

**PROPOSED SOLAR FARM
LAND NORTH AND EAST OF
GREAT WYMONDLEY,
HERTFORDSHIRE**

**AGRICULTURAL EVIDENCE
ON BEHALF OF
THE APPLICANT
BY**

TONY KERNON BSc(Hons), MRICS, FBIAC

VOLUME 1: TEXT

LPA Reference: 21/03380/FP

PINS Reference: APP/X1925/N/23/3323321

August 2023





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1 INTRODUCTION

- 1.1 An application for a solar farm across 89 ha of land near Wymondley, Hertfordshire, has been called in for determination by the Secretary of State.
- 1.2 The application is subject to a resolution to approve by the local planning authority.
- 1.3 The land involved in the application is a mixture of Agricultural Land Classification (ALC) Grades 2 and 3a, and accordingly "best and most versatile" agricultural land (as defined in the National Planning Policy Framework (2021) at Annex 2).
- 1.4 This evidence assesses the agricultural considerations of relevance to the Secretary of State's decision. The evidence is structured as follows:
- (i) section 2 sets out a summary of the relevant planning policy and guidance;
 - (ii) section 3 sets out the land quality and agricultural circumstances of the site;
 - (iii) section 4 sets out the local planning authority's assessment and conclusions regarding agricultural land;
 - (iv) section 5 assesses the land quality considerations;
 - (v) section 6 assesses other agricultural considerations, notably food production;
 - (vi) with a summary and conclusions in section 7.

The Author

- 1.5 This evidence is presented by Tony Kernon. I am a rural Chartered Surveyor and a Fellow of the British Institute of Agricultural Consultants. I have 35 years experience in assessing the effects of development on agricultural land and businesses. My Curriculum Vitae is at **Appendix KCC1**.
- 1.6 As a Chartered Surveyor gaining evidence, I am bound by the RICS Practice Statement "Surveyors Acting as Expert Witnesses, 4th Edition" (RICS, amended 2023). A declaration is provided at the end of this evidence.

2 PLANNING POLICY AND GUIDANCE OF RELEVANCE

- 2.1 This section of my evidence:
- (i) describes the ALC system;
 - (ii) considers National Policy Statements;
 - (iii) considers national planning policy;
 - (iv) considers related guidance;
 - (v) considers local planning policy.

The ALC System

- 2.2 Agricultural land quality is measured under a system of Agricultural Land Classification (ALC). This grades land based on the long-term physical limitations of land for agricultural use, including climate (temperature, rainfall, aspect, exposure and frost risk), site (gradient, micro-relief and flood risk) and soil (texture, structure, depth and stoniness) criteria, and the interactions between these factors determining soil wetness, droughtiness and utility. The system is described in Natural England's Technical Information Note TIN049 (2012) (**Appendix KCC2**).
- 2.3 Land is divided into five grades, 1 to 5. Grade 3 is divided into two subgrades. Land falling into ALC Grades 1, 2 and Subgrade 3a is the "**best and most versatile**" (BMV) (as defined in the National Planning Policy Framework (2021), Annex 2). Natural England estimate that 42% of agricultural land in England is of BMV quality (see TIN049 in **Appendix KCC2**).
- 2.4 The site comprises a mixture of Grade 2 and Subgrade 3a. Each grade is defined in the ALC Guidelines, an extract from which is reproduced as **Appendix KCC3**. The description shows variability.
- 2.5 The definitions of Grade 2 and Subgrade 3a are as follows:
- Grade 2: "**land with minor limitations that affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown. On some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops, such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than grade 1**";
 - Subgrade 3a: "**land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops**".

National Policy Statements (NPS)

- 2.6 Paragraphs 1.2.1 and 1.2.2 of the **Overarching National Policy Statement for Energy (EN-1)** (draft March 2023) may be a material consideration for all applications. The extent to which the NPS will be relevant will depend upon a case-by-case judgement depending upon the extent to which the matters are already covered by existing planning policy.
- 2.7 The **National Policy Statement for Renewable Energy Infrastructure (EN-3)** (draft March 2023) sets out at 2.1 that "**there is an urgent need for new electricity generating capacity to meet our energy objectives**". The document then sets out specific guidance for different technologies, with section 3.10 covering "Solar Photovoltaic Generation".
- 2.8 Paragraph 3.10.14 is set under the subtitle of "**factors influencing site selection and design**". It advises that while land type should not be a predominating factor in determining the suitability of the site's location, applicants should, where possible use non-agricultural land. Where the use of agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land.
- 2.9 The development of ground mounted solar arrays is not prohibited on land of ALC Grades 1, 2 or 3a paragraph 3.10.15 advises, but the impacts must be considered.
- 2.10 Further advice is provided as follows:
- soil stripping and handling (3.10.72), noting that topsoil and subsoil should be stripped, stored and replaced separately to minimise soils damage and to provide optimal conditions for site restoration;
 - drainage and watercourses (3.10.77), noting that given the temporary nature of solar PV farms, sites should be configured so as to minimise impacts on existing drainage systems;
 - biodiversity relative to intensive agricultural use (3.10.80), noting that solar farms have the potential to increase the biodiversity value of a site, especially if the land was previously intensively managed;
 - mitigation and soil preservation (3.10.118), cross-referencing Defra's Construction Code of Practice for the Sustainable Use of Soils (2009), and advising on mitigation measures to minimise soil carbon loss and maximise soil biodiversity.
- 2.11 Paragraph 3.10.136 advises that the Secretary of State should take into account the economic and other benefits of BMV agricultural land. The Secretary of State should ensure that the applicant has put forward appropriate mitigation measures to minimise the impacts on soils or soil resources.

NPPF

- 2.12 The National Planning Policy Framework (NPPF) (2021) sets out at paragraph 174 (b) that the economic and other benefits of the best and most versatile agricultural land should be recognised. It does not set any prohibition on the use, or loss, of such land.
- 2.13 Paragraph 175 and the related footnote 58 are set in the context of plan making. They are therefore aimed at local planning authorities and are not directly relevant for decision making. They require plans to allocate land with the least environmental effect, where consistent with other policies in the Framework. Footnote 58 states that "**where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality**".

Guidance

- 2.14 There is no definition of what is "significant" development in the context of footnote 58 of the NPPF (which, as noted, is set in the context of plan making). The threshold for consultation with Natural England is where there will be the loss (by sealing-over or downgrading rather than by a change of use) of more than 20 ha of BMV agricultural land (as set out in Appendix 4 (y) of the Town and Country Planning (Development Management Procedure) (England) Order 2015) (DMP Order).
- 2.15 There is no definition of what is meant by "loss" in the DMP Order. The IEMA Guide "A New Perspective on Land and Soil in Environmental Impact Assessment" (February 2022) defines impacts for EIA purposes as "**permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading)** ..." (Table 3, page 49).
- 2.16 The IEMA Guide notes that this can include "**effects from temporary developments**", which is defined as follows: "**temporary developments can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soils**".
- 2.17 Therefore, in respect of the guidance, the "loss" of agricultural land is where there is an irreversible loss of agricultural land by sealing over of land, or a downgrading of ALC value through permanent damage to soils.
- 2.18 The Planning Practice Guidance suite from 2015, in the section on "Renewable and Low-carbon energy", advises at 5-013-20150327 that particular factors a local planning authority will need to consider include whether the proposed use of agricultural land has been shown to be necessary and poorer quality land has been used in preference, and the proposed

use allows for continued agricultural use. I note that this guidance is now eight years old, and more extensive guidance is now set out in the draft NPS EN-3.

Local Plan

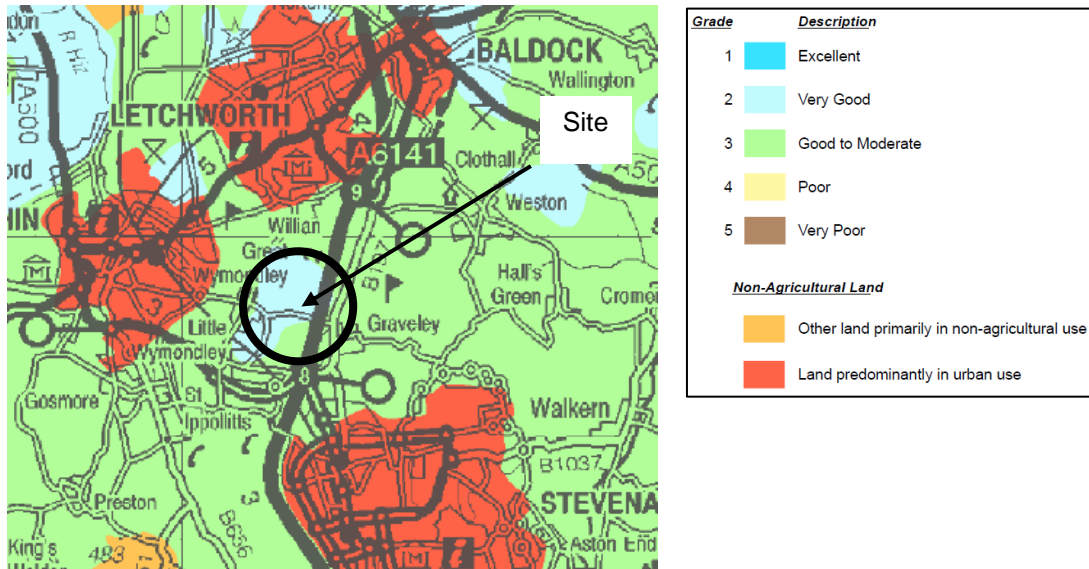
- 2.19 The emerging North Hertfordshire District Local Plan 2011-2031 (November 2022) policy NE12 "Renewable and Low Carbon Energy Development" states that "**proposals for solar farms involving the best and most versatile agricultural land ... will be determined in accordance with the national policy**".

3 LAND QUALITY AND AGRICULTURAL CIRCUMSTANCES

Agricultural Land Quality: Published Data

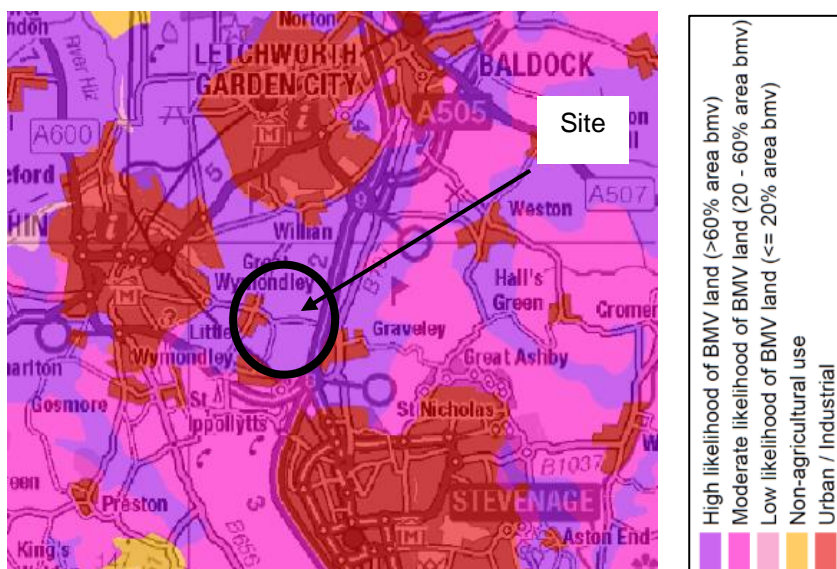
- 3.1 As described in Natural England's TIN049 (**Appendix KCC2**) MAFF produced provisional ALC maps in the 1970s. These are still available at a 1:250,000 scale, and provide information for strategic purposes only. The Site is shown as Grade 2 and undifferentiated Grade 3, as shown below.

Insert 1: Extract from the 1:250,000 Provisional ALC



- 3.2 In 2017 Natural England published "Likelihood of BMV" maps, also at 1:250,000 scale. These estimate the percentage of land in low (<20%), moderate (20 - 60%) and high (>60%) likelihood of BMV. The site, and most of the land in the local area, falls into the high likelihood of BMV, as shown below.

Insert 2: Extract from the Likelihood of BMV Maps



Detailed ALC

- 3.3 Appendix H of the Planning Statement (Axis, November 2021) provides the results of a detailed ALC by Richard Stock. 80 sample locations were examined over the site, and the land classified. The soils are clay or clay loam topsoils, in some places calcareous. The upper subsoil is slightly stoney mottled clay, sometimes with chalk stones at depth.
- 3.4 The text of the ALC report is reproduced at **Appendix KCC4**. It describes in section 5 the factors that determine the ALC grade. The results are that 27.4 ha (32.2%) of the Site is Grade 2, and 57.6 ha (67.8%) of the Site is subgrade 3a. The distribution is shown below.

Insert 3: The ALC Results



- 3.5 The ALC describes the soils as clay or clay loam topsoil overlying slightly stoney mottled clay, sometimes with chalk at depth, and sometimes with natural calcareous properties and in part subject to a periodic liming programme.
- 3.6 The land is naturally stoney and this will prevent the growing of root crops for human consumption. The stones are evident on the surface, as shown below.

Photos 1 and 2: Stones Evident on Grade 2 Areas



3.7 A topsoil profile of Grade 2 land is shown below. The stoney nature of the soil, and the shallow depth over clay, is evident.

Photos 3 and 4: Grade 2 Topsoil Profile



3.8 Subgrade 3a land is shown in the profile below.

Photos 5 and 6: Subgrade 3a Land



Farming Uses

- 3.9 The site comprises five arable fields. These are all in cereals at the present time, and the farming is run by contractors.
- 3.10 Photographs of the land when the crop is maturing do not identify differences in soils or, usually, crop growth indicating variability. The photographs below are from the following positions.

Insert 4: Location of Photographs



Views of the Fields

Location 1: Southern field, looking east



Location 2: Looking NE across field south of the road



Location 3: Looking south across NE field



Location 4: Looking west across NW field

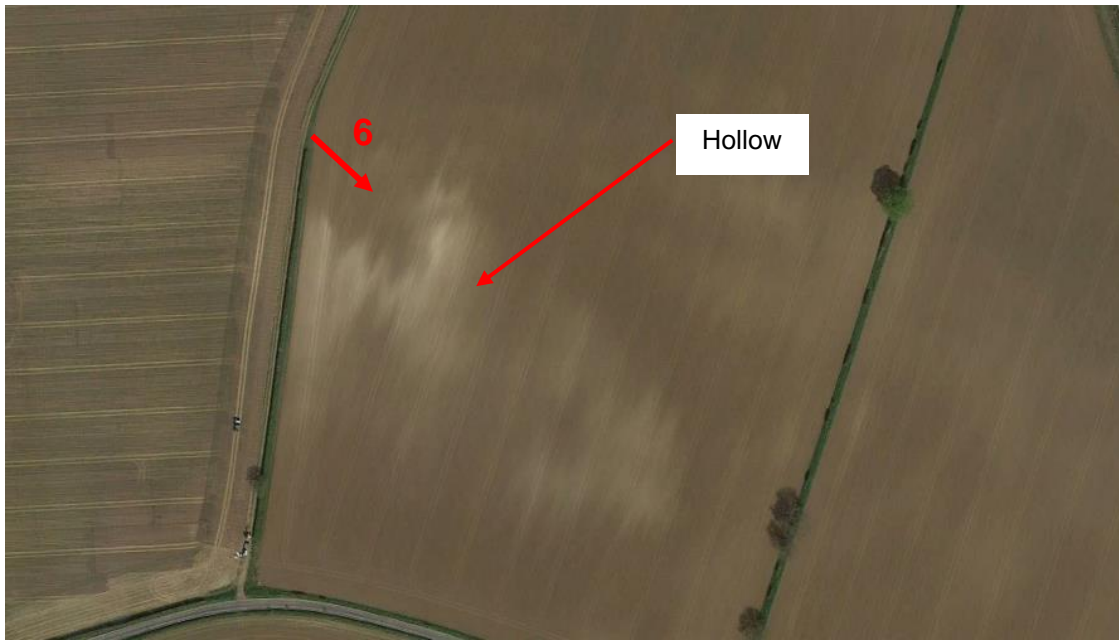


Location 5: Looking NE across central northern field



- 3.11 The variability of soils is mostly easily seen in winter when crops are small or absent. The aerial photograph identifies some variability in the fields. One example is shown below, identifying the location of the photograph that follows where the later maturing crop can still just be seen (tinged greener).

Insert 5: Area and Photo Location



3.12 The land is used for cereals and break crops, as part of a much larger holding. There are no buildings within the site, and access to other farmland will not be affected.

4 LPA ASSESSMENT

Consultees

- 4.1 Natural England raised no objections to the Proposed Development.
- 4.2 There were a number of objections from members of the public on agricultural matters, mostly relating to the use of BMV land for solar.

Officer's Analysis

- 4.3 In the officer's report, agricultural matters are considered in sections 4.5.145 to 4.5.152.

- 4.4 The key paragraphs are 149 to 152, which state as follows:

"4.5.149 The applicant states that there is unlikely to be a significant long- term loss of agricultural land quality as the solar panels would be secured to the ground by support table posts with limited soil impacts, which could be removed later. However, across the lifetime of the development, there would be a reduction in agricultural productivity over the whole development area with only sheep grazing.

4.5.150 Food security is an important consideration to be weighed in the planning balance. However, weighing in favour of the proposal is that the applicant proposes to improve the biodiversity potential of the application site through the provision of planting including trees, hedges, and grassland and this is a matter addressed in considering the benefits of the proposed development.

Conclusion on loss of BMV Agricultural Land

4.5.151 The proposed grassland has potential to be used for the grazing of sheep, which is viable in tandem with solar energy production. A condition is recommended to ensure that this is implemented in accordance with a grazing management plan. Therefore, the proposal would not result in the loss of BMV agricultural land as agricultural use would continue. In addition, the Site would eventually be able to be restored to full agricultural use with enhanced biodiversity.

4.5.152 Nevertheless, the proposal would result in a reduction of agricultural production on this site during the period of operation of the solar farm and moderate weight is attributed to this harm to agricultural production of the land".

- 4.5 In the Planning Balance section of the report, moderate weight is accorded to the agricultural matters. Overall, the application was recommended for approval.
- 4.6 The Committee concurred with the recommendation.

Issues Arising

- 4.7 There is no dispute that the Proposed Development is reversible, and does not result in the loss of agricultural land.
- 4.8 The reasons why moderate weight was accorded to the alleged adverse agricultural impacts, as set out in the officer's report above, relates to reduced agricultural production for the lifetime of the proposed development, with food production considered to be an important consideration in the planning balance.

5 LAND QUALITY ASSESSMENT

5.1 This section considers the potential adverse effects on land of BMV quality. This assessment is in the context that:

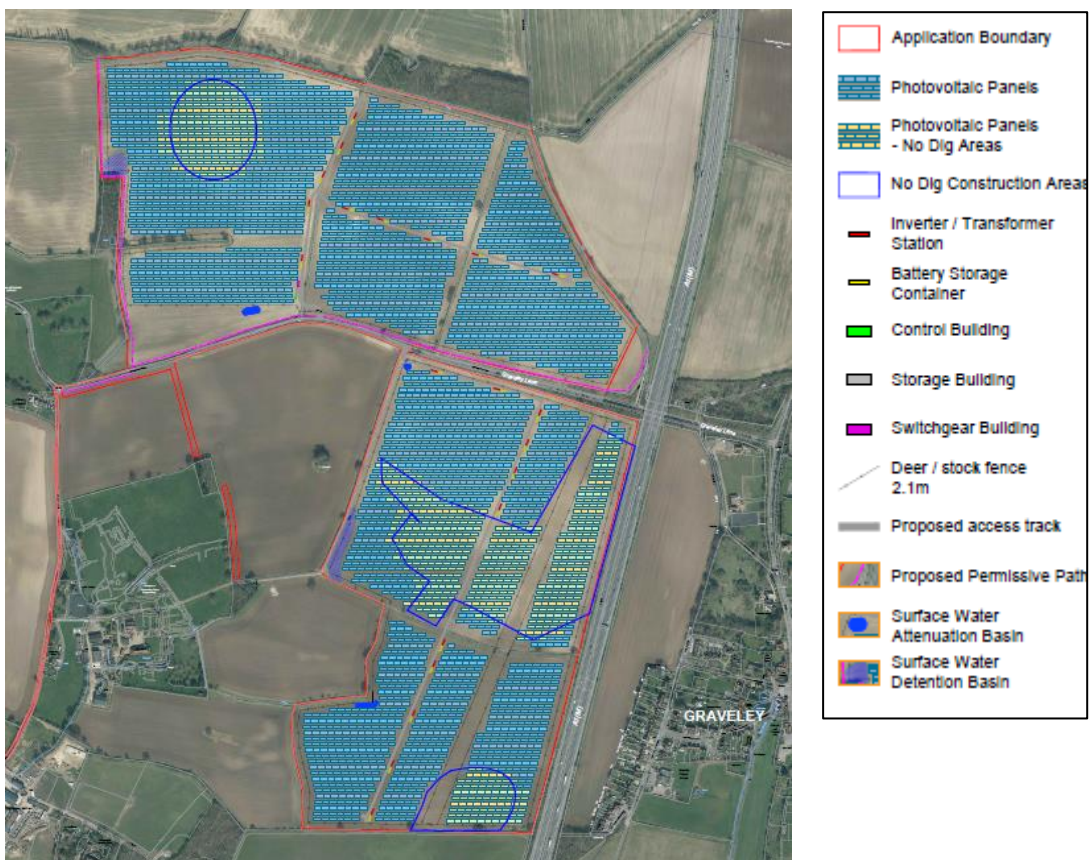
- Natural England raised no adverse comments or objections;
- the case officer did not consider that land quality would be adversely affected or that agricultural land would be lost.

5.2 Agricultural land will not be lost, nor will it be downgraded.

5.3 In **Appendix KCC5** is a description of the process of installing solar PV arrays. The installation does not significantly disturb soils and does not downgrade agricultural land quality or cause sealing over of agricultural land.

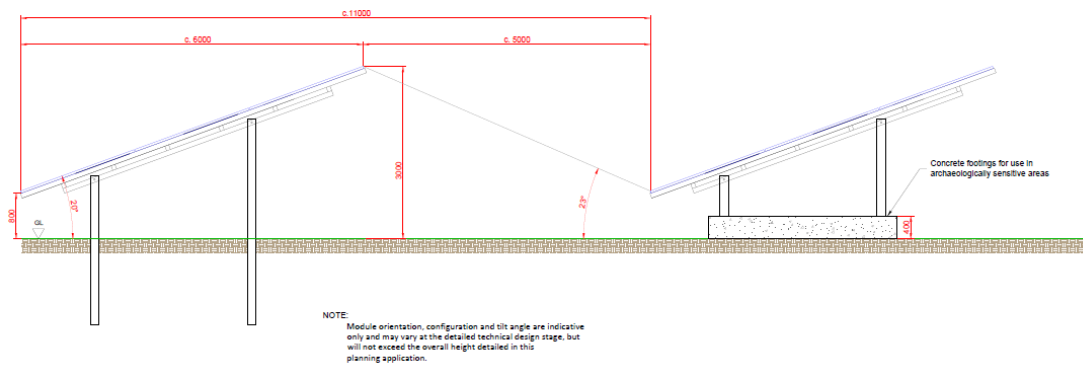
5.4 As set out on the layout plan below, parts of the Site will involve no penetration of the soil by legs, due to archaeological limitations.

Insert 6: The Proposals



5.5 In other areas legs will be inserted, as shown on the extract from the application plan below, but these have a limited effect on soils and do not result in ALC downgrading.

Insert 7: The Proposed Panels



5.6 Photographs in **Appendix KCC5** show how little effect the installation process can have when installed in suitable conditions, winter or summer. The following photographs show this.

Photos 7 - 9: Installation Examples



5.7 There is now widespread recognition that land is not "lost". I reference the following recent decisions:

- (i) in the decision on the Nationally Significant Infrastructure Project at Little Crow, Lincolnshire, which included 36.6 ha of Subgrade 3a, the Secretary of State agreed with his Inspector that the effect would be **"medium term, reversible, local in extent and of negligible significance during the operational phase with a moderate beneficial effect for the quality of soils because intensive cropping would be replaced with the growing of grass"** (para 4.50);
- (ii) in the appeal decision for the solar farm at Bramley, Hampshire (APP/H1705/W/22/3304561) the Inspector, noting that 53% of the site was of BMV, noted (para 58) **"The agricultural land would not be permanently or irreversibly lost, particularly as pasture grazing would occur between the solar panels. This would allow the land to recover from intensive use, and the soil condition and structure to improve. The use of the soils for grassland under solar panels should serve to improve soil health and biodiversity and the proposed LEMP, which could be secured by a condition attached to any grant of planning permission, includes measures to improve the biodiversity of the land under and around the panels"**;
- (iii) in the NSIP decision on the Longfield Solar Farm of 26th June (EN010118) the Secretary of State agreed with the Examining Authority's conclusion that the use of 156 ha of BMV, with 6 ha considered to be lost, was appropriately accorded only limited weight in the planning balance;
- (iv) in the planning appeal decision 3315877 at Leeming Substation, Scruton (**Appendix KCC6**), the Inspector concluded that the land was likely Subgrade 3b due to compaction, but importantly she concluded that even if it was Grade 2 (as argued by the Council) there would be no loss of land quality, and accordingly policy was not harmed. The Inspector noted the benefits to soil during the period the land is in grassland (paragraph 21) and concluded at paragraph 25 that **"the proposal would not result in either the temporary or permanent loss of BMV land as the land would continue to be used for some agricultural purposes whilst also being used to produce solar energy. Nor would the proposal be detrimental to the soil quality, so a return to arable production at a later date would still be possible"**.

5.8 The "loss" of agricultural land is not alleged in this case. It is not an issue between the parties. Agricultural land is not lost or sealed over. The BMV resource is protected.

6 LAND USE ASSESSMENT

Issue

- 6.1 As set out in the officer report, it is the local planning authority's view that **"food security is an important consideration to be weighed in the planning balance"** (para 4.5.150). The conclusion is that **"a reduction of agricultural production on the site is an adverse effect to be accorded moderate weight"** (para 4.5.152).

Is This Relevant or an Important Consideration?

- 6.2 The production of food is not an environmental consideration, but a land-use consideration. It is not a matter to which Government places weight, and should not be accorded moderate weight in this case.
- 6.3 The land is used for agricultural purposes, currently arable farming enterprises.
- 6.4 The use of land for "agriculture", which is defined in the Town and Country Planning Act 1990 (s336), is not "development" (as defined in s55 (2) (e)). You do not need planning consent to use land for agriculture, or to change between any different agricultural enterprises.
- 6.5 The definition of agriculture allows a wide range of agricultural uses. Some relate to food production, others do not. There is no requirement to use land for food production, or to use it for any particular intensity of use. Consequently the considerable interest and push for "rewilding" or regenerative agriculture, which encourages low intensity use with a focus on biodiversity, which was widely reported in recent years, is still an agricultural use.
- 6.6 It follows that a landowner can do what he or she wants with their land within the definition of agriculture. They could rewild and graze it unintensively, they could graze it with horses, they could plant short-rotation coppice, plant ancillary woodland, or fallow it. They could farm it intensively, subject to limits on nutrient loading (covered by other legislation and rules), farm it unintensively or farm it organically. They could grow crops for industrial use, crops for energy use, crops for animal feed or crops for food for human consumption. Food production is not an obligation.
- 6.7 Government policy and initiatives do not require or even seek to encourage food production.
- 6.8 Prior to the invasion of Ukraine, Government policy and financial incentives were focused on enhancing biodiversity and tackling the loss of environmental diversity (ie biodiversity).

- 6.9 The position of Government has not changed.
- 6.10 The Sustainable Farming Incentive, the handbook for which was updated on 21st June 2023, is one of three new environmental schemes post Brexit. The SFI aims to improve water quality, biodiversity, climate change mitigation and animal health and welfare. There is no mention of food production.
- 6.11 The SFI, the guide advises, aims to:
- encourage actions to improve soil health;
 - recognise how moorland provides benefits to the public;
 - improve animal health and welfare by helping farmers with the costs of veterinary advice for livestock.
- 6.12 Therefore whilst an intensive agricultural use might produce more crop, that is not a requirement of policy, and is not encouraged in Government incentives. This is not, therefore, a reason for not permitting a solar farm and grazing livestock use, the consequence of which is also beneficial for soils and biodiversity.
- 6.13 Therefore there is no planning policy reason to consider food production relevant or to conclude that the reduced agricultural flexibility is a matter that should be accorded moderate weight. As set out in the officer's report, even if accorded moderate weight this is not a reason that should result in a refusal.

Is Food Production Harmed?

- 6.14 There will be a change in agricultural enterprise, and arable farming will no longer be possible.
- 6.15 There is no dispute that agricultural land will be needed to meet our need for solar power, so the relevant consideration is whether panels should be deployed on lower quality land instead of BMV land. In this part of the country that would mean using subgrade 3b land if it can be found.
- 6.16 As described earlier, this is clayey soil with a lot of stone in the topsoil. It is not therefore suitable for root crops for human consumption, because of the damage flinty stones would cause to crop growth or to the crop when being lifted. This is cereal and break-crop farming land.
- 6.17 As a measure of the implications for food production, the following calculation assesses the crop production difference between BMV land (assumed to be high yielding in the John Nix

Pocketbook for Farm Management) and average yields. The crop chosen is winter wheat, as it is high yielding. The data is from the 2023 John Nix budget book. This is a crude assessment, in that there is no quantitative analysis of the difference in yield between BMV and non-BMV yield. This is an illustrative assessment, therefore.

- 6.18 The budget book predicts 1.4t/ha difference between average and high yielding crops. Hence for the 85 ha of agricultural land involved, a maximum impact of moving the panels to poorer quality land, would be 119 tonnes (85 ha x 1.4 t/ha).
- 6.19 As set out in **Appendix KCC7**, in 2022 the UK produced 24 million tonnes of cereals. Wheat production was 15.5 million tonnes, up 8.5% on 2021. In the national, regional and local context, the production of 120 tonnes of wheat is insignificant.
- 6.20 The economic and other benefits are limited.

Is There a Food Crisis?

- 6.21 The officer's report does not allege a food crisis, but it does accord moderate weight to reduced food production.
- 6.22 As described above, food production is not a requirement of ownership of agricultural land, and receives no Government support.
- 6.23 Food security, and hence increasing food production, is not a concern of Government.
- 6.24 The Government Food Strategy (June 2022) does not seek to increase food production. The "Foreword" recognises near self-sufficiency in wheat, most meat, eggs and some vegetables, but not in soft fruit although the trend is favourable. But the strategy does not seek to alter that in the main commodities. The Strategy states:
"Overall, for the foods that we can produce in the UK, we produce around 75% of what we consume. That has been broadly stable for the past 20 years and in this food strategy we commit to keep it at broadly the same level in future".
- 6.25 In **Appendix KCC8** is an analysis of food production and self-sufficiency. The UK is about 74% self-sufficient in food we can grow or rear in the UK, but the shortfall is not necessarily because we cannot produce more. It is largely due to consumer choice to eat food out of season, or to import more cheaply. In many crops, meat, dairy and eggs, we are self-sufficient.

- 6.26 In the UK Food Security Report (2021) it noted that, for example, the mix of grain grown in the UK differs from the grain consumed in the UK. It was noted that eating grain alone would not provide a healthy or nutritious diet or meet consumer demand for a varied diet. However the report noted the following:
- “However, from a purely calorific perspective, the (below average) grain yield in 2020 of 19 million tonnes would be sufficient to sustain the population. It is equivalent to 283kg per person, 0.8 kilos per day. A kilo of wheat provides 3,400 calories (and barley slightly more at 3520 calories), making 0.8 kilos of grain over 2,600 calories, compared to recommended calorie intake of 2 to 2500 for adults. From these figures it is easy to demonstrate that, even without accounting for other domestic products like potatoes, vegetables, grass-fed meat and dairy, and fisheries, current UK grain production alone could meet domestic calorie requirements if it was consumed directly by humans in a limited choice scenario”.**
- 6.27 The report went on to note that whilst grain is generally the most efficient form of production in terms of calories per hectare, it has a significant environmental impact **“due to the lack of biodiversity in conventional grain fields, damage to soil through ploughing, environmental harms caused by fertilisers and pesticides, and the oil use embedded in fertilisers and field operations”.**
- 6.28 In a Press Release of 6th December 2022, from Defra, the Government's stated position is that **"the UK has a large and highly resilient food supply chain. Our high degree of food security is built on supply from diverse sources: strong domestic production as well as imports through stable trade routes"** (Defra Press Release 6th December 2022). This is reproduced at **Appendix KCC9**.
- 6.29 In **Appendix KCC6** is a recent decision for a solar farm involving BMV land, referred to earlier. The Inspector considered the food security issues, and concluded that there is no food security crisis, see paragraph 26.

Are There Benefits?

- 6.30 The land will be in grassland, and it is expected to be managed by grazing of sheep. This is common practice, and entirely feasible, as shown below.

Photos 10 - 13: Managed Grassland



- 6.31 What we know about soils in the UK is that continual arable production is generally not good for soils, and that conversion to grassland is generally good for soils and the biological functions they support. Conversion of arable land to grassland receives funding under the Countryside Stewardship Scheme which, for example, pays farmers £326 per hectare for managed conversion (Tier level SW7, 2023/24 rates).
- 6.32 Some other known harms and benefits are summarised below:
- (i) soil is an important natural capital resource, but our understanding of soils is hindered by a lack of data. In the Environment Agency’s “Summary of the State of the Environment: Soil” report of January 2023¹, they note that UK soils currently store about 10 billion tonnes of carbon, equal to 80 years of annual greenhouse gas emissions.
 - (ii) the report notes that soil biodiversity and the many biological processes and soil functions that it supports “**are thought to be under threat**”. The statistics are concerning:
 - almost 4 million hectares of soil are at risk of compaction;
 - over 2 million hectares of soil are at risk of erosion;
 - intensive agriculture has caused arable soils to lose about 40 to 60% of their organic carbon.

¹ Research and analysis: Summary of the state of the environment: soils, Environment Agency (26 January 2023)

- (iii) the state of soil biology is poorly researched, but the report identifies that intensive agriculture reduces soil biodiversity. A recent study identified 42% of fields may be overworked, as evidenced by an absence or rarity of earthworms. It is noted that **“tillage had a negative impact on earthworm populations, and organic matter management did not mitigate tillage impacts”** (page 11).
- (iv) the UK Food Security Report 2021 also notes that, whilst grain is generally the most efficient form of production in terms of calories per hectare, it has a significant environmental impact **“due to the lack of biodiversity in conventional grain fields, damage to soil through ploughing, environmental harms caused by fertilisers and pesticides, and the oil use embedded in fertilisers and field operations”**.
- (v) the Environment Agency "State of the Environment: soil" report notes that bare soils, reduced hedgerows and increased field sizes mean that, in England and Wales, an estimated 2.9 million tonnes of topsoil is lost to erosion every year. Erosion regularly exceeds the rate of formation of new soils (which is at about 1 tonne per hectare per year) on many soils, with 40% of arable soils at risk, especially lighter soils on hillslopes and peats in upland areas. **“Significant decreases in erosion risk occurred when fields changed from winter cereal use to permanent grassland”**, the EA reported. Management practices in arable land can make a big difference, but the constant vegetation cover of grassland reduces erosion significantly.
- (vi) organic matter in soil acts like a sponge and can hold up to 20 times its weight in water. Most arable soils have lost 40 to 60% of their organic carbon². The British Society of Soil Science record (Science Note: Soil Carbon, BSSS (2021)) the declining state of soil carbon (soil organic carbon and soil inorganic carbon), and note that the greatest and most rapid soil carbon gains can be achieved through land use change, eg converting arable land to grassland. Sustainable soil management practices are needed for all soils.
- (vii) the role of soil organic carbon in soils is complex, as described in the British Society of Soil Science Note “Soil Carbon” (2021). As described under the heading “Soil Carbon Functions” on page 4, **“a soil with a greater SOC content has a more stable structure, is less prone to runoff and erosion, has greater water infiltration and retention, increased biological activity and improved nutrient supply compared to the same soils with a smaller SOC content. Even small increases in SOC can markedly influence and improve these properties”**.

² EA, *ibid*, page 8.

(viii) it is noted in that same report at the top of page 5 that “**Significant long-term land use change (e.g. conversion of arable land to grassland or woodland) has by far the biggest impact on SOC, but is unrealistic on a large scale because of the continued need to meet food security challenges**”.

(ix) biodiversity across farms is also in a poor state. The 2019 State of Nature Report (The State of Nature 2019, The State of Nature Partnership (2019)) recorded increases and decreases in different species, but overall a decline in the abundance and distribution of the UK's species since 1970, continuing a trend started hundreds of years earlier. The House of Commons Environmental Audit Committee (House of Commons Environmental Audit Committee: Biodiversity in the UK, bloom or bust?, First report of session 2021-22 (23 June 2021)) recorded this in stark terms. The Summary started as follows: “**the world is witnessing a colossal decline in global biodiversity**”.

6.33 There is general agreement that grassland is good for soil carbon, results in increased organic matter compared to arable land, reduces the risk of erosion, and soil biodiversity (including earthworms) will improve. As can be seen in the photographs above, there is no reason in this country why grassland growth below panels should not be strong. We get plentiful rain, which will keep soils moist, and in our temperate climate there are no reasons to be concerned about differential soil temperatures affecting biological activity or biodiversity enhancement potential.

Decommissioning

6.34 Decommissioning will need to be carried out when the ground conditions are suitable. It is recommended that a Decommissioning Soil Management Plan be submitted for approval two years before the proposed decommissioning stage. An outline could be produced now, but we do not know what the effects of climate change might be in 40 years' time if as a world we do not manage to limit global warming, so a detailed DSMP at that stage would be more useful.

6.35 However there is every reason to conclude that the panels can be removed without significant disturbance to soils, and without creating problematic levels of compaction.

Conclusions

6.36 On the balance the planning officer recommended approval, and the Committee agreed.

6.37 That was on the basis that the reduced food production was an adverse effect to which moderate weight should be accorded. As set out above, only very limited weight should be accorded to that effect. It is not a planning policy concern, nor is food production considered to be a current issue for the UK.

7 SUMMARY AND CONCLUSIONS

- 7.1 The Proposed Development is recommended for approval by the local planning authority.
- 7.2 There is agreement that panels can be installed, and subsequently removed, without causing downgrading of the land quality or any permanent sealing-over of agricultural land. The ALC resource, in this case Grade 2 and 3a BMV land, is not affected or lost.
- 7.3 Recent development management decisions have confirmed that there is no planning policy reason to refuse development because of the reduced flexibility of the land for food production during the operation.
- 7.4 That notwithstanding, the Council has accorded moderate weight to the reduced food production consequence. In my view only limited weight should be accorded to food production issues, as a matter of principle and as a matter of analysis of harm:
- (i) there is no planning policy to require land to be used for food production;
 - (ii) there is no food security crisis or concern;
 - (iii) Government funds arable land conversions to grassland, and is clearly not seeking increased food production;
 - (iv) the actual implications are miniscule: 120 tonnes per annum from a national production of 24 million tonnes of cereals;
 - (v) there will be benefits in terms of carbon sequestration, organic matter, reduced erosion, reduced compaction, and improved biodiversity.
- 7.5 There are no agricultural reasons to refuse the Proposed Development.

8 DECLARATION

- 8.1 In accordance with the requirements of the Royal Institution of Chartered Surveyors Practice Statement, "Surveyors acting as expert witnesses" (4th edition, 2014):
- (i) I confirm that my report includes all facts which I regard as being relevant to the opinions which I have expressed and that attention has been drawn to any matter which would affect the validity of those opinions.
 - (ii) I confirm that my duty to this Public Inquiry as an expert witness overrides any duty to those instructing or paying me, that I have understood this duty and complied with it in giving my evidence impartially and objectively, and that I will continue to comply with that duty as required.
 - (iii) I confirm that I am not instructed under any conditional fee arrangement.
 - (iv) I confirm that I have no conflicts of interest of any kind other than those already disclosed in my report.
 - (v) I confirm that my report complies with the requirements of the Royal Institution of Chartered Surveyors (RICS), as set down in *Surveyors acting as expert witnesses*: RICS practice statement.

Signed:



(Tony Kernon)

Dated: 15th August 2023



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