Renewable Energy Planning Guidance Note 2

The development of large scale (>50kW) solar PV arrays

ASHFORD
BOROUGH COUNCIL

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Version History			
Date	Version	Author/Editor	Comments
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Contents

The Development of Large Scale (>5OkW) Solar PV Arrays in Ashford Borough

This guidance document has been prepared to assist all parties involved in the renewable energy development process. The status of this document is that it has been approved by the Council's Cabinet and will advise decision makers when determining applications.

Introduction

This guidance note aims to provide planning advice in respect of solar photo voltaic (PV) installations with a capacity in excess of 50kW. Planning advice in respect of solar PV installations with a capacity of less than 50kW is provided within a sister document 'the Development of Domestic and Medium Scale Solar PV arrays of up to 50kW in Ashford Borough'.

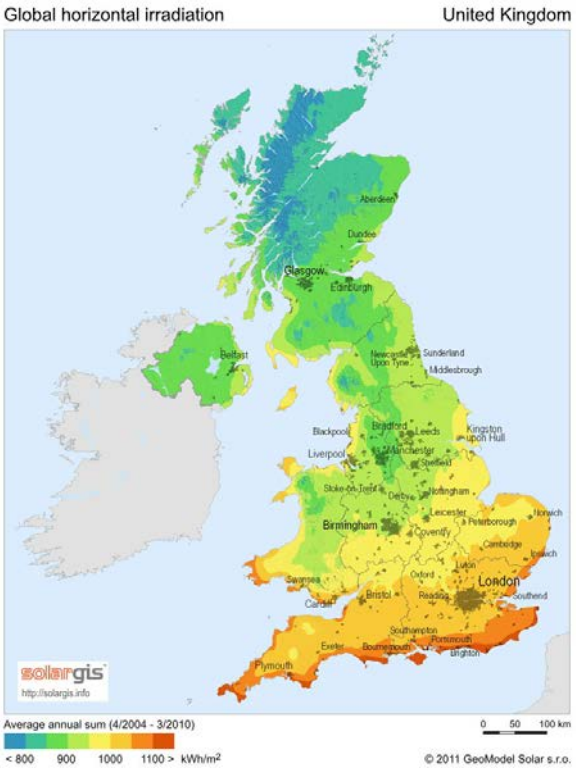
These guidance notes will be regularly reviewed and updated and can be viewed on our website at **www.ashford.gov.uk/renewableenergy**

We hope that you find this planning guidance useful but if you have any queries please do not hesitate to contact the Planning help line at **planning.help@ashford.gov.uk** or ring 01233 331111.

We continuously seek to improve the quality of the advice and guidance that we offer and we would be happy to receive comments, suggestions, or images which may improve this guidance document.

Solar PV in the UK

The **map**, right, shows the global irradiation and solar electricity potential for the UK. The greatest irradiation is within the south of England.



Large, grid-connected solar PV power plants

Large, centralised solar PV power systems, mostly at the multi- megawatt scale, have been built to supply power for local or regional electricity grids in a number of countries including Germany, Switzerland, Italy and also in Cornwall.

Feed in Tariff

The Feed in Tariff (FiT) essentially provides developers with a financial subsidy towards solar PV. The tariff for solar PV is index linked and guaranteed for 25 years. The original FiT for solar PV has been subject to a review which has subsequently had a significant impact on the development of large scale solar PV installations within the UK.

Government Guidance

The National Planning Policy Framework confirms the government's commitment to sustainable development with one of the core planning principles being to

"support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy);"

Further detailed guidance is available in **Planning practice for renewable and low carbon energy** published by the DCLG in July 2013 and identifies particular factors that Ashford Borough Council will need to consider when determining applications for large scale solar farms as

1. *encouraging the effective use of previously developed land, and if a proposal does involve greenfield land, that it allows for continued agricultural use and/or encourages biodiversity improvements around arrays*
2. *that solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use*
3. *the effect on landscape of glint and glare (see guidance on landscape assessment at paragraphs 39-40) and on neighbouring uses and aircraft safety*
4. *the extent to which there may be additional impacts if solar arrays follow the daily movement of the sun*
5. *the need for, and impact of, security measures such as lights and fencing*
6. *great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting. As the significance of a heritage asset derives not only from its physical presence, but also from its setting, careful consideration should be given to the impact of large scale solar farms on such assets. Depending on their scale, design and prominence, a large scale solar farm within the setting of a heritage asset may cause substantial harm to the significance of the asset*
7. *the potential to mitigate landscape and visual impacts through, for example, screening with native hedges*

8. *the energy generating potential, which can vary for a number of reasons including, latitude and aspect*

Paragraphs 39 and 40 say

"39 Cumulative landscape impacts and cumulative visual impacts are best considered separately. The cumulative landscape impacts are the effects of a proposed development on the fabric, character and quality of the landscape; it is concerned with the degree to which a proposed renewable energy development will become a significant or defining characteristic of the landscape.

40 Cumulative visual impacts concern the degree to which proposed renewable energy development will become a feature in particular views (or sequences of views), and the impact this has upon the people experiencing those views. Cumulative visual impacts may arise where two or more of the same type of renewable energy development will be visible from the same point, or will be visible shortly after each other along the same journey. Hence, it should not be assumed that, just because no other sites will be visible from the proposed development site, the proposal will not create any cumulative impacts."

This Guidance note provides more information for potential developers and explains the approach to handling applications that Ashford Borough Council will take.

Planning Application considerations

a) Pre-Application Discussions

Potential applicants are strongly encouraged to enter into pre-application discussions with the Council. We will want to involve the local parish council in any discussions in accordance with our **Parish Protocol**

b) Environmental Impact Assessment (EIA)

Large scale solar PV arrays are not expressly listed in Schedule 2 to the EIA Regulations 2011; however it is quite possible such developments could have a likely significant effect on the environment. In the absence of any express listing the Authority applies a broad and purposive approach to the issue of EIA. To date the large scale solar PV developments in the UK in rural areas are typically on agricultural land. In this context solar PV developments appear similar to greenhouses and therefore the Council considers that development listed in A2 of Annex A to the EIA Circular 02/99 would closely follow the approach below:

"Development (such as greenhouses, farm buildings etc.) on previously uncultivated land is unlikely to require EIA unless it covers more than five hectares. In considering whether particular development is likely to have significant effects, consideration should be given to impacts on the surrounding ecology, hydrology and landscape'. In addition to the above description the Council will also screen under paragraph A11 (power stations)."

c) Screening

As a starting point the proposal should be assessed against the selection criteria in Schedule 3 of the EIA Regulations. In general, EIA is likely to be needed for Schedule 2 developments if the solar PV development is in a particularly environmentally sensitive or vulnerable location.

In each case it will be necessary to judge whether the likely effects on the environment of that development will be significant in that particular location. In judging whether the effects of a development are likely to be significant it is necessary to have regard in particular to the visual impact of the development on landscape character and how this will be affected by the installation of a solar farm development, and also the possible cumulative effect with any existing or approved development. This should include situations where there is more than one application for solar PV development which should be considered together. Any views expressed by consultees should be taken into account. Advice should be sought from consultees where there is any doubt about the significance of a development's likely effects on a 'sensitive area' as defined in the EIA Regulations.

d) Planning Application Fee

There is no national guidance on the fee category for solar PV installations. The Development Management Team considers that such applications fall within Category 5 of the Town and Country Planning (Fees for Applications and Deemed Applications) (Amendment) (England) Regulations 2008. This category, for the erection, alteration or replacement of plant or machinery, imposes a fee of £335 for each 0.1ha up to 5ha. Where the site exceeds 5ha the fee would be £16,565; plus an additional £100 for each additional 0.1ha, subject to a maximum total of £250,000.

A 15ha solar PV facility (the average size of a 5 MW system) would therefore attract a planning application fee of; £16,565 (for 5ha) + £100 for each additional 0.1ha = (£10,000). Giving a total of £26,565.

The planning application boundary, and planning application fee, relates to the site area. If the solar PV panels are close to a field boundary and there is an existing or proposed fence the planning application area should reflect these field boundaries. If the solar PV panels are some way away from the field boundaries (e.g. >50m) where a separate fence is proposed the planning application boundary should extend around the proposed solar PV panels with a separate planning application area extending around the fenced area. In such instances it would be unreasonable for the application area (and planning application fee) to include relatively large tracts of field where no development is proposed. Where no fence is proposed and solar PV panels are positioned in the middle of a field well away from the field boundaries the planning application boundary should be drawn around the proposed array and any immediate ancillary works e.g. access tracks. It is for the applicant to ensure that all proposed development is included within the boundary of the planning application.

A planning application will not be registered until the correct planning application fee has been received by Ashford Borough Council.

e) Full Planning Application

Outline planning permission cannot be granted for a planning application submitted in category 5 of the above fee regulations. Only detailed planning applications will therefore be validated. Some matters, such as the exact dimension/model of solar panel, may be 'reserved' but sufficient detailed information should accompany any planning application to allow the Local Planning Authority to fully determine such an application.

f) Site Levelling Works

Development of the 5MW Trenouth solar PV farm, Cornwall. Images courtesy of Low Carbon Solar Partners

Consideration should be given to the existing site contours. If any site levelling works are proposed to facilitate the development of a solar PV array the extent of these levelling works should be discussed at the pre-application stage and detailed within any planning application.

g) Development in Relation to Current Land Use

Ideally large scale solar PV arrays should be directed towards previously developed land / brownfield sites, contaminated land, industrial land. There are few sites of appropriate status and size in Ashford Borough. Large scale solar PV arrays should avoid landscapes designated for their natural beauty, sites of acknowledged/recognised ecological/archaeological importance/interest. It is therefore likely that such development will look to land currently in agricultural use.

The development of a 1.4MW solar PV farm on land adjacent to the Hendra Holiday Park, Newquay will greatly assist in meeting the electricity demand of this facility. Images courtesy of Hendra Holiday Park.

h) Assessment of the Impact upon Agricultural Land

The National Planning Policy Framework indicates that

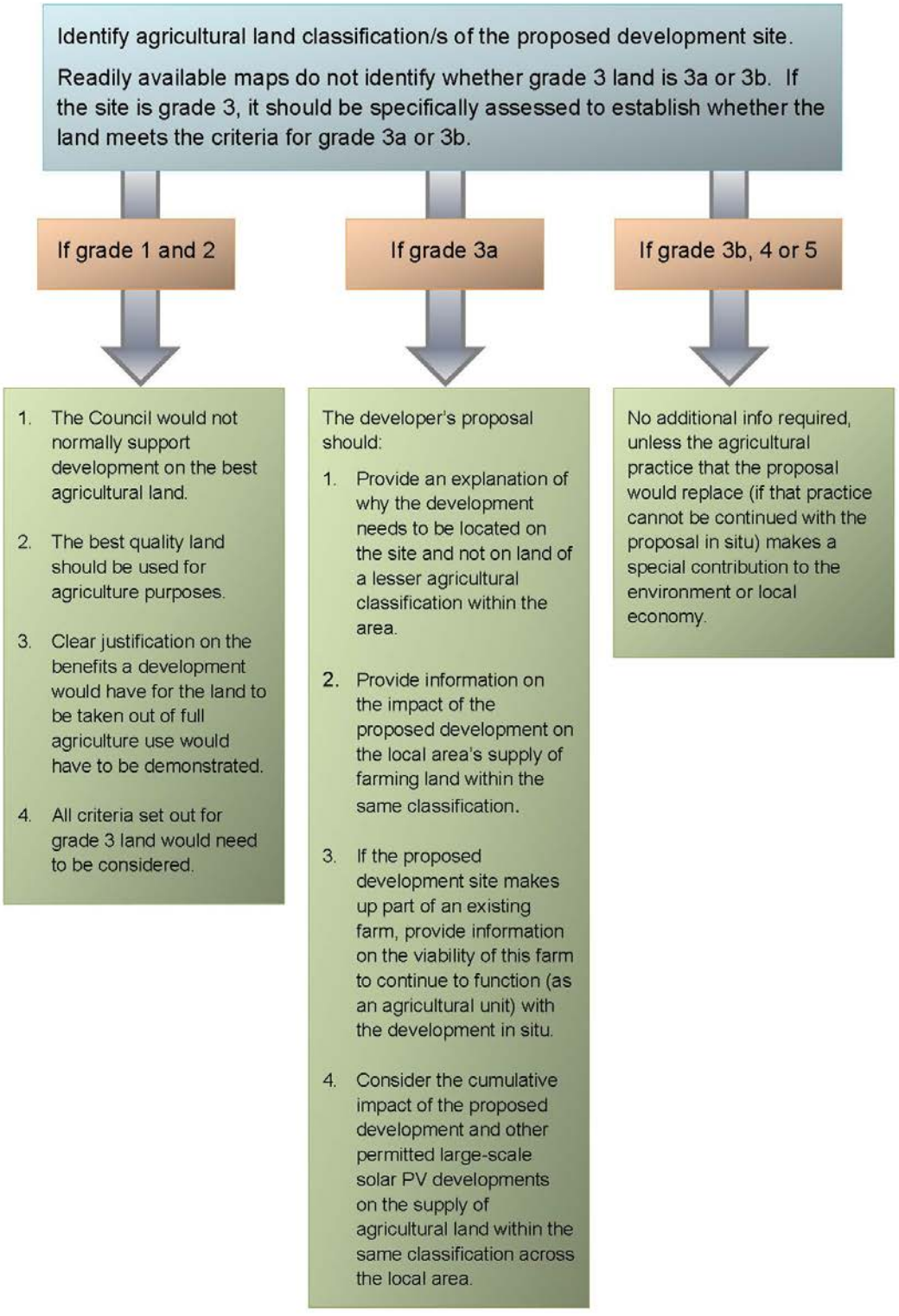
"Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality."

The presence of the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) will therefore be a significant issue in the determination of applications to be taken into account alongside other sustainability considerations.

Construction of a 1.4MW solar PV farm at the former tin mine site at Wheal Jane, Cornwall. Such sites should generally be considered for such development in preference to agricultural land.

This position should be taken into account when identifying sites for large scale solar photovoltaic development. The following steps should be undertaken by the developer when considering locating a large scale solar photovoltaic development on agricultural land. If a planning application is subsequently submitted it should be accompanied by the relevant information detailed in the steps below.

Ashford Borough Council's steps for developers on agricultural land classification



i) Ground Maintenance

Vegetation will grow under the solar panels and this will require management, particularly to avoid the site becoming overgrown with noxious weeds and assist with the eventual restoration of the site, normally to agriculture. There are various techniques for managing the vegetation, these include mowing, strimming, spraying or mulching.

Sheep and cattle grazing under solar PV arrays. Support structures, and the height of panels, would need to be substantial i n order to allow cattle grazing and would not ordinarily be recommended. Images courtesy of Steve Edmunds, Mole Valley Renewables.

Spraying should be avoided wherever possible and mulching large areas is likely to present technical challenges and may add to the landscape/visual impact of a development proposal. Few of these management techniques are regarded as sustainable, particularly on sites up to 15ha, and there is a desire, both in terms of food production and the rural scene, to continue an agricultural use on the site.

Grazing is therefore to be encouraged wherever practicable. Cattle, horses, pigs and goats are likely to be too 'physical' with the solar PV arrays but sheep, chickens or geese should be acceptable. In order to facilitate grazing within the solar farm it is advised that solar panels are positioned at least 900mm above ground level and all cabling etc. is suitably protected.

Adequate spacing between rows of panels is necessary to avoid overshadowing. Vegetation will grow between these rows and this vegetation will require management. The image to the right shows the 1.4MW Wheal Jane solar PV farm, Cornwall. Image courtesy of Lightsource Limited.

j) Construction Compound

The development of a large scale solar PV array will require the delivery and storage of construction materials, plant, machinery and office/welfare accommodation. It is therefore likely that a temporary construction compound will be required. Such compounds should be carefully located in order to minimise environmental or amenity impact and any planning application should contain details of their size and location. Topsoil and subsoil should be stripped from such areas and stored on site for replacement following the completion of construction works. Details of such soil stripping, storage and replacement should be contained within any planning application, together with the anticipated life of the construction compound.

Case Study 1

Wheal Jane, Truro, Cornwall

Ref: PA10/03993

The 1.55 MW Wheal Jane solar PV farm in Cornwall under construction in Spring 2011. Image courtesy of Lightsource Limited.

Background

The site of the former Wheal Jane Mine is located approximately 5km south west of Truro and 8km north east of Penryn in the heart of one of Cornwall's historic mining areas and within a predominantly rural, rolling landscape characterised by scattered settlements associated with early mining activities and farming. The mining and processing of tin at the site ceased in 1991. A treatment facility located at the site currently treats mine water, removing heavy metals with resultant residues being deposited in a large tailings dam at the site. The site is host to a range of companies that specialize in mining, minerals processing, civil engineering and providing employment for approximately 150 staff. An agreed 'Masterplan Framework' sought to develop the site into an 'earth science cluster', providing renewable energy technologies that would utilise natural resources at the site and provide new office accommodation and related infrastructure.

A planning application was subsequently submitted for the development of a 1.55MW 'solar farm at the site. This would involve the installation of 5,760 solar PV panels on a site of 3.88ha with associated inverters, substation and security fencing. The planning application sought planning permission for a period of twenty five years.

Issues & Mitigation

Landscape & Visual Impact

Views from visual receptors close to the site would be limited to glimpses above and between intervening vegetation. The existing topography would minimise views from the closest highway. Distant views would be limited and the development would appear as a small feature in such long distance views. Appropriate soft landscaping and habitat creation would integrate the site within the local countryside and appropriate boundary fencing was secured by planning condition.

Ecology

An ecological impact assessment was submitted in support of the planning application. This identified impacts with the potential to arise from both the construction and operational periods particularly vegetation clearance, construction activities, lighting and the operational phase. It was concluded that the proposed development would not have an unacceptable ecological impact, and indeed offered the potential for ecological benefit.

Case update: The Wheal Jane solar farm was the first to be granted planning permission in the UK. The site became operational in summer 2011.

k) Soil stripping, Storage and Replacement

The development of a large scale solar installation is likely to require the excavation of soils associated with construction compounds, access roads, cable trenching etc. Where such soil stripping occurs topsoil and subsoil should be stripped, stored and replaced separately in order to minimise soil damage and to provide optimal conditions for site restoration. Any planning application should contain a methodology for soil stripping, storage and replacement and this methodology should subsequently be adhered to during site development.

The construct on compound associated with the development of the 5MW Trefullock solar PV farm in Cornwall

Soil excavation during cable trenching at the 5MW Trefullock solar PV farm in Cornwall. Note how topsoil and subsoil are stored on opposite sides of the cable trench in order to avoid the mixing of soil types and facilitate subsequent soil replacement and site restoration.

l) Access Tracks

Solar PV facilities which are developed on agricultural land should:

- aim to minimise disturbance to the agricultural land;
- be temporary, capable of removal and 'reversible'; and
- minimise their landscape/visual impact and their impact on the rural scene.

The installation and use of access tracks should therefore be kept to an absolute minimum. Access tracks between rows of solar panels will generally not be acceptable. Agricultural vehicles, including tractors, quad bikes and 4WD, should be capable of servicing these facilities without the need to construct access tracks.

Buffer strips of 5m+ between hedges and solar panels could be used for access purposes while also providing access for hedge management and biodiversity.

m) Security Fencing/Lighting

Applicants will be expected to direct considerable effort towards minimising the landscape/visual impact of solar PV arrays. Whilst there is an acknowledged need to ensure solar PV facilities are adequately secured it would be unfortunate if such security measures resulted in an unacceptable landscape/visual impact. Applicants should:

- minimise the use and height of security fencing;
- utilise existing features, such as hedges or landscaping, to screen security fencing;
- use natural features, such as vegetation planting, to assist in site security;
- minimise the use of security lighting. Any lighting such utilise a passive infra-red (PIR) technology and should be designed and installed in a manner which minimises glare, light pollution and impacts on biodiversity, in particular bats (see ecology section).
- Ensure that appropriate measures are in place to facilitate continued access by larger mammals, such as badgers and foxes.

Close welded mesh panel fencing, as shown here at the Wheal Jane solar farm, generally has a low landscape/visual impact while also being versatile and providing a good level of site security

In some instances specialist fencing may be necessary in order to prevent access by deer. Such deer fencing can be much less intrusive than other forms of fencing and should be considered where possible.

Photo courtesy of The Green Company

Planning applications should contain full details and specifications of all security and lighting installations in order to allow an accurate landscape/visual/ecological assessment of the proposal to be made.

Where pole mounted CCTV facilities are proposed the location of these facilities should be carefully considered in order to minimise visual/landscape impact. In exposed landscapes such structures should be avoided where possible.

Further Security Advice from the Police is provided in Appendix E.

Any security equipment, such as this CCTV system, should be as discrete as possible in order to minimise its visual and landscape impact.

n) Ground Anchors

Solar PV facilities which are developed on agricultural ground should be 'reversible', allowing the site to be easily restored to a more intensive agricultural use.

Intrusive development, such as trenching and foundations, should therefore be minimised and the use of concrete should be avoided. Solar PV arrays should be installed using 'pile' driven or screw foundations, or pre-moulded concrete blocks (shoes), and capable of easy removal.

The ground anchors and framework associated with the development of the1.4MW Benbole solar PV farm in Cornwall

Where there are areas of archaeological interest, and therefore a need to avoid ground disturbance, the use of pre-cast concrete anchors should be considered, as shown here at the 5MW Trefullock solar PV farm in Cornwall

Where pile driven foundations are proposed consideration should be given to the noise impact at nearby sensitive receptors. Difficult ground conditions, such as those encountered at the 1.4MW Wheal Jane solar PV farm shown here, may also require drilling.

Where 'pile' driven foundations are proposed applicants should ensure that such development would not exceed statutory noise levels at any nearby noise sensitive properties.

o) Tracking

Some solar PV arrays will follow the daily movement of the sun across the sky in order to take maximum advantage of the solar gain. These systems are known as 'trackers' and, although they maximise solar gain, they are expensive to install and maintain. Some solar PV arrays will be static. These are less expensive to install and maintain but, because they do not follow the suns movement, they are not as efficient as 'trackers'. A compromise is reached with some solar arrays which are generally static but can be moved quarterly to reflect seasonal changes in the movement of the sun across the sky. The type of solar PV array installed, and the extent of any 'tracking', will have an impact on the landscape/visual assessment and the planning application should clearly indicate the type of array proposed.

The impact of 'trackers' on grazing animals such as sheep should be carefully considered to avoid such animals becoming trapped in any moving parts.

p) Grid Connection

Any buildings required in order to house electrical switchgear inverters etc should be designed and constructed in order to minimise their landscape and visual impact and should typically be of an 'agricultural style, clad with timber or local stone.

The capacity of the electrical grid network in Ashford Borough may be one of the greatest constraints to the development of solar PV farms. Such development is likely to be attracted to suitable sites within 2km of an existing electrical substation with sufficient capacity to accommodate the additional electrical supply. There is likely to be considerable interest in some areas and electricity substations may be unable to accommodate all development interest. It is likely that developers will have approached the relevant power distribution network provider to evaluate sites as part of the pre- application process.

Application proposals should provide a broad indication of the route of connectivity to the electrical grid. Such connectivity should avoid areas of high landscape, ecological or archaeological sensitivity.

q) Landscape/visual impact

The landscape/visual impact of a solar PV park is likely to be one of the most significant impacts of such development.

The 5MW Howton solar PV farm in Cornwall. Image courtesy of Lightsource Limited

Developers may be attracted to southerly sloping sites, where solar gain is greatest. However such sites may be of high agricultural value and are likely to be more visible within the wider landscape.

Howton 5MW solar PV farm, Cornwall. Image courtesy of LowCarbon Solar Partners.

Solar farms are regarded as a temporary use of land (refer to Duration of Planning Permission at the end of the Guidance) and as such the removal

of existing vegetated field boundaries, including hedges will not be permitted as this will irrevocably alter the landscape character of the site.

The development will need to have regard in both its design layout, and future maintenance plans for the retention of growth of vegetation on these important boundaries, including the opportunity for individual trees within the boundaries to grow on to maturity.

The 5MW Howton solar PV farm in Cornwall. Image courtesy of Lightsource Limited.

The landscape/visual impact must be considered with great care at the pre-application stage and mitigation measures proposed wherever necessary. Guidance to the information which should be provided within a Landscape and Visual Impact Assessment is covered in Appendix A. Information on **landscape character** assessment within Ashford Borough can be found at **http://www.ashford.gov.uk/landscape-character-spd**

Existing hedges and established vegetation, including mature trees, should be retained wherever possible. Trees and hedges should be protected during construction. The impact of the proposed development on established trees and hedges should be informed by a tree survey (to BS 5837) and/or a hedge assessment as appropriate.

The 5MW Trefullock solar PV farm, Cornwall

Construction of the 1.4MW solar PV farm on land adjacent to the Hendra Holiday Park, Newquay. Images courtesy of Hendra Holiday Park.

A soil mound, less than 2m high, can sometimes assist in reducing the visual/landscaping impact of a proposed solar installation. There is a need to ensure that the screening mound itself does not have a detrimental visual/landscape impact and consideration should be given to the vegetation management. This mound has been carefully designed to allow sheep grazing. Installation at the Olde House, Chapel Amble, Cornwall.

Cumulative Impact

Ashford Borough Council maintains a record of all EIA Screening requests received in respect of proposals for large scale solar PV installations and a record of all planning decisions. Prospective applicants are advised to contact the Council to review these records at an early stage in order that, where necessary, the issue of cumulative impact for such development can be considered and addressed when preparing any planning application.

Careful consideration should be given to the impact of existing or proposed vegetation in order to ensure that any resultant shading of solar panels does not result in the future pruning or felling of such vegetation

r) Ecology

Solar arrays could have implications for habitat loss, fragmentation and modification and for displacement of species. The nature of impacts will depend on the ecological characteristics and features of the site and sensitivity to proposed changes. Schemes may reduce habitat and habitat suitability for some species, but may also be capable of integrating different uses of land and delivering environmental gains. The NPPF sets out the national approach to conserving and enhancing the natural environment. It will be important to consider impacts that could take place through the construction, operation and decommissioning stages of a scheme.

The most important thing to get right with respect to ecology is choosing an appropriate location. Intensively managed agricultural land is likely to be of least ecological interest and therefore most suitable, in ecological terms, for solar PV farms.

Design should be informed and influenced by ecological assessments (phase 1 habitat surveys, protected species surveys etc). Issues that may need particular assessment include ground nesting birds, wintering birds, bats, dormice, reptiles and badgers. The use of an advising ecologist throughout the design process can ensure that adverse impacts are mitigated and biodiversity enhancements are maximised. (NB. Protected species surveys are season-dependent so contacting an ecologist at a very early stage is advisable).

The assessment will need to include a 'desk study' for existing ecological records, an evaluation of the likely impacts of the solar PV farm upon ecological features, specify mitigation to avoid/minimise these impacts and list any further surveys required. The main impacts and mitigation requirements are likely to be:

Lighting - security lighting may affect bats. It is advised that lighting is not used unless absolutely necessary. If lighting is necessary it must be minimised and directed away from hedges/woodland/scrub. A bat survey will be needed to inform any other mitigation required and indeed whether lighting would be allowable on site.

Cables - overhead and underground cables have the potential to adversely impact upon biodiversity. Cable routes need to be carefully designed in consultation with the consulting ecologist.

Construction - we advise hedges are fully retained and no new hedge breaks are created. If any hedges/scrub are to be removed, further surveys including for dormice and reptiles may be necessary. Pile driving may affect any badgers nearby; this will need to be informed by a badger survey and a licence may be necessary.

Fencing - we advise that large buffer strips (at least 5m) are left between perimeter fencing and existing hedges. The fencing must allow badgers, reptiles and other fauna access into the site (whilst retaining grazing sheep).We advise a gap to allow small mammals and reptiles access is left around the entire base of the fence, with larger gaps or gates for badgers at suitable intervals.

Kobern-Gondorf facility solar PV facility, in Germany, is used as a nature reserve for endangered species of flora and fauna

Enhancement, Management and Monitoring

Solar PV farms have the potential to increase the biodiversity value of a site if the land was previously intensively managed. Sheep grazing or an autumn cut with removal of grass cuttings could increase the botanical diversity of the site. The ecological consultant should specify a suitable management regime for each case, bearing in mind shading by the solar panels. Hedges should be managed appropriately and could be laid to reduce gaps.

Proposed enhancements should build upon and extend existing habitats or create new important habitats e.g.: cultivated strips/plots for rare arable plants, rough grassland margins, bumble bee plant mixes, wild bird mixes, etc.

It is advised an ecological monitoring programme is developed to monitor impacts upon the flora of the site and upon any particular features (e.g. bats, wintering birds). Results of the monitoring will then inform any changes needed to the management/grazing regime

A 5m buffer strip between the field boundary and any fencing will allow access for maintenance purposes, minimise damage to the field boundary and provide an access corridor for wildlife.

Checklist for advising on potential nature conservation impacts:

- Could the development site, alone or cumulatively, have impacts on a designated site and its objectives or designation?
- Is the site (habitat/species) sensitive to changes likely to result from a solar PV scheme?
- Can the site successfully integrate land uses and deliver environmental benefits?
- Are proposed mitigation measures adequate and likely to be effective?
- Is post-construction monitoring necessary?
- Have impacts been properly assessed in the EIA/HRA or other environmental assessment? Do we agree with the conclusions?
- Are there opportunities for environmental enhancement, such as creation of new natural screening features or management of the land/margins for conservation purposes?
- Are enhancement measures appropriate and do they contribute to wider aims in the area, such as Biodiversity Action Plan (BAP) action plans?

Solar farms therefore can offer the opportunity to increase biodiversity and hence it is desirable to maximise the environmental benefit to the land where they are located. Recent (September 2011) guidance produced by Natural England Technical

Information Note TIN101 "Solar parks: maximising environmental benefits" **http://publications.naturalengland.org.uk/publication/32027** offer more detailed advice on this aspect of solar farm development.

s) Historic Environment

The impacts of solar PV developments on the historic environment will require expert assessment in most cases. Solar developments may affect heritage assets (sites, monuments, buildings and landscape) both above and below ground. Above ground impacts may include the effects of applications on the setting of Listed Buildings and Scheduled Monuments as well as

on the Historic Landscape Character of the area. Below ground impacts may include direct impacts on archaeological deposits through ground disturbance associated with trenching, foundations, fencing, temporary haul routes etc.

Ashford Borough Council will expect all proposals to have been informed by a consultation with the Historic Environment Record (HER) maintained by Kent County Council. Any application should identify the presence of both designated and undesignated heritage assets which may be affected by any development and identify if there will be a requirement for further information to support an application. If such a requirement is identified we will expect applicants who wish to proceed with such sites to undertake a further consultation with Kent County Council who will advise on a brief for the required expert assessment or evaluation work.

The results of such assessments will be required as supporting information in advance of the validation of applications. Ashford Borough Council expects such assessments to follow the briefs set by the Historic Environment Service and to demonstrate the use of appropriately qualified professional expertise. Where assessments are absent or inadequate the Council may request further work to be undertaken in advance of determination. We will expect applications to take account of the results of historic environment assessments in their design, for instance through the sensitive planning of installations. Any opportunities to introduce better management of affected assets, or to improve the settings of designated sites, should be identified and this will be actively encouraged.

t) Drainage, Surface Water Run-off and Flooding

Due to the size of solar PV parks, planning applications will be expected to be accompanied by a Flood Risk Assessment. This will need to consider the impact of drainage. As solar panels will drain to the existing ground, the impact will not in general be significant. Therefore this should not be an onerous requirement.

However on sloping sites the concentration of run-off from panels could lead to run-off caused by the formation of gullying. This is more likely where the underlying soils are not naturally free draining, the site is steep and the arrays are installed up-and-down the slope, rather than along contours. Simple Sustainable Drainage Urban Drainage Systems (SUDS) drainage techniques, such as shallow swales or infiltration trenches, should be adopted to overcome this. These should aim to disperse the run-off at regular intervals to allow it to soak into the natural ground and prevent drainage paths forming straight down the slope. To avoid the concentration of flows, these should not necessarily be linked through the site but can be a series of short, contoured features.

Where access tracks need to be provided, permeable tracks should be used, and localised SUDS, such as swales and infiltration trenches, should be used to control any run-off.

Given the temporary nature of solar PV park sites should be configured or selected to avoid the need to impact on existing drainage systems and watercourses. Culverting existing watercourses/drainage ditches should be avoided. Where culverting for access is unavoidable, it should be demonstrated that no reasonable alternatives exist and where necessary only temporarily for the construction period.

u) Glint and Glare

Glint may be produced as a direct reflection of the sun in the surface of the PV solar panel. It may be the source of the visual issues regarding viewer distraction. Glare is a continuous source of brightness, relative to diffused lighting. This is not a direct reflection of the sun, but rather a reflection of the bright sky around the sun. Glare is significantly less intense than glint.

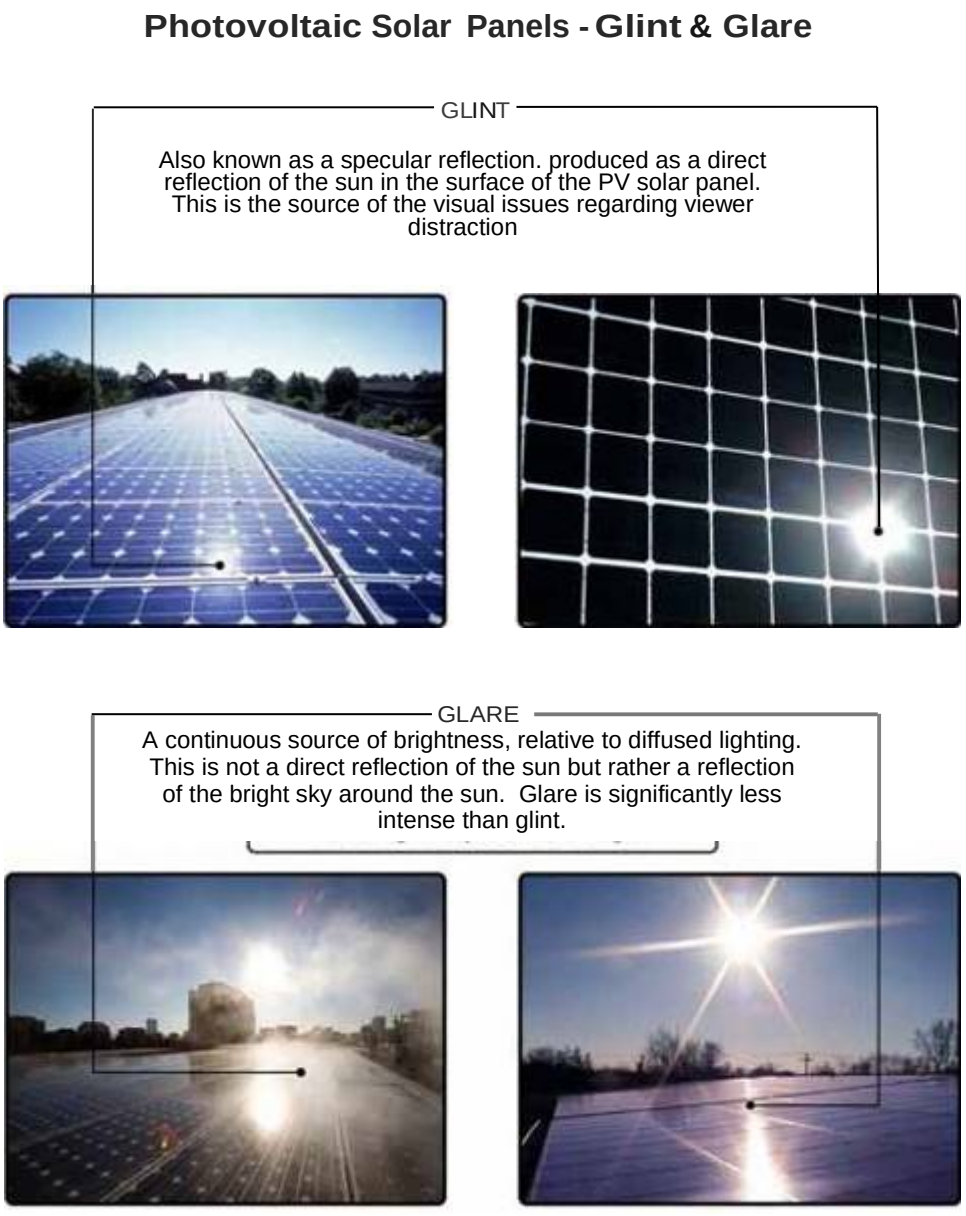


Figure 1

Solar panels are designed to absorb, not reflect, irradiation. However the sensitivities associated with glint and glare, and the landscape/visual impact and the potential impact on aircraft safety, should not be underestimated.

All applications should include a glint and glare assessment . This will be particularly important if 'tracking' panels are proposed as these may cause differential diurnal and/or seasonal impacts.

The potential for PV panels, frames and supports to have a combined reflective quality should be assessed. This assessment needs to consider the likely reflective capacity of all of the materials used in the construction of the solar farm

Solar PV facility adjacent to Saarbruecken airport

East Langford 5MW solar PV farm, Cornwall. Image courtesy of Low Carbon Solar

v) Community Involvement

Community Involvement - Community involvement should be considered as an integral part of the development process. The local community should be engaged, by the developer, at the pre-design, conceptual stage, ideally utilising a local exhibition/presentation where community views can be sought and recorded. A second exhibition/presentation should be arranged, by the developer, some weeks prior to submission of the planning application. This second consultation should allow sufficient time to seek community views/opinions, and take them into consideration, prior to the submission of any final planning application. Any planning application should detail the exhibitions/presentations, any views/representations received and how any planning application was influenced/amended to accord with such representations.

The developer may also wish to undertake an exhibition/presentation following the submission of a planning application.

Howton 5MW solar PV farm, Cornwall. Image courtesy of Low Carbon Solar Partners

W) Airport Safety

The Civil Aviation Authority (CAA) is seeking to develop its policy on the installation of solar photovoltaic systems and their impact on aviation. Further information may be viewed at; **http://www.caa.co.uk/homepage.aspx?catid=752**

x) Electricity Generating Capacity

Planning applications for commercial scale solar PV development should clearly indicate the installed capacity (MW) of the proposed facility. While it is accepted that the performance of the solar panels may degrade over time the initial installed capacity should be provided. The 'capacity factor' and estimated annual production (MWh p.a.) should also be provided together with the number of residential properties electricity equivalent for UK, south east and Ashford properties. A pro forma table, explaining these terms, is attached as Appendix B. This information will allow members of the public, and elected Members, to clearly understand the generating capacity of the proposed facility.

y) Duration of Planning Permission and potential conditions

The Feed in Tariff for solar PV applies for a period of 25 years. Solar farms should normally be regarded as a temporary use of land, and hence the need for 'reversibility', and the ability for all structures to be removed and the land returned to its original use. Planning permissions will normally;

- Need to be implemented within a period of three years
- Contain a timeframe for the completion of the construction and commissioning of the development
- Be for a temporary period only, and a maximum period of 25 years from the commissioning of the facility should be applied.
- Require the removal of all equipment and restoration of the land.

Planning applications should specify the length of time being applied for. A 25 year time limit will normally be imposed. Some typical conditions are listed in Appendix C.

Appendix A: Guidance on the information which should be provided within a Landscape and Visual Impact Assessment

It is vital that landscape considerations are embedded in the decision making process, as the most significant environmental effect of a development such as this, will be the impact on landscape character and visual amenity.

The question to be addressed is whether this solar farm scheme is likely to give rise to significant environmental effects on the landscape of Ashford Borough, and thereby whether the Environmental Impact Assessment Regulations apply to the application.

There are a number of elements associated with a solar farm development which have the potential to influence the significance of the impacts on landscape character and visual amenity :-

- Gradient of the site and the surrounding landform,
- Extent of the application site,
- Height and layout of the panels,
- Colour of the panel's surrounding frames,
- Treatment of the ground below and between the panels, for example to grow crops, graze livestock, or to lay down mulch to reduce maintenance,
- Perimeter fencing.

Landscape and Visual Impact Assessment – Third Edition – Landscape Institute and Institute of Environmental Management and Assessment 2011 provides advice on an appropriate approach to landscape assessment. The council would expect any application to be accompanied by an assessment based on the principles set out in this document.

Whether the EIA Regs are applied to the application or not, the impact of the proposal on landscape character and visual amenity needs to be examined through a comprehensive Landscape and Visual Impact Assessment. Such an assessment will need to cover the following detail:

1 Description of the development

- The need for the development set within local regional and national strategies;
- The timescale for construction, operation and decommissioning;
- The site's location and overall layout;
- Solar panel design and specification, method of construction /installation;
- Reasonable estimates of quantity and type of traffic which will be generated through construction and operation.

2 Site Description

- Description of the main reasons for the site selection and any alternatives in site design or layout which have been considered.
- Area of proposed land which the panels will occupy, clearly described and indicated on a map or diagram;
- Illustrated description of the land use of the surrounding area;
- Description of the policies plans and designations which are relevant to the proposal;
- Evaluation of the direct, indirect, secondary and cumulative, short medium and long term effects resulting from the existence of the development.

3 Landscape Baseline Conditions

- The current condition of the landscape;
- Ashford's Landscape Assessment 2011 provides the framework landscape character information, supplemented by a study to assess the specific impact of the development;
- Relationship of the site to any designated areas of landscape at a national, regional or local level, and to areas of landscape value or scenic quality.
- Description of all baseline date sources, and methods used to supplement this information;
- The landscape baseline should be evaluated in relation to its sensitivity and importance. The sensitivity evaluation of each landscape element should reflect its quality value, contribution to landscape character and the degree to which the particular element or characteristic can be replaced or substituted.

4 Predictions of Impact

- Assess the scale, or magnitude of change to the landscape and visual elements as a deviation from the baseline conditions for each phase of the proposal. Consideration will need to be given to visitor and resident populations, and seasonal variations;
- Provide a Zone of Theoretical Visibility (ZTV) diagram for the development indicating as a minimum 1km, 2km, and 4km radii from the site;
- The methods used to establish the magnitude should be clearly described and be appropriate and reasonable in relation to the importance of the landscape and visual impact;
- Where assumptions or unsupported data has been used in the predictions, these should be highlighted and accompanied by an indication of the reliability / confidence of those assumptions or data;
- Evaluation of the direct, indirect, secondary and cumulative, short medium and long term effects resulting from the existence of the development.

5 Impact Significance

- Clearly describe the judgements which underpin the attribution of significance;
- The assessment of significance should consider the impact's deviation from the established landscape baseline condition, the sensitivity of the landscape and receptors and the extent to which the impact will be mitigated or is reversible;
- The range of factors which are likely to influence the assessment of significance should be clearly identified;
- Provide detail of how these variables will affect the significance of the impacts over the life of the development;
- Identify the significance of impacts that remain following mitigation.

6 Mitigation

- Describe the measures proposed to avoid, reduce and if possible remedy significant adverse impacts on both landscape character and visual amenity;
- Provide an indication of the effectiveness of the stated measures;
- Clear indication of how the mitigation measures will be implemented.

7 Presentation of the Landscape and Visual Impact Assessment

- The document should be clear and logical in its layout and presentation and be capable of being understood by a non-specialist;
- It should be a balanced document providing an unbiased account of the landscape and visual effects, with reasoned and justifiable arguments;
- A glossary of all technical terms and full reference list should be provided;
- Plans, diagrams and visual representations should be provided to assist in the understanding of the development and its impact, and should be clearly labelled with all locations reference in the text.

8 Non-Technical Summary

1. A standalone document to be available to a non-specialist reader, to enable them to understand the landscape and visual impacts of the proposal;
2. To include a summary description of the development; the aspects of landscape character and visual amenity likely to be significantly affected; the likely significant effects; the mitigation measures to be implemented;
3. Include as a minimum the plans, maps and other visual representations which illustrate the location of the application site, the footprint of the development, and the location of key features.

Should you require any further advice or clarification of matters raised in this response, please contact **planning.help@ashford.gov.uk**

Appendix B: Electricity Generating Capacity

Planning applications for commercial scale solar PV development should be accompanied by the following information.

Installed capacity (MW) [1]	**Capacity factor** [2]	**Estimated annual production (MWh p.a.)** [3]	**Number of residential properties electricity equivalent** [4]

Notes:

[1] Installed capacity is the full-load, continuous rating of generating equipment under specific conditions as designated by the manufacturer. In other words, this is the power generated when the equipment is working at full capacity.

[2] Capacity factor is the calculated factor which compares the plant's actual production over a given period of time with the amount of power the plant would have produced if it had run at full capacity for the same amount of time. The capacity factor should take account of the specific equipment and the specific location. It is expressed as a percentage.

[3] Estimated annual production of electricity based upon the installed capacity and the capacity factor.

[4] Number of residential properties that would be powered by the estimated annual production based upon the U.K. average household consumption of 4,629 KWh/year,

Appendix C: Template Schedule of Planning Conditions for Standalone or Ground Mounted Solar PV Installations

1. The development hereby permitted shall be begun before the expiration of 3 years from the date of this permission.

   Reason: In accordance with the requirements of Section 91 of the Town and Country Planning Act 1990 (as amended by Section 51 of the Planning and Compulsory Purchase Act 2004).

2. Within 25 years and six months following completion of construction of development, or within six months of the cessation of electricity generation by the solar PV facility, or within six months following a permanent cessation of construction works prior to the solar facility coming into operational use, whichever is the sooner, the solar PV panels, frames, foundations, inverter modules and all associated structures and fencing approved shall be dismantled and removed from the site. The developer shall notify the LPA in writing no later than five working days following cessation of power production. The site shall subsequently be restored in accordance with the approved restoration scheme no later than three months following the cessation of power production.

   Reason: To ensure the achievement of satisfactory restoration.

3. Where details of any fencing or security measures have not been included with the planning application;

   Prior to the installation or erection of any fencing or security measures details of such infrastructure shall be submitted to, and agreed in writing with, the Local Planning Authority.

   Reason: To minimise the landscape, visual and environmental impact of the development.

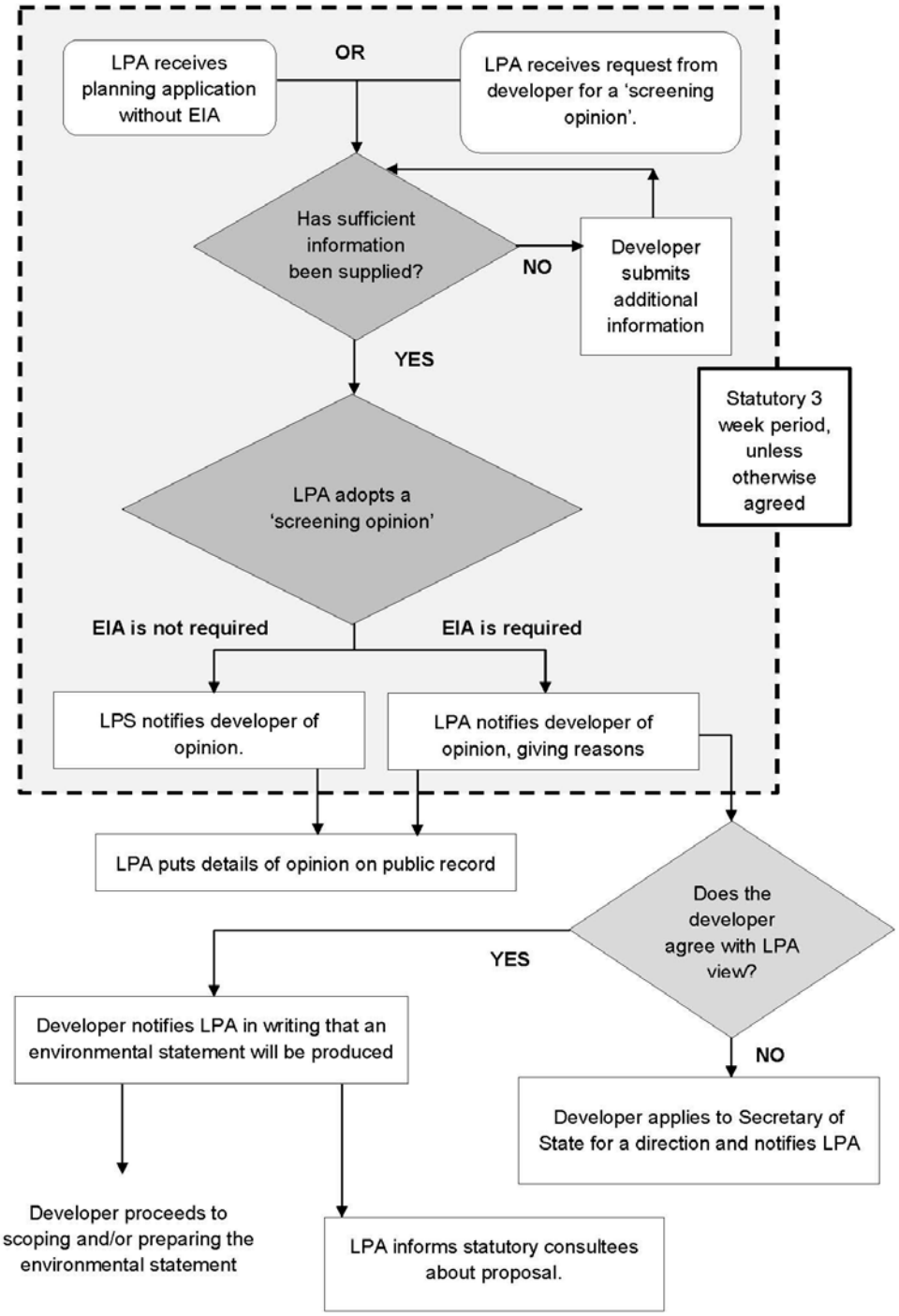
4. Artificial lighting is generally not encouraged at such sites. The Local Planning Authority may restrict such lighting by use of the following condition;

   No artificial lighting shall be installed until details of such lighting has been submitted to, and agreed in writing by, the Local Planning Authority.

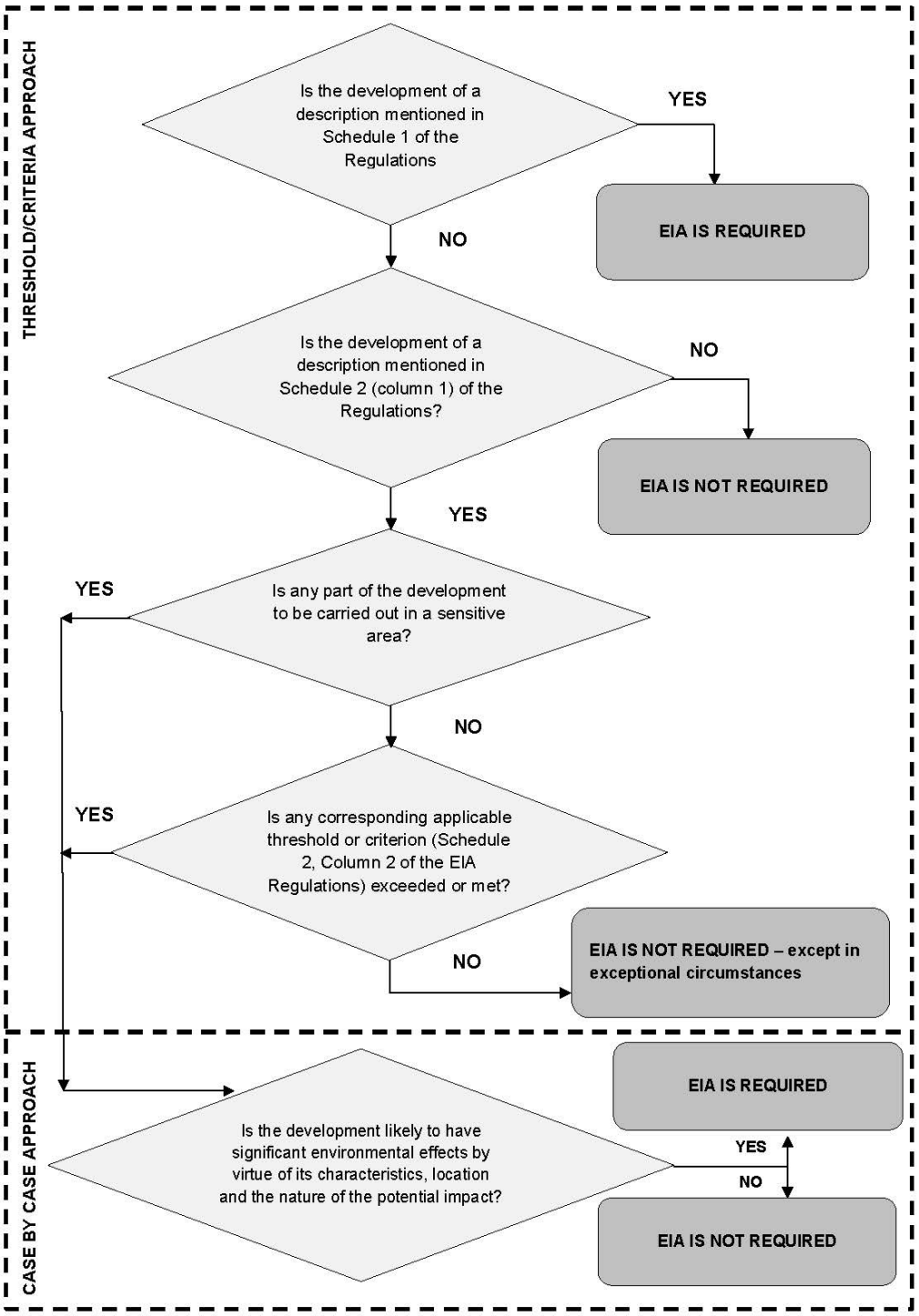
   Reason: To minimise the landscape, visual and environmental impact of the development.

Appendix D: Screening Procedures Overview

Screening Procedure overview



The screening decision



Appendix E Advice on Security and Crime Prevention

The following text is based upon advice kindly provided by the Devon and Cornwall Police Authority

Risk

Generating electricity from the sun using photovoltaic panels on a commercial scale is a relatively new venture within the UK and will bring with it new risks and challenges to protect the location and panels from criminals. Because this is a new project there is currently no UK crime data to base crime prevention advice on.

Policing experience indicates that placing large quantities of expensive photovoltaic panels in isolated locations without adequate protection will attract criminals and the photovoltaic panels and associated infrastructure will be stolen. The main risk will come from organised gangs who will use heavy duty tools and vehicles to remove large quantities of the panels. Stolen the panels are likely to be moved from the crime scene before re-emerging for sale.

Site

In view of the potential risk when considering suitable locations for solar farms a major consideration from a police view will be how the site can be protected from unauthorised vehicle entry. Full consideration of the natural defences of the site should be taken into consideration for e.g. steep gradient, substantial hedging, rivers etc. Wherever possible the boundary protection of the site should be an appropriate distance from the actual panels to discourage parking a vehicle against the site boundary and manually lifting stolen panels onto a vehicle.

Access to the Site

The solar company/site owner will require vehicular access to the site. The physical security guarding this access must be robust to sustain a high level of attack as these sites will probably be remote and lacking any natural surveillance. Consideration should be given to protecting the access road at two separate locations;

1. at the actual entrance to the site and;
2. away from the specific entrance to keep authorised vehicles a substantial distance from the site.

The security of solar farms must be properly assessed by all those involved in the planning process.

All planning applications should therefore include full details of the security proposals within the Design and Access Statement (as required by Department for Communities and Local Government Circular 1/2006 paragraph 87)

The security measures to be incorporated at each location will have to be considered on a site specific basis. They will obviously be determined to some degree by, for example, the existing landscape and local planning constraints etc.

The basic principle of all crime prevention is to provide layers of defence to whatever is in need of protection. In the case of solar farms this protection will almost certainly require both the physical element, such as fences or ditches and also the utilisation of appropriate technology such as CCTV.

The advice offered below covers the general crime prevention points which should be considered by any applicant.

Perimeter Security and Access Control

If perimeter fencing is to be used then it should be a proven security fence.

The recommendation would be to install fencing which has been tested and approved to current UK Government standards.

Fencing which meets the SEAP (Security Equipment Approval Panel) class 1-3 may be the most appropriate.

Fencing which is not of a specialist security type is likely to offer at best only token resistance to intruders.

Planting up and alongside any fencing will be acceptable providing there is no detrimental effect upon site surveillance that is available. The standard for rating bollards, blockers and gates is PAS 68:2007 and PAS68:2010.

Landscaping techniques such as ditches and berms (bunds) may also be appropriate in some instances. To be effective in stopping vehicles these need to be designed carefully. Police are able to provide further specific advice in relation to the design of such defences upon request.

There should be a minimum number of vehicular access points onto site, ideally only one.

Clearly such access points will present the most obvious means for the criminal also and therefore will require a robust and adequate defence.

Some thought should also be given to the wider issues of access around any site. If, for instance, the land surrounding the site is under the same ownership can this be made more secure by improving gates etc. Again this provides layers of difficulty for the criminal to overcome.

Electronic Security

There is a huge range of electronic security available. For most sites it is very likely that this will play an important role. In selecting which type of technology to employ a proper assessment on a site specific basis should be undertaken to ensure any system will be fit for purpose.

For CCTV this assessment is commonly called an Operational Requirement (OR). An obvious example would be to establish how effective will the CCTV be at night at these locations.

There will probably be little reward in deploying CCTV or other defence unless it is monitored in some way or can provide an instant alert in some form and also who would then respond to this? CCTV which simply records will probably be of very limited value.

Other Options

The presence of site security personnel in some capacity should be considered including perhaps in terms of some types of response to site alarm activations.

The use of security bolts to secure photovoltaic panels and locked housing to secure inverters etc.

If the individual solar panels can be marked overtly this would reduce the ease with which they could be re sold/re used and thus help act as an additional deterrent and assist in any future identification.

Covert security marking should also be used.