



Paddock Wood Solar Farm

ENVIRONMENTAL AND COMMUNITY STRATEGY



The aim

The present global and national trend towards renewable energy is predominantly based on initiatives and targets to reduce the demand for non-renewable fossil fuels and cut greenhouse gas emissions. The Climate Change Act commits the Government to cutting national greenhouse emissions by at least a 34% in 2020 and by 80% in 2050. The proposed development will make a valuable contribution towards cutting greenhouse gas emissions and assist with the Government's objectives of greater sustainability through renewable energy production and carbon reduction.

In addition to the environmental benefits associated with generating low carbon electricity, our proposal delivers a number of other outcomes that will benefit the local environment and community. This document summarises the environmental and community initiatives that are proposed as part of the planning application, and demonstrates how these can be achieved in harmony with renewable energy generation.

This project is being co-developed by three parties - Luminous Energy, BELECTRIC UK and Big60Million. In our view an important part of developing successful solar farms is ensuring that we deliver net positive environmental benefits, by enhancing the natural environment in and around our sites. This starts with diligence in site selection and the integration of tailored biodiversity and ecological enhancements to maximise the wider benefits that can be achieved for the use of the site to generate solar power.

Our aims for Paddock Wood Solar Farm include:

- To implement a range of on-site habitat improvements to encourage wildlife;
- To make improvements to landscape features that will improve the visual amenity of the site and the surrounding area;
- To engage with local schools and enable children to learn about renewable energy and learn about the ecological features of the site;
- To provide an attractive investment opportunity to local people by issuing bonds which are securitised against Paddock Wood Solar Farm;
- To improve existing access to the countryside for local people; and
- To implement a habitat management plan to ensure that the ecological potential of the site is maximised for Paddock Wood Solar Farm's lifetime.

Luminous Energy Ltd

Luminous Energy Ltd is based in Chippenham, Wiltshire and specialises in the planning and development of large-scale photovoltaic power plants, from initial site selection to connection and commissioning.

We determine the feasibility of potential sites, negotiate the commercial and legal terms for the project, organise grid connection with Distribution Network Operators, and manage the entire planning application process.

Responsibilities on this project:

- Initial feasibility studies;
- Liaison with the Local Planning Authority;
- Project management of planning application and preparation of supporting documentation;
- Liaison with statutory consultees and the local community; and
- Negotiation of commercial and legal terms.

Big60Million Ltd

B60M is a Community Benefit Energy Company. The company has been established by Belectric to provide the opportunity for the 60 Million residents of the UK to directly benefit from new solar farms developed closest to their local communities.

B60M has been established to ensure the project is:

1. Net Commercially Positive;
2. Net Environment Positive; and
3. Net Energy Positive.

Responsibilities on this project:

- Issuing bonds allowing local people to invest in the solar farm;
- Offering the community benefit fund for the use of local projects in need of financial support; and
- Ensuring the benefits to the local environment are greater than before the solar farm is constructed.

BELECTRIC UK Ltd

BELECTRIC UK is based in Iver, Buckinghamshire and is leading the way photovoltaic power plants are de-signed, manufactured, installed, operated, and main-tained. We take a comprehensive approach to systems integration, design and installation processes, and building mutually beneficial and trusting relationships with our partners.

The company is part of the international Belectric group, renowned for producing high quality solar technology. We currently provide solar energy for more than a million people worldwide.

Responsibilities on this project:

- Technical input to the planning application;
- Construction of the solar farm;
- Provision of operations and maintenance services for the duration of the project (25 years); and
- Decommissioning at the end the project's life span.

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Different wild flower mixtures help us understand what's best for pollinating insects

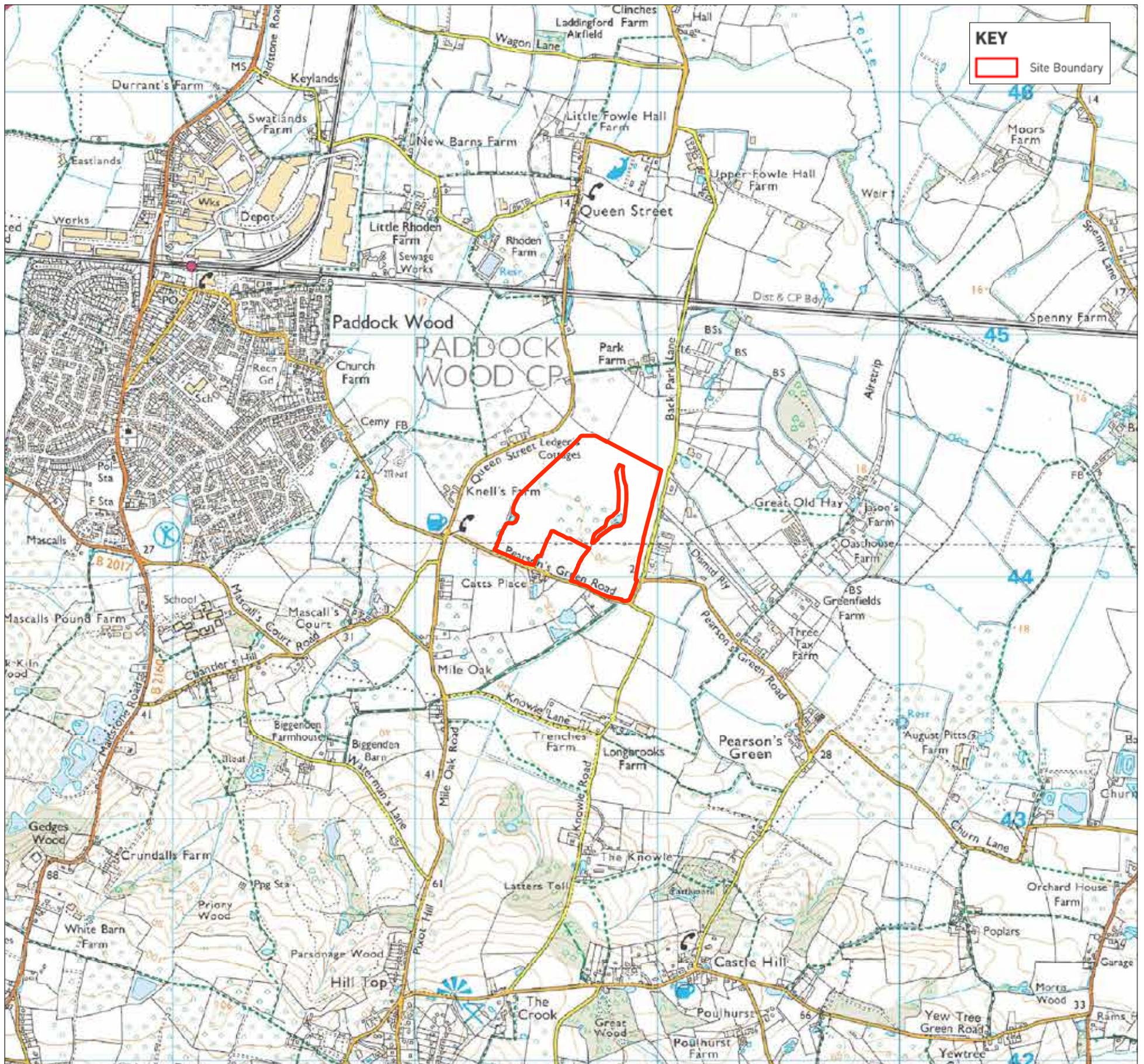




proposed development

Generating electricity from sunlight offers an exciting alternative to non renewable fossil fuels such as coal and oil

1



Site Location Plan

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1 proposed development

- 1.1 The proposed development comprises the installation and operation of a 9.2 MW ground-mounted solar farm over an area of approximately 25ha.
- 1.2 The proposed solar farm will generate approximately 9,120 MWh of electricity per annum – enough renewable electricity to meet the needs of approximately 2,760 homes per annum. The solar farm will broadly comprise a series of linear rows (also known as arrays) of thin-film photovoltaic (PV) solar modules, together with four inverter platforms, a transfer station, a collecting station, storage containers and enhanced landscaping.
- 1.3 The solar farm will use state-of-the-art PV modules with thin-film technology. The modules ensure optimal use of solar irradiation and perform very efficiently at different angles to the sun. Thin-film modules require significantly fewer raw materials during production than traditional silicon-based technologies. Furthermore, the thin-film technology performs excellently in diffuse light of cloudy days as well as higher temperatures reached on very sunny days. On cloudy days the output of the thin-film modules decreases by a smaller extent compared to commonly used silicon modules resulting in an increase in electrical output.
- 1.4 The PV modules will generate electricity with no air emissions, no waste production and no water use. The modules are frameless and fixed to a simple aluminium supporting frame with a 15 degrees inclination.
- 1.5 Each array of modules is approximately 6.1m wide, in order to avoid shading by adjacent rows and to ensure optimum energy yield in the winter months the rows will be spaced approximately 5.4-7.8m apart, depending on local variations in topography. The rows would be aligned east to west and south facing. There will be a minimum 10m stand off around the end of each array to field boundaries, allowing for facility maintenance, access and ecological and landscape enhancements.
- 1.6 The supporting structure is pile driven vertically into the ground to a depth of approximately 1m and held in situ using a post-grout foundation. When the modules are fixed to the supporting frame, the majority of the modules will reach a maximum height of 2.5m above the ground level, however, subject to site topography a limited number of modules could extend to a maximum height of 2.7m.
- 1.7 The solar farm requires four double inverter platforms. The platforms comprise an intelligent inverter system and a small transformer. The inverter is a power conversion device which changes the direct current (DC) generated by the PV modules into grid-compliant alternating current (AC) and feeds this into the local electricity distribution network. The transformer is an electrical device that alters the ratio of current and voltage in power to meet the requirements of transmission grids and devices. The double inverter platforms are 11.2m long, 2m wide and 2.8m high.
- 1.8 One transfer station is required for the solar farm. The transfer station monitors the grid access points and regulates the electrical current flow of the solar energy farm and adjusts the voltage using reactive power. Specially developed voltage sensors and software algorithms detect grid requirements and react automatically.
- 1.9 Three containers will be required as part of the proposed development. One of these will be used for onsite storage of spare parts and tools, and the other two will house Energy Storage Containers. The Energy Storage Containers are battery storage systems that allow the solar farm to contribute towards stabilising the local electricity network, and help smooth out the differences between electricity generation and consumption. This includes being able to feed electricity into the local grid at night when the solar panels are not generating electricity.
- 1.10 A 2m high security fence will be installed around the perimeter of the solar farm. The fence will be placed around the site at the start of the construction programme and will remain for the duration of the operation of the solar farm. The fence will be designed to allow small animals to pass through the site and will be placed behind existing and proposed hedges to ensure it blends into the natural setting and existing environment.
- 1.11 In order to deter criminal activity and vandalism and to monitor the health of the solar farm, CCTV cameras pointing into the solar farm will be installed within the security fencing. The CCTV cameras will be mounted on poles up to 3.5m high. During operation of the site, there will be no external artificial lighting.

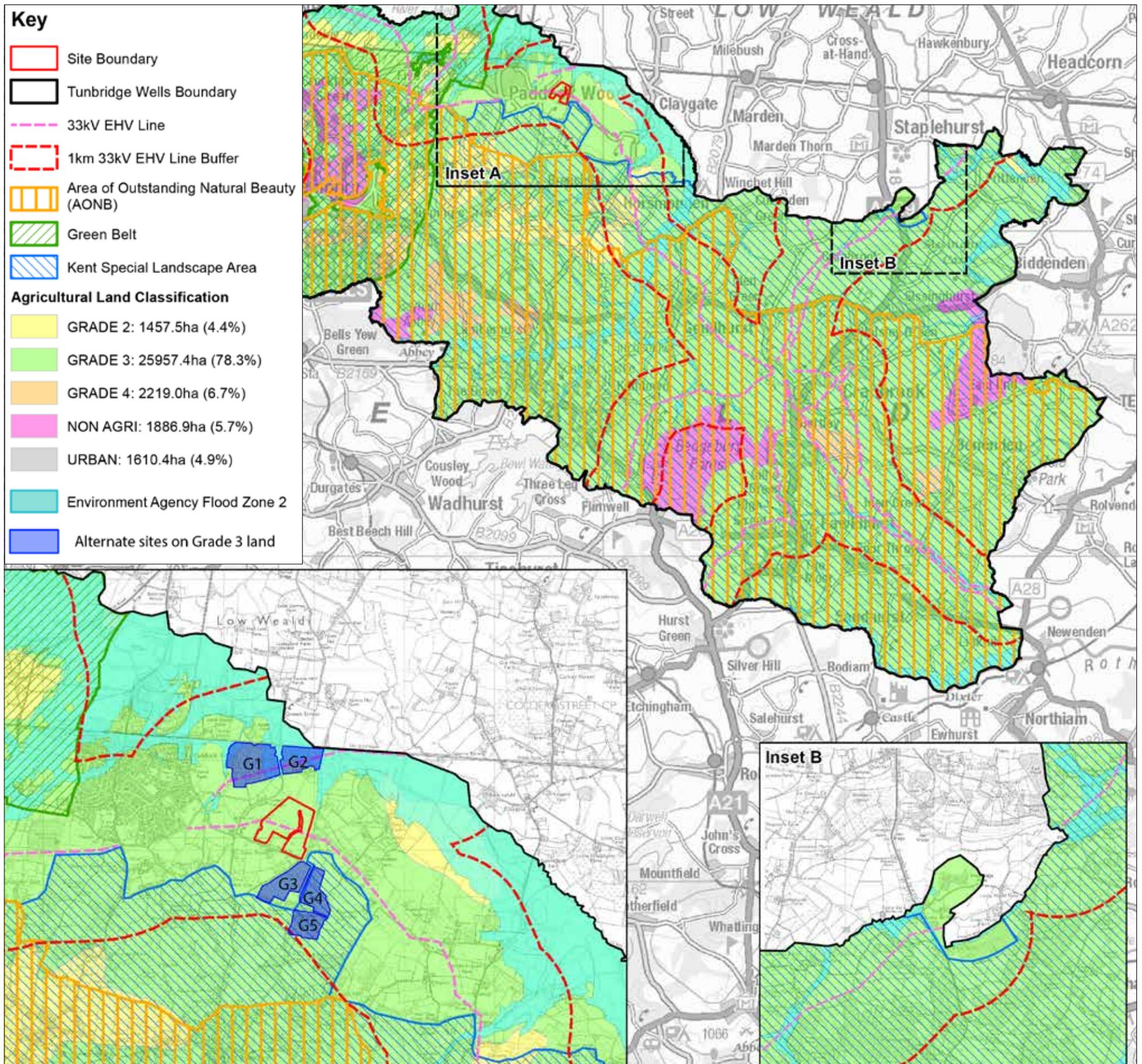




site selection

The 33kv lines crossing the site were identified with available capacity to support a solar farm

2



Local constraints and alternative sites considered

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2 site selection

Available grid capacity

- 2.1 Following a meeting with UK Power Networks in July 2013, Luminous Energy became aware that grid capacity was available in the 33kv lines emanating from Paddock Wood substation.

Topography

- 2.2 The relatively flat topography of the landscape was another reason for focusing on the area around Paddock Wood for identifying potential sites for solar farms. This is because the visual impacts of solar farms tend to be greater on sloping landscapes and more easily avoided or mitigated against in flatter areas (Natural England, 2011).

Designations

- 2.3 The lack of potentially restrictive designations at and around the site was another key reason for identifying potential sites for solar farms in this area. This should be considered in the context of a significant proportion of Tunbridge Wells Borough having a Green Belt or AONB designation, which significantly reduces the potential areas for solar farms to be developed according to BELECTRIC UK's current development criteria. The plan on the page opposite shows relevant constraints across the borough, with the key constraints being:

The High Weald AONB

- 2.4 Land within the High Weald AONB, which constitutes in excess of 70% of the LPA's total area, was excluded as it is considered that development of this scale would not be appropriate within the AONB.

Special Landscape Areas

- 2.5 The Tunbridge Wells Landscape Character Assessment (adopted October 2011) identifies additional areas of the Borough as 'High Weald Special Landscape Areas' and 'Low Weald Special Landscape Areas'. The Planning Inspector who examined the Tunbridge Wells Core Strategy in 2010 concluded it was no

longer relevant or necessary to retain the Special Landscape Area (SLA) designation.

- 2.6 However, in Luminous Energy's opinion, this designation still retains some significance given that it forms the setting of the AONB, and that development in the SLA should be avoided if potential sites could be identified elsewhere. Furthermore, pre-application discussions between Luminous Energy and the LPA's landscape officer had previously been held for another prospective solar farm that was not taken forward, in part due to it being located within the SLA. The SLA covers approximately 86% of Tunbridge Wells Borough.

Green Belt

- 2.7 Land within the Green Belt has been excluded as it is considered that development of this scale would not be appropriate within the Green Belt. The Green Belt covers approximately 22% of Tunbridge Wells Borough.

Flood Zones 2&3

- 2.8 Although it is technically possible for a solar farm to be constructed in Flood Zones 2 or 3, the Environment Agency is known to object to this practice, and as such all land classified as such was excluded.

'Best and Most Versatile' agricultural land and brownfield sites

- 2.9 The Solar Trade Association has published best practice guidance, which includes ten commitments for solar farm developers [5]. With regards to agricultural land, use of land that is not "Best and Most Versatile" is encouraged:

"Ground-mounted solar should ideally utilise previously developed land, brownfield, contaminated land, industrial land and preferably agricultural land of classification 3a, 3b, 4, and 5 (in most instances avoiding use of the "Best and Most Versatile" cropland where possible)."

- 2.10 The site and all land within several kilometres of it is shown on the Provisional Agricultural Land Classification (ALC) map (1983) in an area of undifferentiated Grade 3 land. The site is therefore typical of land quality around Paddock Wood.

2 site selection

- 2.11 The LPA sought advice from Rural Planning Ltd regarding agricultural land quality to inform their screening opinion. Rural Planning provided written advice to the LPA, which states that,
- “...the local area has been the subject of a rather more detailed 1:25,000 Soil Survey report, which indicates most of the land concerned to be mainly of Wickham soil series, characterised by upper layers of clay loams or silty clay loams, over clay subsoils, which are difficult to cultivate, with an unstable topsoil structure, and naturally slow drainage, as well as tending to summer droughtiness”.*
- 2.12 The difficulty in cultivating the land and its naturally slow drainage are key motivations for the landowner’s preference for utilising the land for a solar farm rather than for arable cropping.
- 2.13 No brownfield sites over 10ha were identified on the National Land Use Database (2009) within Tunbridge Wells Borough (the largest was approximately 3ha). The council does not currently have an adopted Site Allocations Development Plan Document, so no sites allocated for development by the LPA could be considered for a potential solar farm.

Commercial or industrial roofspace

- 2.14 BELECTRIC UK has a team dedicated to PV installations on commercial and industrial roofspace, however there are currently significant barriers to the deployment of rooftop PV installations, as acknowledged by DECC in the UK Solar Strategy Part 2: Delivering a Brighter Future (2014).

Outcome

- 2.15 Luminous Energy then carried out a ‘sieve mapping’ exercise informed by grid capacity, topography and relevant designations to identify potential sites within the areas that matched the criteria set out above. Once the areas of the Borough covered by the AONB, SLAs and Green Belt have been excluded, only a small area of land to the east of Paddock Wood remains (this is illustrated on the constraints plan on the previous page).
- 2.16 Once additional considerations are made such as flood zones, agricultural land quality, topography and proximity to a grid connection, the area of land remaining is approximately 184 hectares (or 0.55% of the Borough). In addition to the site, a total of five alternative greenfield sites were identified within this area.
- 2.17 Luminous Energy endeavoured to contact the landowners of these potential sites, and/or viewed sites where possible from PRoWs or public highways. The reasons these alternative sites were not taken forward are discussed in the Planning, Design and Access Statement. The various reasons include:
- The land was located in a Flood Zone;
 - Being unable to contact the landowner; and
 - Considering the site to be inappropriate following a site visit due to visual impacts on neighbouring properties, Public Rights of Way or roads.



Existing Landscape Features Plan

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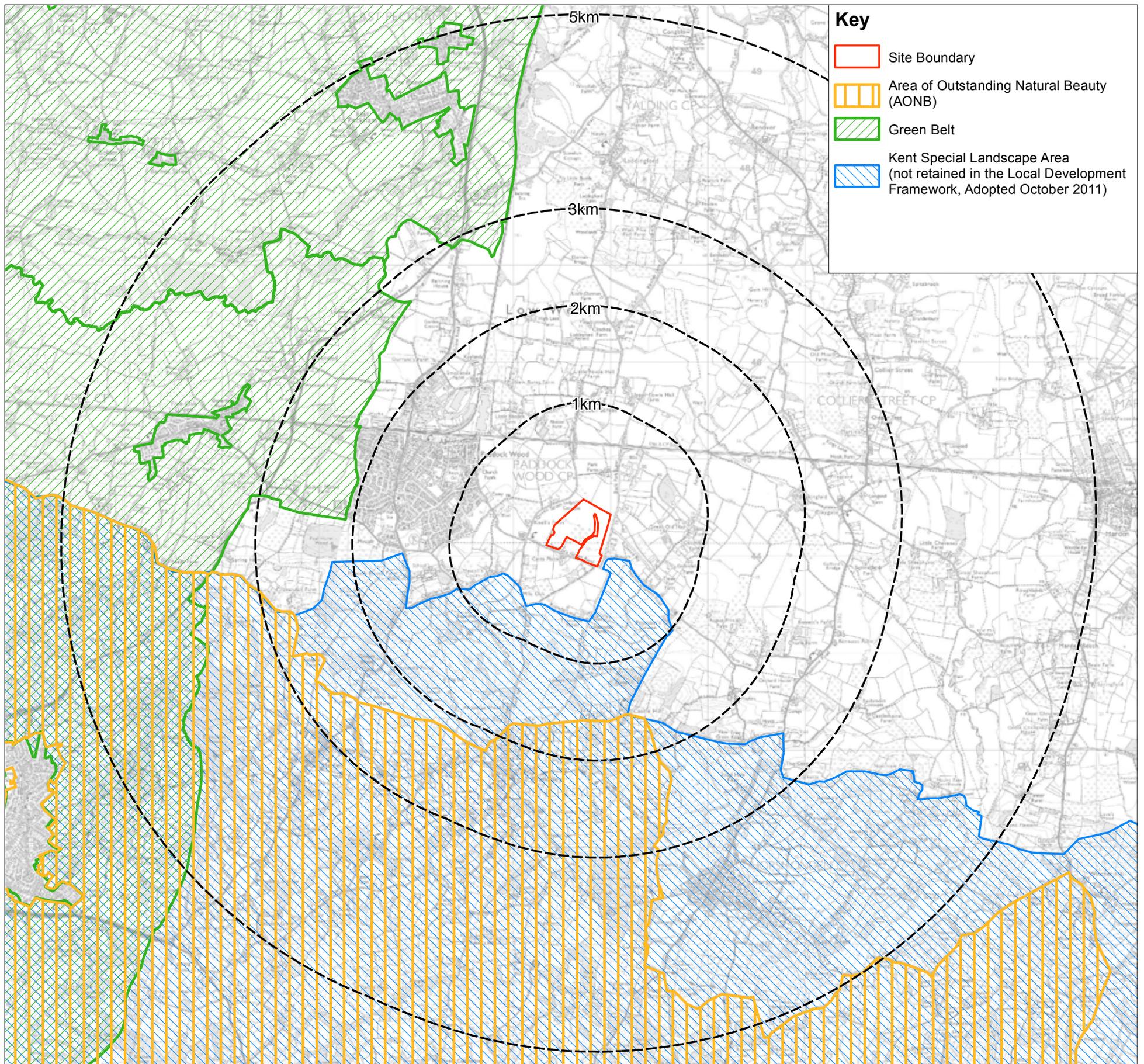




surrounding area

The proposed development is not located within an environmentally sensitive area or subject to any designations

3



3 the surrounding area

- 3.1 Mixtures of arable and pastoral fields lie to the south of the site with vegetation gradually getting more apparent towards the rising landform at Castle Hill. Interspersed between these field types lie pockets of orchard planting and manmade lakes. Immediately to the north and west of the site is predominantly made up of orchard planting, with these individual trees forming fixed linear patterns which contrast to the open agricultural fields they lie amongst. The immediate setting of the site is otherwise rural, comprising broadly level farmland, a mixture of pasture, orchard and arable fields, with an irregular pattern of fields defined by hedgerows, woodland clumps and farm tracks. The hedgerow structure is relatively intact within the immediate area and this, together with frequent lines or groups of trees and small copses, creates a sense of enclosure in the level landscape.
- 3.2 In this area of the landscape to the east of the Paddock Wood settlement pattern is infrequent comprising small clusters of housing along road intersections, scattered farmsteads and individual dwellings strung along minor roads such as Willow Lane (labelled as Back Lane on the OS map) to the east and Queen Street to the west.
- 3.3 Several smaller settlements are located in the surrounding area; nearby settlements include Queen Street 750m to the north, Claygate 2.3km to the east and Pearson's Green 550m to the south east. Marden is the next largest settlement behind Paddock Wood and is located 4.8km to the east of the site. Numerous parcels of woodland are located in the surrounding area, particularly to the south.
- 3.4 The topography around the site is relatively level, ranging between 14 and 30 metres AOD in all directions within 1.0km of the site boundary. The only significant change in topography to the north of the site appears some 6km to the north where the landform rises to over 100m AOD east of Yalding. To the east and west the land remains relatively level emphasising this lowland landscape at the foot of the High Weald Area of Outstanding Natural Beauty (AONB) (which lies 1.6km from the site). Just beyond 1km to the south of the site at The Knowle the lowland landscape rises quickly towards the foothills of the High Weald reaching 81m AOD at Castle Hill 1.5km to the south east of the site.
- 3.5 A notable feature of the landscape to the distant north is areas of polythene tunnels which lie in the agricultural fields on the sloping land and form swathes of linear white elements in views from the south.
- 3.6 There are several public highways in the area surrounding the site, notably Queen Street, Pearson's Green Road and Willow Lane. Highways in close proximity to the site are generally minor country lanes such as Mascall's Court Road and Chantler's Hill 0.5km to the south west and Mile Oak Road which runs into Queen Street. These minor roads link the interspersed villages and individual scattered properties. The A228 is the largest road in the study area and runs north south 2.8km from the site's western boundary, linking Royal Tunbridge Wells with the A26 in the north. The B2017 and B2160 provide access to the A228 both north and west from Paddock Wood, and lie some 1.5km to the west of the site.
- 3.7 A mainline railway line is located 0.6km to the north of the site and runs in an east west direction linking Tonbridge in the west with Ashford in the east.
- 3.8 There are a small number of PROWs within 1km of the site apart from the aforementioned bridleway and footpath adjacent to the site boundaries. This is particularly apparent to the north and south of the site where footpaths run to the west and east. A PROW runs northwest-southeast to the west of Queen Street, where it splits and runs north over the railway line to Rhoden Farm and west towards Paddock Wood. Queen Street and Willow Lane are linked to the north of the site by a small stretch of bridleway which runs through Park Farm. The PROW which lies to the north east of the site runs from Willow Lane easterly towards Great Old Hay where it turns south, crosses Pearson's Green Road and links with several footpaths that run towards Castle Hill. In general beyond 1.5km of the site PROWs become more numerous to the south east and south west.
- 3.9 The High Weald Landscape Trail runs within the High Weald AONB some 2km to the south of the site.





the site

4

The site is made up of a single field currently used for arable production



a

- a. Farming practices removed the former eastern field boundary vegetation
- b. Apple orchards lie to the north of the site
- c. Young apple on orchard adjacent to the site
- d. Broken field boundary fencing



b



c



d

4 the site

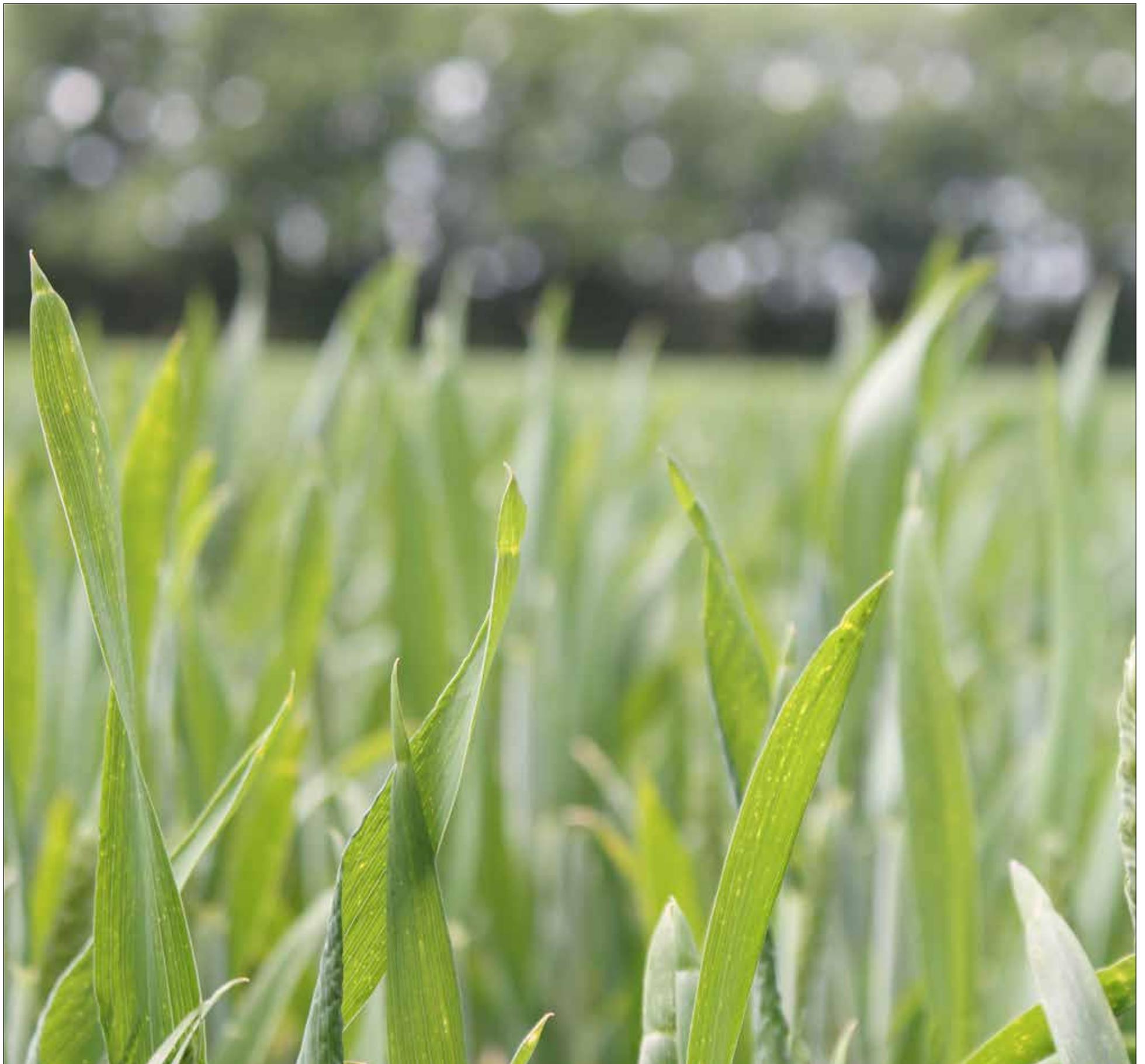
- 4.1 The parcel of land that makes up the site lies within low-lying farmland approximately 800m to the east of Paddock Wood.
- 4.2 The site comprises one parcel of land with a total area of 25 hectares bordered by Willow Lane to the east and Pearson's Green Road to the south which runs in a north west south east direction between Paddock Wood and Pearson's Green.
- 4.3 Ground levels across the site vary slightly, ranging between 26m and 17m AOD with no overall gradient apparent. The field is under arable production and is 94% Grade 3b agricultural land quality.
- 4.4 The western boundary is made up of a continuous well managed hedgerow with some hedgerow trees which form the field boundary to a neighbouring field. The northern boundary is formed by a post and wire fence and new shrub planting which abuts an orchard with the southern boundary of the field more densely vegetated with mature hedgerows and trees. The eastern boundary is formed by a mix of individual trees with small clumps of vegetation and a drainage ditch.
- 4.5 A mature strip of woodland runs north south from the southern boundary ending some 70m from the northern boundary.
- 4.6 With the exception of the eastern boundary in general the boundaries of the site are a mix of mature hedgerows with hedgerow trees. The hedgerows range from approximately 1m-4m and the trees from approximately 2m-15m.
- 4.7 There are no public rights of way (PRoW) that cross the site or run along its boundaries. A bridleway runs from Mile Oak Road and joins Pearson's Green Road opposite the southeast corner of the site. A PRoW joins Willow Lane 90m to the northeast of the site on the opposite side of the road.
- 4.8 Several power lines run across the site itself, including a 132 kV overhead pylon line running south west – north east across the southern portion of the site. A further 33 kV power line runs east – west across the middle of the site while an 11 kV power line runs north – south in the western portion. In combination with the mature trees, these structures form prominent vertical elements across the site itself.



Existing vegetation along sites western boundary



Tall mature boundary hedgerows help screen the site from Pearson's Green Road



The site is currently used for arable purposes

4 the site

- 4.9 Current access to the site is provided by an existing gateway off Pearson's Green Road.
- 4.10 There are no landscape designations that affect the site itself or its immediate context (see Landscape Designation Plan on the previous pages). The High Weald AONB lies 1.6km to the south. Due to topography and vegetation there is a limited extent of visibility from within the AONB itself.
- 4.11 A former Low Weald Special Landscape Area (SLA) lies close to the southeastern corner of the site. However, the Planning Inspector who examined the Tunbridge Wells Core Strategy in 2010 concluded it was no longer 'relevant' or 'necessary' to retain the Special Landscape Area designation.
- 4.12 A drainage ditch runs along the eastern boundary of the site parallel to Willow Lane.



Power poles run across the field

- 4.13 An apple orchard abuts the north of the site and is separated by a hornbeam hedge and post and wire fence which forms the sites northern boundary.



The closest footpath lies to the north east of the site



A drainage ditch runs along the eastern boundary of the site



Image taken from a Big60Million Solar Farm



5

landscape proposals

A number of specific mitigation measures have been included within the proposals as part of the design

5 landscape proposals

5.1 A number of specific mitigation measures have been included in the proposals as part of the design. The objectives are to:

- Help integrate the development into its surroundings;
- Help to screen views from the most sensitive locations; and
- Provide landscape and ecological enhancements using land within the site and beyond the immediate site boundary.

5.2 The proposed development has been located within areas of farmland that benefit from a generally intact and mature structure of hedgerows and trees so as to minimise its visibility within the surrounding area.

5.3 The layout of the arrays has been designed to fit within the existing field pattern, with appropriate buffers of land along all boundaries, so that the existing structure of ditches, hedgerows and trees will remain undisturbed. This would also help to reduce potential visual impacts and integrate the development into the landscape, as well as allowing the existing structure of the farmed landscape to be returned to its former character upon decommissioning of the solar farm.

5.4 The method of construction allows for minimal disturbance to the ground and existing levels, and the land underneath the arrays would be maintained as grassland, retaining some of its character. Associated structures and fencing have been designed in neutral, recessive colours to minimise their visibility and impact on the landscape, while no lighting is proposed during the operational phase of the project to avoid impact on the rural character of the landscape after dark.

5.5 A range of measures designed to reduce the landscape and visual impact of the development have been incorporated into the design and layout of the solar farm and are shown on the Landscape Mitigation Plan, presented opposite.

5.6 These landscaping enhancement amount to:

- Approximately 390 metres of native hedge planting. Native hedge planting will be at 5 per linear metre in a double staggered row equating to approximately 1,950 new hedgerow plants. 470m of new hornbeam hedge planted 3 per linear metre equating to approximately 1,410 plants.
- Approximately 12 new trees.
- An orchard of apple trees.

Species rich grasses

- As well as naturally regenerated grassland the site would be over seeded with grass seed containing a minimum of 5% wild flower seed mix to increase its bio-diversity.

Hedgerows

- Existing boundary vegetation would be predominantly retained and managed to no less than 3m to maintain its existing landscape value. Current boundary vegetation is tall and mature but any areas that require infilling would be allowed to grow to up to a minimum of 3m from ground levels within 5 years of planting.
- There is currently no hedge or significant vegetation cover on the eastern boundary of the site. A new hornbeam hedge is proposed along this boundary to the west of the ditch and east of the proposed orchard. The new hedge would continue along the eastern boundary and link with the existing hornbeam hedge immediately to the north east of the site. This new hedge would be fast growing and act as a windbreak for the orchard trees as well as helping to screen views from the properties along Willow Lane and the lane itself. The hedgerow would be planted at 1.0m high with three plants per linear metre, and is expected to be 3m high within 5 years. These growth rates are based on similar windbreak planting recently undertaken at the orchard to the north of the site.
- The proposed hornbeam hedge has been set back 5m from the ditch that runs along Willow Lane in order to facilitate the continued maintenance of this ditch by the Upper Medway Drainage Board (UMDB).

5 landscape proposals

- Historical mapping shows a shaw immediately to the west of Willow Lane until approximately 50 years ago. To avoid restricting access for maintenance of the adjacent ditch by the UMDB, the Applicant is not proposing to re-establish the shaw.
- A new stretch of hedgerow approximately 15m in length would be planted behind the proposed access point off Pearson's Green Road, helping to restrict views into the site from road users.
- Existing hedgerows around the site (particularly the southern boundary) would have new planting in strategic locations to fill any gaps. Additionally, vegetation and hedgerow trees would be allowed to develop, where glimpsed views may be possible. New planting would be a mix of locally appropriate species; the choice of fast growing native and characteristic planting is particularly suitable for area as is recognised in the published landscape assessments.

Trees

- A strip of apple trees would be planted adjacent to the fence line on the eastern boundary. The apple trees are likely to be Gala or Early Windsor, and would be planted in rows at 1.25m high and maintained at approximately 2.5m (height expected to be reached within 5 years). This orchard planting would help to filter and screen views from the properties east of Willow Lane and the lane itself.

5.7 The benefits of such improved tree and hedgerow cover will be to:

- Provide greater physical continuity in the landscape;
- Strengthen characteristic features of the local area;
- Improve the visual amenity of the site and its surroundings;
- Strengthen the field pattern of the site and its surroundings;
- Establish and strengthen linkages between woodland areas;
- Enhance the habitat on the site with long term preservation of the land; and
- Create more shelter and encourage and support wildlife and flora.







Image of a public footpath which runs to the north west of the site



access and recreation

The public rights of way in the vicinity of the site are well connected to the wider area and will be unaffected by the development

6



Despite a small access point over the drainage ditch on the eastern boundary there is no public access across the site

6 access and recreation

- 6.1 Access during the construction and operational periods is proposed via a new access point off Pearson's Green Road in the south west corner of the site. The new access will be approximately 30m to the west of the existing access to maximise and improve exit visibility, whilst retaining a substantial oak tree to the east of the existing access. The new access will require the removal of up to 10m of hedgerow, and the existing gateway will be infilled with hedgerow species. The access would be appropriately surfaced and can be constructed under an appropriate highways license.
- 6.2 To ensure the efficient management of the construction phase, a temporary construction compound will be set up for the duration of the estimated 16 week construction phase. The construction compound will require the laying of Box Trakpanel (a temporary roadway and walkway system) on the existing ground surface. The construction compound is of a temporary nature and will be fully dismantled and removed after the construction period. At the end of the construction period the area will be immediately restored to its original condition.
- 6.3 Due to the flat topography and vegetation there would be limited visibility of the solar farm from the public footpaths surrounding the site. At year 1 there would be glimpsed views of a small portion of the site from the closest public footpath located north east of the site. In winter months there would be filtered views of the site from the closest bridleway to the south at Pearson's Green Lane, opportunities would be taken to strengthen this boundary.
- 6.4 As part of the Paddock Wood Solar Farm proposals the opportunity will be taken to strengthen and enhance the hedges that provide shelter and screening along the boundaries of the site. Native species of local character will be used.
- 6.5 In general the footpaths located in the local landscape have views of the site restricted by intervening vegetation or built form.



The closest public footpath joins Willow Lane north east of the site



A bridleway runs adjacent to mature hedges to the north of the site



Image of the route of the footpath through the field

Site access for construction would be off Pearson's Green Road

6 access and recreation



The site is well screened from the public footpath to the west



Gaps in the southern boundary vegetation opposite the entrance to the closest bridleway will be infilled to increase the screening of the site



Vegetation restricts views from public footpaths surrounding the site



Image from a recently constructed Big60Million Solar Farm



ecology

7

Ecological enhancements will increase the biodiversity and habitat on the site



Information boards from a Big60Million Solar Farm educates visitors about the positive benefits of the solar farm on local ecology

7 ecology

Overview

- 7.1 An Extended Phase 1 habitat survey was undertaken on the site, and found that the intensively managed arable land was generally of low value to wildlife with little structural or species diversity. Areas of higher ecological value within and adjacent to the Site such as the boundary hedgerows and ditches, pond, narrow strips of field margin semi-improved grassland and the small areas of woodland are retained as part of the solar farm. One pond is present within the Site and was been confirmed as supporting great crested newts in 2014.
- 7.2 Precautionary measures are recommended to protect habitats and species during the construction phase of the development, including Reasonable Avoidance Measures for reptiles and amphibians. The majority of boundary hedgerows, field margins and hedgerow trees will be retained as part of the proposed development and appropriate buffers applied within the project design. Other proposed mitigation and enhancement measures include the reversion of arable land to more species diverse grassland, planting of native species hedgerow, and the installation of bird and bat boxes.
- 7.3 Implementation of these measures will lead to a net biodiversity gain at a local level. With appropriate layout and design measures in place, it is considered that adverse effects on protected and notable species can be avoided.
- 7.4 Big60Million solar farms are designed to benefit the environment. The solar modules are elevated, leaving more than 95% of the land to be used for nature and, where appropriate, co-production of food. So many species of animals, birds and insects are suffering due to changes in their habitats caused by intensive agricultural use, industrialisation, and climate change. Our approach is to make Big60Million solar farms a protected sanctuary for struggling species by delivering the environment they need to prosper in.

Grassland

- 7.5 Two broad areas of grassland will be created:
- Area A – comprising a four metre wide strip around the perimeter of

the site along boundary hedgerows, which will be seeded and managed by cutting to allow grassland with a varied height and structure valuable to small mammals, birds and invertebrates.

Area B – comprising the main ex-arable body will be seeded (with the exception of land immediately beneath the panels which will be allowed to vegetate naturally) and managed through grazing.

- 7.6 The grassland areas are to be sown with a suitable meadow mix (for example EN1 grass / flower mix or similar) and will constitute a minimum of 5% wildflowers. Wild flowers would be planted to provide food for bees (who gather the pollen for their larvae) and other pollinating insects. Bees provide an invaluable service for agriculture, pollinating up to a third of our foods, however populations have declined by up to 90% in recent years and much of our land is over farmed. Big60Million works with specialist scientists and has partnered nationally with the British Bee Keeper's Association and Flowerscapes to ensure we grow the most effective wild flowers to support local bee populations. .
- 7.7 The overall benefits of habitat creation will be to:
- Improve the site and the surrounding area to enable both plants and wildlife to flourish;
 - Consolidate and strengthen the value of wildlife corridors;
 - Encourage new species of fauna and flora to establish themselves on site and in the surrounding area;
 - Strengthen the position of those species of flora and fauna already present on and around the site;
 - Enhance wildlife margins alongside existing hedgerows in order to manage and enhance the biodiversity of these features;
 - Enhance and safeguard key habitats such as trees and hedgerows for the benefit of wildlife;
 - Significantly increase the amount of hedgerow and trees in the immediate area.

7 ecology

Hedgerows

- 7.8 New hornbeam hedgerow planting along the eastern boundary will be undertaken at 3 plants per linear metre in a single row. Additional planting will also be undertaken to strengthen existing hedgerows around other boundaries of the site, as discussed above.
- 7.9 Species providing valuable food resources to wildlife, such as such as hazel and blackthorn, will be managed to allow them to flower, set fruit and seed in order to provide an increased food resource for a range of species, including birds and small mammals as well as invertebrates.

Wildlife enhancement

- 7.10 Bird nest and bat roost boxes will be installed on suitable features along the boundary of the site (or immediately adjacent land) to encourage breeding birds and roosting bats. Six bird nest boxes (suitable for a variety of common garden / woodland species) and nine bat boxes (three boxes on three trees facing in different directions) will be positioned on site. Suitable bird boxes would include the CedarPlus Modern Nest Box. Local school children will be invited to decorate these boxes to promote interest in the scheme.
- 7.11 Sections of the perimeter fencing, at appropriate intervals, will be raised by approximately 20cm, or include access 'gates' in places to maintain and allow the dispersal of wildlife (such as badgers or small mammals) through the site.

Habitat piles

- 7.12 Any wood removed during habitat management or other work operations will be kept in habitat piles and placed along the edge of hedgerows, in order to provide valuable invertebrate habitat and shelter for other species including small mammals.
- 7.13 An insect hotel will also be created to provide refuge and shelter for invertebrates. The hotel will comprise natural materials; including dead wood if available to provide opportunities for beetle and holes (e.g. bamboo canes) for solitary bees.



Children's hand painted bat box on a Big60Million Solar Farm



Children's hand painted bird box on a Big60Million Solar Farm



Bee hives on a Big60Million Solar Farm

7 ecology

Beehives

- 7.14 Beehives will be installed within the site area, and would assist with the pollination of local flowering crops such as oilseed rape on surrounding agricultural land. Bees (along with other invertebrates) will also benefit from the areas of hedgerow planting and extensive herb-rich grassland creation, which will provide sources of pollen and nectar.

Sheep

- 7.15 Grassland within the main body of the site beneath the solar panels will be grazed. Grazing will be reduced or removed during the summer months to allow meadow species to maximise opportunities to flower and set seed. The fields would be subject to light intermittent grazing by sheep between late August (after the chicks of any ground-nesting species have fledged) and late February. Removing sheep from the field between March and early August will allow summer flowering plants to set seed.



Birds nesting beneath the panels on a BELECTRIC UK solar farm

Ponds

- 7.16 There is the potential for positive management measures to improve the value of the onsite pond for breeding great crested newts and other amphibians. As un-managed waterbodies undergo natural succession over time, becoming more shaded or overgrown or even drying out, their habitat value to great crested newts may decline. Pond habitat enhancement and management work is proposed which will maintain its value for great crested newts over the longer-term. The proposed management regime involves targeted vegetation management to maintain a balanced mix of terrestrial and marginal vegetation cover, shade and areas of open water which will be attractive to amphibians (along with other species groups including invertebrates). The solar panels will be set back from the pond by approximately 30m to create a buffer zone, within which management can be undertaken that is specifically designed to benefit great crested newts.



Sheep grazing on a BELECTRIC UK solar farm



Image from the open day of a recently constructed Big60Million Solar Farm



community and educational benefits

8

Big60Million has been created to give 60 million UK residents the opportunity to benefit from some of the highest quality solar farms in the world



Local school children preparing the soil to plant wildflower mixes at a Big60Million Solar Farm

8 community and educational benefits

- 8.1 Big60Million is a Community Benefit Energy Company that provides the opportunity for the 60 Million residents of the UK to directly benefit from new solar farms constructed by BELECTRIC UK closest to their local communities. The company recently launched its first solar farm on a 3.8MW project near Willersey, Gloucestershire.
- 8.2 Big60Million offer bonds to the local residents of every new solar farm which cost £60 each. Residents in the community will be able to invest in as many bonds as they wish. In return investors will be paid interest at a set rate which is to be paid half yearly. After an initial 5-year period residents have the option to have their initial investment returned in full, or to reinvest in a further bond issue. Big60Million is so confident in being able to deliver the return on investment that the assets of each Big60Million Solar Farm will be offered as security to the bond holders.
- 8.3 In addition to local communities benefiting from financial and environmental gains, Big60Million Solar Farm deliver a range of social benefits. We work with local schools and colleges to develop educational programs and open up our Big60Million solar farms for field trips. This helps students learn all about solar energy technology, distributed generation and energy storage and the wild flower meadows, bee hives, bird and bat boxes that make up our habitat management plan, all of which provide a great opportunity for pupils to study the local environment.
- 8.4 At our existing solar farms we have been working with local primary schools to run a number of events to help educate the pupils about the solar farm and its habitat. Our aspiration is to use Big60Million solar farms to help educate people of all ages on the transition to electric vehicles and electric heating and explore how solar farms can support these technologies.
- 8.5 We'd also like to encourage the co-production of food on our sites and demonstrate that low cost, organic food can be produced and consumed locally, 'by the local community, for the local community', without the need for fossil fuelled fertilisers, synthetic insecticides, or long-distance transportation.



- 8.6 Open days are proposed which would allow the local community and any potential local investors to look around the solar farm and understand how it works.
- 8.7 The provision of the information boards would provide an opportunity for the community to get involved in the development of their context. The Local Planning Authority, local schools and specialist interest groups such as local wildlife groups might have useful contributions to make.
- 8.8 Local school pupils involved in decorating bat and bird boxes could learn about the levels of electricity generated from the solar farm and the amount of CO₂ saved, thereby enabling a greater understanding of the technology and the benefits it brings.
- 8.9 The implementation of the Environmental and Community Strategy and the management regime for the solar farm will leave a long term legacy of environmental benefits throughout and beyond the duration of the scheme.
- 8.10 Engagement with the Paddock Wood community and Parish Council has been initiated through consultation to discover what benefits could be generated through the development of the solar farm that would be of use locally. Throughout the determination period, we intend to continue to discuss these opportunities with local stakeholders.



Habitat Management Plan created for a Big60Million Solar Farm following input from the local community. There would be opportunities for the local community to participate in delivering the Habitat Management Plan for Paddock Wood Solar Farm should planning permission be granted

8 community and educational benefits



Community allotment proposals in a Big60Million Solar Farm



Potential investors from the local community learn about a Big60Million Solar Farm during an open day



Local school children's hand painted bird and bat boxes located in a Big60Million Solar Farm

8.11 As part of the Paddock Wood Solar Farm proposals, opportunities will be explored for educational and community benefits to encourage the teaching of local school children and residents about solar farms, renewable energy, and the wildlife benefits associated with the management of the site.



During an open day a member of BELECTRIC'S team educates members of the local community about a Big60Million Solar Farm



Image from a recently constructed Big60Million Solar Farm



summary

Paddock Wood Solar Farm has the potential to bring a range of environmental benefits to the site and its immediate surroundings. It also provides financial and educational opportunities for the local community

9



Image of a thin film array taken from a Big60Million Solar Farm

9 summary

- 9.1 Big60Million takes a holistic approach to solar farm development, incorporating the natural elements of a specific site into every design. The focus is on constructing a system that will be appropriate to the location, using existing features such as dense hedges to provide screening. Paddock Wood Solar Farm aims to enhance the biodiversity value of the area, by using locally appropriate seed mixes under and around the solar arrays to grow grasses and wild flowers.
- 9.2 The site consists of a single field predominantly bounded by mature vegetation and covers an area of approximately 25 hectares. The proposed development is not located within an environmentally sensitive area or subject to any designations. The site comprises 94% Grade 3b agricultural land, and is therefore predominantly not ‘Best and Most Versatile’ land.
- 9.3 The solar farm will use state-of-the-art PV modules with thin-film technology. The modules ensure optimal use of solar irradiation and perform very efficiently at different angles to the sun. Thin-film modules require significantly fewer raw materials during production than traditional silicon-based technologies. Furthermore, the thin-film technology performs excellently in diffuse light of cloudy days as well as higher temperatures reached on very sunny days. On cloudy days the output of the thin-film modules decreases by a smaller extent compared to commonly used silicon modules resulting in a comparative increase in electrical output.
- 9.4 The thin-film solar module mounting technique requires minimal ground disturbance and does not result in the creation of large areas of impervious surfaces. It has been calculated that less than 1% of the overall site will be covered with an impermeable surface with the solar farm in place.
- 9.5 The site and immediate surroundings will be enhanced with mitigation measures including the planting of hedgerows, use of a special seed mix to form meadows and implementation of other biodiversity enhancement measures, including the placement of bird boxes and bee hives on specific areas of the site. Many species of birds nest in adjacent hedgerows and could utilise the wooden beams under the solar modules. Small animals and insects would be attracted to the grasses under the solar arrays. The areas under the modules also provide protection from the weather for animals.
- 9.6 The overall benefits of habitat creation will be to:
- Improve the site and the surrounding area to enable both plants and wildlife to flourish;
 - Consolidate and strengthen the value of wildlife corridors;
 - Encourage new species of fauna and flora to establish themselves on site and in the surrounding area;
 - Strengthen the position of those species of flora and fauna already present on and around the site;
 - Enhance wildlife margins alongside existing hedgerows in order to manage and enhance the biodiversity of these features;
 - Enhance and safeguard key habitats such as trees and hedgerows for the benefit of wildlife;
 - Significantly increase the amount of hedgerow and trees in the immediate area.
- 9.7 The proposed landscape mitigation seeks to maintain and where possible enhance the character of the site. Although the fields would contain the components of a solar farm, the proposals are for a restricted period of 25 years, after which the site will revert back to agricultural use.
- 9.8 The existing boundary vegetation will be preserved and infilled where needed. New trees and hedgerows will be planted which as well as strengthening the landscape fabric of the site will assist in restricting views from the surrounding landscape. A new orchard will be planted adjacent to the eastern boundary, a continuation of the orchard to the north.



Image from the open day of a recently constructed Big60Million Solar Farm

9 summary

- 9.9 Big60Million is a Community Benefit Energy Company that provides the opportunity for the 60 Million residents of the UK to directly benefit from new solar farms constructed by BELECTRIC UK closest to their local communities.
- 9.10 Big60Million's vision is to see local communities benefiting from solar farms in as many ways as possible. It is intended that Paddock Wood Solar Farm will partner with local schools and colleges to develop educational programmes and biodiversity initiatives; the first collaboration saw bird, bat and hedgehog boxes painted by the pupils of Willersey CofE Primary School. Big60Million also initiates community growing schemes within its solar farms, to produce low cost, high quality organic food for the local area.
- 9.11 Paddock Wood Solar Farm will be one of the first Big60Million solar farms allowing local people to invest in the project and receive an attractive return on investment.
- 9.12 The UK Government is explicit in its support in the transition to a secure, safe, low-carbon, affordable energy system and to mobilise commitment to ambitious action on climate change internationally. Paddock Wood Solar Farm provides an opportunity to help towards securing the UK's clean power supply, increase local biodiversity, create habitat and improve public access around the site.
- 9.13 This combined with Big60Million's vision for communities to invest in local solar farms along with educational initiatives for local school children will help create a legacy for our planet and children.

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