

Design and Access Statement

Site: Hill Top Farm, Coddington, Newark, NG24 2QE

Proposal: Additional 18.04kW ground mounted solar PV array

The applicant approached Geo Green Power to ask for advice on how they could best utilise renewable energy generation opportunities on their land to reduce the environmental impact of Hill Top Farm. Geo Green Power advised the installation of an additional 18.04kW ground mounted solar PV system.

1. Site

The proposed site Hill Top Farm, a dwelling located in Newark. The solar panel array would be located with the field to the south of the property and supply renewable energy to the dwelling. The site is not within a Green Belt area, National Park, Area of Outstanding Natural Beauty or Conservation Area.

Figure 1: Ariel View of site (reference 'Google Maps')



2. Character

Geo Green Power designs and installs solar PV systems with high regard for the aesthetics and impact on surrounding areas.

The site falls within National Character Area: 48 Trent and Belvoir Vales. Natural England advises that this area is characterised by undulating, strongly rural and predominantly arable farmland, centred on the River Trent. A low-lying rural landscape with relatively little woodland cover, the NCA offers long, open views.

The site currently has a 26.4kW ground mounted solar system installed (approved under application 21/00428/FUL). This current application is for an additional 18.04kW ground mount system as the property's electrical requirement has recently increased (for example the property is heated by a ground source heat pump which utilises electricity and the applicant will be installing EV chargers).

Alternative siting of the solar panels had been considered prior to submission of this planning application. Geo Green Power prioritise installation of roof mounted systems over ground mounted systems wherever possible and as before, installation of roof-mounted schemes have been discussed. However, there is limited viable roof space at the property due to poor orientation of the building which would not maximise potential solar power. The applicant also has comparatively high electrical requirement* and a roof mounted system, due to limited roof space, would not fulfil this requirement. Thus a ground mounted solar PV system is the only viable option to reduce the environmental impact and high electricity demand of the dwelling.

In order to meet the local requirements, Geo Green Power will be careful to ensure that this solar PV system is a non-permanent installation by using a pile driven mounting system, therefore eliminating the need to fix the mounting system into concrete.

The solar PV modules to be utilised are Canadian Solar 410w panels (the datasheet for this solar panel has been included separately). These modules have an anti-reflective coating to ensure that there are no undesirable side effects related to light reflecting glare. The additional array will be made up of 44 x Canadian Solar 410w solar panels organised into a single table, arranged in 4 rows of 11 panels in landscape. This would be similar to the existing installation. Scaled drawings of the solar PV array and scaled examples of a ground mount frame for a single table of panels have been included in the application (see 'Block Plan' and 'Hitech Mounting Frame').

Figure 2: Existing solar PV array at site



Existing solar PV array comprising of two tables of 88 solar panels

(*). Ofgem website states that the average household in England, Scotland and Wales uses 2,700 kWh of electricity and 11,500 kWh of gas in a year. <https://www.ofgem.gov.uk/information-consumers/energy-advice-households/average-gas-and-electricity-use-explained>

Figure 2b: Existing solar PV array at site (side view)



The area required for the solar PV system would be approximately 76.8 sq m (0.00768 hectares).

At its highest point, the development will be approximately 2.54m high and therefore will not be highly visible to the surrounding area, particularly as the panels shall be of southern orientation and consequently run parallel to and therefore face away from Balderton Lane. At its closest point, the array will be approximately 59m from Balderton Lane.

The area of land has been specifically chosen to minimise the visual impact on the surrounding area. The proposal would be located in the field to the south of the property in order to benefit from the existing screening surrounding the north, south, east and west. There are also houses and properties situated at various points around the proposed site, providing further screening from the highways. Pictures of the level of visibility of the site can be found in Appendix A 'Viewpoints'. This specific location has also been chosen as siting the development elsewhere would require considerable works to connect the panels back to the electricity supply which would prove impractical and expensive.

Figure 3: Existing screening examples (reference: 'Google Maps')



Figure 3b: Existing screening examples (reference: 'Geo Green Power')



Figure 3c: Existing screening examples (reference: 'Geo Green Power')



Figure 3d: Existing screening examples (reference: 'Geo Green Power')

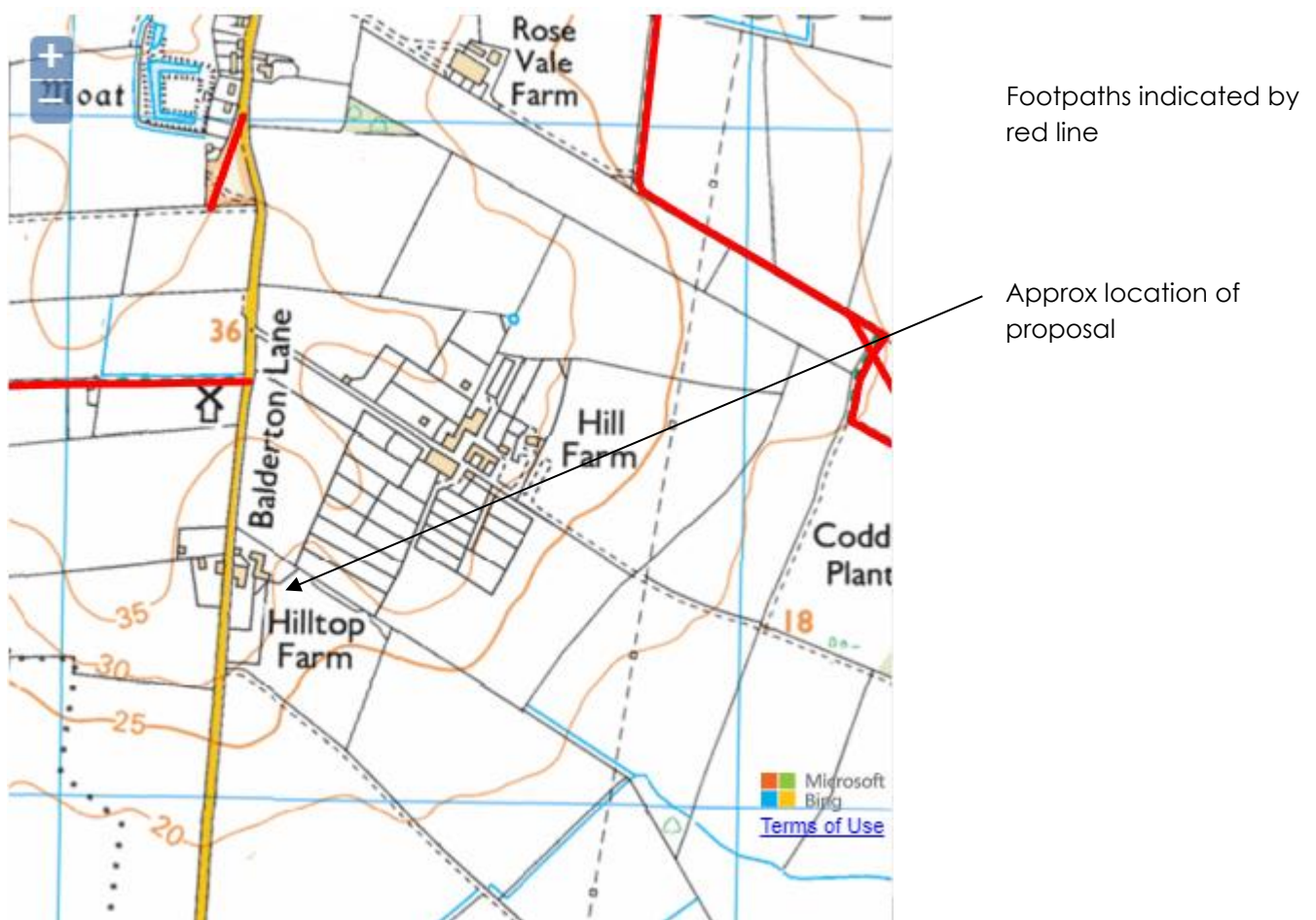


Once the PV system is no longer in operation the system will be removed immediately. Solar PV systems have no moving parts and therefore maintenance to the arrays is minimal. There should be no need for the array to be accessed on foot any more than 4 or 5 times over the duration of the guaranteed period of twenty years.

3. Access

The specific location for the proposed solar PV array is the field to the south east of the dwelling. A minimum gap of 6 metres will be left between the boundaries of the field and the solar PV array to allow for access and to avoid shading.

Figure 4: Footpaths (reference: <http://www.rowmaps.com>)



The proposal would have limited impact on the surrounding footpath either physically or visually due to existing screening between the footpath and the proposed development. Access to the solar PV array will not impact accessibility needs to public highways, cycle paths or footpaths. It will also not impact access needed for emergency vehicles or connections that these may require.

During the installation, vehicles will access the site via Balderton Lane. No alterations to the land or existing driveway will be required to enable this. As the solar PV array will be on the applicants' private land, the use of any public transport will remain the same, as will the parking arrangements currently in place. Any surrounding footpaths, highways or cycle ways will be unaffected by the proposed PV array.

Figure 5: Access/Vehicle Manoeuvring (reference: 'Geo Green Power')



Access entrance & parking

The site has a designated off-road parking (as can be seen in Figure 5), so that no vehicles will need to use the public highway for manoeuvring or parking. The size of the entrance allows for long distance and clear views of oncoming traffic. Existing access is to be used for the proposed installation. Please see Appendix A 'Viewpoints' for further details.

3b. Delivery Schedule

The delivery schedule of installing this solar PV array will not increase the level of traffic that the property is used to receiving. Over the course of the 1 week solar PV installation, several deliveries of equipment would be required:

-Contractors vans (such as Vauxhall Vivaros) would be making daily trips to site which will not cause any over-run whilst accessing the site. These vans will access the site from Balderton Lane into the access entrance. The solar PV inverter would be delivered in one of the contractor vans.

-The flatbed trailer (delivering the telehandler/pile driver) and the ground mount frame would be delivered during the first day of installation.

-Due to the relatively small number of solar panels required only a single solar panel delivery would be necessary. This would be made on approximately the third day, allowing time for the ground mount frame to be delivered and installed.

The equipment would be scheduled for priority morning deliveries to maximise working hours and minimise delays. This ensures that deliveries are completed prior to 10:30am (traffic dependant). Geo Green Power representatives will be onsite daily from 8am to take delivery

of equipment. This delivery schedule will not greatly increase traffic or access to the site above and beyond what is usually expected for a dwelling of this size.

Visuals of the site entrance and access route can be found in Appendix A 'Viewpoints'.

4. Community Safety

Geo Green Power will make the PV array as safe and secure as possible. This includes meeting specific health & safety requirements during installation and for the lifetime of the system. All inverters will be located above ground level and are type tested and IP rated. The proposed array will not have any moving parts that could impact the safety of the system. All work and materials used in the system will meet the relevant electrical and mechanical standards including, but not limited to, BS7671 compliance for any A/C components and G99 IET wiring regulations.

Geo Green Power is NICEIC, MCS and CHAS accredited. Geo Green Power will have taken care to ensure that the proposed PV array is in a location so as not to impact the safety of the general public.

5. Environmental Sustainability

The applicant wishes to reduce the environmental impact of the dwelling and an additional 18.04kWpk solar PV array will reduce the carbon footprint by approximately 4 tonnes of CO2 per annum. This will reduce the environmental impact of the dwelling on the surrounding area immediately.

The solar PV system will not contribute to the merging of neighbourhoods and indeed we can demonstrate that the solar panels would have a limited impact on the appearance and openness of the surrounding area. The solar PV array would only take up a proportionally small parcel of land within the applicant's boundary. Additionally, the solar PV array will not be widely visible from the surrounding highways and its location has been specifically selected because of this (see 'Viewpoints'). We would draw attention to the fact that the site is already well contained by physical barriers within the landscape.

Furthermore, this location has not only been chosen to reduce the visual impact but also to assist in the development having minimal amenity impact. The site has been chosen because of the proximity to the private electricity supply to which it will be connected in to, and therefore the reduction in the amount of ancillary infrastructure needed to support the scheme.

The mounting method that will be used is pile driven posts, meaning that no concrete base or excavation is needed, and the land can be returned to its original state once the solar panels are no longer functioning. This method of mounting also means that the land is still able to be used for dual purpose if so needed, as the vast quantity of surface area will still be accessible. This means that the field can continue to be utilised such as for the grazing of sheep or planting of wildflowers. Alternatively, the land can use the life span of the solar PV system (20-25 years) as an opportunity to regenerate leading to improved land quality over time. It is considered

that the finite and reversible aspect of the proposals should be afforded significant weight when considering the very special circumstances of this proposal.

In addition, the Government has a commitment to solar development and has identified this form of renewable energy production as having an important role to play in a balanced UK energy policy. The Climate Change Act commits the UK government by law to reducing greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050. Solar energy is therefore capable of providing a source of energy at a time when there is an overall climate crisis in terms of energy supply and security within the UK.

Due to the Climate Emergency, the overall principle direction of both national and local planning policy is to support the use of renewable energy technologies, such as solar panels, to contribute to the U.K.'s target of reducing its carbon dioxide and other greenhouse gas emissions. This solar PV array would allow this business to cut its CO₂ production by 4 tonnes a year. One of the core principle planning policies of the NPPF is a move towards a low carbon economy and the Framework is clear in its support of renewable energy projects. The generation of renewable electricity at the site is a positive factor in favour of the proposal and it would make a valuable contribution in the context of wider environmental benefits.

In the future, should the PV array need to be moved or taken down, it is a non-permanent fixture and so can be done with minimal impact on the surrounding areas. Water sources and waste management will not be affected.

7. Cumulative Impact

Unlike large scale solar farm systems, this application is a proposal for a system that will directly feed the applicant's own dwelling, rather than solely feeding directly into the national grid, allowing the applicant to lower their carbon footprint by around 4 tonnes of CO₂ per annum. The proposed 18.04kW system would produce energy similar to the applicant's private usage whilst covering a proportionally small area of one of the dwellings fields. This proposal is very specific to this particular set of circumstances and will not set a precedent for future large 'grid only' solar PV arrays. This project is one of the few practical alternatives there is to help the business transition to a lower carbon energy use footprint. As it has been tailor made to fit the applicant's needs, there should not be a large surplus being exported to the grid and therefore any other surrounding installs should be considered separately rather than cumulatively.

8. Wildlife and Trees

When designing the current proposal, thought was given to section 11 of the NPPF. There shall be no security lighting installed so this solar PV system will not contribute to the light pollution of the surrounding area. Additionally, the system will not contribute to noise pollution as there are no moving parts in a solar PV system and therefore wildlife that may be situated in the surrounding trees and hedgerow shall not be adversely affected. Attention will be paid to bird breeding season. There will be no building demolition and there are no ponds in the vicinity.

Specific attention has also been paid to BS5837-2012 "Trees in relation to design, demolition and constructions". All existing hedgerows that are currently at the applicant's site have been considered. It is well understood that these are all 'material considerations' in the planning

process, and to this end, no demolition will need to occur in order to accommodate the proposal (section 5.4).

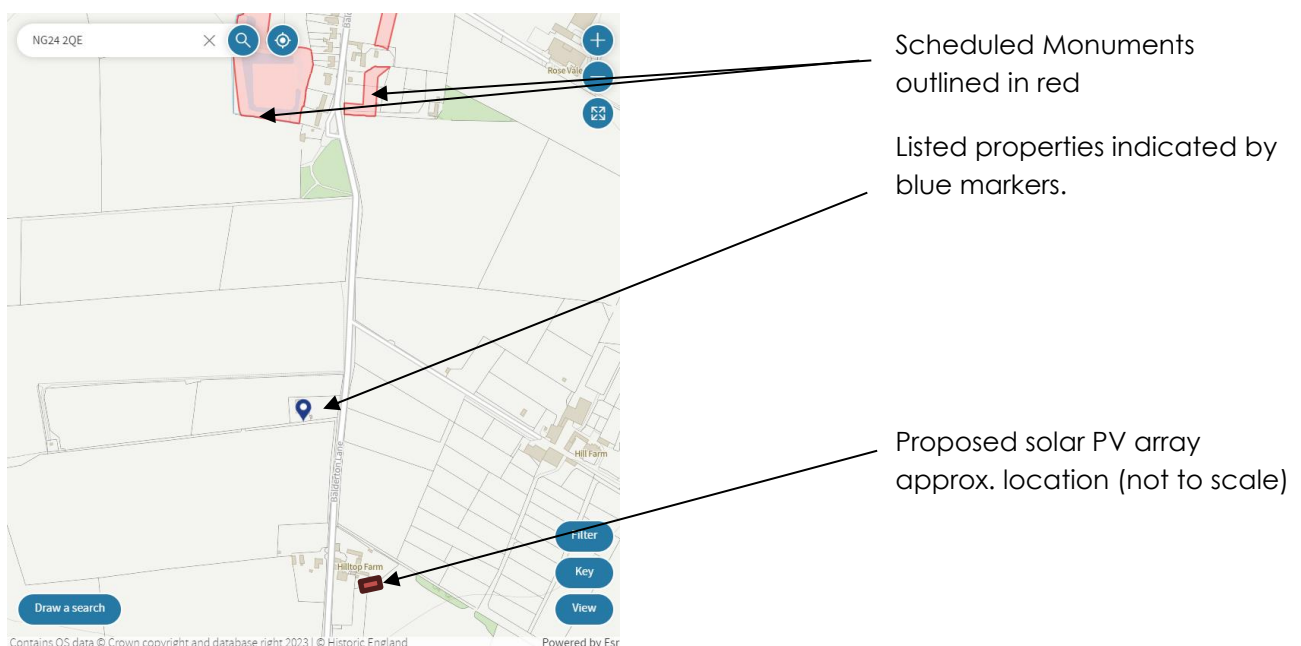
Section 5.3 of the BS5837-2012 outlines that the Root Protection Area of any on site tree should not be affected by the proposed development. The construction of this proposed development is purposefully mounted on a non-permanent ground spike mounting system so as to require no concrete footings or for any impermeable surfaces to be used. This minimizes the disruption to the proposed land and allows for the system to be easily dismantled and removed once it is no longer in operation. It also allows for the land to be returned to its original state post dismantling. Furthermore, the structure shall be situated far enough away from the hedgerow so that direct damage to the development shall not occur, e.g. from falling branches, or seasonal nuisances, meaning that there will be no pressure in the future to remove these trees. Instead, the trees and hedgerow which provide character and visual amenity to the surrounding area shall be retained and not adversely affected. Allowances for sufficient room for root growth have been given and the proposal will not interfere with any Root Protection Orders.

9. Heritage Statement

There are heritage assets in the nearby vicinity of the proposed site location, relatively speaking. The closest heritage assets are:

- Coddington Windmill, Grade: II, List Entry Number: 1302683 (approx. 290m away)
- Schedule Monument Civil War defences 270m and 300m west of Vale Farm, Scheduled Monument, List Entry Number: 1018485 (approx. 711m away)
- Moat, two fishponds, fishstews and pond bay, west of Balderton Lane, Scheduled Monument, List Entry Number: 1008527 (approx. 728m away)

Figure 6: Heritage Map (Reference: Historic England website)



The listed properties fall outside the application site and no material works are proposed to these properties. The proposal seeks to erect an 18.04kW solar PV array on a parcel of the applicant's land which will not affect the heritage assets from a material point of view. The heritage assets would be located just over 290m, 711m and 728m, respectively, away from the proposed array at its nearest point. No physical demolition or building works are required on or nearby the heritage assets to facilitate this proposal. Additionally, substantial screening (including hedgerows, trees, shrubbery, fields and properties) lie between the proposed development site and the listed properties meaning that it will not be visible from the Grade II listed buildings or scheduled monuments during erection or once completed; thus, the proposal would not visually detract from the surrounding area.

The access route, as detailed in the main application, is not shared by any of the heritage assets and therefore there will be no effect on access to the building during the construction of the solar PV array.

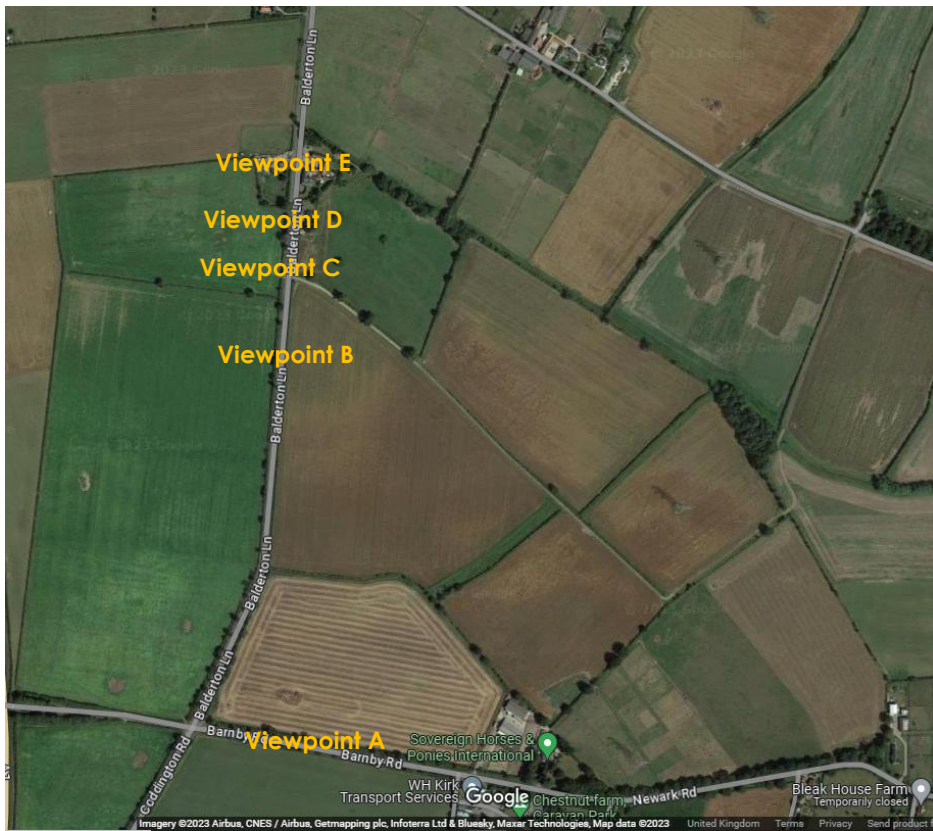
The proposal does not contribute to the noise or light pollution of the surrounding area and therefore this will have no negative impact on the heritage assets either. Rather the proposal would generate clean renewable energy, reducing pollution of the surrounding area, meaning that there would only be positive effects on the heritage assets of the surrounding area.

10. Conclusion

Overall, the enclosed application presents a scheme that is appropriate to the setting of the site, with the intention to provide a proposal with a sympathetic scale, form and the use of appropriate materials.

The proposal would not affect the existing access and the surrounding heritage assets would continue to be conserved. The proposal would present no harm to the public but rather is a viable solution to further transition the dwelling into utilising renewable technology in order to lower the applicant's carbon footprint.

Appendix A: Viewpoints



Viewpoint A (Barnby Road)





Viewpoint B (Balderton Lane)



Viewpoint C (Balderton Lane)



Viewpoint D (Balderton Lane; Hill Top House)



Viewpoint E (Balderton Lane; Access to Hill Top Farm)



