From: Kirk Hill **[Redacted S.40]**
Sent: 12 May 2021 10:11
To: Williams, Arwel (ESNR - ERA - Land, Nature & Forestry) **[Redacted S.40]**
Cc: Ruth Metcalfe **[Redacted S.40]**
Subject: RE: Blackberry Lane Solar Park

Sorry Arwel,

I re-sent Ruth's previous notes instead of my notes. The attached are my and Ruth's latest notes.

Regards

Kirk Hill
[Redacted S.40]
Please visit our website: www.adas.uk

From: Kirk Hill
Sent: 11 May 2021 22:19
To: Williams, Arwel (ESNR - ERA - Land, Nature & Forestry) **[Redacted S.40]**
Cc: Ruth Metcalfe **[Redacted S.40]**; Richard Sowden **[Redacted S.40]**
Subject: FW: Blackberry Lane Solar Park

Arwel,

Please find attached Ruth's latest notes plus mine. Sorry these are separate docs but we both worked on this independently today. If you and Ben can feedback on these Ruth will amalgamize our comments into one "soil response" document and finalise this week.

Regards

Kirk Hill
[Redacted S.40]
Please visit our website: www.adas.uk

From: Ruth Metcalfe **[Redacted S.40]**
Sent: 11 May 2021 21:20
To: Kirk Hill **[Redacted S.40]**
Subject: Blackberry Lane Solar Park

Kirk- please find attached response re ALC matters. Sent to you in the first instance.

Ruth Metcalfe

[Redacted S.40]

A5.2 Agricultural Assessment

24. *There is mention of proposed additional drainage, but I have not seen where this is proposed*. Given the soil descriptions there are likely to be existing underground land drainage systems present in many of the fields. These drainage pipes are at risk of damage from the panel supports, fence post and cables. Therefore such areas may require comprehensive new field drainage systems to restore the current land quality potential.

26. They state the land is moderately yielding. However, most of the land is grade 2 which is "land with minor limitations" which may usually grow "a wide range of agricultural and horticultural crops" and where "the level of yield is generally high" (quotes taken from ALC guidance).

A5.3 Land Quality Assessment Nov20

35. Reference is made to planning decisions that support temporary loss of BMV as acceptable. *But I have not yet reviewed Appendix A of the report which contains this.*

37. This paragraph quotes from the ALC 1988 guidance regarding the impact future projects may have on potential land quality. There is inherently a degree of uncertainty regarding the absolute success of a restoration scheme to achieve any given land quality. Therefore "where there is uncertainty" could be taken to suggest that it should not automatically be assumed that land quality will be restored during decommissioning works.

This "uncertainty" clause could also be applied to the likelihood that, at the end of the solar farm lifespan, it may not be returned to agricultural use. If a solar farm was today expiring, under the current system it could be classified as "non-agricultural", even if the underlying soils would otherwise be BMV.

38. This paragraph quotes ALC guidance that when a timescale and methodology are in place for any future works that may affect land quality, that the future works should be considered in any assessment. However, no timescales or methodology have been submitted let alone reviewed, approved and financially secured such that they will definitely be put in place.

46. *Notes to self only below*

- *70,000 panels (4 post per panel) (0.1 x 0.1 x 4 x 70,000 = 2,800. 0.28ha)*
- *12 inverter/transformer (12 x 10.4 x 2.6 = 0.03245)*
- *1 one control building (7 x 3 = 21sqm=0.0021)*
- *1.75 km access track (3m wide = 0.525 ha)*
- *Security fence ???*

48. The developer proposes to thinly disperse the excavated topsoils from the trackways in a manner that would not measurably effect soil depth. This would mean that it would be very difficult to retrieve the topsoils in order to restore the tracks during decommissioning. Soils of a similar nature and quality would then need to be found and imported to carry out restoration.

53. Mechanical disturbance of subsoil (e.g. cable laying and removal) can affect soil texture, structure and drainage.

54. Vehicle and machinery movements across the site to install and remove panels arrays, their support posts, tracks, fencing, at el, would be widespread across the site, as the installations are widespread. Therefore the risk of soil structural damage resulting in an increased vulnerability to soil droughtiness and waterlogging would be widespread and not localized as suggested.

56. It is good that they are proposing to use small tracked vehicles but these are usually supported by numerous movements of auxiliary vehicles that bring staff and materials back and forth to the workface.

57-58. The point about numbers of vehicle movements compared with for example, silage cutting, may be true. However, field operations undertaken by farmers are governed by suitable ground conditions being present to obtain the desired outcome. The desired outcome for contractors involved in construction or decommissioning projects is normally to meet a hard deadline or simply to complete site work as quickly as possible so they can raise the invoice and move on to another site. This is often contrary to the need to delay start dates or pause works due to suboptimum ground conditions or weather forecasts.

By far the greatest risk of soil damage from the project would be due to compaction and topsoil loss (mixing with subsoil during rutting or excavations) due to vehicle and machinery movements and excavations. The structure of agricultural soil is inherently fragile and very easily damaged. The vulnerability to damage is directly proportional to soil moisture content. The period when ground conditions are most likely to be suitable in this agroclimatic area would be from the end of May until the beginning of September. This will commonly vary by about one month either side of these dates in any given year. Therefore, on average you may expect a 3 month window but this may commonly only be 1 month.

The developer's construction code of practice (para 46) states that construction will start in the autumn and continue for 4 months. This would involve working during some of the wettest months of the year and therefore be at greatest risk of causing soil damage.

With the Met Office long term average annual rainfall in the area of 1128 mm this would be regarded as a high rainfall area for the UK. Typical of areas in the UK with high annual rainfall, the rainfall each month does not vary as greatly as in drier areas and hence it still rains more throughout the summer months than it does in drier regions in the winter. Therefore to avoid soil damage you would need to ensure that the contractors undertaking construction (or decommissioning) activities are prepared and budgeted to pause works as required according to predicted or prevailing weather and ground conditions. However, it is common to see such working method statements produced at project inception but breached as timescales slip during site works. Therefore there is always uncertainty about the precise

degree of land restoration success where temporary construction projects occur on agricultural land. Ruth – can you add something about the degree of damage that would be required on the soil types present to change it from 2 to 3a and 3a to 3b e.g. small change in porosity, structural units etc.

59. There is no mention of how the cables will be installed. This is presumably by mechanical excavator rather than trenchless technology (i.e. mole plough). But they have not discussed working methods, such as whether they will strip topsoils over the trench or trafficking width, or avoid mixing of topsoils and subsoils, etc. Thus, it is difficult to review the method if no details are given. If this was a different project this might not require a detailed description at this stage but, as they are arguing that they will not reduce the quality of BMV, perhaps in this case they should demonstrate that they have sufficient understanding of soils subject to temporary construction sites and that they have planned appropriate working methods.

With regards to the last sentence, it is inaccurate to compare the excavation and backfilling of the cable trenches as similar to ploughing, particularly when excavating and replacing subsoils. Subsoils are also more difficult to remediate when physically damaged. But again, the developer's working method is not explicitly set down.

Notes to self - Cable 0.6 deep, trench 50 cm wide.

61. Soil depth in the sense of the ALC assessment process (i.e. total soil depth) should not be affected. However, topsoil depth could be affected as a result of losses if:

- construction or decommissioning are carried out during poor ground conditions that result in deep rutting that mixes topsoil with subsoil
- compaction that causes increased runoff and soil erosion
- topsoils and subsoils excavated for the tracks and cables are not stripped and stored adequately to enable their reinstatement in a suitable manner (see point 48)

80-91. All the points made within these paragraphs are inconsequential. There are risks inherent with arable farming, however, as Best and Most Versatile Land it is recognized in government policy that this land is best placed to provide consistently high value and high yields crops. Furthermore, as such it is a national resource that needs protection from development.

All the items risks listed in paragraph 80 are equally true for damage as a result of temporary construction sites. And the placement of a solar farm, for example, is not dependent on using BMV land for its production value.

The choice of farming practices are relative to the desired crop and yield. You cannot grow arable crops if you do not plant the seed. The precise method may vary and have different agriculturally productive and environmental outcomes. But this does not change the fact that whatever system is permitted or put into practice the relative quality of BMV remains unchanged compared with that of non BMV land. So there is no justification

in comparing highly productive arable farming with low input grassland or any other land use.

ALC guidelines state that you should not grade land where the outcome of any change is uncertain. Therefore, the ALC grade should not make any assumption regarding likely deterioration or improvements of an individual site due to continued arable use.

The reversion of arable to grassland can have many soil health and wider environmental benefits. However, the developer's argument does not consider that these environmental benefits may be offset by the implications of having to make up the deficit of lost production. That is to say, if we remove good quality land from the nations production then we must acquire the products from another source to make up the deficit, assuming no drop in demand. This second source may need to be a larger area of poorer land to get the same total yields, which may place more pressures on available space for future development. The poorer land may also require more inputs to grow the same value/quantity of product and is likely to be more vulnerable to soil compaction, runoff and erosion. These issues could in turn lead to more Diffuse Water Pollution from Agriculture. Or it may be that the deficit is sourced from further afield, bringing the negative environmental implications associated with additional transport.

Furthermore, the benefits of improved soil health and carbon capture will only exist whilst the land is under permanent vegetative cover. Once the land is brought back into cultivation (the purpose for which it is offered a level of protection as BMV) then the soil organic matter, carbon content and the micro fauna and flora conditions will rapidly revert to their pre solar farm condition. John Williams to add some text

Other thoughts but not worth including because the developer's statement are immaterial on this matter as stated above.

The developer's argument taken to its logical conclusion would appear to be that you should take all land out of agricultural use so that it remains suitable for agricultural use. But if you preclude it from use, then it is of no use anyway!

The current potential (and ALC grade) would be unaltered by the developer's statement regarding future damage from arable land use. The present organic matter levels are reasonable and if under arable grassland rotation it should be possible to maintain reasonable organic matter levels in the future, even if manures are also added periodically (i.e. normal management).

The citated USDA research is unlikely to be applicable to agricultural practices, climate and soils in the UK. And the mention of 35% carbon loss per annum is not qualified – this could be way over the average and in the USA prairie dust bowl for all that this statement reveals. It also takes no account of factors that may go some way to counter these issues, such as

the increased promotion and use of different farming methods e.g. minimum tillage, buffer strips, etc.

If the pasture is not chemically or physically cultivated for over 10 years then would it not be viewed as permanent pasture and any subsequent attempt to restore the land to arable could fall foul of the EIA Regs for Agriculture (Wales), especially if they are they will establish and manage it as a species rich grassland for 40 years in the meantime – Arwel to comment

108. The potential soil health benefits on the land would potentially exist only during the period when the land is under permanent grassland and for a short period after it is returned to arable (refer to JW comments about his report).

112. The statement assumes that there is no uncertainty regarding the potential for soil damage that could result in a decrease in land quality (and ALC grade). Whereas in fact there is always a level of uncertainty with temporary construction projects on agricultural land, especially in high rainfall areas.

114. There may be few if any legislative mechanisms to directly control the agricultural land use but there are incentives.

- A landowner can be prosecuted for allowing an escape of sediment or increased runoff if this resulted from bad practice.
- A landowner should follow good agricultural and environmental practices to receive farm subsidies and environmental stewardship payments.
- Better land management should coincide with reduced costs of farm inputs
- the landowner should want to maintain the value and continued economic use of his own asset

115. The potential soil health benefits on the land would exist only during the period when the land is under permanent grassland. Therefore they are not, as claimed by the developer, a way of increasing the long term land quality of cultivated land (the purpose of which BMV exists) (refer to JW comments about his report) (Same as point made at 108).

A6.1 Outline Decommissioning and Restoration Plan

There is no detail in this document. They have stated that the detailed Working Practices Plan would be developed 12 months prior to decommissioning.

If were to be possible to assess the likely impact on land quality of the decommissioning works the nature of the vehicles, machinery and excavations would need to be established. For example, the equipment to extract pile driven panel supports or concreted fence posts from underground may be specialist or involve wide excavations.