Heckington Fen Solar Park

EN010123

Appendix 17 Statutory consultation – Section 42 response from Landscope

Applicant: Ecotricity (Heck Fen Solar) Limited

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CONSULTATION REPORT – APPENDIX 17 – STATUTORY CONSULTATION – SECTION 42 RESPONSE FROM LANDSCOPE

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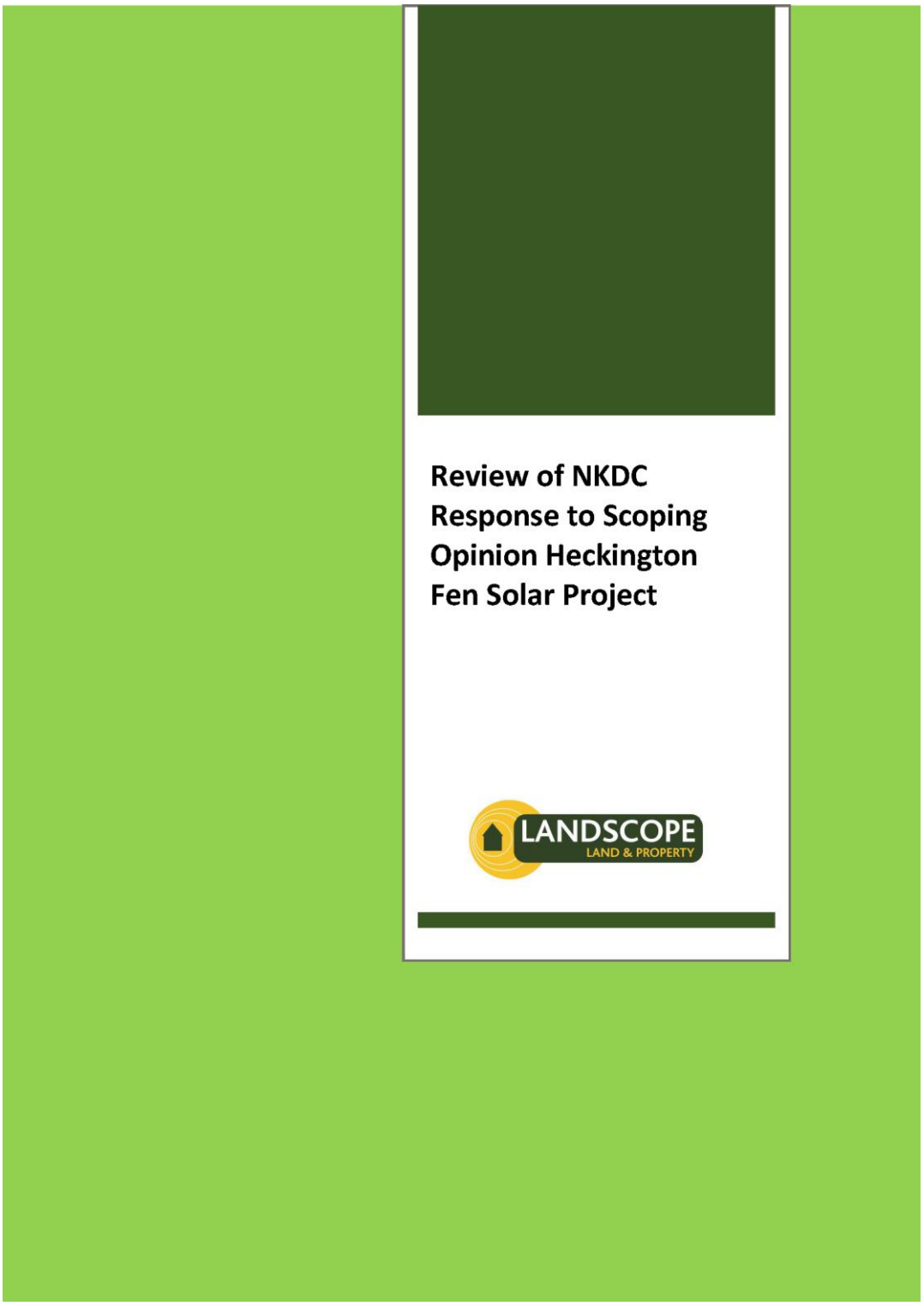

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Instructions to Landscope

As discussed on the phone we would be pleased if you could initially review the NKDC response to the BMV section of the Scoping Opinion, the PINS Scoping Opinion itself (by way of background information) the 'land use and agriculture' section of the PEIR and the non-technical summary and provide your advice in relation to:

1. Whether or not in the PEIR the applicant has adopted the correct approach to assessing cumulative impacts on a Lincolnshire-wide basis alongside the other known NSIPs in West Lindsey/Bassetlaw and Rutland/SKDC and whether you're minded to agree with the applicants findings that impacts would not be 'significant' in that context; or whether further discussion and evidence is required in the ES

1. Cumulative Impacts

There are a number of small(er) and largescale Solar PV schemes in Lincolnshire, with others planned or proposed. There are four known solar project NSIP schemes; specifically in relation to impacts on agricultural land. The situation is a moving picture as new proposals come froward from time to time. Most of these sites are proposed on farmland. Lincolnshire and N Kesteven in particular are agricultural areas with substantial areas for land within the Best and Most Versatile category. Much of the non BMV land will be Grades 3b and 4 with very little Grade 5.

A county-level alternative assessment area should be applied which as a minimum should consider scope for connection into the National Grid at the locations proposed by the registered NSIP solar projects named above, and with specific consideration of agricultural land impacts.

2. Whether the applicant's spatial approach to additional augering is appropriate (nb Ecotricity have already discussed with Natural England we understand) or whether augering should be targeted differently

2. Spatial Approach

The augering of the site should be undertaken in line with TIN 049 and the MAFF 1988 Guidelines, one auger point per hectare and with occasional soil pits particularly where soil types vary. On a site of this size the amount of augering should be around 500 auger holes and probably 3 or 4 pits to verify the soil profiles – more if there are significantly different soils. Soil types should be laboratory analysed for textural assessment to provide accurate information that can be relied upon in calculating the ALC grade.

The soils are described as (mainly) 813g Wallasea 2. These are summarised as Deep stoneless clayey soils. Calcareous in places. Some deep calcareous silty soils. Flat land often with low ridges giving a complex soil pattern. Groundwater controlled by ditches and pumps. A more detailed description is provided in **Appendix 1**. However the PIER recognises that there is a complex variety of soil textures and drainage status (Wetness Class) over the surveyed site, which reflects the variety of Tidal Flats Deposits deposited by the sea in the past. This variation does warrant close inspection.

Kernon Countryside have drawn up a new programme of works (**Appendix 2**) to undertake further augering during August and September that should fill in the missing areas. This work has been agreed with Natural England.

It is my view that where the preliminary work has identified significant differences from published data, particularly the provisional ALC maps and the predicted Best and Most Versatile status, those areas should be assessed as a priority. Generally the Kernon Countryside proposals seek to address this with a more focused approach on the areas identified by Natural England to be in need of clarification. Natural England have provided a map of areas of search and the Kernon Proposals in Appendix 2 seek to identify and clarify the areas of difference and apparent discrepancy. Laboratory analysis of representative samples is proposed to determine textures.

3. Whether the information presented in the PEIR to date gives confidence that the estimated BMV proportions on site are accurate?

3. Estimated BMV amounts

I don't consider that the work undertaken to date is sufficient to meet the requirements given that the land is provisionally mostly Grade 1 and 2. Further the Natural England maps of Best and Most Versatile land indicate a high chance of BMV in this location. So far the ALC work on site runs contrary to this 'expected' outcome, although I have no reason to believe that it is suspect at this stage. However the PEIR acknowledges that the ALC survey has been carried out at a semi-detailed level.

However, there have been a number of independent ALC reports undertaken in the vicinity with one at Heckington and one further East of the site. Both of these assessments found exclusively BMV land, though the soil types appear to have been different in each case. There is undoubtedly a lot of BMV land in this vicinity and only a full ALC will identify where it is and what the Grade and quality is.

The revised programme of soil sampling and pit digging (**Appendix 2**) should help complete the picture, assuming it is undertaken in the manner set out in the MAFF 1988 guidelines. Kernon Countryside have contacted me and copied me into their proposed plan. It is expected that 5-10 days of soil augering will be undertaken on site to determine the grades in accordance with national guidance.

This programme outlined should now give a more comprehensive view of the soils and ALC Grade(s) of the site. The soil scientists tasked with the work are experienced and should undertake the work correctly.

4. Whether the applicant's approach of setting aside some of the higher value BMV land to ecological net gains will help preserve the BMV value of that land and whether initial proposals for management of the ecological net gain land are appropriate in the context of safeguarding that agricultural value in the longer term (i.e. post-40 years once the site is decommissioned)

4. Ecological Effect

If the land is used for biodiversity it would not be available for agriculture. However even if it is available for some form of cutting or grazing it is unlikely that the ALC grade will change significantly during the life of the project. There is evidence that organic matter builds up in biodiversity areas at a faster rate than arable farmland and this may benefit the land, but it is not a factor in the assessment of ALC.

Long term, where biodiverse land becomes ecologically important there is the possibility of land becoming assigned with environmental designations, such as SSSI status, though generally this has not so far occurred on other solar sites.

Revisions to the Environmental Impact Assessment rules regarding the cultivation of agricultural land suggest that if land remains uncultivated for longer than five years, then permission may be required from Natural England to bring the land back into cultivation.

Any material enhancement in the botanical diversity of the sward (to the extent that this site is considered to be of ecological value), will limit the capacity for the land to be returned to arable use after the solar plant has been decommissioned. The EIA (Agriculture) (England) (No.2) Regulations 2006 prohibit the physical or chemical cultivation of what are considered to be 'semi-natural areas'.

Cultivation is not clearly defined and does not necessarily require land to have been ploughed. The application of pesticides and fertiliser may be sufficient, but the biodiverse areas are much less likely to receive these treatments once established and there is the possibility that large areas of environmentally interesting land may therefore not be allowed to return to arable farmland after the 40 year period. This is a complex area as there may be planning conditions that require land to be returned to agriculture as part of any consent and it is an open question whether the compliance with a 'restoration' condition 'trumps' any future environmental status or requirement.

Grazing management at this Site is not easily compatible with standard biodiversity management practices at Solar Photovoltaic sites due to fundamental population biology principles. As the site is in arable production at present, it currently has a relatively low level of biodiversity. The grazing management plan may, therefore, lead to a modest increase in species richness at the site from current base levels, but it will not deliver the level of biodiversity that the site could potentially achieve if biodiversity gains were prioritised over agricultural production.

By grazing land for agricultural livestock production, the level of disturbance is high. This prevents plant species with a slow establishment rate (which often are those which are ultimately strong competitors) from growing – and thus the invertebrates that feed on these species are also excluded from the area.

Areas which promote high species diversity often use low intensity grazing as a means to promoting biodiversity. Grazing represents a form of disturbance to the area, thus preventing any one species becoming too dominant. It also helps manage the sward to provide an optimum habitat for invertebrates.

Grazing for biodiversity enhancement usually occurs between October and April, which will allow plants to flower and set seed. The stock densities are monitored and adjusted to prevent either under and overgrazing and to ensure the sward contains a mix of long and short vegetation with some plants in flower.

There is therefore some conflict between maintaining the land in agricultural production and improving biodiversity. Whilst not incompatible, site based issues, such as soil type(s) and local agricultural practices may create future problems. The biodiversity areas particularly target the highest grades on agricultural land and any future restriction that might prevent its return to cultivation should be a consideration in the planning process and in the conditioning of any consent.

5. Your comments on the likely challenges/success of the applicant's approach to reverting from arable to sheep grazed pasture within both the panelled and ecological net gain areas in terms of the continuance of agricultural 'value'; whether we have sufficient information as to how that will be achieved and delivered.

5. Sheep Farming

This part of Lincolnshire is a mainly arable farming area with only limited sheep grazing operations. Whilst it is perfectly possible to graze the areas under and between the panels, it is unlikely to be very cost effective for a grazier. The difficulties of rounding up sheep and handling them, together with finding sick or wounded animals makes the graziers workload harder and more complex.

As such the economics of moving sheep to and from the site will be marginal. However, most examples quoted do not charge much or anything for the grazing and this may make it sufficiently attractive for a local farmer or shepherd with a 'flying flock'.

Land in use for solar panels is generally ineligible for the normal agricultural subsidies, such as the Basic Payment Scheme (now being phased out) and the Environmental Land Management Scheme (ELMS). It does not prevent land from being managed in similar ways but there will be no payments available to farmers (eg graziers) for compliance and this could make farming less financially attractive going forward.

The site will probably have to be seeded to grass, but this will probably occur after the panels have been sited on the land. In my experience grass does not grow well under the panels themselves. There are often areas that are dry and barren or that host weeds.

Soil structure can be significantly damaged during the construction phase of the process. There is a lot of trafficking of vehicles on the land to erect the panels and if this work is undertaken when soils are wet, there can be significant damage. Much of this damage can be remedied post construction but not all and it is possible that long term drainage issues occur on the site due to the construction. **Appendix 3** shows photographs of before during and after construction of a large solar farm in Hampshire where soil structural issues were a major problem post construction. Once the panels are in place usual agricultural practices such as subsoiling become difficult

6. In the context of your knowledge of the District ALC resource and the stated quantity of BMV within the site (about 54%; approx. 316ha) whether you agree with the applicant that subject to their mitigation proposals there will be 'no significant adverse effects' at a District-level

6. District ALC

For a project of this scale there is an impact the project will tie up the land for up to 40 years, there will be some impact. The area is large locally and if the quantities of BMV are as stated or similar then the impact will be reasonably small. However if the BMV is greater and of higher grades then I would expect the impact to be significant at a District Level. Environmental Impact Assessments give guidance on the size and quality of Land Grade that is or can be affected by development proposals. The loss of such a large area of land would normally be considered as significant at District level, even though the use is 'temporary'. Any permanent loss of land due either to construction or through biodiversity designation may affect this assessment.

7. Further Comments

Cable Route

A soil management plan should be considered for the cable route in order to minimise the impact on soil structure, land drainage and ultimately soil quality. Guidance is available in published documents.

0813g WALLASEA 2

Detailed Description

This association is extensive on reclaimed marine alluvium in the marshlands of Lincolnshire, Cambridgeshire and Norfolk, and is also present in Romney Marsh, the Essex marshes and in Holderness. The land is generally level but there are occasional ridges on the sites of former creeks. The soils are mainly Wallasea series, pelo-alluvial gley soils; Newchurch series, pelo-calcareous alluvial gley soils; Blacktoft series, gleyic brown calcareous soils; and Wisbech series, calcareous alluvial gley soils. Wallasea and Newchurch soils are clayey with a greyish brown topsoil over greyish or grey and ochreous mottled subsurface horizons; Newchurch series is calcareous. Blacktoft soils are calcareous and fine silty with grey colours and mottling in the subsoil. Wisbech soils are also calcareous, but have greyish and mottled coarse silty horizons below the plough layer, often with sedimentary laminations. Wallasea series predominates and Newchurch, Blacktoft and Wisbech soils are common. Dymchurch, Snargate, Agney, Stockwith, Tanvats and Paglesham series also occur.

Wallasea soils consistently constitute over half of the association, but the proportion of other soils varies widely throughout the country. Generally, Wisbech and Blacktoft series are found on or near former creeks (rodhams), with Wallasea and Newchurch soils in the intervening areas. The incidence of creek ridges, and so the proportion of coarser soils, increases seawards where Blacktoft soils cover a third of the land, except in Lincolnshire where the similar Agney series is more common. The proportion of the less common Wisbech soils also increases seawards. Inland towards high ground, clayey soils are predominant, Wallasea soils being most common in Lincolnshire and Cambridgeshire, but in Norfolk, Newchurch and Wallasea soils are co-dominant. In places in Lincolnshire, Wallasea soils have developed from former Downholland soils from which topsoil organic matter has been lost by oxidation. Wisbech soils are rare in north Lincolnshire and non-calcareous soils, including Pepperthorpe and Tanvats series, become more common. Near Huttoft, where islands of Devensian till rise through the alluvium, some Holderness soils are included. Creek ridges are uncommon in Essex and Wisbech soils are rare. Calcareous fine silty Agney soils cover one sixth of the land and non-calcareous Tanvats and Paglesham soils also occur. Locally there are a few saline soils and, where leaching has occurred, subsoil structure has deteriorated causing silting of drains, waterlogging and reduced crop yields.

As there are very few creek ridges near the Humber, Wallasea soils predominate over large areas, with Newchurch and rarer Dymchurch soils occurring randomly. Blacktoft soils are found round the edges of the delineations, and, less commonly, Burlingham soils are included where the association adjoins soils on Devensian till. It occurs in Humberside between Sunk Island and the Holderness till plain; in Cleveland along the

tidal reaches of the Tees; and in Northumberland in two very small areas near Alnmouth Bay and Beadnell Bay.

In the central part of Romney Marsh in Kent, the association corresponds to the land type with creek ridges on decalcified "Old" marshland. On creek ridges on either side of the Rhee Wall, non-calcareous coarse silty Snargate soils are dominant, with finer textured Tanvats soils, formerly part of the Finn series, towards their margins. Wallasea series is the main soil of the pool areas between the creek ridges with subsidiary Dymchurch and Pepperthorpe soils. In the west of the Marsh, calcareous Wisbech, Blacktoft and Agney soils are locally common and in the north-east where creek ridges are few and narrow, Wallasea, Pepperthorpe and Newchurch soils dominate, with Tanvats series as the main soil on creek ridges.

Soil Water Regime

Most of the land is pump-drained and the more permeable Blacktoft and Wisbech soils are well drained (Wetness Class I). Wallasea and Newchurch soils are less permeable but respond to underdrainage; drained soils are occasionally waterlogged (Wetness Class II) but undrained soils are waterlogged for long periods in winter (Wetness Class III or IV). Droughtiness assessments for selected crops are given in Table 38. Droughtiness slightly restricts the growth of arable crops in Wallasea and Newchurch soils. Wisbech soils have large available water reserves and are non-droughty whilst Blacktoft soils are intermediate in droughtiness. Grassland suffers from drought on all soils in south Lincolnshire, Norfolk and Essex but growth is less restricted in the higher rainfall area of north Lincolnshire.

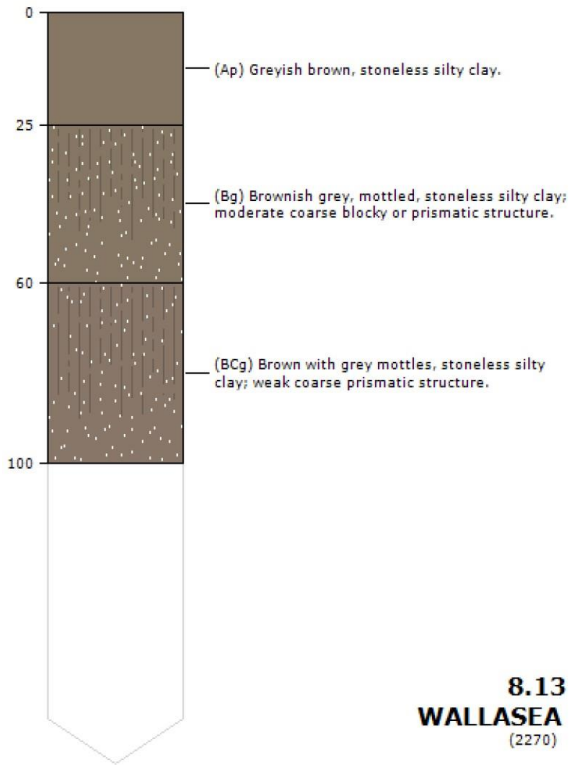
Cropping and Land Use

With adequate underdrainage, Wallasea and Newchurch soils are moderately easy to work. There are adequate days for safe cultivation in autumn and spring, but in north Lincolnshire the moist climate reduces the opportunity for spring cultivation, particularly in wet years, and the soils are marginal for spring-sown crops. The land is generally used for winter cereals and ley grassland, but sugar beet, peas and field brassicas are grown in the drier districts. The use of heavy machinery often causes topsoil compaction and surface wetness on the heavier soils especially Wallasea series though they can be direct drilled very successfully if subsoiled periodically. Newchurch soils which are calcareous have a more stable structure. Wisbech and Blacktoft soils are less suitable for direct drilling because of the problems associated with this system on silty soils.

Definition

Major soil group:	08 ground-water gley soils	Seasonally waterlogged soils affected by a shallow fluctuating groundwater-table. They are developed mainly within or over permeable material and have prominently mottled or greyish coloured horizons within 40 cm depth Most occupy low-lying or depressional sites.
Soil Group:	1 alluvial gley soils	With distinct topsoil, in loamy or clayey recent alluvium more than 30 cm thick.
Soil Subgroup:	3 pelo-alluvial gley soils	(clayey with non-calcareous subsoil)
Soil Series:		clayey marine alluvium

Brief Profile Description



8.13
WALLASEA
(2270)

Appendix 2

KERNON
COUNTRYSIDE CONSULTANTS LIMITED

[redacted] [redacted]

Our Ref: KCC3076/hw
19th August 2022

[redacted]

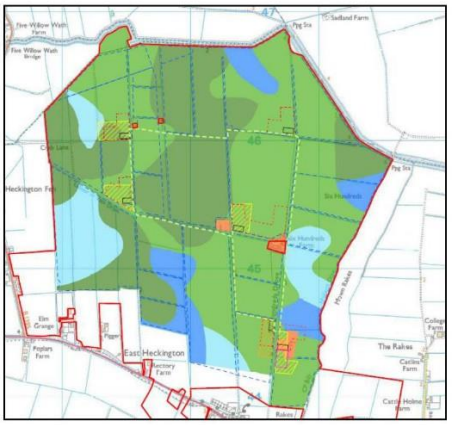
HECKINGTON FEN SOLAR

Thank you both for your comments on the semi-detailed Agricultural Land Classification which we carried out last year to establish the general distribution of land quality across the site.

There is a need for further survey of targeted areas to ensure that your various comments are met, and prior to that taking place I write to set out the proposed methodology and sampling locations.

Without repeating your various suggestions, in short targeted detailed ALC survey work to ensure that the distribution is mapped accurately is required. This is a large area of land and prior to further survey I am very keen to agree the target areas in advance.

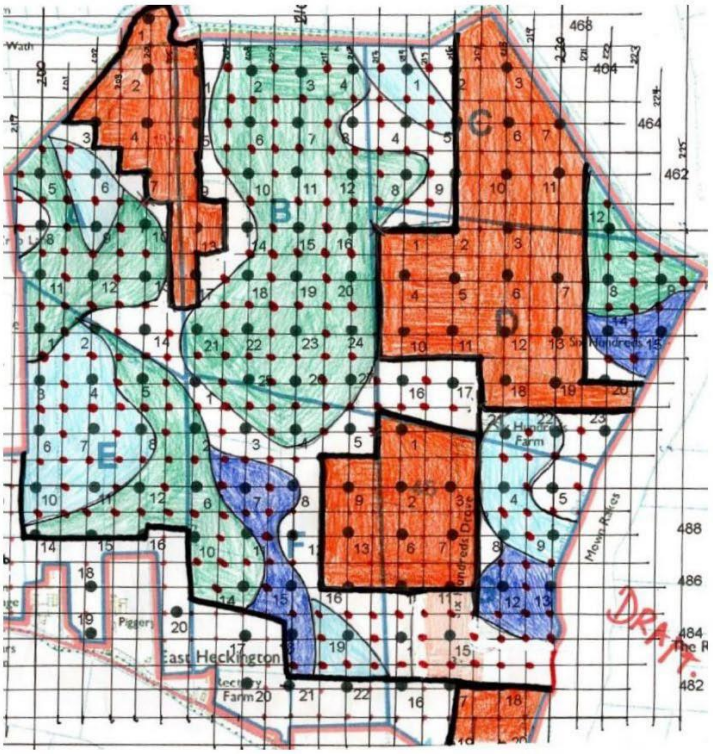
The distribution of ALC from the semi-detailed survey is shown on the attached ALC plan and reproduced in small scale below.



[redacted]

Part of the area originally surveyed is not proposed for panels, so we do not propose further work in those areas. They are not shown above.

The following sketch shows the areas that we propose to target with detailed survey. As you can see that covers a large part of the site. The orange areas are, we propose, to be left at a semi-detailed survey level. All the red dots represent the additional auger points.



The additional survey will involve a further 222 auger bore samples, so a further 11 – 12 days in the field.

There will be two or three surveyors on site on the following days:

- Wednesday 31st August, Thursday 1st September and Friday 2nd September;
- Wednesday 7th September and Thursday 8th September.

The surveyors are all highly experienced and will be:

[redacted]

I understand that, [redacted] you would like to attend during one of the survey days, so I suggest perhaps Thursday 1st September?

Wessex Archaeology will be starting on site that first week. I am exploring the possibility of us asking them to dig a few pits in selected locations, because the ground is so dry and hence difficult to dig by hand at present.

Next Steps

I would appreciate your feedback urgently, and confirmation that the above scope of works is agreed.

Obviously if there are further areas you consider could be removed from the detailed survey, please let me know.

Yours sincerely

[redacted]

Appendix 3

Conditions during construction

1

2

3

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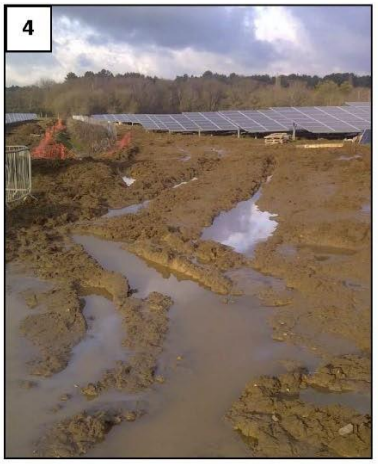

5

6

Conditions as construction proceeds

Commencement

Mid construction

Near completion

Examples of Localised Drainage Issues/ No Grass Under Panels

Main Site Entrance

Condition Pre-commencement

Condition Mid construction

Post completion and establishment