

Landscape and Visual Impact Assessment
for
Solar PV Array Proposals
At Owls Lodge Farm, near
Barton Stacey, Hampshire

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FINAL REPORT

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For
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A. Executive Summary

A.i. Commission

Cornwall Environmental Consultants Ltd (CEC) was commissioned in December 2010 to carry out a Landscape and Visual Impact Assessment (LVIA) on behalf of AEE (the Client) to identify the potential impacts of a proposed Solar PV Array development (the proposed development) at Owls Lodge Farm, near Barton Stacey, Hampshire (the proposed development site). The LVIA is intended to accompany the detailed planning application for the proposed development to be submitted by the client to Hampshire County Council in February 2011.

A.ii. Site and Study Area

The proposed site covers approximately 16.3ha of productive arable farmland. It is located approximately 1.8km north-of Barton Stacey and 7km east of Andover.

Following verification of a 5km area of search, the study area was set at 2.5km because of negligible levels of visibility beyond this distance. However, there is one area of potential visibility between 3 and 4km to the southwest of the site, as illustrated in Viewpoint 1. This area has been discussed as an outlier area in the report as appropriate.

A.iii. Methodology and Scope

The impact assessment was based on a detailed methodology as outlined in Appendix 2 of the report and in line with the current guidance for Landscape and Visual Impact Assessmentⁱ and EIA regulationsⁱⁱ. The visual impact drawings were generated using KeyTerraFirma software as outlined in Appendix 2 of the report. Visualisations for key views were prepared to support the assessment and are included in the Photographic Record in Appendix 4 of the report.

The scope of the report was informed by a screening opinion from the local planning authorityⁱⁱⁱ. Test Valley Borough Council concluded the development would have a significant effect on the environment. The council therefore

determined that the proposed development would require an Environmental Impact Assessment (EIA). Detailed assessment of the landscape and visual conditions within the 2.5km study area has been undertaken in a way which is compliant with current guidance.

A.iv. Proposals

The proposals are for a static PV array achieving 5MW AC output with an array area of approximately 10.8ha, within a site of approximately 16.3ha. The installation would comprise a series of polycrystalline photovoltaic modules encased in an aluminium frame and mounted on an aluminium or galvanised steel frame. The PV modules would be angled at 30 degrees from horizontal and orientated to the south. The gap between each row would be approximately 5.4m. Panels would be orientated to the south, being 0.8m high at the front and 2.4m high at the back.

There will be 9 inverter stations 2.6 x 5.3m and 2.8m in height and one transformer station of similar dimensions, located within the field. These stations are distributed to keep cable lengths and energy losses at a minimum. The stations will be either of concrete or steel. They can be painted according to the surrounding landscape. Those structures are of a comparable height to the modules and could be painted green to aid their blending into the landscape.

A fence is proposed around the array. This would be a 2.5m high green mesh fence, installed close to the modules to separate the grazed array area from the hedge and tree buffers intended to be managed for biodiversity benefits.

Access to the site will be via the existing farm gate on the minor road to the north west of the site. The surfaced track runs parallel to the northern boundary of the main site, at approximately 300m, and then turns south to enter the site at the northeast corner. There will be no permanent internal roads and maintenance for vehicular access will be across the grass. A temporary hardcore track is proposed to allow for construction, this will subsequently be removed. A hardcore-surfaced temporary compound is proposed off site of sufficient size to accommodate up to five containers. There

is no permanent lighting associated with the proposals.

Landscaping consists of seeding and natural regeneration. The proposal area will be seeded for grazing and it is intended to manage those areas through grazing sheep. The buffers can be treated differently and managed for biodiversity, especially as the fence separates the grazing area from the buffers, therefore allowing for a better landscape and biodiversity management of the site.

A.v. Baseline Conditions Summary

National and regional planning policy context of some relevance to the LVIA report was briefly set out. In terms of local planning policy, the site is covered by the Test Valley Borough Local Plan. The plan has a number of policies relevant to the proposals, including renewable energy, countryside and hedges and tree policies.

The site is located on the lower sections of a gently undulating ridge between the River Test, to the north and the River Dever, to the south. It lies below a local ridge and has a gently sloping southerly aspect between approximately 65-75m AOD. It is comprised of a single rectangular open field falling in a south westerly direction. The site is in arable agricultural use, and has recently been ploughed.

A hedge and stock fence is located on the south west boundary. The hedge is relatively dense and maintained at 2.5 to 3 metres in height. The south east and north east boundaries are stock fenced only. A double row of mature pines and beech are located along the majority of the north western boundary, forming a prominent feature in some wider area views.

A minor road (Southside Road) linking Longparish and Barton Stacy runs north to south at approximately 100m from the western boundary. The proposed site will be accessed from a surfaced farm track off this road.

The site is located in a historically rural area recently overlaid by a number of inhomogeneous modern uses that have shaped the current character and appearance of the local area. A recycling facility is located immediately adjacent to the site and characterised by significant artificial earth bunding

and a large industrial unit on its premises, making it a prominent installation in the wider area and a key component in views to the site.

The A303 and A34 are major road corridors in the area, with the A303 running east to west at approximately 0.35km from the southern boundary of the site. The Barton Stacy junction with the A303 is also located here, so is a service station, which is prominent in some views.

The MOD is using a number of sites in the area, including Drayton army camp to the south of the site, now used for MOD training exercises. The MOD sites are characterised by disturbed ground, scrub and young woodland, contrasting with agricultural uses elsewhere.

Other distinctive features within the area are a treed disused railway to the east and the River Dever and River Test valleys. The river corridors are physically and visually separated from the site.

There are only a limited number of designated areas and features within the study area. The North Wessex Downs AONB is located approximately 3km north of the proposals. Due to visual and physical separation by intervening topography, effects on the setting and visual amenity on the designated area and its users are unlikely and it has been excluded from the impact assessment.

The Tidbury Ring Iron Age hill fort is located on a hill at 114m AOD at approximately 1.8km to the east of the site and is screened by mature trees and shrubs on its boundaries, but has a visual connection to the wider landscape including the site. It is not publicly accessible. It has been included as a landscape receptor in the impact assessment to investigate potential effects on its setting. Andyke Scheduled Ancient Monument is also in the area, but is unlikely to experience any effects due to visual and physical separation from the site.

Conservation areas and listed buildings were reviewed as part of the desk study and site work, but none have a visual or physical connection to the site and have therefore not been included as receptors.

There are no Public Rights of Way (PROW) on site, but several in the study

area. PROW 6, 15, 16 and 35 have been identified to be within the theoretical visibility area of the site and users would be included as visual receptors. PROW 16 is along a Roman Road approximately 3.7km southwest of the site.

The site is within national character area 130 – Hampshire Downs. In a local context, the site is within LCA10E (Drayton Chalk Downlands), a small area of rolling Chalk Downland. Area LCA 10D (Leckford and Chilbolton Chalk Downs) is to the south, and as this land is elevated and relatively open there is some inter-visibility from localised elevated areas.

Visually, the site is well contained and always seen in conjunction with the recycling facility and road corridors. Views of the site are limited to a small number of locations along PROW and local roads on higher ground to the east, and south. There are also glimpsed views to the site through field gateways and occasional breaks in hedges from the minor road to the west. Elsewhere views are generally screened by intervening vegetation and topography. Properties in the vicinity of the site have no intervisibility. Many of the local villages and farms tend to be located in river valleys and elsewhere intervening vegetation and topography screens view to the site. Views from the recycling facility are generally screened.

Landscape receptors with the potential to be affected by the proposals were identified during the baseline study and include:

- Tidbury Ring Iron Age hill fort Scheduled Ancient Monument
- Drayton Chalk Downlands LCA (Open chalklands landscape type)
- Leckford and Chilbolton Chalk Dowlands (Open chalklands landscape type)
- Existing hedges and the double row of beech and pine trees on the north west boundary

Visual receptors which could potentially experience a change in views as a result of the proposals were identified to be:

- Users of the PROW to the east of the site (path number 35)
- Users of the minor road west of the site

- Users of the PROW to the east of Barton Stacey (Barton Drove, path number 15)
- Users of the road to Newton Stacey, east of Barton Stacey
- Users of PROW to the south west of Barton Stacey Footpaths (path numbers 6 & 16)
- Users and workers within the A303 Recycling Facility

The impact assessment considered potential impact on all of the above landscape and visual receptors.

A.vi. Impact Assessment Summary

Landscape Impacts

The arrays of solar panels would be a new feature in the landscape and one which has an engineered and technological appearance. However, the solar panels are arranged to respect the local landscape structure, and reflect the landform (there will be no terracing or cutting of ground, the panels will follow the landform, although they are not aligned with the flow of the contours). No boundaries will be removed; hedges and trees will be retained. The use will change from arable to grazing, with buffer margins managed for biodiversity benefits.

The site is located in an area, where historic landscape character has been overlaid by modern structures and installations such as trunk road corridors and ancillary facilities, the recycling centre and MOD uses. It has also been eroded by removal of hedges and many remaining hedges are in a deteriorating state. It is a changing landscape with an inhomogeneous appearance in several areas.

The site is well screened from views in the wider area, which was reflected in the reduction of the study area. Lack of intervisibility and physical separation from many landscape areas led to a only a limited number of landscape and visual receptors considered in this report as setting, character and visual changes are localised and minimal.

The report considered the impacts on landscape designations, landscape

character areas and landscape elements.

Designated landscapes

The only designated area identified as a potential receptor was the Tidbury Ring Iron Age hillfort Scheduled Ancient Monument. The proposals are considered to result in only a **slight** change (negligible impact magnitude on high sensitivity receptor) to the setting of the monument, due to the localised character change within medium distance to the monument. The monument is screened by a dense treebelt and there is no public access. The character of the setting is already affected by the trunk roads, recycling centre and MOD uses, with the recycling centre being in the foreground of the view from the areas around the monument.

Landscape Character

The assessment finds that the proposals have the potential to bring about only a **slight** change (low magnitude impact on medium sensitivity receptor) to the Drayton Chalk Downlands LCA10E. Key characteristics of the LCA would not be affected and there is the potential for enhancement through change to grazing and management of buffers for biodiversity benefit. The proposals will be located within the perimeters of an existing arable field, not affecting existing hedges and trees. The site is generally well screened. The disturbed landscape of the adjacent re-cycling facility and the A303 road corridor detract from the rural character of the local area.

There would be a **negligible** change to Leckford and Chilbolton Chalk Dowlands LCA10D due to the distance to site and the localised, glimpsed nature of any views limiting the intervisibility and resulting setting change.

Landscape Elements

The proposal will not directly affect adjacent hedgerows or the mature tree belt along the north western boundary. There is **no change** to those elements.

Visual Impacts

For the proposals considered in this report, the visual envelope of the existing

site (Figure CEC1699b/06) and the ZTV of the proposals (Figure CEC1699b/07) are almost identical, due to the low height of the proposed modules, which do not generally significantly exceed the height of the hedges and bunds in the wider landscape.

The potential visual impacts arising from this scheme are due to the large area being covered by the modules and the change in use associated with the proposals, introducing technical and geometric elements of a darker colour into an agricultural landscape. However the proposals are well screened with only localised views from a limited range of areas. The site is set below a local ridgeline and the bund associated with the recycling facility on the southern boundary prevents views of the whole site and will screen southern sections of the site from all more distant viewpoints.

The fence and the ancillary buildings (small inverter and transformer stations - see technical information submitted with the application for details) will form additional features visible as part of the proposals from some areas. However, those elements could be painted green, are of comparable height to the rest of the installation and are relatively small, and therefore not considered to contribute to an additional increase of visibility in comparison to the panels alone.

Visual receptors identified during the baseline study desk and site work are limited to road and PROW users in a limited number of locations and the workers and users of the recycling centre. There are no private properties with views of the site. The visual impact assessment used key views to describe the change from a number of areas, representative for the visual receptors in that area.

Visual envelope area A included areas immediately adjacent to the site, including the local road passing to the west of the site and the recycling facility workers and users. Representative key views for those areas are views 5, 6 and 7. The visual impact on **road users and the recycling facility users and workers** was evaluated to be low magnitude on low sensitivity receptors, resulting in a **negligible to slight** change.

Visual envelope area B is represented by key view 4 (View from the PROW east of the site West of Tidbury Ring ca. 1.15km east of site) and is representative for **PROW users on path 35**. The impact was evaluated of low to medium magnitude on a medium sensitivity receptor, resulting in a **slight to moderate** change. The visual impact would only occur along a short section of path and this is the highest magnitude impact this proposal is likely to cause within the overall study area. A photomontage has been prepared for key view 4.

Visual envelope area C covers **PROW and road users in the Barton Stacey** area approximately 2km to the south of the site. Again, views from those areas are glimpsed and partial, from a limited number of locations. The impact was evaluated to be of negligible to low magnitude on low and medium sensitivity receptors, resulting in **negligible to slight** changes. Key views 2 and 3 are representative of the character of views from the area.

Visual envelope area D covers the outlier area approximately 3.7km to the southwest of the site, where the theoretical visibility was indicated for an area along **PROW 16, which runs along a Roman Road**. The view would again be glimpsed, at a long distance and of a small area of the site only, seen with the recycling facility in the foreground and to the side. It is unlikely that a casual observer would notice any change at all. The impact was evaluated to be of a negligible magnitude at most, resulting in a **negligible** change for medium sensitivity receptors.

In summary, visual impacts of the scheme would be minimal, with the highest magnitude being medium from two small areas. No high sensitivity visual receptors would be affected.

A.vii. Mitigation Strategy

The predicted landscape and visual impacts of the proposed PV array at Owls Lodge Farm are minimal, with slight to moderate degrees of effect at most for a very small number of receptors, mostly of low and medium sensitivity with the exception of Tidbury Ring iron age Hill Fort, which was assessed as having a high sensitivity. The site is located adjacent to a recycling facility, which is a

prominent feature in all views to the site and the area around the site is characterised by an increased influence of modern developments. Mitigation is therefore not considered to be required. However, some consideration has been given to mitigation in order to improve the landscape on site throughout the implementation of the proposals.

Mitigation-by-Design

Mitigation measures were highlighted at an early stage of the assessment and discussed with the client. These have been incorporated in the final proposals and include:

- Retaining as far as possible a regular geometric layout to the rows of panels and associated infrastructure so that the solar farm has a striking and legible layout. With a very regular design, the array will work more closely with the structure of the landscape, for example reflecting subtle changes in terrain, slope and aspect.
- Using the existing field boundaries to give structure to the proposal and retaining all hedgerows and trees.
- Incorporating buffer zones around all hedges and trees to ensure there is no impact at any stage of the development and the fields do not appear cramped.

Longer-term Mitigation Proposals

Existing hedges could be improved through additional planting, change in management to allow for slightly taller, wider and denser growth and management of appropriate buffer zones. This would have the benefit to provide additional landscape structure and wildlife corridor links and would also over time result in all views being screened from the local road to the west. It would also be in line with the guidelines of the Drayton Chalk Downland Landscape Character Assessment which seeks to discourage the amalgamation of fields and loss of hedgerows and restore lost and fragmented hedgerows. Buffer zone management could consider favouring chalk loving flora and fauna, and the grazing seed mix and management of grazing areas could also reflect this. It should also be noted that the beech tree planting on

the north west boundary will over time develop to become a significant landscape element and visual screen/backdrop to the proposals over time.

A.viii. Significance and Residual Impacts

Significance

The Screening Response from the Test Valley Borough Council stated that the developments “propose a significant installation for the production of electricity” and “the proposed solar array farm is likely to have a significant visual impact on the landscape character and the setting on this part of the parish.”

However, this LVIA determined that **no landscape or visual impacts are significant** in terms of EIA methodology (methodology table 5 and accompanying text, Appendix 2).

Whilst not significant, **landscape impacts** are assessed as producing a **slight** degree of change on the Tidbury Ring Iron Age Hill Fort and the Drayton Chalk Downlands Character Area during construction and operation phases.

For users of the PROW to the east of the site (path 35) **visual impacts** have a **slight to moderate** degree of change during construction and operational phases. Impacts for road users to the west of the site will have a slight degree of change both during construction and operation phases. Users of Barton Drove PROW (path 15) experience a **slight to negligible** degree of change. In all other areas the degree of change was found to be **negligible or no change**.

Residual Impacts

If the proposed mitigation is adopted, certain local effects would gradually lessen over time. These would primarily be the effects within **Visual envelope area A** on road users to the west of the site (views 5, 6 & 7). As the improved hedge and tree management, together with the establishment of the recent tree planting on the north west boundary develops over time, the proposals will further integrate within the local landscape and locally screen views to the site.

It is not possible to completely mitigate views from **Visual envelope area B** represented by the PROW to the east of the site (path 35 & view 4), due to the elevation of the view. However, as the improved boundary management and new tree belt become established, they will provide additional and substantial landscape features and contribute to the local landscape character and setting of the site.

Mitigation is unlikely to make a perceivable difference from **Visual envelope areas C & D** (views 1, 2 and 3). The degree of change was found to be negligible to slight from these receptors. The establishment of the recent tree planting will contribute to the wider landscape setting and backdrop to the proposals with the extension of the existing substantial tree belt on the north west boundary. The existing mature tree belt forms a prominent and positive landscape feature from available views. Over time this will link to boundary tree blocks and hedgerows as the recent tree planting establishes.

A.ix. Conclusions

This assessment concludes that that the installation of the solar park at Owls Lodge Farm does not cause significant landscape and visual impacts in terms of EIA methodology. The proposals would result in a negligible to slight change to landscape resources and a slight to moderate change to a limited number of views.

In this landscape, the visibility of the site and the proposals are generally well enclosed by vegetation and topography. The site is at a relatively low level and south facing. The nearby A303 road corridor and the recycling facility bund encloses and screens the views from many areas to the south, east and west and the low ridgeline to the north screens distant views. These factors substantially contribute to reducing the existing zone of visual influence and therefore few visual receptors would be affected. It is primarily rights of way and road users who would notice changes to views, simply because roads pass near to the site and the footpath to the east has an elevated view. Further away, changes are slight to negligible, due to the nature of the receptors and the localised views. The busy A303 road corridor, its associated infrastructure

and the recycling facility generally detract from the rural character of the area and form an inherent part of the setting of the site. The development is therefore not considered a significant element within the context of adjacent land uses and the wider character area.

If long-term mitigation is adopted, certain local effects would gradually lessen over time. This would include landscape effects on the Drayton Chalk Downland Landscape Character. Visual effects would also lessen on users of the western road. It is not possible to completely mitigate views to the site from the elevated PROW to the east.

In the long-term, the overall character and visual amenity of the landscape would be maintained as the proposals retain and enhance the existing landscape structure and agricultural use. Potential impacts are reversible as removing the solar array from the site would leave a negligible trace and the present landscape and visual structure would be enhanced.

The proposed installation of a solar PV installation at Owls Lodge Farm is considered acceptable from a landscape and visual point of view.

1. Introduction

1.1. The Commission

Cornwall Environmental Consultants Ltd (CEC) was commissioned in December 2010 to carry out a Landscape and Visual Impact Assessment (LVIA) on behalf of AEE (the Client) to identify the potential impacts of a proposed Solar PV Array development (the proposed development) at Owls Lodge Farm near Barton Stacey, Hampshire (the proposed development site). The LVIA is intended to accompany the detailed planning application for the proposed development to be submitted by the client to Hampshire County Council in February 2011.

The LVIA report describes baseline conditions, constraints and opportunities, and provides an assessment of environmental effects and mitigation measures. The text is supplemented by a number of figures and photographs (see Appendices).

1.2. The Site and Study Area

The proposed site covers approximately 16.3 ha of productive arable farm land. It is located approximately 1.8km north-of Barton Stacey and 7km east of Andover. All distances in this report are approximate, taken from the closest point on the site boundary to the closest point of the feature being discussed.

The initial area of search for the LVIA was determined by drawing a circle to include all points within the site boundary and offsetting this by 5km. The extent was set to enable a general understanding of the wider landscape context within which the site is located, while limiting information to that which is most relevant and avoiding excessive analysis which does not directly benefit the appraisal. As such it conforms to best-practice guidance with interim distance boundaries included to aid interpretation.

Following verification of the initial area of search on site, the study area was set at 2.5km. Beyond 2.5km from the site, the topography and vegetation screen views of the site, with the exception of an isolated area near Newton Down Farm, approximately 3.7km to the southwest of the site. This potential area of visibility includes a stretch of Roman Road and was therefore included as an outlier area in the visual assessment as appropriate.

The 2.5km study area extends north beyond Longparish, west along the A303 road corridor to Forton, south to encompass Barton Stacey and east to the A34 road corridor.

The extent of the initial area of search and the study area is shown on Figure CEC1699b/01 Site Location and Study Area.

1.3. Methodology and Scope

The impact assessment was based on a detailed methodology as outlined in Appendix 2 of the report and in line with the current guidance for Landscape and Visual Impact Assessment^{iv} and EIA regulations^v. The visual impact drawings were generated using KeyTerraFirma software as outlined in Appendix 2 of the report. Visualisations for key views were prepared to support the assessment and are included in the Photographic Record in Appendix 4 of the report.

A Zone of Theoretical Visibility (ZTV) was modelled, including main woodlands and built form, to show the theoretical visual envelope of the site over the 5km initial area of search. The methodology for production of the ZTV is outlined in Appendix 2. The ZTV was used as a tool to identify potential viewpoints and direct field study.

The desk study and ZTV were clarified and ratified through field observations.

The report covers baseline conditions and impact assessment as follows:

- Landscape resource with the site boundary;
- Landscape designations within the 2.5km study area;
- Landscape character within the 2.5km study;
- Visual character, prominent features, and key views in detail within 2.5km of the site, and addressing the southwestern outlier area along the Roman Road as appropriate.

A glossary of technical terms used in the report can be found in Appendix 1.

1.4. Screening Opinion and Need for EIA

A Screening opinion was issued by Test Valley Borough Council (dated 24th December 2010)ⁱⁱⁱ determined that the proposed development would require an

Environmental Impact Assessment (EIA). The Screening opinion stated that *"...the development would be likely to have significant effects on the environment for the following reasons:*

- ❑ *The site is 16.6 hectares and proposes a significant installation for the production of electricity.*
- ❑ *The proposed development of this agricultural land within the rural setting with the proposed solar array farm is likely to have significant visual impacts on the landscape character and the setting of this part of the parish of Longparish and the wider countryside, which could not be fully mitigated by a structural landscaping scheme.*
- ❑ *The site is currently under grade 3 arable agricultural land in the countryside."*

Both the sensitivity and the magnitude of the individual landscape and visual receptors need to be assessed in detail before any conclusions can be drawn as to whether it is likely that the nature and scale of the proposals can be accommodated without a significant impact on the landscape character and the setting of the area. The methodology used in this LVIA is intended to address the EIA requirement. For this assessment only moderate/ substantial and substantial degrees of effect will be considered significant in terms of the EIA regulations (see table 5, appendix 2) and therefore mitigation methods would be actively explored, although in practice this LVIA would also recommend mitigation for lesser effects. Section 4.4 will assess the requirement for a mitigation strategy.

It is also worth noting that the site will be grazed and will remain in agricultural use thorough out the life of the solar array. The operational period for the solar array is estimated to be 25 years and that while there are residual effects during the operational phase, long-term effects are ultimately reversible – see Section 5 Residual Impacts and Significance.

1.5. Sources of Information

Information used in the assessment was derived from the publicly available adopted documents and online database sources listed in Appendix 5. Information was gathered through:

- A desktop study identifying the main landscape designations relevant to this study, listing existing landscape character information and outlining the planning background.
- Detailed field observations covering site appraisal (i.e. land uses, vegetation, context, etc.) and a visual analysis using agreed viewpoints as a guide in identifying potential visual receptors.
- A brief appraisal of long-distance views and Landscape Character Areas (LCAs) within the General Study Area to confirm and inform desk study results.
- Analysis of maps including topographical data.

1.6. Proposals

For full details of the proposals, refer to the proposal description submitted with the application, and the planning statement accompanying the application. Proposal details are summarised below as required to inform the LVIA.

The proposals are for a static PV array achieving 5MW AC output, within a site of approximately 16.3ha (red line boundary).

Photovoltaic modules will comprise polycrystalline modules with a front glass and aluminium frame clamped on a galvanised steel or aluminium frame table. Each module would be approx. 1.6m x 1.0m, mounted with two modules arranged above each other with a 20mm gap and 20 modules in horizontal with a 25mm gap giving an approximate table size of 3.2m x 20.1m.

Panels will be arranged in rows of approximately 20.1m length. Breaks of 0.1m between lengths allow thermal expansion without affecting the remainder of the array. The mounting structure would measure 0.8m at the front, 2.4m at the back with panels mounted at an angle of 30 degrees to the horizontal. The corridor between the rows would be approximately 5.4m.

The mountings beneath and supporting the modules would be made of galvanised steel posts spaced at intervals of 2-3m depending on ground conditions. The posts will be screwed or piled into the ground as opposed to embedded in concrete footings to avoid any removal of soil and to enable an uncomplicated reversal to agricultural land on decommissioning.

One sub-station building and 9 smaller inverter/transformer houses. Approximate dimensions of the inverters are 5.3x2.6m and 2.80m high. The structures would be made either of galvanised steel or concrete, and though normally finished off in matt white, there is the option to powder coat the structure in a more appropriate colour such as brown/green. The building location is determined to minimize cable lengths and energy losses. They will be mostly screened by the surrounding solar array (due to comparable height).

The array will be fenced by a green wire mesh fence at 2.5m height. The fence would be positioned close to the modules, allowing for a 2 to 3m maintenance strip between fence and panels. This is considered preferable to positioning it close to the hedges as it provides a useful separation of buffer zones and grazing land, thereby aiding the biodiversity value of the scheme, avoids unnecessary impacts on hedges and associated trees and enables hedgerow management without interference with the fence. The fence close to the panels will also read more as one with the technical structures, rather than locating a technical element in very close proximity to a natural hedge. At 2.5m height, the fence is at a comparable height to the back of the frames, tables, and the services housings, therefore not considered increasing the overall visibility.

Access to the site would be across the eastern part of the field, where a grassed track would be created along the margins for maintenance access. There would be no internal roads; maintenance vehicles' access would be across the grass. A temporary hardcore track is proposed to allow construction, this would subsequently be removed. A hardcore-surfaced temporary compound is proposed off site of sufficient size to accommodate up to five containers.

There would be no permanent lighting associated with the proposals.

Landscaping consists of seeding and natural regeneration. The proposal area will

be seeded for grazing within the fenced area and left to regenerate naturally or seeded for wildlife benefit in the buffer zones. It is intended to manage the fenced area through grazing sheep and the buffer area through occasional mowing (maximum twice a year). The intention is to enhance the biodiversity value of the grassland and buffer zones as well as retaining an agricultural land use on the fields. It is intended to allow existing hedges to grow into mature shrubs (although managed to retain their vitality in the long-term) and allow trees to develop through an adjusted rotational management providing this does not compromise the technical efficiency of the panels. The maturing hedges with their associated buffer area of rough calcareous grassland and some naturally establishing scrub will increase the habitat value of the hedges and provide additional screening.

2. Landscape Planning Policy

To determine the presence of landscape designations, the saved policies from the Hampshire County Council^{vi} and Test Valley Borough Local Plan^{vii} were reviewed for landscape designations, and the online sources MAGIC^{viii}, Natural England database, and online planning portal^{ix} were searched to obtain digital information.

2.1. National

2.1.1. PPS22^x Renewable Energy and Technical Annexes

The PPS22 guidance is focused on domestic applications within building design and site layout for passive solar gain or standalone panels to supply communications such as road signs or monitoring equipment. There are no specific discussions or guidance relating to PV Solar Arrays.

Whilst PPS22 notes there are implications for listed buildings and frontages in conservation areas, it states that PV installations should generally be encouraged by local planning authorities and any potential adverse effects be mitigated through involvement in the design process.

The guidelines contain the following recommendations in relation to landscape and visual effects of renewable energy installations which can generally be applied in principle to PV Solar Arrays:

1. The landscape and visual effects of particular renewable energy developments will vary on a case-by-case basis according to the type of development, its location, and the landscape setting of the proposed development. Some of these effects may be minimised through appropriate siting, design and landscaping schemes, depending on the size and type of development proposed. Proposed developments should be assessed using objective descriptive material and analysis wherever possible even though the final decision on the visual and landscape effects will be, to some extent, one made by professional judgement.
2. Policies in local development documents should address the

minimisation of visual effects (e.g. on the siting, layout, landscaping, design and colour of schemes).

3. Of all renewable technologies, wind turbines are likely to have the greatest visual and landscape effects. However, in assessing planning applications, local authorities should recognise that the impact of turbines on the landscape will vary according to the size and number of turbines and the type of landscape involved, and that these impacts may be temporary if conditions are attached to planning permissions which require the future decommissioning of turbines.
4. Planning authorities should also take into account the cumulative impact of wind generation projects in particular areas. Such impacts should be assessed at the planning application stage and authorities should not set arbitrary limits in local development documents on the numbers of turbines that will be acceptable in particular locations.

The first two points can be taken to relate directly to solar park development. The impact of solar farms on the landscape will also vary according to the size of the development and the type of landscape involved. As the solar parks are generally designed with a 25-year productivity span before decommissioning, their impacts can also be considered temporary, when considering a longer time span. The cumulative impact of solar parks is not currently an issue in the area surrounding this site due to the lack of nearby proposals and / or implemented projects, but may well become an issue in the future when more schemes are being planned and built. It is not assessed as part of this report.

2.2. Regional

2.2.1. RPG9^{xi} Regional Planning Guidance for the South East (RPG9 -March 2001)

Policy INF4 states that: *"In planning the future development of the region and activities within it, priority should be given to energy conservation and to maximising the use of renewable energy sources as an alternative to fossil fuels.*

a Development plans should:

Include proposals for renewable energy resources, including active solar systems, wind power, energy from waste combustion, wood fuel, anaerobic digestion and landfill gas where these do not conflict with policies for the protection of designated areas contained in PPG7 (The Countryside – Environmental Quality and Economic and Social Development) and PPG9 (Nature Conservation). Small scale schemes may be suitable in many parts of the rural areas ...”.

Regional planning policy has been revoked by the current coalition government, at the time of preparing the assessment there was no replacement guidance in place.

2.3. Local

2.3.1. Test Valley Borough Local Plan

Policy ESN 32 relates to renewable energy developments and states that:

“Proposals for the development of renewable energy schemes will be permitted provided that:

- the impact of the development on the immediate and wider landscape, particularly within statutory and non statutory designated areas, is not detrimental;*
- the proposal does not adversely affect features or areas of ecological, historic or cultural interest;*
- measures are undertaken, both during and after construction, to minimise the impact of the development on local land use. ...”.*

The Government wishes *“to stimulate the exploitation and development of renewable energy sources wherever they have prospects of being economically attractive and environmentally acceptable.”* The development of renewable energy sources helps to increase the diversity and security of energy supply, and could also help to reduce harmful emissions to the environment.

The policy continues to explain that “..Government guidance acknowledges that renewable energy systems differ from fossil fuel and nuclear energy systems in their relationship to land use and the environment. They tend to be of a lower energy output for an equivalent area of land used, when compared with conventional sources, and capital plant requirements may be more expensive. A variety of factors peculiar to the technology involved have to be taken into account in assessing planning applications for renewable energy systems.

Encouragement of the development of renewable energy sources must be weighed carefully against the policies in this Plan to protect the environment. Many schemes can have particular locational constraints since, in many cases, the resource can only be harnessed where it occurs. In considering schemes for renewable energy development, the Council will consider both the immediate impacts of renewable energy projects on the local environment and their wider environmental benefits, such as a contribution to reducing emissions of greenhouse gases.”

Other policies applicable to the proposals relate to the countryside and its resources and are listed below.

The site is within policy area SET 03- DEVELOPMENT IN THE COUNTRYSIDE

Development in the countryside (i.e. outside the boundaries of settlements defined by Policy SET 01 and shown on the Inset Maps) will only be permitted if:

- there is an overriding need for it to be located in the countryside; or
- it is of a type appropriate in the countryside as set out in Policies SET 06 – 13, ESN 05-09, ESN 11, ESN 13 - 14, ESN 23 -25 and ESN 27 - 33.

Policy DES 08: TREES AND HEDGEROWS

,Development will be permitted provided that it would not result in the loss of individual trees, groups of trees, woodlands or hedgerows of amenity or

landscape value.

Where development is proposed close to existing trees or hedgerows, it should be designed and located to ensure that their health and future retention is not likely to be prejudiced'.

Policy DES 10: NEW LANDSCAPING

Development will be permitted provided that new hard and soft landscaping, in conjunction with the retention of existing landscape, wildlife and amenity features where appropriate, is sufficient to enable the development to integrate successfully into the local environment.

3. Baseline Conditions

Baseline conditions are described for both landscape and visual resources. Landscape resources include landscape designations, landscape character, landscape elements, features and characteristics, and are illustrated in Figures CEC1699b/02 to 05.

Visual resources are described for areas located within the ZTV. They are expressed through the character and quality of views, which are in turn defined by the character and quality of the landscape. Existing visual characteristics and elements are shown on CEC1699b/06 – Visual Appraisal.

3.1. Site Appraisal

The site and study area were introduced in section 1.2. This section adds further detail on specific site features.

The site is comprised of a single rectangular field with a predominantly southerly aspect. The long axis of the site is orientated in a north east to south west direction. The site is in arable agricultural use and has recently been ploughed. The field does not contain any distinctive features. The site is shown on Figure CEC1699b/05 (Site Appraisal).

3.1.1. Site boundaries and Vegetation

The south eastern site boundary comprises of a post and wire stock fence. Immediately offsite, beyond the fence, there is a substantial earth bund associated with the 'A303 Recycling Facility'. The bund is currently under construction and reaches a height of approximately 5m (estimate) along the majority of the boundary. A section towards the centre of the site allows oblique views into the recycling facility where the bund is low or absent. A dense hedge of approximately 3-4m runs south east away from the site to the western perimeter of the recycling facility.

The north eastern site boundary comprises of a post and wire stock fence allowing open views to the east. A surfaced track runs parallel to the fence within the site and into the adjacent recycling facility, separated by a gate. It is not clear, whether this is a route that may be required for occasional access by the

recycling facility operators; however, a low earth bund has been constructed against the gate.

A double row of mature pines and beech runs along the majority of the north western boundary from the north west corner of the site for approximately 520m. There is little or no understorey along this boundary. A recently planted double row of beech trees continues the existing mature double row running in a south westerly direction to the south west corner of the site for approximately 160m. There is no fencing along this boundary. An open arable field is located immediately beyond this boundary.

The southwest boundary consist of a post and wire stock fence with a native field hedge of up to 2.5-3m in height on adjacent land. A copse of semi mature trees and shrubs are located outside the boundary in the southern corner of the site.

Rows of trees and hedges on site could potentially be affected by the proposals and will be included as potential landscape receptors in the impact assessment.

3.1.2. Site access and circulation

There is no public access to the site. The site can be accessed from the north east corner along a surfaced track which also runs inside the site parallel to the north east boundary. The track links the site to Owls Lodge Farm to the north and the minor road running to the west of the site. An ornamental steel gate is located on the minor road access to Owls Lodge Farm but does not currently appear to be in use. There are no other formal field access points. However, the northern western boundary is not fenced.

3.1.3. Topography

The site lies on a low ridgeline between the River Test (approx. 1km to the north) and the River Dever (approx. 1km to the south). The ridgeline reaches a height of approximately 80m AOD at approximately 0.35km north of the site, with the northeastern site boundary being at approximately 75m AOD. Within the site the landform has a southerly aspect and falls in a south westerly / southerly direction to 65m AOD in its southern corner.

The local topography is defined by the Test and Dever river valleys which

converge approximately 3km south west of the site. This has resulted in a landscape of low valley floors interspersed with gently undulating chalk downlands. To the east the landform rises to approximately 114m in height in the area of Tidbury Ring Iron Age hill fort. To the south, beyond the River Dever, the land rises to approximately 90-95m in a series of gently undulating hills within the chalk downland.

3.1.4. Soils and geology

The British Geological Society data^{xii} states that the site overlies chalk bedrock and the nearby river valleys are made up of superficial deposits of river terrace sand and gravels. The National Soil Resources Institute data^{xiii} indicate that the site is comprised of shallow lime rich soil over chalk. This information accords with conditions experienced on site. The site is classified as grade 3 agricultural land.

3.1.5. Historic Landscape

There are no apparent features of historic landscape present on/or adjacent to the site. The Test Valley Landscape Character Assessment^{xiv} suggests that the 19th century enclosures extended across the majority of the local area. It also states that *"... immediately north of the A303 are several surviving stands of 19th century plantations which may relate to older forest of Harewood across the valley of the River Test to the north west. ..."*. The tree belt on the north western boundary does not appear on available historic maps prior to the 20th century. The regenerated woodlands to the west and south are located on the Drayton army camp, now used for training by the MOD.

3.1.6. Other features

There are no buildings or other features of interest within the site with the exception of the surfaced track on the north east boundary. There are no water bodies or water courses within the site and its environs are not within a flood risk area.

3.1.7. Surrounding Land Uses and Infrastructure

The site is surrounded by a variety of uses, set in the wider agricultural

landscape. Uses include a number of larger, intrusive structures such as the recycling facility with its large industrial unit, earth bunding and facilities to the south, the major trunk roads and their corridors and associated services to the south and east and the army training area to the southwest. There is also a disused railway approximately 300m to the east.

3.2. Landscape-related Designations

The site does not lie within a designated landscape. However, there are a number of designated areas within the study area and the vicinity of the site, as detailed below.

3.2.1. North Wessex Downs AONB

The southern edge of the North Wessex Downs AONB is located approximately 3km north of the proposals. Due to visual and physical separation by intervening topography, effects on the setting and visual amenity on the designated area and its users are unlikely. Therefore the AONB and its users will not be further considered in this assessment as landscape or visual receptors.

3.2.2. Scheduled Monuments at Tidbury Ring and Andyke

Tidbury Ring Iron Age hill fort is located at an elevated location approximately 1.6kms from the eastern boundary of the site and there is the potential for the proposals to indirectly affect the setting of the monument. It has been included in the impact assessment as a potential landscape receptor. The monument is enclosed by a woodland strip blocking views and is not publicly accessible; therefore users have not been considered as visual receptors.

Andyke Scheduled Monument is located approximately 1.3kms west of the site and is located on the north edge of the Dever River valley immediately south of the A303. Due to visual and physical separation by intervening topography, mature vegetation and the A303 road corridor, effects on the setting and visual amenity of the monument are unlikely. Therefore this monument and users have not been taken forward to the impact assessment as landscape or visual receptors.

3.2.3. Barton Stacey and Longparish Conservation Areas

There is no intervisibility and no direct or indirect effects anticipated due to intervening topography. Therefore the Conservation Areas and its users will not be further considered in this assessment as landscape and visual receptors.

3.2.4. Listed Buildings.

There are numerous listed buildings within the 2km study area, located at

Bransbury, Lower Bullington, Longparish (and environs) and Firgo Farm. Many of the listed buildings are nucleated within the villages. No listed buildings have intervisibility with the site due to intervening topography and vegetation. Therefore effects on the settings of listed buildings are not anticipated and they will not be further considered in this report as receptors.

3.2.5. Public Rights of Way

There are no PROW within or adjacent to the site boundaries. A number of local footpaths and bridleways are located within the 2km study area. The proposals may result in changes to views experienced within localised areas on these routes and those with visibility have been considered in the visual impact assessment.

3.3. Landscape Character

The following two documents contain wider area information on landscape character in this part of Hampshire, and the immediate study area, and form the basis for evaluation of landscape character:

- Countryside Character Volume 7 –South East & London, by The Countryside Agency
- Test Valley Borough Council – Community Landscape Project – Landscape Character Areas^{xv}

Relevant information from those documents has been summarised below, where applicable it has been copied directly from the original document for clarity and accuracy. The local landscape character was reviewed during the site survey work and is also described below.

Landscape character information within the study area is shown on Figure CEC1699b/04 Landscape Character.

3.3.1. National Landscape Character Areas - Countryside Character Volume 7

The study area lies within the Hampshire Downs (National Character Area 130). The key characteristics of this area are:

- Strongly rolling downland with scarps, hilltops and valleys which have an overall open and exposed character.
- Scarps and hilltops are characterised by extensive open tracts of large arable fields and some ley pasture, sporadically interrupted by woodlands. In contrast within the sheltered downland valleys, the network of mixed-species hedgerows interspersed by numerous oak/ash or hazel woodland coppice gives a strong sense of enclosure.
- Clay-with-flints overlying Chalk mainly on higher ground supports a mix of arable farms, former commons, wood-pastures and ancient semi-natural woodland. A network of distinctive and ancient droving roads and track ways are a particular feature, as are numerous large estates with formal parkland.

- Distinctive appearance of chalk cob and flint in traditional rural buildings and walls surrounding farm courtyards, with thatch surviving in many places.
- Widespread prehistoric settlement and burial mounds with visually prominent Iron Age hill forts, Roman estates and nucleated medieval village settlement patterns.
- The Test and Itchen are significant and distinctive Chalk river valleys cut into the broad downland landscape.

The character of the study area generally accords well with these characteristics, although it is less strongly rolling than perhaps experienced in the wider area.

The guidelines for this area include the following recommendations, which should be considered when designing mitigation proposals if any:

- *The landscape and nature-conservation interest of ancient woodlands, former wood pastures and relic commons should be addressed.*
- *There is scope to conserve and manage neglected and fragmented hedgerows.*
- *The protection of archaeological features and their settings is important.*
- *The protection of the Chalk aquifer from pollution should be addressed, together with the management of water resources and the conservation of rivers and their landscape setting.*
- *There are opportunities to conserve Chalk grassland by the reinstatement of traditional management regimes.*

Due to the size of this area and the nature of the proposals, it is considered unlikely that key characteristics or overall integrity of national CA 130 would be affected as a result of the proposals and it has not been taken forward as a landscape receptor.

3.3.2. Local Landscape Character Areas - Test Valley Borough Council Community Landscape Project

3.3.2.1. LCA10E (Drayton Chalk Dowlands)

Drayton Chalk Downland covers a small area of rolling Chalk Downland which extends into the Borough of Basingstoke and Deane. The site lies towards the centre of landscape character area LCA10E (Drayton Chalk Dowlands).

The key characteristics of this area are:

- ❑ *An elevated downland landscape sloping down towards the Test Valley*
- ❑ *Large areas of open arable farming, with very limited areas of grassland*
- ❑ *Poor hedgerow structure*
- ❑ *Isolated small woodlands, sometimes associated with farmsteads*
- ❑ *Areas of shelter belts which are linked together to provide some enclosure*
- ❑ *A more complex landscape adjacent the Test Valley*
- ❑ *Large redundant army base with associated woodland, scrub and rough grassland (CEC Note: Now used as training centre by the MOD)*
- ❑ *Redundant railway line demarcated within landscape as long wooded feature*
- ❑ *Dominant road corridor of the A303 and A34, with large junctions*
- ❑ *Largely a landscape dominated by 19th century parliamentary enclosure*
- ❑ *Iron Age hill fort (Tidbury Ring) present within the eastern portion of this character area*
- ❑ *No settlement and few farmsteads.*

The character area information contains the following management guidelines, which should be taken account of when developing mitigation proposals and planning the proposal layout:

- ❑ *Maintain areas of remoteness and tranquillity*

- ❑ *Protect and enhance views to valued local landscape features*
- ❑ *Seek opportunities to retain remaining small areas of pasture*
- ❑ *Discourage further amalgamation of fields and loss of hedgerows*
- ❑ *Encourage sustainable farming practices with a view to minimising the impact of new farming infrastructure and methods including spraying and fertiliser applications*
- ❑ *Encourage new farm buildings to be well sited and integrated into the landscape*
- ❑ *Encourage careful siting of new energy crops in keeping with the local landscape pattern and to create a positive contribution to the landscape*
- ❑ *Restore lost and fragmented hedgerows on former hedgerow lines*
- ❑ *Promote good management of woodlands*
- ❑ *Seek opportunity to enhance and manage the woodland structure of Drayton Camp*

With local landscape character area LCA10E covering the site, potential effects of the proposals on this area should be considered and it has been included in the impact assessment as a potential landscape receptor.

3.3.2.2. LCA 10D (Leckford and Chilbolton Chalk Downs)

The northern edge of landscape character area LCA10D is located within the study area, approximately 1.1km to the south of the site.

The key characteristics of this area are:

- ❑ *An elevated downland landscape sloping down through a number of gentle dry valleys towards the valley of River Test*
- ❑ *Large areas of open arable farm land, with very limited areas of grassland.*
- ❑ *Poor hedgerow structure*

- *Isolated small woodlands, sometimes associated with farmsteads*
- *Shelter belts some of which are linked together provide some enclosure*
- *A more complex landscape adjacent the Test Valley*
- *Largely a landscape dominated by 19th century parliamentary enclosure*
- *Visually prominent radio telescope communication centre at Chilbolton*
- *MOD rifle range at Barton Stacey with associated grassland*
- *Large orchard at Leckford Abbas*
- *Well dispersed farmsteads*
- *Expansion of Chilbolton and Barton Stacey up from the valley floor into the area*
- *A large scale landscape of 'big skies' and wide views.*
- *Local Natural and Cultural Landscape Issues*
- *Risk of extensive views of any new large to medium scale development*
- *Potential impact from any change to the use on MOD sites.*

The development has the potential to affect the setting of the Leckford and Chilbolton Chalk Downs LCA 10D and it will therefore be considered as a landscape receptor in the impact assessment.

3.3.3. Local Landscape Character

The site is located in an inhomogeneous landscape, where a number of uses overlay the historic remote rural character. The adjacent recycling centre with its industrial unit and bunding forms a distinct feature in many local views. The traffic on the main trunk roads adds business to the landscape and can be perceived visually and audibly from higher ground. MOD uses add another layer of character, by introducing disturbed areas with some scrub and young woodland into the wider agricultural landscape.

Arable use on site accords well with the wider landscape character. However, hedges are either removed or in a deteriorating state. The beech and pine

avenue appears of more recent origin and does not link to other features in the landscape. It is however a prominent feature in views towards the site.

Due to local topography, the site does not feel part of the adjacent river valley landscape, but is more associated with the southern and eastern slopes.

Taking account of the already inhomogeneous nature of this area of landscape, the empty nature of the proposal site (i.e. made up of one large field with deteriorating boundaries) and its visually contained nature; it is considered that the site would be able to accommodate a significant amount of change without detrimental impacts on the character of the wider area. This will be discussed further in the impact assessment when considering the potential change for local landscape character areas as receptors.

3.4. Visual Conditions and Views

This section describes the visual characteristics and qualities in the study area based on the landscape baseline information on the previous pages. Key views are identified and briefly described. The Visual Envelope of the existing site together with main visual elements and receptors is shown on Figure CEC1699b/06 – Visual Appraisal and is described below.

3.4.1. Visibility of the existing site

An initial visibility analysis of the existing site was prepared using a 5km radius to ensure that all potential areas of visibility were covered by site work. Site verification of views in the study area led to it being reduced to 2.5km, plus consideration of the outlier area up to approximately 3.7km to the south/southwest of the site.

Areas of potential visibility are principally located in the following areas:

- Views from the immediate vicinity to the site including the minor road to the west of the site
- Views from the PROW (path 35) to the east of the site (west of Tidbury Ring).
- Views from Barton Drove PROW (path 15), east of Barton Stacey
- Views from roads and PROW (paths 6 & 16) south/southwest of Barton Stacey, up to 3.7km distance.

No properties within the study area were identified as having views to the site. The A303 and A34 road corridors do not have views of the site as they are screened by vegetation or run in cutting. Traffic on the trunk roads is however visible in several views when looking towards the site.

The Visual Envelope is an approximation and a useful tool to assess the worst case baseline situation. This theoretical worst case scenario was verified during site work. The results of the site work can be summarised as follows:

Table 2: The site's Visual Envelope

Area	Discussion
<p>A. Views from the minor road to the west of the site and recycling facility. Distance 0.1 to 0.35km</p>	<p>The views are intermittent and transient for users of the local road. There are two glimpsed views, one through the ornamental Owls Lodge Farm gates and another through a field gate to the south, although these views are oblique and transient. Views are towards the western areas of the site, as the tree belt on the northern boundary, hedge vegetation and the rising land effectively screen other areas.</p> <p>The recycling facility is screened by an earth bund and is currently a disturbed landscape. There are no views into the site from the public recycling centre area or its access road.</p>
<p>B. Views from the PROW (35) east of the site (west of Tidbury Ring). Distance 1.15km</p>	<p>These views are middle distance views from the higher elevations to the east of the site. The observer can see some of the northwestern and central field areas above the bunds from the recycling centre and in front of the beech and pine avenue.</p> <p>At lower levels tree belts and the vegetation on the disused railway screen or partially screen views to the site. The bund within the recycling facility also screens the central sections of the site.</p>
<p>C. Views from the roads and PROW (paths 6 & 16) west and south west of Barton Stacey distance up to 3.7km</p>	<p>These views are potential long distance views from the elevated downlands to the south west of the site. Dense roadside hedgerows and intervening ridgelines screen potential views from most locations within the area. The location identified has a very limited view of the site at a long distance, not readily perceptible.</p> <p>There is a potential view from the roman road PROW 16 near Newton Down Farm. As for road users, only a minor part of the site at a great distance may be visible if searched out using binoculars, but is not readily perceptible by walkers etc.</p> <p>Access to the PROW (path 6) within the live firing range was not possible during the site visit. The theoretical ZTV identified a location on path 6 which would be similar to VPs 1 and 2 and on the same sight line as VP1.</p>
<p>D. Views from the PROW (path 15) and East of Barton Stacey Distance 2km</p>	<p>This is a localised view from a high point on Barton Drove (PROW). Elsewhere views are screened by intervening vegetation and intervening topography. The earth bund at the recycling centre screens the majority of the eastern and southern (lower) sections of the site.</p>

Based on the discussion of the findings of site work in relation to visibility of the existing site, visual impacts on areas A, B, C and D will be discussed in the impact assessment. From the above considerations it becomes clear that the actual site visibility is significantly reduced from the theoretical visibility due to

the screening effect of local vegetation and road side hedge banks and the recycling facility bunding, none of which would have been included in the wider area contour model supplied by Ordnance Survey. Generally, views of the site were difficult to obtain, are normally through gaps or gates in hedges and are partial only. The most direct view is from PROW 35, but again only part of the site is visible as a narrow slice, with the recycling facility bunding in the foreground and the beech and pine avenue in the back. The site is considered to be relatively well visually contained, with only a small actual area of visibility.

Views within the study area include a number of inhomogeneous elements such as the trunk road corridors and facilities, recycling centre and facilities and the MOD areas.

Key views illustrating the above areas are described in section 3.4.2 below.

3.4.2. Brief description of key views

Key views were selected to be representative of views experienced from within the visual envelope areas A to D discussed above. Photographs are contained in Appendix 4.

Table 3: Key Views

Key View	Description
<p>Key view 1 – The Roman Road (PROW) north east of Newton Down Farm ca 3.7km SW of the site (path 16) (Representative of type of views from Area C)</p>	<p>It is possible that a glimpsed view of the north east corner of the site can be identified by the informed observer using binoculars, therefore unlikely to be perceptible by the occasional walker / footpath user. This long-distance glimpsed view would be set against the foreground of the recycling facility bund and industrial unit. The view is limited to a single gap in an otherwise dense hedge. It is also set within the context of a backdrop of treed ridgelines and extensive foreground.</p>

Key View	Description
<p>Key view 2 – Road between Newton Stacey and Barton Stacey, ca. 2kms SW of the site (Representative of type of views from Area D)</p>	<p>This viewpoint is located on the road between Newton and Barton Stacy. It is from an elevated position. This is a localised and partial, glimpsed view limited to a single gap in the hedge. Elsewhere in the immediate area views are not possible due to intervening topography and vegetation. The view is set against the backdrop of treed ridgelines and foreground trees. A whole site view is not possible.</p>
<p>Key view 3 – Barton Drove PROW east of Barton Stacey ca 2km south of the site (path 15) (Representative of type of views from Area D)</p>	<p>A localised partial, middle to long distance view from a high point on the PROW. The view is only possible where the hedge has been maintained at a lower level. Elsewhere the views are screened by intervening vegetation and ridgelines. Large sections of the site are screened by the earth bund in the recycling centre.</p>
<p>Key view 4 - . Views from the PROW east of the site (west of Tidbury Ring). Distance 1.15km (Path 35) (Representative of type of views from Area B)</p>	<p>This is a middle distance view from the higher elevations to the east of the site. In other nearby locations, tree belts and the vegetation on the discussed railway screen or partially screen views to the site. The bund within the recycling facility also screens the middle and lower sections of the site. The most extensive view from these location are towards the north western sections of the site whilst a small section of the north east of the site is also visible, but at a less elevated angle.</p>
<p>Key view 5 – A. Views from the farm track access NW of the site. Distance 0.35km (Representative of type of views from Area A)</p>	<p>This close distant view is experienced by users of the local road passing close to the site. The views are towards the lower levels of the western sections of the site from the north west, as the tree belt on the northern boundary and the ridgeline effectively screen other areas. There may be the potential for filtered views beneath the canopies of the tree belt as there is little understorey. The ridgeline screens upper sections of the site.</p>

Key View	Description
<p>Key view 6 – Glimpsed view through the gappy hedge along the minor road west of the site. Distance 0.1km (Representative of type of views from Area A)</p>	<p>Views through the hedge are limited. When the hedge is in leaf it is likely views will not be possible. There is a further screening by the hedge along the site boundary. This is a transient view and is generally well screened.</p>
<p>Key view 7 – View through a field gate on the minor road west of the site Distance 0.3km (Representative of type of views from Area A)</p>	<p>A similar viewpoint to key view 5. This close distant view is experienced by users of the local road. Any views would be glimpsed, transient and of small areas of the site only.</p>

3.5. Summary of Baseline Study

The LVIA baseline was analysed initially within a 5km area of search, through desk study and theoretical visibility modelling. Site verification of this initial area of search resulted in definition of a 2.5km study area, with an outlier area between 3 and 4km to the southwest of the site.

National and regional planning policy context of some relevance to the LVIA report was briefly set out. In terms of local planning policy, the site is covered by the Test Valley Borough Local Plan. The plan has a number of policies relevant to the proposals, including renewable energy, countryside and hedges and tree policies.

The site is located on the lower sections of a gently undulating ridge between the River Test, to the north and the River Dever, to the south. It lies below a local ridge and has a gently sloping southerly aspect between approximately 65-75m AOD. It is comprised of a single rectangular open field falling in a south westerly direction. The site is in arable agricultural use, and has recently been ploughed.

A hedge and stock fence is located on the south west boundary. The hedge is relatively dense and maintained at 2.5 to 3 metres in height. The south east and north east boundaries are stock fenced only. A double row of mature pines and beech are located along the majority of the north western boundary, forming a prominent feature in some wider area views.

A minor road (Southside Road) linking Longparish and Barton Stacy runs north to south at approximately 100m from the western boundary. The proposed site will be accessed from a surfaced farm track off this road.

The site is located in a historically rural area recently overlaid by a number of inhomogeneous modern uses that have shaped the current character and appearance of the local area. A recycling centre is located immediately adjacent to the site and characterised by significant artificial earth bunding and a large industrial unit on its premises, making it a prominent installation in the wider area and a key component in views to the site.

The A303 and A34 are major road corridors in the area, with the A303 running east to west at approximately 0.35km from the southern boundary of the site.

The Barton Stacy junction with the A303 is also located here, so is a service station, which is prominent in some views.

The MOD is using a number of sites in the area, including Drayton army camp to the south of the site, now used for MOD training exercises. The MOD sites are characterised by disturbed ground, scrub and young woodland, contrasting with agricultural uses elsewhere.

Other distinctive features within the area are a treed disused railway to the east and the River Dever and River Test valleys. The river corridors are physically and visually separated from the site.

There are only a limited number of designated areas and features within the study area. The North Wessex Downs AONB is located approximately 3km north of the proposals. Due to visual and physical separation by intervening topography, effects on the setting and visual amenity on the designated area and its users are unlikely and it has been excluded from the impact assessment.

The Tidbury Ring Iron Age hill fort is located on a hill at 114m AOD at approximately 1.8km to the east of the site and is screened by mature trees and shrubs on its boundaries, but has a visual connection to the wider landscape including the site. It is not publicly accessible. It has been included as a landscape receptor in the impact assessment to investigate potential effects on its setting. Andyke Scheduled Ancient Monument is also in the area, but is unlikely to experience any effects due to visual and physical separation from the site.

Conservation areas and listed buildings were reviewed as part of the desk study and site work, but none have a visual or physical connection to the site and have therefore not been included as receptors.

There are no Public Rights of Way (PROW) on site, but several in the study area. PROW 6, 15, 16 and 35 have been identified to be within the theoretical visibility area of the site and users would be included as visual receptors. PROW 16 is along a Roman Road approximately 3.7km southwest of the site.

The site is within national character area 130 – Hampshire Downs. In a local context, the site is within LCA10E (Drayton Chalk Dowlands), a small area of

rolling Chalk Downland. Area LCA 10D (Leckford and Chilbolton Chalk Downs) is to the south, and as this land is elevated and relatively open there is some inter-visibility from localised elevated areas.

Visually, the site is well contained and always seen in conjunction with the recycling facility and road corridors. Views of the site are limited to a small number of locations along PROW and local roads on higher ground to the east and south. There are also glimpsed views to the site through field gateways and occasional breaks in hedges from the minor road to the west. Views from the north are screened by a low ridgeline close to the north western site boundary. Properties in the vicinity of the site have no intervisibility. Many of the local villages and farms tend to be located in river valleys and elsewhere intervening vegetation and topography screens view to the site. Views from the recycling centre are screened.

In summary of the findings of the baseline study and to aid the understanding of the impact assessment, key elements, features and characteristics of the landscape on site and in the study area have been listed in Table 4 below. Landscape and visual receptors to be taken forward to the impact assessment are listed in Tables 5 and 6 respectively, including their sensitivities in accordance with the methodology in Appendix 2.

3.5.1. Key elements, features and characteristics

In summary of the baseline description, including landscape character, the following key landscape elements, features and characteristics can be identified.

Table 4: Key landscape and visual elements, features and characteristics

	LANDSCAPE	VISUAL
Key Elements	Large to medium scale field patterns with hedges lost or in deteriorating condition.	Mature beech and pine tree belt on the northern boundary. Disturbed land and industrial unit associated with the recycling centre. Mature hedgerows and hedge banks along many roads and PROW restricting views.
Key Features	The A303 road corridor and recycling centre forming prominent features. MOD land uses in the area.	Traffic on the A303 road corridor visible from many locations. Wooded ridges and large arable fields. Tidbury Ring Iron Age hill fort.
Key Characteristics	Open chalk downland intersected by river valleys. Settlements predominantly low lying in river valleys. The contrast between undeveloped chalk downlands with traditional villages and the modern intrusive uses in the area such as recycling centre, trunk road corridors and ancillary facilities and the MOD uses.	Land along the river valleys is generally more intimate with limited long distance views and tree belts and plantations. The ridgelines screen views to the north. Land to the south of the A303 rises in a series of ridges and hills and is generally more open with long distance views in local areas.

3.5.2. Summary of Landscape Receptors

Landscape receptors include designated areas, landscape character areas and landscape elements that could be affected by the proposals either directly (for example removal of elements, change of use) or through change of setting (character changes in areas close to designations).

Table 5: Summary of landscape receptors

(Note: For sensitivity criteria refer to Appendix 2: Methodologies, LVIA)

CATEGORY	RECEPTOR	SENSITIVITY
Landscape Designations	Tidbury Ring Scheduled Ancient Monument hill fort	High
Landscape Character	Drayton Chalk Downlands Character Area (LCA10E)	Medium
	Leckford and Chilbolton Character Area (LCA10D)	Medium
Landscape Elements	Mature tree belt on the site boundary	Medium
	Hedge on the site boundary	Low

3.5.3. Summary of visual receptors

Visual receptors are people who are likely to be affected by the proposals through changes in the view from the places where they live, work, travel, or walk, etc., and can include (LI and IEMA, 2002; Page 75):

1. Users of recreational landscapes or public footpaths and bridleways including tourists and visitors
2. Residents
3. Users of public roads
4. Workers
5. Views of, or from within, valued landscapes

The assessment focuses in the first instance on people who would perceive the landscape and any change to it. Visual receptors addressed in this assessment would be located up to a distance of 2km in line with the study area definition, with the 3.7km distant outlier area along the Roman Road also considered. The

table below summarises visual receptors for each area in the Visual Envelope of the existing site.

Table 6: Summary of visual receptors

Visual Envelope Area	Summary of visual receptors	Sensitivity	Key Views
A	Road users of the minor road west of the site and workers in the Recycling Facility	Low	5, 6, 7
B	Users of the PROW to the east of the site (path 35)	Medium	4
C	Users of the PROW and roads to the west and south west of Barton Stacey (paths 6 & 16)	Low / Medium	1
D	Users of the PROW to the east of Barton Stacey (path 15)	Medium	2, 3

3.5.4. Constraints and opportunities

Constraints and opportunities determined as a result of the baseline study can be summarised as follows.

Constraints:

- Retention of existing boundary trees and hedgerows with appropriate buffer zones, thus limiting the area available for development.

Opportunities:

- Existing site boundaries could provide increased local screening if an improved management plan is adopted.
- Increase the landscape infrastructure, screening potential and habitat diversity of the site with native boundary hedge and tree planting.
- 5 to 10m buffer zone to hedgerows could be incorporated to allow for adequate protection and future growth, whilst also providing opportunities for biodiversity enhancement.

4. Impact Assessment

The baseline study, in conjunction with the planning policy review, provides a sound basis to identify and discuss impacts of the proposals on the landscape and visual resources. This section identifies impacts caused by the proposals. Options for additional mitigation measures are discussed in section 4.4 based on the findings of the impact assessment.

The impact assessment is conducted for the operational phase of the development in accordance with the definitions and criteria described in Appendix 2. Impacts on landscape receptors and visual receptors are assessed separately.

Construction impacts are briefly discussed in each section, but are not represented in table format as they are not expected to be significant. For details of the construction process refer to technical information submitted with the planning application.

4.1. Landscape Impacts

Potential impacts on the landscape resource during construction and operation are discussed below.

4.1.1. Construction Impacts

Principal construction effects on the landscape resource in the area would include:

- Increased activity on site and the lane leading to it for a period of 12 weeks.
- Potential to impact on hedges and trees on site boundaries.
- Exposure of bare soil due to construction activity.

The increase in activity for a short period of time is not considered an issue in the wider context of the recycling centre and A303. Users of the minor road to the west of the site may be affected during weekly working hours, but it is not intended to work over night or at weekends, therefore this impact on the road

users is unlikely to be more than slight for a limited period of time.

Impacts on hedges and trees will be avoided by using the existing surfaced entrance track in the north east corner of the site and observing protection zones to all trees and hedges. Those will be delineated with temporary fencing to ensure no construction machinery enters those areas. No actual impacts on those elements are envisaged.

The site currently consists of bare soil due to its arable management and this is a regular feature in the area. The presence of bare soil during construction is unlikely to lead to any perceived change of the character in the area in addition to that already existing through agriculture and the recycling centre activities.

Table 7 Landscape Impact Assessment – Construction Phase

Category	Receptor	Sensitivity	Description of Change	Magnitude	Degree of Change	Significance
Landscape Designation	Tidbury Ring Iron Age hill fort Scheduled Ancient Monument	High	The site could be considered to form part of the setting of the hill fort. However, the recycling centre with its extensive bunding is in the foreground to any potential views from the fort. In addition, the fort is surrounded by a dense tree belt and is not publicly accessible. Much of the construction activity on site would be screened by the recycling centre bunding and the construction activity is comparable to busy movements in the recycling centre and machinery on agricultural land. The change as a result of the proposals is therefore considered to be minimal, not adding much to the already existing business in the landscape.	Negligible	Slight	Not significant

Category	Receptor	Sensitivity	Description of Change	Magnitude	Degree of Change	Significance
Landscape Character Area	Drayton Chalk Dowlands Character Area LCA10E	Medium	<p>The overall landscape character of the character area will not be altered during the construction phase. The field patterns, characteristic landscape elements and landform are preserved. The site is well screened and not a significant element within the context of the overall character area. The change during construction also needs to be assessed within the context of the industrial character of the adjacent recycling centre and the busy A303 major road corridor with its associated infrastructure. During construction additional traffic will introduce a new element into the landscape although this will be over a short time period and limited in extent. This could cause a localised change to the perception of the landscape and its character. The site traffic will use the existing field access track.</p> <p>The presence of bare soil during construction is considered in line with agricultural practice and is of a short-term nature only.</p>	Low	Slight	Not significant

Category	Receptor	Sensitivity	Description of Change	Magnitude	Degree of Change	Significance
Landscape Character Area	Leckford and Chilbolton Character Area LCA10D	Medium	The overall landscape character of this adjacent area will not be directly altered by the proposals. Views between the site and this character area are very localised and at long distance and at a low level, partially screened and set within the context of the adjacent disturbed land the A303 road corridor. During construction the proposals are unlikely to have a marked effect on the character area.	Negligible	Negligible	Not significant
Landscape Elements	Northern boundary tree belt	Medium	The proposal will bring about no change to the tree belt subject to sufficient temporary protection or erection of fence prior to commencement of construction (i.e. construction activity not occurring within the proposed buffer zones). Access to the site will be along the existing track and across a temporary hardcore track along the alignment of the future grass access shown on the proposal plan.	No change	No change	Not significant
	Boundary Hedge	Low	As above, the proposal will bring about no change to these features subject to protection measures / observation of proposed buffer zones.	No change	No change	Not significant

4.1.2. Operational Impacts

Principal operational effects on the landscape resource in the area would include:

- Change from arable to grazing use and buffer strips managed for biodiversity benefits,
- Introduction of large new technical infrastructure installation on agricultural land.

The change of use to grazing could be considered in line with management recommendations for LCA10E and the introduction of buffer zones could be used to re-create some chalk grassland communities over time or at least allow for some flora and fauna associated with chalk to return.

The introduction of a large new technical structure would result in a localised change of character. On this site, there are already many modern intrusive elements nearby and the site is well screened, so any character impacts would be localised and perceived in close relation to adjacent prominent uses.

Operational impacts on landscape receptors are discussed in more detail in Table 8 below.

Table 8: Landscape Impact Assessment – Operational Phase

Category	Receptor	Sensitivity	Description of change	Magnitude	Degree of change	Significance
Landscape Designation	Tidbury Ring Iron Age hill fort Scheduled Ancient Monument	High	<p>The site could be considered to form part of the setting of the hill fort. However, the recycling centre with its extensive bunding is in the foreground to any potential views from the fort. In addition, the fort is surrounded by a dense tree belt and is not publicly accessible.</p> <p>The potential change in view is illustrated in the photomontage for viewpoint 4. The proposals are not prominent, do not breach the skyline and are partially screened. They are seen as part of other development including the recycling centre, roads and agricultural sheds.</p>	Negligible	Slight	Not significant

Category	Receptor	Sensitivity	Description of change	Magnitude	Degree of change	Significance
Landscape Character Area	Drayton Chalk Dowlands Character Area LCA10E	Medium	The overall landscape character of the character area will not be altered by the proposals. The field patterns, characteristic landscape elements and landform are preserved, therefore ensuring full retention of the elements contributing to the character of the landscape. The site is well screened and not a significant element within the context of the overall character area. Potential change also needs to be assessed within the context of the adjacent disturbed landscape of the recycling centre and the nearby A303 major road corridor. Grazing is proposed under the panels therefore the agricultural use will change from arable to pasture which would be in line with management recommendations for this LCA. Construction of a solar park will introduce a new element into the landscape, which could be argued to cause a localised change to the perception of that landscape and its character. The solar park will, however, be contained within the existing landscape structure and its layout is designed to work with existing features, such as the hedge, tree belt and topography. The solar park itself could also be interpreted as a productive and positive element in the landscape.	Low	Slight	Not significance

Category	Receptor	Sensitivity	Description of change	Magnitude	Degree of change	Significance
Landscape Character Area	Leckford and Chilbolton Character Area LCA10D	Medium	The overall landscape character of this adjacent area will not be directly altered by the proposals. Views between the site and this character area are very localised and at long distance. As the site is at a distance, at a low level, partially screened and set within the context of the adjacent disturbed land the A303 road corridor the introduction of a solar park in this context is unlikely to have a marked effect on the character area.	Negligible	Negligible	Not significant
Landscape Elements	Northern boundary tree belt	Medium	The proposal will bring about no change to the tree belt. Buffers are included between the trees and the solar arrays. Access to the site will be along the existing track and across the grass during operation.	No change	No change	Not significant
	Boundary Hedge	Low	As above, the proposal will bring about no change to these features.	No change	No change	Not significant

4.2. Visual Impacts

This section assesses visual impacts on visual receptors grouped into key views in Year 1, i.e. on completion of construction of the proposal, with a brief summary of construction impacts. The assessment is based on site work findings and a comparison of the ZTV model with the existing baseline using viewpoint photography as an informative tool. The effects of any mitigation measures are discussed in section 4.3 and could result in reduction of visual impacts over time.

4.2.1. Limitations of ZTV

The ZTV as illustrated on Figure CEC1699b/07 represents an area of search, within which visual impacts are analysed and determined in more detail. Not all properties, roads, footpaths, etc., included in the ZTV will automatically have views of the proposals, as hedgerows and local vegetation other than main woodland blocks and the recycling centre bunding have not been included in the computer model due to data limitations. Equally, there may be some areas shown as having no visibility in the ZTV where locally glimpsed or partial views can be found due to tree belts and hedges modelled as visual barriers having some localised gaps or reduced screening effect. The ZTV is an approximation and a tool to explain visual impacts in comparison to the visual baseline situation and to narrow down the area included in a more detailed analysis. The visual analysis has been run according to the methodology contained in Appendix 2.

4.2.2. Glare and Glint

For a discussion of glare refer to Appendix 2. In summary, glare is unlikely to be an issue as solar panels are designed to maximise absorption of light and have a surface that is anti-reflective and diffusing. As a result, there may be some localised glare in very close proximity to the panels, but not from any distance. At a distance, the glare will simply be perceived as a lighter area in the landscape.

In addition, glare and glint would only be perceived at very specific times of year and day in a limited area.

4.2.3. Construction Impacts

Construction-phase impacts on visual receptors in the area will last for a period of 12 weeks and the principal effect would be an increase in vehicle movement in the landscape and increased activity on site. Night working is not proposed, so lighting would not be an issue.

Near to the site viewers will have close views of different stages of the construction activity, including the laying of temporary access tracks and site compounds, fencing works, the construction of frames, modules and inverters. There will be views of construction vehicles and workers on site. Existing views are limited and transient. For more distant receptors, some of this activity will be perceptible but it is likely that the overall degree of change will be less significant.

It is thought that the increased activity during the construction phase will be noticeable, but would not exceed an acceptable level, given the presence of other activity, such as the recycling facility and A303 in the local area.

Table 9: Visual impacts – Construction Phase

Viewpoints	Receptor type	Visual sensitivity	Type of view	Description and potential visual impacts	Impact Magnitude	Degree of Change	Significance
Key view 1 – The Roman Road (PROW) North east of Newton Down Farm Distance 3.7kms (path 16)	Public right of way users	Medium	Long distance, partial and glimpsed	<p>From this viewpoint, an informed observer could potentially seek out the site using binoculars, but it is unlikely that the casual user would perceive any change. This is a localised glimpsed view along a shallow valley as other potential views along the PROW are screened by intervening topography and dense path side hedgerows. The view is set within the context of the recycling centre industrial unit and bund and the treed ridgelines beyond.</p> <p>The view would be to the higher sections of the east of the site where the access track enters the site. The screen bund at the recycling centre will screen lower sections. Views to traffic on the access road will be screened by the north west boundary tree belt.</p> <p>There is the potential of a view along the same sight line (path 6) at approximately 2.2kms from the site. As it is located in a live firing range the view was not available during the site visits. It is however considered that the character of the view would be similar – of higher eastern parts of the site free from development with recycling centre in the foreground, therefore any change would be negligible.</p>	No change / Negligible	No change / negligible	Not significant

Viewpoints	Receptor type	Visual sensitivity	Type of view	Description and potential visual impacts	Impact Magnitude	Degree of Change	Significance
Key view 2 – The road between Newton and Barton Stacey ca. 2km to the site	Road users	Low	Medium distance, partial, glimpsed, slightly elevated	From this viewpoint a small part of the site is visible through the hedgerow. Elsewhere the road has dense hedgerows and views are not possible i.e. the view towards the site has to be sought out. Some of the construction may be perceptible from this viewpoint, however the existing access track will largely be screened by the tree belt on the north west boundary It is likely that any potential changes will be missed by a casual observer.	Low	Negligible	Not significant
Key view 3 – Barton Drove (PROW) east of Barton Stacey Ca 2km to the site (path 15)	Public right of way	Medium	Medium distance, partial, glimpsed from slightly elevated position.	From this viewpoint construction in the western sections of the site could be perceived. The eastern sections are screened by bunds to the recycling centre. The site is also set below the wooded ridgelines, tree belts and largely contained by other adjacent landscape features. The tree belt will screen traffic on the access track. This view is only possible from a small section of the most elevated part of the path where the hedgerow has been recently flailed. Elsewhere on the path views to the site are screened by intervening topography and vegetation. When the hedge is in leaf and has grown during the next season it is likely that the view will not be possible. It is also likely that a change in view will be missed by a casual observer.	Negligible to low	Negligible to Slight	Not significant

Viewpoints	Receptor type	Visual sensitivity	Type of view	Description and potential visual impacts	Impact Magnitude	Degree of Change	Significance
Key view 4 – View from the PROW east of the site West of Tidbury Ring) ca. 1.15km (path 35)	Public right of way users	Medium	Medium distance, partial, open.	Views to construction activities on site from this PROW are only possible along a short section from the higher elevations within the vicinity of this viewpoint. The access track is screened by the north west boundary tree belt. However there will be views to traffic entering the site on the north east corner during working hours. The central sections of the site are screened by the bund of the recycling centre. Construction in some areas of the western parts of the site will be possible.	Low to Medium	Slight to Moderate	Not significant
Key view 5 – View from the farm access track NW of the site. Ca 0.35kms	Road users	Low	Close distance, partial, transient and glimpsed.	A close distance view experienced by road users. Construction activities will be possible in western sections of the over the low ridgeline. It is also possible to experience a filtered view below the canopies of the tree belt. This view needs to be considered within the context of the disturbed land of the recycling centre in the background. The view will be further screened when the hedge is in leaf. During working hours close distance views of site traffic will possible along the site access track.	Medium	Slight	Not significant

Viewpoints	Receptor type	Visual sensitivity	Type of view	Description and potential visual impacts	Impact Magnitude	Degree of Change	Significance
Key View 6 – View through gappy hedge to the west of the site Ca 0.1kms	Road users	Low	Close-distance, partial, transient and glimpsed	This view is through the gaps in the roadside hedgerow. It is likely that this view will not be possible when the hedge is in leaf. It is also likely that a change in view will be missed by a casual observer.	Low	Negligible	Not significant
Viewpoint 7 – View through a field gate on the minor road to the west ca 0.3kms	Road users	Low	Close distance, partial, transient and glimpsed.	Construction activities will be possible in western sections of the over the low ridgeline. It is also possible to experience a filtered view below the canopies of the tree belt. This view needs to be considered within the context of the disturbed land of the recycling centre in the background. During working hours views of site traffic on the access road may also be possible.	Medium	Slight	Not significant

4.2.4. Operational Impacts

Principal operational visual effects of the installation would be the introduction of a new visual element of a technical nature into views. Glare and glint are not considered to be an issue, see 4.2.2 above and Appendix 2.

Table 10 below details operational impacts on visual receptors by evaluating the change to key views as a result of the development. As several different visual receptors may experience views from the same point, this avoids duplication and ensures the assessment remains relevant.

A photomontage of the proposal has been prepared for key view 4. See Appendix 4.

Table 10: Visual Impact Assessment – Operational Phase

Viewpoints	Receptor type	Visual sensitivity	Type of view	Description and potential visual impacts	Impact Magnitude	Degree of Change	Significance
Key view 1 – The Roman Road (PROW) North east of Newton Down Farm Distance 3.7kms (path 16)	Public right of way users	Medium	Long distance, partial and glimpsed	<p>From this viewpoint, an informed observer could potentially seek out the site using binoculars, but it is unlikely that the casual user would perceive any change. This is a localised glimpsed view along a shallow valley as other potential views along the PROW are screened by intervening topography and dense path side hedgerows. The view is set within the context of the recycling centre industrial unit and bund and the treed ridgelines beyond.</p> <p>The view would be to the higher sections of the east of the site as the screen bund at the recycling centre will screen lower sections. It should be noted that the higher eastern parts of the site have been kept free from solar panels under current proposals; therefore no change would be observed.</p> <p>There is the potential of a view along the same sight line (path 6) at approximately 2.2kms from the site. As it is located in a live firing range the view was not available during the site visits. It is however considered that the character of the view would be similar – of higher eastern parts of the site free from development with recycling centre in the foreground, therefore any change would be negligible.</p>	No change / Negligible	No change / Negligible	Not significant

Viewpoints	Receptor type	Visual sensitivity	Type of view	Description and potential visual impacts	Impact Magnitude	Degree of Change	Significance
Key view 2 – The road between Newton and Barton Stacey ca. 2km to the site	Road users	Low	Medium distance, partial, glimpsed, slightly elevated	From this viewpoint a small part of the site is visible through the hedgerow. Elsewhere the road has dense hedgerows and views are not possible i.e. the view towards the site has to be sought out. Some rows of solar panels, visible as darker linear features, may be perceptible from this viewpoint. It is likely that any potential changes will be missed by a casual observer.	Low	Negligible	Not significant
Key view 3 – Barton Drove (PROW) east of Barton Stacey Ca 2km to the site (path 15)	Public right of way	Medium	Medium distance, partial, glimpsed from slightly elevated position.	From this viewpoint the western sections of the site are visible. The eastern sections are screened by bunds to the recycling centre. The site is also set below the wooded ridgeline and largely contained by other adjacent landscape features. This view is only possible from a small section of the most elevated part of the path where the hedgerow has been recently flailed. Elsewhere views to the site are screened by intervening topography and vegetation. When the hedge is in leaf and has grown during the next season it is likely that the view will not be possible. It is also likely that a change in view will be missed by a casual observer.	Negligible to low	Negligible to Slight	Not significant

Viewpoints	Receptor type	Visual sensitivity	Type of view	Description and potential visual impacts	Impact Magnitude	Degree of Change	Significance
Key view 4 – View from the PROW east of the site West of Tidbury Ring) ca. 1.15km (path 35)	Public right of way users	Medium	Medium distance, partial, open.	Views to the site from this PROW are only possible along a short section from the higher elevations within the vicinity of this viewpoint. The central sections of the site are screened by the bund of the recycling centre. Some eastern and western parts of the site are visible as a thin strip above the bunding and below the treebelt along the site boundary.	Low to Medium	Slight to Moderate	Not significant
Key view 5 – View from the farm access track NW of the site. Ca 0.35kms	Road users	Low	Close distance, partial, transient and glimpsed.	A close distance oblique view experienced by road users. The lower western sections of the site are visible over the low ridgeline. It is also possible to experience a filtered view below the canopies of the tree belt. This view needs to be considered within the context of the disturbed land of the recycling centre in the background. The view will be further screened when the hedge is in leaf. The newly planted double row on the boundary will also further screen the site over time.	Medium	Slight	Not significant

Viewpoints	Receptor type	Visual sensitivity	Type of view	Description and potential visual impacts	Impact Magnitude	Degree of Change	Significance
Key View 6 – View through gappy hedge to the west of the site Ca 0.1kms	Road users	Low	Close-distance, partial, transient and glimpsed	This view is through the gaps in the roadside hedgerow. It is likely that this view will not be possible when the hedge is in leaf. It is also likely that a change in view will be missed by a casual observer.	Low	Negligible	Not significant
Viewpoint 7 – View through a field gate on the minor road to the west ca 0.3kms	Road users	Low	Close distance, partial, transient and glimpsed.	As per key view 5.	Medium	Slight	Not significant

4.3. Impact Assessment Summary

The arrays of solar panels would be a new feature in the landscape and one which has an engineered and technological appearance. However, the solar panels are arranged to respect the local landscape structure, and reflect the landform (there will be no terracing or cutting of ground, the panels will follow the landform, although they are not aligned with the flow of the contours). No boundaries will be removed; hedges and trees will be retained. The use will change from arable to grazing, with buffer margins managed for biodiversity benefits.

The site is located in an area, where historic landscape character has been overlaid by modern structures and installations such as trunk road corridors and ancillary facilities, the recycling facility and MOD uses. It has also been eroded by removal of hedges and many remaining hedges are in a deteriorating state. It is a changing landscape with an inhomogeneous appearance in several areas.

The site is well screened from views in the wider area, which was reflected in the reduction of the study area. Lack of intervisibility and physical separation from many landscape areas led to a only a limited number of landscape and visual receptors considered in this report as setting, character and visual changes are localised and minimal.

4.3.1. Landscape Impacts

The report considered the impacts on landscape designations, landscape character areas and landscape elements.

4.3.1.1. Designated landscapes

The only designated area identified as a receptor is the Tidbury Ring Iron Age hillfort Scheduled Ancient Monument. The proposals are considered to result in only a **slight** change (negligible impact magnitude on high sensitivity receptor) to the setting of the monument, due to the localised character change within medium distance to the monument. The monument is screened by a dense tree belt and there is no public access. The character of the setting is already affected by the trunk roads, recycling centre and MOD uses.

4.3.1.2. Landscape Character

The assessment finds that the proposals have the potential to bring about only a **slight** change (low magnitude impact on medium sensitivity receptor) to the Drayton Chalk Downlands LCA10E. Key characteristics of the LCA would not be affected and there is the potential for enhancement through change to grazing and management of buffers for biodiversity benefit. The proposals will be located within the perimeters of an existing arable field, not affecting existing hedges and trees. The site is generally well screened. The disturbed landscape of the adjacent re-cycling site and the A303 road corridor detract from the rural character of the local area.

There would be a **negligible** change to Leckford and Chilbolton Chalk Dowlands LCA10D due to the distance to site and the localised, glimpsed nature of any views limiting the intervisibility and resulting setting change.

4.3.1.3. Landscape Elements

The proposal will not directly affect adjacent hedgerows or the mature tree belt along the northern boundary. There is **no change** to those elements.

4.3.1.4. Visual Impacts

For the proposals considered in this report, the visual envelope of the existing site (Figure CEC1699b/06) and the ZTV of the proposals (Figure CEC1699b/07) are almost identical, due to the low height of the proposed modules, which do not generally significantly exceed the height of the hedges and bunds in the wider landscape.

The visual impacts arising from this scheme are due to the large area being covered by the modules and the change in use associated with the proposals, introducing technical and geometric elements of a darker colour into an agricultural landscape. However the proposals are well screened with only localised views from a limited range of areas. The site is set below a local ridgeline and the bund associated with the recycling centre on the southern boundary prevents views of the whole site and will screen southern sections of the site from all more distant viewpoints.

The fence and the ancillary buildings (small inverter and transformer stations -

see technical information submitted with the application for details) will form additional features visible as part of the proposals from some areas. However, those elements could be painted green, are of comparable height to the rest of the installation and are relatively small, and therefore not considered to contribute to an additional increase of visibility in comparison to the panels alone.

Visual receptors identified during the baseline study desk and site work are limited to road and PROW users and the workers and users of the recycling centre. There are no private properties with views of the site. The visual impact assessment used key views to describe the change from a number of areas, representative for the visual receptors in that area.

Visual envelope area A included areas immediately adjacent to the site including the local road passing the site and the recycling centre workers and users. Representative key views for those areas are views 5, 6 and 7. The visual impact on **road users and the recycling centre users and workers** was evaluated to be low to medium magnitude on low sensitivity receptors, resulting in a **negligible to slight** change.

Visual envelope area B is represented by key view 4 (View from the PROW east of the site West of Tidbury Ring ca. 1.15km east of site) and is representative for **PROW users on path 35**. The impact was evaluated of low to medium magnitude on a medium sensitivity receptor, resulting in a **slight to moderate** change. The visual impact would only occur along a short section of path and this is the highest magnitude impact this proposal is likely to cause within the overall study area. A photomontage has been prepared for key view 4.

Visual envelope area C covers **PROW and road users in the Barton Stacey** area approximately 2km to the south of the site. Again, views from those areas are glimpsed and partial, from a limited number of locations. The impact was evaluated to be of negligible to low magnitude on low and medium sensitivity receptors, resulting in **negligible to slight** changes. Key views 2 and 3 are representative of the character of views from the area.

Visual envelope area D covers the outlier area approximately 3.7km to the southwest of the site, where the theoretical visibility was indicated for an area along **PROW 16, which runs along a Roman Road**. The view would again be glimpsed, at a long distance and of a small area of the site only, seen with the recycling centre in the foreground and to the side. It is unlikely that a casual observer would notice any change at all. The impact was evaluated to be of a negligible magnitude at most, resulting in a **negligible** change for medium sensitivity receptors.

In summary, visual impacts of the scheme would be minimal, with the highest magnitude being medium from two small areas. No high sensitivity visual receptors would be affected.

No landscape and visual impacts were identified to be significant in terms of the EIA methodology.

4.4. Mitigation Strategy

The predicted landscape and visual impacts of the proposed PV array at Owls Lodge Farm are minimal, with slight to moderate degrees of effect at most for a very small number of receptors, mostly of low and medium sensitivity with the exception of Tidbury Ring iron age Hill Fort, which was assessed as having a high sensitivity. The site is located adjacent to a recycling facility, which is a prominent feature in all views to the site and the area around the site is characterised by an increased influence of modern developments. Mitigation is therefore not considered to be required. However, some consideration has been given to mitigation in order to improve the landscape on site throughout the implementation of the proposals.

4.4.1. Mitigation-by-Design

Mitigation measures were highlighted at an early stage of the assessment and discussed with the client. These have been incorporated in the final proposals and include:

- Retaining as far as possible a regular geometric layout to the rows of panels and associated infrastructure so that the solar farm has a

striking and legible layout. With a very regular design, the array will work more closely with the structure of the landscape, for example reflecting subtle changes in terrain, slope and aspect.

- Using the existing field boundaries to give structure to the proposal and retaining all hedgerows and trees.
- Incorporating buffer zones around all hedges and trees to ensure there is no impact at any stage of the development and the fields do not appear cramped.

4.4.2. Longer-term Mitigation Proposals

Existing hedges could be improved through additional planting, change in management to allow for slightly taller, wider and denser growth and management of appropriate buffer zones. This would have the benefit to provide additional landscape structure and wildlife corridor links and would also over time result in all views being screened from the local road to the west. It would also be in line with the guidelines of the Drayton Chalk Downland Landscape Character Assessment which seeks to discourage the amalgamation of fields and loss of hedgerows and restore lost and fragmented hedgerows. Buffer zone management could consider favouring chalk loving flora and fauna, and the grazing seed mix and management of grazing areas could also reflect this. It should also be noted that the recent beech tree planting on the north west boundary will over time develop to become a significant landscape element and visual screen/backdrop to the proposals over time.

5. Significance and Residual Impacts

5.1. Significance

The Screening Option from the Test Valley Borough Council stated that the development would “propose a significant installation for the production of electricity” and “the proposed solar array farm is likely to have a significant visual impact on the landscape character and the setting on this part of the parish.”

However, this LVIA determined that **no** landscape or visual impacts are significant in terms of EIA methodology (methodology table 5 and accompanying text, Appendix 2). Whilst not significant, landscape impacts are assessed as producing a **slight** degree of change on the Tidbury Ring Iron Age Hill Fort and the Drayton Chalk Dowlands Character Area during construction and operation phases.

Visual impacts are on the users of the PROW to the east of the site (path 35). The impacts are a **slight to moderate** degree of change during construction and operational phases. Impacts for road users to the west of the site will have a slight degree of change both during construction and operation phases. Users of Barton Drove PROW (path 15) experience a **slight to negligible** degree of change. In all other area the degree of change was found to be **negligible or no change**.

5.2. Residual Impacts

If the proposed mitigation outlined in section 4.4 is adopted, certain local effects would gradually lessen over time. These would primarily be the effects within **Visual envelope area A** on road users to the west of the site (views 5, 6 & 7). As the improved hedge and tree management, together with the establishment of the recent tree planting on the north west boundary develops over time, the proposals will further integrate within the local landscape and locally screen views to the site.

It is not possible to completely mitigate views from **Visual envelope area B**

represented by the PROW to the east of the site (path 35 & view 4) due to the elevation of the view. However, as the improved boundary management and new tree belt become established, they will provide additional and substantial landscape features and contribute to the local landscape character.

Mitigation is unlikely to make a perceivable difference from **Visual envelope areas C & D** (views 1,2 and 3). However, the degree of change was found to be negligible to slight from these receptors. The establishment of the recent tree planting will contribute to the wider landscape setting and back drop to the proposals with the extension of the existing substantial tree belt on the north west boundary. The existing mature tree belt forms a prominent and positive landscape feature from available views. Over time this will link to boundary tree blocks and hedgerows as the recent tree planting establishes.

6. Conclusions

This assessment concludes that the installation of the solar park at Owls Lodge Farm is not significant in terms of EIA methodology. The proposals would result in a negligible to slight change on landscape resources and a slight to moderate change to a limited number of views.

In this landscape, the visibility of the site and the proposals are generally well enclosed by vegetation and topography. The site is at a relatively low level and south facing. The nearby A303 road corridor and the recycling facility bund encloses and screens the views from many areas to the south, east and west and the low ridgeline to the north screens distant views. These factors substantially contribute to reducing the theoretical zone of visibility and therefore few visual receptors would be affected. It is primarily rights of way and road users who would notice changes to views, simply because roads pass near to the site and the PROW has a relatively open elevated view.

The busy A303 road corridor, its associated infrastructure and the recycling facility generally detract from the rural character of the area. The development is therefore not considered a significant element within the context of adjacent land uses and the wider character area.

If long-term mitigation outlined in section 4.4 was adopted, certain local effects would gradually lessen over time. This would include landscape effects on the Drayton Chalk Downland Landscape Character. Visual effects would also lessen on users of the western road. It is not possible to completely mitigate views to the site from the elevated PROW to the east.

In the long-term, the overall character and visual amenity of the landscape would be maintained as the proposals retain and enhance the existing landscape structure and agricultural use. Potential impacts are reversible as removing the solar array from the site would leave a negligible trace and the present landscape and visual structure would be enhanced.

The proposed installation of a solar PV installation at Owls Lodge Farm is considered acceptable from a landscape and visual point of view.

Appendix 1: Abbreviations

AONB Area of Outstanding Natural Beauty

LCA Landscape Character Area

LVIA Landscape and Visual Impact Assessment

PPS Planning Policy Statement

SAM Scheduled Ancient Monument

ZTV Zone of Theoretical Visibility (also referred to in other reports as Zone of Visual Influence (ZVI))

Appendix 2: Methodologies

LVIA

The LVIA methodology is based on the principles outlined in the Guidelines for Landscape and Visual Assessment^{xvi}, which is widely accepted as the industry standard. SNH's recent guidance on the presentation of windfarm visual assessment^{xvii} was also referred to. The LVIA report covers:

- Description of the landscape and visual baseline conditions of the site and study area;
- Information gaps and assumptions on which the assessment is based;
- Description of the likely potential sensitive receptors;
- Summary of likely predicted changes to the baseline which can reasonably be foreseen;
- Identification of predicted effects as a result of the proposed development;
- Assessment of predicted landscape and visual effects, including cumulative effects, on identified receptors, and their significance based on receptors' value, condition, capacity, distance from development, sensitivity to change and magnitude of change; and
- Potential mitigation measures to be incorporated into the design.

The text is supplemented by a number of Figures and a photographic record of the site (see Appendices 3 and 4).

Definition of effects

Landscape effects are described in the GLVIA by the Landscape Institute (LI) as *direct* effects such as changes as a result of the proposed development to the landscape elements within the site or *indirect* effects such as changes to key landscape character elements of the study area, the integrity of landscape designations within the study area or the overall landscape condition of the study area.

Visual effects are described by the LI as *direct* effects on the visual amenity or views available to visual receptors located within publicly accessible areas and residential dwellings resulting from changes to that view as a result of the proposed development such as introduction, removal, obstruction, or modification of elements within the view.

Cumulative effects are described by the LI as those which result from changes as a result of the proposed development in conjunction with other development, of intervisibility of a range of developments or elements of the proposed development, and of actions that occurred in the past, present or foreseeable future.

Residual effects are those remaining once mitigation measures identified in the initial round of assessment have been implemented and are predicted based on the assumption that these mitigation measures have been fully and successfully established.

Nature of Effects

Individual and cumulative landscape effects can be assessed objectively and quantitatively as either adverse i.e. loss of valuable landscape elements, degradation of landscape character or loss of integrity in terms of designated landscapes, or beneficial i.e. removal of inappropriate or damaging landscape elements, enhancement of key landscape elements and landscape character, or introduction of positive landscape elements.

The nature of visual effects of the proposed development is not as easily assessed, as perception of such developments varies greatly between individual viewers, being a largely subjective judgement, influenced by a variety of issues including personal preference, interests, and exposure to similar developments. This assessment does not, therefore, attempt to consider the nature of individual or cumulative visual effects but does provide a statement on the sensitivity of receptors, magnitude of change to existing cumulative visibility and from that an assessment of the level of the impact.

Landscape Value

The value of an area of landscape can be defined by its importance at international, national, regional and local levels and is often reflected in the application of landscape policy and designations, which it is assumed in turn reflect the perceived value of the landscape amongst the general public. The majority of LVIA's do not have time for an accurate detailed assessment of the value of the landscape as perceived by the general public and therefore the assessment is generally based on the presence of landscape designations. The following criteria are used as a basis for assessing value, with this assessment focussing on those classed as Exceptional or High by virtue of their designated status:

Methodology Table 1: Landscape Value

Value	Typical criteria	Typical scale	Typical examples
Exceptional	High importance (or quality) and Rarity. No or limited potential for substitution	International, National	World Heritage Site, National Park, AONB, Heritage Coast.
High	High importance (or quality) and Rarity. Limited potential for substitution	National, Regional, Local	National Park, AONB, Heritage Coast, AGLV.
Medium	Medium importance (or quality) and Rarity. Limited potential for substitution	Regional, Local	Undesignated but value perhaps expressed through non-official publications or demonstrable use
Poor	Low importance (or quality) and Rarity	Local	Areas identified as having some redeeming features and possibly identified for improvement
Very Poor	Low importance (or quality) and Rarity	Local	Areas identified for recovery

Sensitivity of receptors

Landscape sensitivity

The judgement of landscape sensitivity varies, can be influenced by subjectivity, and is often based on landscape character. A number of studies have been carried out to identify a common definition, the latest being a combined commission from Natural England and Scottish Natural Heritage concentrating principally on the clarification of landscape character sensitivity building on advice in Landscape Character Assessment Guidance Topic Paper 6^{xviii}. The Paper does not attempt to define sensitivity instead noting that judging it requires professional judgement based on whether significant characteristics elements of the landscape, and as a result its amenity value, will be lost as a result of the development. It is understood that the revisions will provide a concise definition of landscape character sensitivity that reflects the nature and perception of change to landscape character and is flexible to incorporate the type of development being assessed.

For this assessment, landscape sensitivity is a reflection of a landscape element, designation or character area's condition, value, and location in relation to the proposed development as outlined in Methodology Table 2. The assessor should always consider a number of the scenarios given in the table to choose the most appropriate sensitivity rating within the given landscape and site context. Designated areas are considered to be of higher sensitivity due to the public perceptions and often cumulative pressures for change attached to them and should never receive a low sensitivity rating.

The overall consideration for a sensitivity rating should be the amount of change that can be accommodated by a given receptor, without it being devalued or unacceptably changed in the long-term, thereby damaging the overall landscape resource. High sensitivity receptors would either be those in pristine condition, where change would be very obvious and distracting, or those that have already been significantly damaged so that further change would result in the receptor being totally devalued in the long-term removing the option for restoration. Medium sensitivity would be mainly associated with average receptors of good

condition, with some damage or distraction, but generally still able to accept more change without irreversible damage. Low sensitivity receptors would be for example those in a changing environment, where change is a defining element, those of low quality, where change would lead to improvements or those of good quality and condition, where there is plenty of capacity to accommodate more change without irreversible damage.

It should be noted that the sensitivity criteria in this report do not represent a detailed sensitivity assessment of the landscape resource within the study area. It is a tool for the assessor to allow some judgement on the perceived sensitivity and to incorporate some judgement on this in the impact assessment. If more detailed local sensitivity assessments are available those would be used to inform the assessment in preference to the criteria defined here. However, often such assessments are not available or are proposal specific, and it is considered that the criteria used in this report provide at least some context to the assessment, without increasing the scope of works and survey effort beyond reason to arrive at detailed sensitivity scores for each proposal.

Methodology Table 2: Sensitivity of Potential Landscape Receptors




Sensitivity	Receptor Category
High	<p>Only minor changes can be accommodated without impact on value and / or loss of character or no more than moderate changes can be compensated by replacement or substitution, for example:</p> <p>Value may be expressed as a national designated area or may be an element that is rare or in pristine condition.</p> <p>Intact historic landscapes with great time depth and no or very limited modern intrusions.</p> <p>Valuable, but damaged landscapes, where further change would result in complete loss of their integrity and quality (in this scenario high sensitivity is based on the assumption that any further change would result in unacceptable long-term damage to a resource, which makes it highly sensitive to further change, although its condition at the point of assessment may not be favourable).</p> <p>The landscape receptor to be assessed has a small area, where the proposal would affect much or all of that area.</p>
Medium	<p>Minor to moderate changes can be accommodated without impact on value and / or loss of character or moderate changes can be reduced or eliminated by replacement or substitution, for example:</p> <p>Value may be expressed through a regional or local designation or element that is in good condition and occurs relatively frequently within the landscape context.</p> <p>Good quality landscapes with preserved integrity, but modern influences apparent.</p> <p>The landscape receptor to be assessed has a medium sized area significantly exceeding that of the proposal area so that any change would not affect the whole landscape receptor.</p>
Low	<p>Moderate to substantial changes can be accommodated without impact on value and / or loss of character or substantial changes can be reduced by replacement or substitution, for example:</p> <p>There is no value defined through designations or clear local use or definition and the receptor does not display specifically valuable properties within the context of the wider landscape area.</p> <p>The landscape receptor is devalued already through character changes etc and restoration is not an option. Proposals would contribute to improvements of the receptor.</p> <p>The receptor is of such a large area that a change would only affect a minor part of that area without any consequence for the remainder of the receptor area and it is not a nationally or regionally designated area.</p> <p>The receptor has plenty of capacity to accommodate change, for example plenty of key elements and features are present so that the loss of a minor percentage would not be significant and can be replaced or visual characteristics can be successfully retained and improved.</p>

Visual Sensitivity

Visual sensitivity is a reflection of a combination of the receptor's type, the context within which the view is perceived and the importance of the view. It is something which is re-evaluated for each LVIA to take into account the local conditions and is outlined in Methodology Table 3.

Clarity of view and the extent to which a site may be perceived as a distinct or prominent element is influenced by weather conditions, angle of light, distance of the receptor from the site and their location.

Methodology Table 3: Sensitivity of Potential Visual Receptors by type

Sensitivity	Receptor Category
High 	Visitors to nationally designated areas of public and private open space where landscape appreciation is a primary function of their use or where landscape and visual quality is integral to the designation's value e.g. AONBs, Heritage Coasts, National Parks, etc
	Users of PRoW - long distance footpaths and routes with direct view of the development for long sections of path.
	Residential communities and private properties with direct views of the development from apparent key living and access areas.
	Visitors to designated areas of historical importance such as SAMs, Conservation Areas and Historic Parks and Gardens where setting is recognised as an integral to the area's importance
Medium 	Visitors to locally designated areas of public and private open space where landscape appreciation is a primary function of their use or where landscape and visual quality is integral to the designation's value e.g. AGLVs, AGHVs, Country Parks etc.
	Users of PRoW – national trails, local trails and footpaths with partial or glimpsed views from sections of the path or direct views from short sections of the path
	Residential communities and private properties with partial or glimpsed views of the development from apparent key living and access areas.
	Users of areas of public and private recreational space where landscape is not a primary function of use i.e. sports grounds, golf courses etc.
Low 	Users of PRoW associated with highways or local routes the primary function of which is access between two points or users of paths with partial or glimpsed views from short sections of the path.
	Employees of businesses and light industry
	Employees of heavy industry, waste management and mineral extraction sites

Magnitude of change

Magnitude of change is a measure of the level of effect on potential receptors arising from addition, alteration, or removal of baseline resources as a result of the proposed development and is classed as high, medium, low or negligible. Magnitude is based on professional judgement and determined by a combination of:

- the **nature** of the change, i.e. adverse or beneficial, in relation to the

- baseline's condition, capacity, sensitivity or value;
- the **scale** of the change in relation to the proportion of the landscape or view affected by the proposed development and the degree to which it is affected;
 - the **duration** and **reversibility** of the change.

The magnitude of change of potential effects on visual receptors is assessed through a process of analysing the change in the visual envelope of the existing site in comparison to a series of ZTVs generated for the proposed development. This assessment is informed by the photo record (Appendix 4), field observations and visualisations produced by the client to aid the design process.

Methodology Table 4 below outlines the measure of magnitude of change in relation to potential landscape and visual effects:

Methodology Table 4: Landscape and Visual Impact Magnitudes

Magnitude of Change – landscape		Magnitude of Change –Visual
Total loss of or major alteration to key elements / features / characteristics identified in the baseline study	<p style="text-align: center;">HIGH</p> <p style="text-align: center;">↓</p>	<p>Proposals form a significant and immediately apparent part of the view with often long-term and irreversible changes to its overall character.</p> <p>Often associated with close distance or direct and open views.</p>
Partial loss of or alteration to one or more key elements / features / characteristics identified in the baseline study	<p style="text-align: center;">MEDIUM</p> <p style="text-align: center;">↓</p>	<p>Proposals form a visible and recognisable new element within the overall view which are readily noticed by the observer or receptor.</p> <p>Often associated with middle distance or partial views and often possible to mitigate to a degree.</p>
Minor loss of or alteration to one or more key elements / features / characteristics identified in the baseline study	<p style="text-align: center;">LOW</p> <p style="text-align: center;">↓</p>	<p>Proposals constitute a minor component of the wider view, which might be missed by the casual observer or receptor.</p> <p>Often associated with long-distance or glimpsed views or can be short-term, reversible effects.</p>
Very minor, localised, loss of or alteration to one or more key elements / features / characteristics identified in the baseline study	<p style="text-align: center;">NEGLIGIBLE</p> <p style="text-align: center;">↓</p>	<p>Proposals constitute such a minor component of the view as to only be visible when deliberately sought out and not casually perceptible, or are severely restricted so that proposals can be barely perceived.</p>
No loss or alteration to one or more key elements / features / characteristics of the baseline (pre-development landscape) and / or no introduction of new elements / features / characteristics	<p style="text-align: center;">NO CHANGE</p> <p style="text-align: center;">NB: this level is normally scoped out in the baseline and not carried forward to the assessment</p>	<p>No part of the development, or work or activity associated with it, is discernible or they are at such a distance that they are scarcely appreciated</p>

Note: based on GLVIA guidance samples on Pages 138 (visual impact magnitude, Terence O'Rourke plc, amended) and 145 (landscape impact magnitude, Jeffrey Stevenson Associates, Option 2, amended).

Degree of Effect and Significance of Impact

The degree of the effect of the proposed development on the identified potential sensitive landscape and visual receptors is measured as combination of receptor sensitivity and magnitude of change. This is based on professional judgement using the scale outlined in Methodology Table 5 below:

Methodology Table 5: Landscape and Visual Impact Degree of Effect and Significance

		Sensitivity		
		High	Medium	Low
Magnitude	High	Substantial	Moderate/Substantial	Moderate
	Medium	Moderate/Substantial	Moderate	Slight
	Low	Moderate	Slight	Negligible
	Negligible	Slight	Negligible	Negligible

Significance of Impacts is an element of LVIAs associated with Environmental Impact Assessments as it is defined in and relates specifically to the EIA Regulationsⁱⁱ. For this assessment, only moderate / substantial and substantial degrees of effect have been considered significant in terms of the EIA regulations, covering medium and high impact magnitudes on medium and high sensitivity receptors. The appropriate cells for significant impacts have been highlighted in grey in methodology table 5. For those impacts, mitigation should be actively explored with the aim to reduce impacts to at least a moderate degree of effect (i.e. reducing the impact magnitude for example through design changes or screen planting). In practice, this LVIA has also recommended mitigation for lesser effects.

Guidelines for PV Solar Plant assessment

This section has been included in the methodology for the LVIA to address the specific landscape and visual issues associated with the assessment of PV solar plants, as this is a new form of proposals in the UK for which there was no specific guidance at the time of preparing the assessment. The information is based on the German guidelines for assessment of environmental impacts associated with PV solar plants as follows:

Original German reference: BUNR (Bundesministerium fuer Umwelt, Naturschutz und Reaktorsicherheit): Leitfaden zur Beruecksichtigung von Umweltbelangen bei der Planung von PV- Freiflaechenanlagen, Bearbeitung durch ARGE Monitoring PV- Anlagen. Hannover, 2007.

(German Ministry for the Environment, Nature Conservation and Nuclear Plant Security: Guidelines for Addressing Environmental Issues in the Planning of Landscape-Scale Solar Plants. Compiled by the consortium ARGE Monitoring PV-Anlagen. Hannover 2007.)

PV solar plants have been built on the continent for a number of years now and this report utilises some of the information and experiences available there to aid interpretation of potential landscape and visual issues associated with solar PV proposals.

General Discussion

The main landscape and visual effects caused by PV solar plants in an open landscape occur due to the introduction of large areas of technical structures into a normally rural landscape, often without connection to developed areas; the optical effects caused by the module surfaces; strongly geometric layouts and through earthworks, foundations; and construction activities associated with the plant, cabling and access. Height is not normally an issue for static row arrangements as they do not exceed 3m, which often is lower than adjacent hedges or one storey buildings.

This assessment is concerned with a static PV array of polycrystalline

silicon modules. Those modules are equipped with an anti-reflection layer to increase the absorption of sun light by the cells (the aim is to absorb as much light as possible). Depending on the thickness of the anti-reflection layer, the perceived surface colour of the modules varies from dark blue to black. Some predominantly diffuse reflection still occurs (see 8.6.1 below), leading to a lighter appearance of the modules in comparison to surrounding natural non-reflective surfaces.

The cells are combined into a larger module, which in turn are connected to each other in rows of up to 99m length. A number of modules are then connected to a generator, which via a DC-AC converter and transformer (housed in a building) feeds into the grid. Cabling associated with the plants is normally laid underground. Sites can be fenced.

The visual prominence of the plant in the landscape depends on the direction of view (i.e. viewer looks directly at the modules or looks at the sides or backs of rows), the location of the site in relation to surrounding ridges and features, the openness of the landscape, and the position of the site in relation to the horizon line (i.e. above or below horizon or locally important ridges). Obviously, weather and light conditions play an important part on the perception of a PV solar plant at any one time due to the optical issues described below.

Optical effects of PV solar plants

PV solar plants can lead to a number of optical effects, those are:

1. Light reflection from textured, diffusing surfaces (modules) and less diffusing smooth surfaces (metal frames)
2. Mirroring through reflection from glass surfaces
3. Development of polarised light through reflection

Light Reflection:

PV solar cells need the sun rays to generate electricity and reflection is therefore discouraged to optimise absorption of sun light. This is done through anti-reflection layers and special glass surfaces.

Despite this, not all reflection can be avoided. High quality glass lets 90% of light pass through, approximately 2% is diffused and 8% reflected. Modern anti-reflection layers can increase light absorption to over 95%, with reflection below 5%. The remaining reflection results in modules appearing slightly lighter in the landscape than vegetation covered areas.

A low sun position (angle below 40 degrees) increases reflection, total reflection occurs at an angle of 2 degrees. This reflection is diffused through use of textured front glasses. In addition, to see the reflection at those angles, the viewer would have to stand opposite the sun, which at low angles has an increased blending effect far exceeding the effect of the module reflections.

Frames can also reflect light, but this is considered of low relevance to the assessment in the context of the small proportion of frame surface in relation to the modules.

Mirroring:

Mirroring surfaces reflect images in the vicinity that for example can imitate bird habitats and encourage birds to fly into it. This risk is greatest in vertical mirror glass frontages in urban areas, when vegetation is reflected.

The polycrystalline silicon modules only have a very small mirror capacity due to their colour and textured surface. In addition, they are installed at angles that prevent direct mirroring of vegetation. It is not considered an issue for this type of proposal.

Polarisation:

Natural light is not polarised, it oscillates in all directions. Polarised light only oscillates in one direction. Polarisation occurs naturally through reflection and diffusion on air particles and surfaces, such as water or wet roads. Some birds and insects can see polarised light and use it to navigate. Solar modules could potentially change the polarisation of light, therefore there is an assumption that in some circumstances this could lead to irritation of some birds or insects. However, research in Germany has failed to prove such impacts to date. No visual or landscape impacts arise from the polarisation of light.

ZTV's and Landform Models using KeyTERRAFIRMA

The KeyTerraFirma (KTF) ZTV module is a specialist program. It works with a series of rays radiating from the target or targets. It may help to consider this as many hundreds or thousands of sections being calculated automatically. Typical data that the Ground Model will be created from is the Ordnance Survey LandForm PROFILE DTM for smaller areas or Ordnance Survey LandForm PANORAMA DTM for larger areas such as wind turbine analysis. The study area may be greater than 10 Km X 10 Km and the fastest and most appropriate model building from large data sets will be from .xyz file when the creation method should be Regular square point data.

Running a ZTV analysis

1. **Select model** – this would have been created previously from the xyz data using the KeyTerraFirma ground model routine

2. Define Target points

- Define point location by picking 2D point or typing Easting, Northing. For this project, 6 target points were defined, distributed evenly to represent coverage of the site:

TP01	X = 443929.456	Y = 142966.791
TP02	X = 443851.367	Y = 143085.184
TP03	X = 444204.819	Y = 143147.768
TP04	X = 444105.383	Y = 143279.040
TP05	X = 444438.113	Y = 143317.275
TP06	X = 444337.402	Y = 143466.390

Note: For this project, the visual envelope was generated using all of the points, the ZTV using points 1 to 4 only as points 5 and 6 were outside the final proposal area.

- Enter the height of this point above ground level (in metres), set at a standard 1.5m for the visual envelope and 3m for the ZTVs post construction representing the top of inverter and transformer stations.

3. **Define the Analysis Start Distance and End distance**, 0 and 6000m for this project set at 1km outside the study area boundary to include all points within it.
4. **Enter the Ray Resolution** (50 for this project). For typical use the ODE expansion will produce a better result and was turned on for ZTV analysis for this project.
5. **Settings** - The Settings button controls a number of parameters that define graphical output geometry used in the analysis. (Draw Visible Rays, Draw Invisible Rays, Draw rays as 3D Polylines, Visibility Model, Factor, Common area only, Observer Height, Use Earth curvature correction).
6. **Visual Barriers** - Visual barriers will have the effect of "stopping" a visible ray assuming that the barrier is high enough. The idea of this feature within KeyTERRA-FIRMA ZTV is to enable the user experiment on a "what if" basis to see what effect a visual barrier at a certain location and with a defined height will have on the visibility of the target(s). Visual barrier information is input from polyline data but may be stored and retrieved with other parameters in the .sky file. There are three types of visual barriers:
 - Linear e.g. a wall or line of trees represented as a 2D polyline and defined with a height that may be different at the start and end.
 - Area e.g. a wooded area - note that in this option the whole area is considered to be at a user specified height above ground level and not just the perimeter. Represented as a closed 2D polyline.
 - 3D Polyline e.g. representing actual or proposed roof lines. Note that only 3D polylines restricted to a start and end (i.e. 2 vertices) are appropriate for this option. Elevations for the start and end are prompted for and the 3D polyline vertices Z values are ignored.

For this project the main woodland or tree blocks within 5km were traced from the OS 1:25,000 basemap and inserted using the Forestry Commission GIS layer of the forestry inventory using closed polylines and

assigned an average height of 15m. The settlements on the 2001 census GIS layer were inserted as closed polylines and assigned an average height of 8m.

7. **Graphical Output** - For a single point analysis the direct output of drawing 3D polylines with user defined layers and colours to illustrate areas of visibility and invisibility may suffice. However this is not acceptable for multi-point analysis where hundreds of crossing rays may be generated for a very large analysis. Note that the processing time may be some hours. By mapping the number of target points visible from each cell (automatically calculated square "grid" with a size set by the ray resolution i.e. the smaller the ray resolution the higher the resolution of the visibility model) we can consider the "count" as Z values in a ground model. Visibility Model must be turned "on" in the Settings dialogue.

Overview of Land-Form Profile Data

Ordnance Survey Land-Form Profile contours were created from height elements depicted in Ordnance Survey's 1:10 000 scale mapping; this is supplemented by spot heights, and high and low water marks from Ordnance Survey 1:1250, 1:2500 and 1:10 000 scale digital data. Land-Form Profile DTMs consist of height values at each intersection of a 10 metre horizontal grid and were derived from the contour product.

The process of creating DTMs utilises all the height information contained in the contour file to generate the height of each of the points in the DTM. The results achieved will depend upon the density of height data contained in the contour file and on the nature of the terrain. In some flat areas, where there is little height information, contours and spot heights may be a great distance apart; this can cause irregularities in the DTM, which appear as slight terracing of the terrain.

The height accuracy of any point in the DTM is equal to or better than half the contour interval, that is $\pm 2.5\text{m}$ for areas with 5m vertical interval and $\pm 5\text{m}$ for

areas with 10m vertical interval (moorlands and mountains). The data used for this report have a 5m vertical interval, i.e. the accuracy is ± 2.5 m.

Visualisations

Photomontages

Industry Standards

General guidance on the production of photomontages can be found in the Landscape Institute's technical advice note^{xix}. The main purpose of a photomontage is to accurately depict what a proposed development will look like from the human eye when stood in that particular photographic view port.

Recent guidance produced by the Highland Council^{xx} is being promoted as the definitive standard for production of photomontages. Though referred to for additional refinement of CEC methodology, this guidance is not currently promoted by the Landscape Institute. It is aimed at visualisation of wind farm developments in open moorland contexts for which detailed proposals are required. In contrast the solar PV array proposals are of a much smaller scale in terms of height and different nature than wind farms. It was considered therefore that the Highland Council guidance was not applicable to montage production for the solar PV array proposals.

Photography

Photography for use in visualisations is only carried out in good weather conditions with clear visibility over long distance views. Ideally it should be undertaken in winter months to reduce the natural screening effect of trees and hedges in leaf and the location should be free of any obstructions to the view to ensure the image represents a 'worse case' scenario.

CEC uses a Nikon D3100 digital SLR with the lens set to 50mm for all visualisation photography. The camera is secured to a 1.5 m adjustable tripod with panoramic head, using integral spirit levels to ensure the set up is level. All images are taken in landscape format to retain the correct vertical field of view. The location of each viewpoint is recorded using handheld Garmin GPS. All location data, along with frame numbers, weather conditions and sometimes a sketch description of the view is recorded in the field on standard survey sheets.

Modelling and visualisation process

CEC uses modelling and visualisation specialists to produce photomontages. For the proposals subject to this report this element was carried out by AEE using AutoDesk AutoCAD and Maya software.

Base photography is supplied to the specialists as .jpg to the original resolution in folders for each viewpoint consisting of the individual frames, a stitched reference image and the viewpoint record sheet. The data from the record sheet information is essential so that the 3D model is not only in the correct position in the final montage but also that it accurately reflects its environment when considering lighting setup

A geo-referenced CAD layout of the proposals with all available design data is supplied along with the base photography. This forms the basis for the 3D model built and rendered by the specialists to be inserted into the final montage. Where specific materials, finishes, furniture, or plant species are defined in the design these are incorporated into the rendering of the model to make the final image as realistic as possible. The 3D model can also incorporate data to generate montages illustrating the growth over time of landscaping schemes.

The final 3D model is then inserted into the base photography using the location data of the base photography and the CAD layout to ensure accurate positioning. The camera locations are then set to those of the viewpoints and 'shots' taken of the scheme as montages. The montages are included in the assessment in photosheets set up as the standard viewpoint sheets including the pre-development image with the site and key features annotated above to aid identification and comparison of the changes to the view.

Appendix 3: Figures

CEC1699b/01	Site Location and Study Area Boundary
CEC1699b/02	Landform and Contours
CEC1699b/03	Landscape Designations
CEC1699b/04	Landscape Character
CEC1699b/05	Site Appraisal
CEC1699b/06	Visual Appraisal
CEC1699b/07	Zone of Theoretical Visibility (ZTV)

Proposal plan not included here again – refer to application package (drawing reference 20110119_owl1_aee_mplan01-r05_cde).

Appendix 4: Photo Record

Site Appraisal Photos

Visual Appraisal Photos and Visualisations

Appendix 5: References

- ⁱ Guidelines for Landscape and Visual Impact Assessment, Second Edition, 2002; Landscape Institute and Institute of Environmental Management and Assessment. Spon Press.
- ⁱⁱ Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, SI 1999 no 293, as subsequently amended.
- ⁱⁱⁱ Test Valley Borough Council – screening Option Letter – 24th Dec 2010 2003
- ^{iv} Guidelines for Landscape and Visual Impact Assessment, Second Edition, 2002; Landscape Institute and Institute of Environmental Management and Assessment. Spon Press.
- ^v Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, SI 1999 no 293, as subsequently amended.
- ^{vi} Hampshire County Council
- ^{vii} Test Valley Borough Local Plan – Adopted 2nd June 2006
- ^{viii} <http://www.magic.gov.uk/>
- ^{ix} <http://www.planningportal.gov.uk/>
- ^x Planning Policy Statement 22: Renewable Energy Office of the Deputy Prime Minister
- ^{xi} RGP9 Regional Planning Guidance - South East –Government Office for the South east - 2001
- ^{xii} http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html accessed on 20th Jan 2011
- ^{xiii} <http://www.landis.org.uk/soilscapes/> accessed on 20th Jan 2011
- ^{xiv} Test Valley Community Landscape Project - 2003.
- ^{xv} Test Valley Borough Council – Community Landscape Project – Landscape Character Areas – 2003

LVIA Methodology

- ^{xvi} *Guidelines for Landscape and Visual Assessment, Second Edition*; Landscape Institute and Institute for Environmental Assessment 2002
- ^{xvii} *Visual Representations of Windfarms Good Practice Guidance* Prepared for Scottish Natural Heritage, eh Scottish Renewables Forum and the Scottish Society of Directors of Planning by horner+maclennan and Envision, March 2006
- ^{xviii} *Landscape Character Assessment Guidance for England and Scotland: TOPIC PAPER 6: Techniques and Criteria for Judging Capacity and Sensitivity* Countryside Agency and Scottish Natural Heritage 2004
- ^{xix} Landscape Institute Advice Note 01/04 as Amended (August 2008) *Use of Photography and Photomontage in Landscape and Visual Assessment* Landscape Institute August 2008
- ^{xx} *Visualisation Standards for Wind Energy Developments* The Highland Council Planning and Development Service January 2010