first is as a momentary flash or 'pin prick' of reflected light, often referred to as Glint. The second is a more prolonged reflection over a greater area of panels which is sometimes referred to as Glare. The potential impacts of both effects are considered within this assessment. Both of these effects are a result of specular reflection and are hereafter referred to collectively as Glint within this report.

1.2.4 Glint effects from solar panels can only occur if a receptor is directly in view of the reflected light. This means that any effects experienced are highly directional and localised to a particular receptor or group of receptors at any given moment. When views of the site are blocked by intervening topography, vegetation or buildings, glint effects will not be experienced. Similarly, if cloud cover blocks the sunlight from reaching the panels then glint effects will be significantly reduced, however due to the transitory nature of clouds and variable nature of the screening provided, the potential effects of cloud cover are not considered further within this assessment.

1.2.5 When light strikes a surface it is either absorbed, transmitted or reflected depending upon the frequency of the light and the nature of the surface. If atoms within the material have the same vibrational frequency as the light striking them then the light will be absorbed. If they do not then the light will either be transmitted (as would generally be the case for a transparent material) or reflected (as would be the case for an opaque material).

1.2.6 Solar Panels work by allowing particles of light (photons) to strike atoms within the panel, releasing electrons and creating a flow of electricity. Solar Panels are therefore designed to capture as much light as possible, maximising their efficiency. To achieve this they are designed to minimise the amount of light which is reflected from the panel surface. The panel surface comprises glass which is used to encapsulate and protect the solar cells. The glass used is special glass with a low iron content which increases the amount of light which passes through it (transmitted to the solar cells).

Table 1 below shows that the light reflected from a solar panel surface is less than that reflected from ordinary glass, and is very similar to that from still water such as a lake.

Table 1; Common Reflective surfaces and Index of Refraction, "n" (data extracted from Sunpower 2010[1])

n	Common Reflective Surfaces
1.980	Snow
1.517	Standard Glass
1.333	Smooth Water
1.329	Solar Glass

(the value "n" may vary by reference source, but the hierarchy of "n" values from one material to another will remain the same).

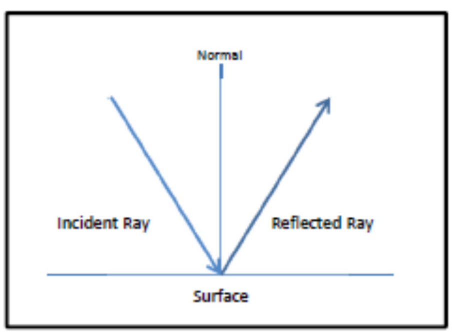
1.2.7 As a result of the above, any glint effects experienced beyond 5km from the site boundary would be likely viewed as a pin prick of light within a much larger vista, limiting the spatial zone of any potential significant impacts.

1.2.8 Two principles apply to the behaviour of light shining on the panels, one is that light travels in a straight line and the other is that the angle of incidence equals the angle of reflection.

1.2.9 The angle of incidence is the angle formed by a ray incident on a surface and a perpendicular to the surface at the point of incidence (the point that the ray hits the surface).

1.2.10 The angle of reflection is the angle formed by the reflected ray and a perpendicular at the point of incidence.

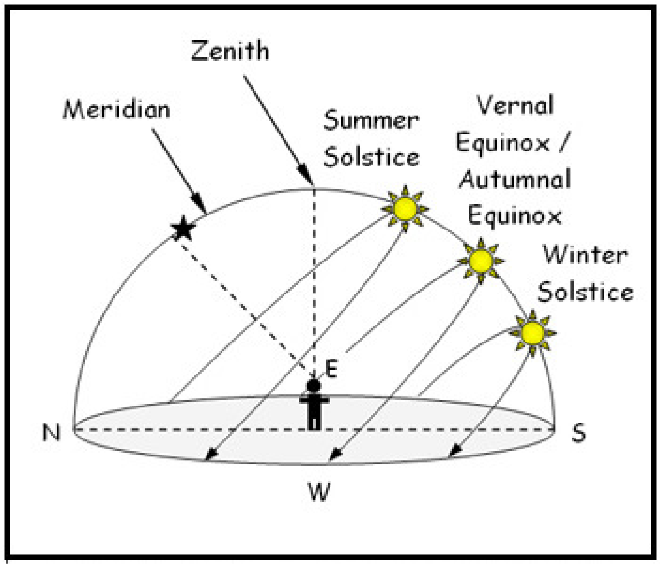
Figure A: Angle of Incidence and Reflection



[1] PV Systems: Low Levels of Glare and Reflectance vs. Surrounding Environment; Mark Shields; Sunpower; 2010

1.2.11 Examination of the azimuth of the sun on autumn equinox, the shortest day and spring equinox shows that the sun rises at north 90 degrees east or greater and sets at north 90 degrees west or greater. Figure B shows the path of the sun in the northern hemisphere at key points in the solar cycle.

1.2.12 Figure B: Northern Hemisphere Solar Path Showing Equinoxes[2]



1.2.13 When the sun is at an angle of greater than 90 degrees from north in an easterly direction and an angle of greater than 90 degrees from north in a westerly direction any reflection from the solar panels is at an angle above the horizontal.

1.2.14 As shown in Figure B above, for a flat site, there can be no glint effect at ground level from the autumn equinox (approximately mid-September) to the vernal (spring) equinox (approximately mid-March) because the sun is always to the southeast or southwest of the site. Glint can only occur when the sun is in the quadrants between north and east and between north and west of the site.

1.2.15 The computational model used to complete the quantitative glint assessment as detailed in Section 2.2 below identifies that due to the topography of the site (not flat) glint may occur on up to 1 day after the autumn equinox and 0 days before the spring equinox.

[2] www.mydarksky.org

2 METHODOLOGY

2.0.1 This assessment considers the potential glint effects as a result of solar panels which would be installed as part of the proposed solar farm development.

2.0.2 This assessment comprises 3 stages as detailed below.

2.1 Stage 1: Receptor Selection

2.1.1 A study area of 5km was selected, because although the site may be visible beyond this distance at some locations, it is considered that glint effects beyond this distance would appear over such a small part of the overall view that they would be negligible.

2.1.2 Receptor points were selected which were considered to be representative of sensitive receptors within 5km of the proposed solar farm site. The Zone of Theoretical Visibility (ZTV) was used to identify areas with potential views of the site. Four types of sensitive receptor were considered; residential, road users, footpaths and cultural heritage, and representative points for each were identified along with Viewpoint locations identified in the LVIA.

2.1.3 Representative points along roads are considered to be those located along main routes in the vicinity of the site at varying distances and directions from the site and which have potential views of the site.

2.1.4 Representative residential receptor points are considered to be those which either represent individual isolated properties or multiple points within a cluster of houses or along a street. Each individual property in a residential street or cluster is not necessarily considered as the selected points will provide a spread of data sufficient to allow the potential glint effects to be understood.

2.1.5 A total of 290 potential receptor points were selected for analysis. The locations of the selected receptors are shown in Figures A1 and A2. They include:

- 250 residential properties;
- 10 points along 4 roads;
- 11 points along 11 footpaths;
- 9 points at Listed Buildings; and
- 10 Viewpoints.

2.2 Stage 2: Quantitative Assessment

2.2.1 A computational model is used to determine potential glint effects at each receptor. The model relies upon the following site and development specific parameters:

- Latitude and Longitude
- Topography of the site
- Proposed panel height
- Proposed panel angle
- Receptor location in relation to the site
- Receptor elevation

2.2.2 The model determines the period over which glint may occur throughout the year and identifies any receptors which cannot technically experience glint due to their location relative to the site. For example, for an entirely south facing site, receptor points immediately north of the site are not able to experience glint because the angle of reflection makes this impossible.

2.2.3 For each receptor point which may experience glint the model output provides the following information:

- Which days in a year glint effects may be experienced;
- What time of the day glint may occur; and
- How long glint effects may occur on any one day (in minutes).

2.2.4 The model generates data at minute intervals for an entire year.

2.2.5 The analysis was completed for 2024. However, the results of this analysis will apply to all years of operation albeit the specific dates of impact may vary slightly. With this in mind, key points in the solar cycle are identified in Section 3.1 below and the data is considered to be representative of the operational lifespan of the solar farm.

2.2.6 The modelling has been carried out for panels aligned facing south at an angle of 25 degrees to the horizontal.

2.2.7 It has been assumed that panels will be installed across the entire site. This represents a worst case scenario approach to the assessment.

2.3 Stage 3: Qualitative Assessment

2.3.1 It is important to note that the model does not take into account the screening benefits of any existing on and off site vegetation and buildings. In addition the model does not take into the micro topography surrounding the site which may screen parts of the site from receptors. Therefore, once the model has identified which of the selected receptors may experience glint effects, a qualitative assessment is completed for each receptor. The qualitative assessment is completed via reference to the landscape and visual impact assessment for the site, and other publically available information, to determine the presence of intervening vegetation, buildings and micro topography and the extent to which these screen each receptor from the site. The results of the qualitative assessment are provided in the final column in Table 2 below and Table 3 in Appendix 1.

3 RESULTS

3.1 Solar Cycle

3.1.1 The key points of the solar cycle in relation to glint are:

- **The longest day** - represents the worst case scenario as this is when the greatest glint would occur
- **The autumn equinox** (plus one day)[3]- The time at which the sun rises at north 90 degrees east and sets at north 90 degrees west.
- **The shortest day** - represents the best case scenario as this is when the least glint would occur
- **The spring equinox** (minus one day)[4]- The time at which the sun rises at north 90 degrees east and sets at north 90 degrees west.

3.1.2 The sunrise and sunset times for these periods at the proposed Phoenix Solar Farm are set out below.

<u>Longest Day</u>

Sunrise:	GMT 0404	BST 0504
Sunset:	GMT 2039	BST 2139
Hours of daylight:	16 hours 35 minutes	

<u>Autumn equinox (plus 1 day)</u>

Sunrise:	GMT 0610	BST 0713
Sunset:	GMT 1812	BST 1812
Hours of daylight:	12 hours 2 minutes	

<u>Shortest Day</u>

Sunrise:	GMT 0827
Sunset:	GMT 1609
Hours of daylight:	7 hours 42 minutes

<u>Spring equinox (minus 1 day)</u>

Sunrise:	GMT 0626
Sunset:	GMT 1829
Hours of daylight	12 hours 3 minutes

[3] Due to the latitude of the site and the refraction of the sun's rays through the atmosphere the sun does not appear to rise and set at a 90 degree angle during the true equinox but one day later.
[4] Due to the latitude of the site and refraction of the sun's rays through the atmosphere the sun does not appear to rise and set at a 90 degree angle during the true equinox but one day earlier.

3.1.3 The altitude of the sun and the azimuth (its position relative to the southern direction) has been determined and used as an input to the computer model.

3.2 Glint Potential

3.2.1 The location of the 290 representative receptors analysed is shown in Figures A1 and A2. The quantitative assessment has revealed that 170 of the receptor points analysed could not experience any glint effects due to their location and elevation in relation to the proposed solar farm site.

3.2.2 This means that only 120 of the receptor points analysed could potentially experience glint during the operation of the solar farm. The qualitative assessment has determined that 111 of the receptor points are entirely screened by existing vegetation, buildings and topography from any potential glint. These points are detailed in Table 3 in Appendix 1. The remaining 9 receptor points are detailed in Table 2 below. The duration of glint detailed in the table below is the total continuous glint effect from across the site on any one day. This glint will usually come from a small number of panels in a localised area moving across the site during the period stated, and not from the panels across the entire site.

G = Residential Receptor Point

RD = Road Receptor Point

FP = Footpath Receptor Point

LB = Cultural Heritage Receptor Point

VP = Viewpoint Receptor Point

Table 2: Potential glint at receptor points analysed and not entirely screened by existing vegetation, buildings and topography

Receptor	Dates between which glint may occur[5]	Duration of glint affect on any one day (maximum)	Time of day (range)	Site Visibility
G1	18 days prior to the longest day – 19 days after the longest day	2 minutes	5:47 AM and 6:14 AM	Very limited visibility of the site to the east of the receptor may be visible through vegetation from upper floor windows.
G3	92 days prior to the longest day – 92 days after the longest day	10 minutes	5:51 AM and 6:24 AM	Site largely blocked by vegetation close to receptor and around site. Very limited glint may remain.
G17	36 days prior to the longest day – 37 days after the longest day	1 minute	5:54 AM and 6:25 AM	Site partially blocked by buildings and vegetation near receptor and by vegetation around site. Limited glint may be visible.
G71	12 days prior to the longest day – 13 days after the longest day	1 minute	6:01 PM and 6:27 PM	Site largely blocked by buildings neighbouring receptor and vegetation. Very limited glint may remain.
G73	29 days prior to the longest day – 29 days after the longest day	1 minute	5:55 PM and 6:26 PM	Site largely obscured by vegetation neighbouring receptor and around site. Very limited glint may remain.
LB 1	91 days prior to the longest day – 92 days after the longest day	4 minutes	5:45 AM and 6:22 AM	Hedgerow around site should block view of site. 3.5m hedgerow required to maintain block.
FP 1	84 days prior to the longest day – 85 days after the longest day	10 minutes	5:45 AM and 6:23 AM	Site largely blocked by vegetation around site. Very limited glint may remain.
FP 7	92 days prior to the longest day – 93 days after the longest day	12 minutes	4:34 AM and 6:25 AM	Site largely blocked by vegetation around site. Limited glint may remain through vegetation.
VP 1	No Glint			
VP 2	90 days prior to the longest day – 91 days after the longest day	5 minutes	4:28 AM and 6:21 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
VP 3	No Glint			
VP 4	No Glint			
VP 5	No Glint			
VP 6	No Glint			

[5] These dates apply to 2024 and will vary by up to 1 day during the 25 years of operation

VP 7	No Glint
VP 8	No Glint
VP 9	No Glint
VP 10	No Glint

4 IMPACT ASSESSMENT

4.1 Residential Receptors

4.1.1 Receptors have been selected for assessment within residential areas located around the site. These receptors have been selected taking into consideration the topography, location and building types in the surrounding area and are therefore considered to represent the potential for glint effects at surrounding properties. As shown in Table 3, of the 250 residential receptor points analysed 99 may experience glint effects.

4.1.2 When intervening vegetation, topography and buildings are taken into account, the potential for glint effects at 94 of these points is eliminated and, as detailed in Table 2, glint effects at the remaining 5 points will be significantly reduced from that predicted.

4.1.3 At 3 of these receptors glint is predicted to occur for no more than 10 minutes on any day and would occur during the early hours of the morning (between 5:47 AM and 6:25 AM). At the remaining 2 receptors glint is predicted to occur for no more than 1 minute in the early evening (between 5:55 PM and 6:27 PM). Such effects would only occur for part of the year and from only part of the site at any given moment.

4.1.4 Due to the short duration and time of day which glint effects are predicted, and taking into consideration the screening benefits of the existing vegetation and buildings, along with the proposed planting on the external site boundaries and internal field boundaries, any glint effects on residential properties are not considered to be significant.

4.2 Road Users

4.2.1 The road points selected are locations on A and B class roads where the site is considered to be most visible from vehicles or which are representative of the stretch of road. As shown in Table 3, of the 10 road points analysed 9 may experience glint effects.

4.2.2 When intervening vegetation, topography and buildings are taken into account, the potential for glint effects at all of these points is eliminated. For this reason potential glint effects on these road receptors are considered to be negligible.

4.3 Public Rights of Way

4.3.1 Of the 11 Public Rights of Way Receptors assessed, 4 could not experience any glint effects due to their location and elevation in relation to the proposed solar farm site. When intervening vegetation, topography and buildings are taken into account, the potential for glint effects at 5 of the remaining receptors is eliminated and as detailed in Table 2, glint effects at the remaining 2 points will be significantly reduced from that predicted.

4.3.2 Predicted glint effects at these two receptors are predicted to occur in the early morning between 4:34 AM and 6:25 AM. These effects have the potential to last up to 12 minutes on any one day although dense mature vegetation surrounding the site and bounded by the site will significantly reduce the duration of the glint on any one day. Additional planting on the north western boundary of the site will further reduce visible glint at these receptors.

4.3.3 Taking into consideration the significant vegetative screening, the time of day which glint effects may occur and the transitory nature of receptors at this location, potential glint effects on these receptor points are not considered to be significant.

4.4 Cultural Heritage Receptors

4.4.1 Of the 9 Cultural Heritage Receptors assessed, 6 could not experience any glint effects due to their location and elevation in relation to the proposed solar farm site. When intervening vegetation, topography and buildings are taken into account, the potential for glint effects at 2 of the remaining receptors is eliminated and as detailed in Table 2, glint effects at the remaining 1 point will be significantly reduced from that predicted.

4.4.2 Predicted glint effects at this receptor are predicted to occur in the early morning between 5:45 AM and 6:22 AM. These effects have the potential to last up to 4 minutes on any one day although dense mature vegetation surrounding the site and bounded by the site will significantly reduce this duration. Additional planting on the north western boundary of the site will further reduce visible glint at this receptor. Due to the short duration and time of day which glint effects are predicted, and taking into consideration the screening benefits of the existing vegetation, along with the proposed planting on the external site boundaries, any glint effects on Cultural Heritage receptors are not considered to be significant.

4.5 Viewpoint Receptors

4.5.1 Of the 10 Viewpoint Receptors assessed, 9 could not experience any glint effects due to their location and elevation in relation to the proposed solar farm site. When intervening vegetation, topography and buildings are taken into account, as detailed in Table 2, glint effects at the remaining point will be significantly reduced from that predicted.

4.5.2 Predicted glint effects at this receptor are predicted to occur in the early morning between 5:45 AM and 6:22 AM. These effects have the potential to last up to 1 minute on any one day although mature vegetation surrounding the site will reduce the duration of the glint on any one day and as noted in Table 2, panels near to the receptor location will provide significant screening. Taking into consideration the panel and vegetative screening, the time of day which glint effects may occur and the transitory nature of receptors at this location, potential glint effects on this receptor point are not considered to be significant.

5 MITIGATION

5.1.1 No significant impacts are predicted as a result of glint effects from the proposed Phoenix Solar Farm.

5.1.2 The proposed planting and infilling of the existing hedgerows around the site will enhance the existing screening and further reduce any potential residual glint effects.

5.1.3 It is recommended that new and existing planting surrounding the site is maintained to provide continued screening benefits throughout the operation of the solar farm.

6 CONCLUSIONS

6.1.1 Existing screening by vegetation and topography will eliminate glint effects at the majority of the receptor points analysed. Potential residual glint effects on residential properties, roads, public rights of way, cultural heritage receptors and selected viewpoints are not considered to be significant and therefore no additional mitigation measures are recommended or required.

Appendices

APPENDIX 1: POTENTIAL GLINT RECEPTORS ENTIRELY SCREENED BY EXISTING VEGETATION, BUILDINGS AND TOPOGRAPHY

Table 3: Potential glint at receptor points analysed and entirely screened by existing vegetation, topography and buildings

Receptor	Dates between which glint may occur[6]	Duration of glint affect on any one day (maximum)	Time of day (range)	Site Visibility
G2	Between 93 and 91 days prior to the longest day Between 90 and 93 days after the longest day	1 minute	6:12 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G4	71 days prior to the longest day – 73 days after the longest day	2 minutes	5:48 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G5	62 days prior to the longest day – 64 days after the longest day	1 minute	5:51 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G6	55 days prior to the longest day – 56 days after the longest day	1 minute	5:52 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G7	55 days prior to the longest day – 57 days after the longest day	1 minute	5:53 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G8	Between 92 and 41 days prior to the longest day Between 43 and 92 days after the longest day	3 minutes	5:47 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G9	Between 92 and 50 days prior to the longest day Between 53 and 93 days after the longest day	2 minutes	6:09 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G10	Between 92 and 57 days prior to the longest day Between 58 and 93 days after the longest day	2 minutes	6:11 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G11	Between 92 and 66 days prior to the longest day Between 68 and 92 days after the longest day	2 minutes	6:10 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G12	Between 92 and 64 days prior to the longest day	2 minutes	6:10 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and

[6] These dates apply to 2024 and will vary by up to 1 day during the 25 years of operation

	Between 65 and 93 days after the longest day			between receptor and site.
G13	Between 92 and 52 days prior to the longest day Between 54 and 93 days after the longest day	4 minutes	6:11 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G14	Between 92 and 48 days prior to the longest day Between 50 and 93 days after the longest day	4 minutes	5:50 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G15	Between 91 and 55 days prior to the longest day Between 57 and 92 days after the longest day	4 minutes	6:10 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G16	79 days prior to the longest day – 80 days after the longest day	1 minute	5:51 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G18	Between 73 and 27 days prior to the longest day Between 29 and 74 days after the longest day	1 minute	5:52 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G19	Between 77 and 35 days prior to the longest day Between 36 and 78 days after the longest day	1 minute	5:51 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G20	Between 82 and 48 days prior to the longest day Between 50 and 83 days after the longest day	1 minute	5:53 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G21	Between 88 and 55 days prior to the longest day Between 57 and 89 days after the longest day	1 minute	6:12 AM and 6:23 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G22	50 days prior to the longest day – 52 days after the longest day	1 minute	5:54 AM and 6:26 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G23	46 days prior to the longest day – 47 days after the longest day	1 minute	5:54 AM and 6:27 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G24	53 days prior to the longest day – 54 days	1 minute	5:55 AM and 6:27 AM	Site entirely screened by existing vegetation

	after the longest day			surrounding site and between receptor and site.
G25	54 days prior to the longest day – 56 days after the longest day	1 minute	5:55 AM and 6:27 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G26	43 days prior to the longest day – 45 days after the longest day	1 minute	5:55 AM and 6:27 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G27	Between 92 and 77 days prior to the longest day Between 78 and 93 days after the longest day	1 minute	6:11 AM and 6:25 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G28	Between 74 and 50 days prior to the longest day Between 54 and 75 days after the longest day	1 minute	6:16 AM and 6:24 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G29	Between 85 and 64 days prior to the longest day Between 66 and 86 days after the longest day	1 minute	6:16 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G30	Between 83 and 65 days prior to the longest day Between 66 and 84 days after the longest day	1 minute	6:18 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G31	Between 91 and 72 days prior to the longest day Between 73 and 92 days after the longest day	1 minute	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G32	Between 92 and 90 days prior to the longest day Between 90 and 93 days after the longest day	1 minute	6:11 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G33	Between 92 and 89 days prior to the longest day Between 89 and 93 days after the longest day	1 minute	6:12 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G34	Between 92 and 90 days prior to the longest day Between 91 and 93 days after the longest day	1 minute	6:11 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G35	Between 92 and 90	1 minute	6:11 AM and 6:25 AM	Site entirely screened by

	days prior to the longest day Between 91 and 93 days after the longest day			existing vegetation and buildings surrounding site and between receptor and site.
G36	Between 93 and 80 days prior to the longest day Between 81 and 94 days after the longest day	2 minutes	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G37	Between 93 and 84 days prior to the longest day Between 85 and 94 days after the longest day	1 minute	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G38	Between 93 and 82 days prior to the longest day Between 83 and 94 days after the longest day	1 minute	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G39	Between 93 and 79 days prior to the longest day Between 80 and 94 days after the longest day	2 minutes	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G40	Between 93 and 81 days prior to the longest day Between 82 and 94 days after the longest day	1 minute	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G41	Between 93 and 80 days prior to the longest day Between 81 and 94 days after the longest day	2 minutes	6:12 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G42	Between 93 and 78 days prior to the longest day Between 79 and 94 days after the longest day	2 minutes	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G43	Between 91 and 73 days prior to the longest day Between 73 and 92 days after the longest day	1 minute	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G44	Between 93 and 75 days prior to the longest day Between 76 and 94 days after the longest day	1 minute	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.

G45	Between 92 and 74 days prior to the longest day Between 75 and 92 days after the longest day	1 minute	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G46	Between 93 and 76 days prior to the longest day Between 77 and 94 days after the longest day	2 minutes	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G47	Between 93 and 78 days prior to the longest day Between 79 and 94 days after the longest day	2 minutes	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G48	Between 93 and 77 days prior to the longest day Between 78 and 94 days after the longest day	2 minutes	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G49	Between 92 and 75 days prior to the longest day Between 76 and 93 days after the longest day	1 minute	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G50	Between 93 and 77 days prior to the longest day Between 78 and 94 days after the longest day	2 minutes	6:12 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G51	Between 93 and 77 days prior to the longest day Between 78 and 94 days after the longest day	2 minutes	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G52	Between 87 and 71 days prior to the longest day Between 72 and 88 days after the longest day	1 minute	6:16 AM and 6:26 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G53	Between 92 and 87 days prior to the longest day Between 88 and 93 days after the longest day	1 minute	6:11 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G54	Between 92 and 90 days prior to the longest day Between 90 and 93 days after the longest	1 minute	6:11 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.

	day			
G55	Between 92 and 89 days prior to the longest day Between 89 and 93 days after the longest day	1 minute	6:11 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G56	Between 93 and 88 days prior to the longest day Between 88 and 93 days after the longest day	1 minute	6:12 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G57	Between 91 and 71 days prior to the longest day Between 71 and 91 days after the longest day	1 minute	6:17 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G58	Between 91 and 72 days prior to the longest day Between 71 and 92 days after the longest day	1 minute	6:16 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G59	Between 94 and 75 days prior to the longest day Between 75 and 95 days after the longest day	1 minute	6:15 AM and 6:27 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G60	Between 88 and 74 days prior to the longest day Between 75 and 89 days after the longest day	1 minute	6:16 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G61	Between 93 and 81 days prior to the longest day Between 82 and 94 days after the longest day	2 minutes	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G62	Between 93 and 81 days prior to the longest day Between 82 and 94 days after the longest day	2 minutes	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G63	Between 93 and 81 days prior to the longest day Between 82 and 94 days after the longest day	2 minutes	6:13 AM and 6:26 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G64	Between 92 and 88 days prior to the longest day Between 89 and 93	1 minute	6:11 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and

	days after the longest day			site.
G65	Between 92 and 88 days prior to the longest day Between 89 and 93 days after the longest day	1 minute	6:12 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G66	Between 92 and 88 days prior to the longest day Between 89 and 93 days after the longest day	1 minute	6:12 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G67	Between 92 and 91 days prior to the longest day Between 91 and 93 days after the longest day	1 minute	6:12 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G68	Between 93 and 88 days prior to the longest day Between 89 and 94 days after the longest day	1 minute	6:12 AM and 6:25 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G69	Between 91 and 70 days prior to the longest day Between 70 and 91 days after the longest day	1 minute	6:15 PM and 6:31 PM	Area of site producing glint entirely screened by existing vegetation surrounding site and between receptor and site.
G70	Between 92 and 68 days prior to the longest day Between 69 and 92 days after the longest day	1 minute	6:14 PM and 6:31 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G72	29 days prior to the longest day – 30 days after the longest day	1 minute	5:57 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G74	51 days prior to the longest day – 51 days after the longest day	1 minute	5:55 PM and 6:28 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G75	Between 71 and 53 days prior to the longest day Between 54 and 72 days after the longest day	1 minute	6:17 PM and 6:25 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G76	Between 71 and 53 days prior to the longest day Between 54 and 72 days after the longest day	1 minute	6:17 PM and 6:25 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.

G77	Between 93 and 90 days prior to the longest day Between 90 and 93 days after the longest day	1 minute	6:11 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G78	Between 93 and 91 days prior to the longest day Between 90 and 93 days after the longest day	1 minute	6:12 PM and 6:29 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G79	Between 93 and 75 days prior to the longest day Between 75 and 93 days after the longest day	2 minutes	6:11 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G80	Between 93 and 75 days prior to the longest day Between 75 and 93 days after the longest day	2 minutes	6:12 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G81	Between 93 and 78 days prior to the longest day Between 77 and 93 days after the longest day	1 minute	6:11 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G82	Between 93 and 79 days prior to the longest day Between 79 and 93 days after the longest day	1 minute	6:11 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G83	Between 85 and 59 days prior to the longest day Between 60 and 85 days after the longest day	1 minute	6:15 PM and 6:26 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G84	Between 84 and 56 days prior to the longest day Between 57 and 84 days after the longest day	1 minute	6:15 PM and 6:27 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G85	Between 83 and 54 days prior to the longest day Between 55 and 83 days after the longest day	1 minute	6:16 PM and 6:27 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G86	Between 79 and 50 days prior to the longest day Between 50 and 79 days after the longest	1 minute	6:17 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.

	day			
G87	Between 75 and 42 days prior to the longest day Between 43 and 75 days after the longest day	1 minute	5:58 PM and 6:29 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
G88	Between 89 and 48 days prior to the longest day Between 49 and 89 days after the longest day	2 minutes	5:58 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G89	Between 93 and 53 days prior to the longest day Between 53 and 93 days after the longest day	3 minutes	6:12 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G90	Between 93 and 59 days prior to the longest day Between 59 and 92 days after the longest day	3 minutes	6:13 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G91	Between 93 and 62 days prior to the longest day Between 63 and 92 days after the longest day	3 minutes	6:13 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G92	Between 93 and 57 days prior to the longest day Between 57 and 93 days after the longest day	3 minutes	6:12 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G93	Between 90 and 50 days prior to the longest day Between 51 and 90 days after the longest day	2 minutes	6:13 PM and 6:28 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G94	Between 93 and 60 days prior to the longest day Between 60 and 92 days after the longest day	3 minutes	6:13 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G95	Between 93 and 67 days prior to the longest day Between 68 and 92 days after the longest day	1 minute	6:12 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G96	Between 93 and 62 days prior to the longest day Between 63 and 93	3 minutes	6:13 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and

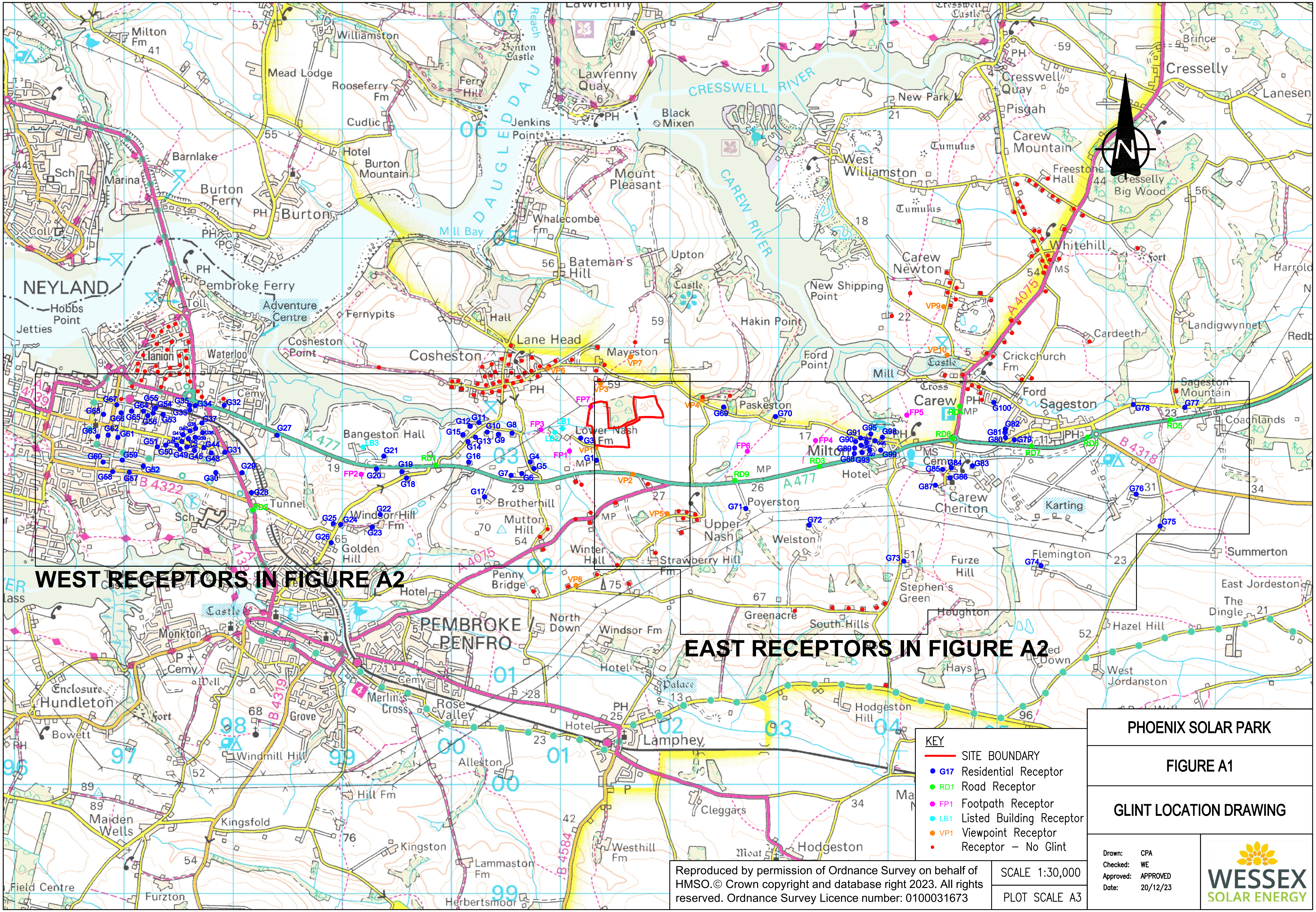
	days after the longest day			site.
G97	Between 92 and 54 days prior to the longest day Between 55 and 91 days after the longest day	3 minutes	6:12 PM and 6:28 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G98	Between 93 and 66 days prior to the longest day Between 67 and 93 days after the longest day	3 minutes	6:13 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G99	Between 92 and 56 days prior to the longest day Between 57 and 92 days after the longest day	3 minutes	6:13 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
G100	Between 93 and 91 days prior to the longest day Between 90 and 93 days after the longest day	1 minute	6:12 PM and 6:29 PM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
RD 1	Between 82 and 32 days prior to the longest day Between 33 and 83 days after the longest day	2 minutes	5:49 AM and 6:21 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
RD 2	Between 67 and 42 days prior to the longest day Between 44 and 69 days after the longest day	1 minute	5:54 AM and 6:25 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
RD 3	Between 82 and 20 days prior to the longest day Between 21 and 82 days after the longest day	2 minutes	5:56 PM and 6:30 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
RD 4	Between 93 and 88 days prior to the longest day Between 88 and 92 days after the longest day	1 minute	6:13 PM and 6:29 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
RD 5	Between 93 and 86 days prior to the longest day Between 86 and 93 days after the longest day	1 minute	6:11 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
RD 6	Between 93 and 79 days prior to the longest day	2 minutes	6:11 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and

	Between 79 and 93 days after the longest day			between receptor and site.
RD 7	Between 93 and 73 days prior to the longest day Between 73 and 93 days after the longest day	2 minutes	6:11 PM and 6:28 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
RD 8	Between 93 and 72 days prior to the longest day Between 72 and 93 days after the longest day	2 minutes	6:12 PM and 6:29 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
RD 9	54 days prior to the longest day – 55 days after the longest day	3 minutes	5:57 PM and 6:29 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
LB 2	91 days prior to the longest day – 92 days after the longest day	3 minutes	5:47 AM and 6:22 AM	Site entirely screened by existing vegetation and buildings surrounding site and between receptor and site.
LB 3	Between 92 and 65 days prior to the longest day Between 67 and 93 days after the longest day	3 minutes	6:11 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
FP 2	Between 77 and 44 days prior to the longest day Between 45 and 78 days after the longest day	1 minute	5:54 AM and 6:24 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
FP 3	91 days prior to the longest day – 92 days after the longest day	4 minutes	5:45 AM and 6:22 AM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
FP 4	Between 93 and 50 days prior to the longest day Between 50 and 93 days after the longest day	3 minutes	6:12 PM and 6:29 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
FP 5	Between 92 and 82 days prior to the longest day Between 82 and 92 days after the longest day	1 minute	6:13 PM and 6:30 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.
FP 6	89 days prior to the longest day – 89 days after the longest day	4 minutes	5:58 PM and 6:31 PM	Site entirely screened by existing vegetation surrounding site and between receptor and site.

Figures

A1 : GLINT LOCATION DRAWING

A2: GLINT LOCATION DRAWING - RECEPTORS EAST + WEST



SCALE 1:30,000	PLOT SCALE A3

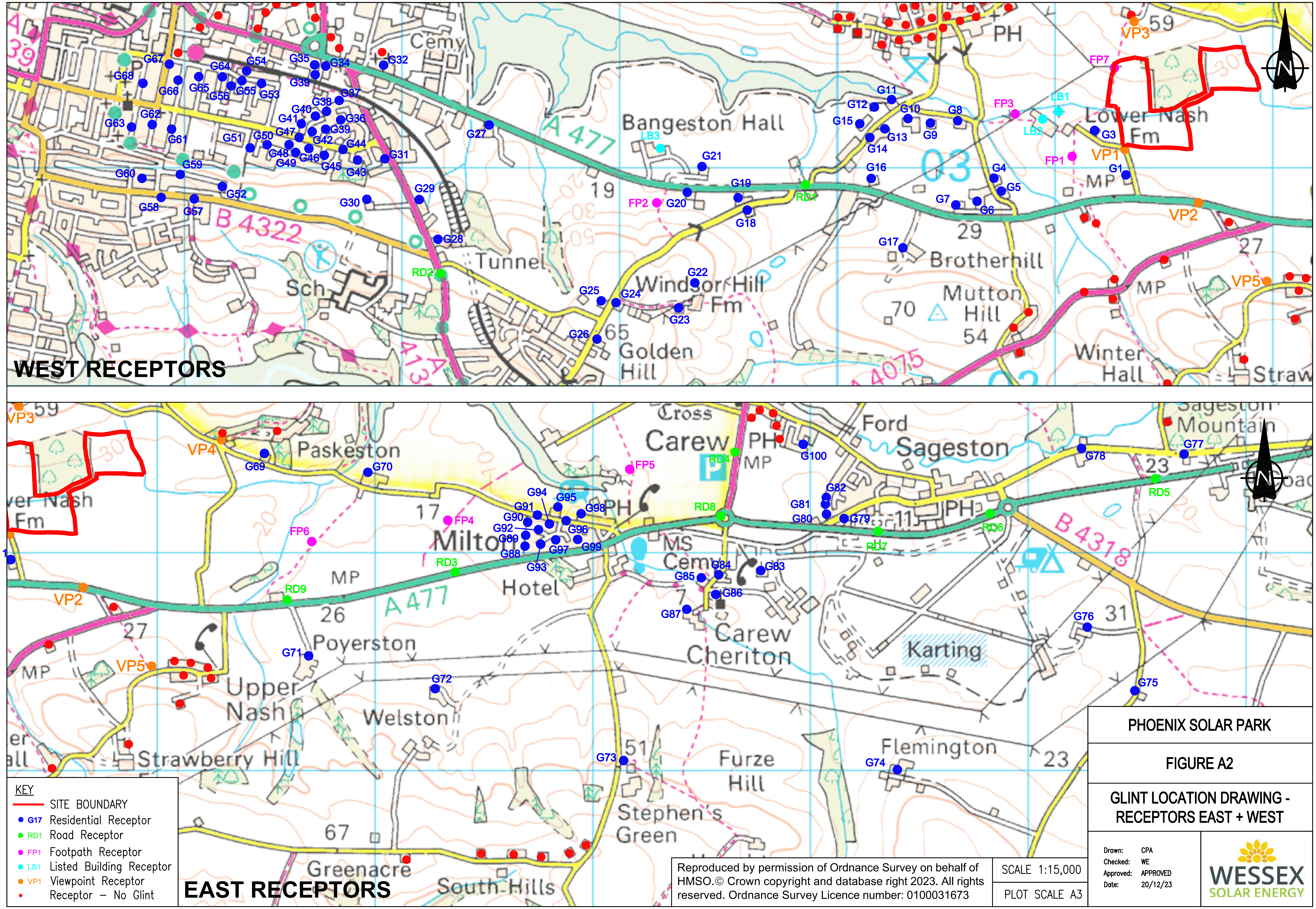
PHOENIX SOLAR PARK

FIGURE A1

GLINT LOCATION DRAWING

Drawn: CPA
Checked: WE
Approved: APPROVED
Date: 20/12/23

WESSEX SOLAR ENERGY



PHOENIX SOLAR PARK

FIGURE A2

GLINT LOCATION DRAWING - RECEPTORS EAST + WEST

SCALE 1:15,000

PLOT SCALE A3

Drawn: CPA
Checked: WE
Approved: APPROVED
Date: 20/12/23

WESSEX SOLAR ENERGY