

AGRICULTURAL LAND CLASSIFICATION (ALC) FOR LONGFIELD SOLAR FARM

A commentary on an ALC report prepared by Land Research Associates (LRA) for Longfield Solar Farm (Ref. 1)

1. CONTENT

1.1 Policies to protect agricultural land and soil

Developers and local planning authorities (LPAs) should refer to the following government policies and legislation when considering development proposals that affect agricultural land and soils. They aim to protect:

- the best and most versatile (BMV) agricultural land from significant, inappropriate or unsustainable development proposals
- all soils by managing them in a sustainable way

Natural England uses these policies to advise on development proposals as a statutory consultee (<https://www.gov.uk/guidance/consultation-and-pre-decision-matters#Statutory-consultees>) in the planning process.

1.2 A Green Future: Our 25 Year Plan to Improve the Environment 2018 (Ref 8)

A Green Future: Our 25 Year Plan to Improve the Environment (<https://www.gov.uk/government/publications/25-year-environment-plan>) sets out the government's 25-year plan to improve the health of the environment by using natural resources more sustainably and efficiently. It plans to:

- protect the best agricultural land
- put a value on soils as part of our natural capital
- manage soils in a sustainable way by 2030
- restore and protect peatland

1.3 National Planning Policy Framework (NPPF) (Ref 5)

LPAs should use the NPPF to make decisions about the natural and local environment to:

- protect and enhance landscapes, biodiversity, geology and soils
- recognise soils as a natural capital asset that provide important ecosystem services
- consider the economic and other benefits of BMV agricultural land, and try to use areas of poorer quality land instead of higher quality land
- prevent soil, air, water, or noise pollution, or land instability from new and existing development

2. INTRODUCTION

The ALC for the proposed Longfield Solar Farm on the 1:250000 maps showed the entire site to be ALC grade 2. (Appendix 1 ALC grades). As such, the entire site would be classified as BMV and should be protected. The ALC maps are regarded as acceptable for strategic purposes but developers should carry out a detailed ALC for specific developments. Longfield Solar Farm

employed Land Research Associates to carry out a detailed ALC. The survey was done in an 8 week period between September and October 2019.

3. SURVEY OUTCOME

The survey covered 637.6 hectares which was the original site proposed for the solar farm prior to the non-statutory consultation. The site for solar panels was redefined as 432 hectares in the revised public consultation document. The survey resulted in a significant downgrading of Grade 2 land to Grade 3a and Grade 3b. As a result, the area of BMV land is reduced:

637.6 ha	93.4 Grade 2	}	264.5 BMV = 41%
	171.1 Grade 3a		
432 ha	55 Grade 2	}	158 BMV = 37%
	103 Grade 3a		

Land has been downgraded to 3b on the wetness criteria and this paper analyses the data and draws conclusions on the interpretation of the survey. It is noted that in other ALCs, where data is available, downgrading to 3b on the wetness criteria is not uncommon. 3b land is not considered BMV but there is a strong case that it should be and planning guidance ENI changed.

4. SURVEY PRACTICE & MAFF GUIDELINES (Ref 1 & 6)

The LRA survey stated there was one observation for every 2ha to a depth of 1.2m and pits were dug where there was a change in soil type. The LRA survey also provided a map of additional auger points. Overall, there were 438 readings, 85 of these are no longer in the solar site. There were 353 pits, augers and additional augers on the revised site and 12 were not recorded.

Natural England guidelines state that there should be 1 auger/ha to a depth of 1.2m and these should be supplemented by digging occasional small pits.

The LRA survey appears to have only dug 8 pits over the whole of the relevant site and whilst they state that these are where soil type changes, only 2 appear to meet this criteria from the soil maps provided.

Overall, there are 100 less auger points than the guidelines and an inadequate number of pits.

5. DOWNGRADING CRITERIA – WETNESS Soil Wetness Classification (Ref 6)

Wetness Class	Duration of Waterlogging ¹
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. ²
II	The soil profile is wet within 70 cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but not wet within 40 cm depth for more than 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31 and 90 days in most years.

IV	The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years <i>or</i> , if there is no slowly permeable layer within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

¹ The number of days specified is not necessarily a continuous period.

² 'In most years' is defined as more than 10 out of 20 years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors.

All the Grade 3b sites identified in the LRA survey are put into Wetness Class III. LRA state the field capacity period as 104 days; this is for the period mid-December to late March. Rainfall is quoted as an annual 574 mm, summer moisture deficits for wheat are 122 mm, potatoes as 118 mm.

Note the wetness class is defined for Class III as the soil profile is wet within 70 cm depth for 91-180 days. A field capacity of 104 days suggests 3b soils are only marginally in Class III. If soils came in wetness Class II in most cases they would classify as 3a.

The table below indicates how soil texture and field capacity days relate to soil grades. (Ref 6).

Grade according to soil wetness – mineral soils						
Wetness Class	Texture of the top 25cm	Field Capacity Days				
		<126	126-150	151-175	176-225	>225
I	S LS SL SZL	1	1	1	1	2
	ZL MZCL MCL SCL	1	1	1	2	3a
	HZCL HCL	2	2	2	3a	3b
	SC ZC C	3a(2)	3a(2)	3a	3b	3b
II	S LS SL SZL	1	1	1	2	3a
	ZL MZCL MCL SCL	2	2	2	3a	3b
	HZCL HCL	3a(2)	3a(2)	3a	3a	3b
	SC ZC C	3a(2)	3b(3a)	3b	3b	3b
III	S LS SL SZL	2	2	2	3a	3b
	ZLMZCL MCL SCL	3a(2)	3a(2)	3a	3a	3b
	HZCL HCL	3b(3a)	3b(3a)	3b	3b	4
	SC ZC C	3b(3a)	3b(3a)	3b	4	4
IV	S LS SL SZL	3a	3a	3a	3b	3b
	ZL MZCL MCL SCL	3b	3b	3b	3b	3b
	HZCL HCL	3b	3b	3b	4	4
	SC ZC C	3b	3b	3b	4	5
V	S LS SL SZL	4	4	4	4	4
	ZL MZCL MCL SCL	4	4	4	4	4
	HZCL HCL	4	4	4	4	4
	SC ZC C	4	4	4	5	5

Of particular relevance to the Longfield site is the statement from MAFF (Ref 6 p.16) *“Calcareous clay soils are generally better structured than non-calcareous clays and are consequently better drained and easier to cultivate at least 1% Calcium Carbonate in the top 25cm. produces a higher grade for such soils.”*

Para 3.9 of the LRA survey (Ref 1) states that the top soils are occasionally calcareous, which is reported to confer greater workability than would otherwise be the case. However, this appears to be limited to small patches which could not be managed separately and are therefore limited to the same subgrade by the constraints of the surrounding land.

This commentary has attempted to analyse all the auger points that indicate calcareous soils in line with the MAFF definition and draw conclusions on the land grades resulting from this.

Detailed analysis is in Appendix 2. 10 sites are classified as 3a/3b or 3b/3a. 10 sites are classified as calcareous and chalky, and a further 4 as calcareous in the upper sub soil. 16 sites are identified as chalky in the lower sub soil. Further independent samples would be needed to see if all of these sites met the MAFF criteria of 1% CaCO₃ in the top 25cm. A reasonable assumption would be that at least half meet the criteria.

On the basis that each site represents 2ha, then 50ha of land could be reclassified as Grade 3a.

This reclassification changes the BHV calculation;

432 ha	55 Grade 2	}	208 BMV = 48%
	153 Grade 3a		

If all the sites were reclassified as 3a			
432 ha	55 Grade 2	}	238 BMV = 55%
	183 Grade 3a		

6. NATIONAL FOOD STRATEGY/LAND USE/FOOD SECURITY

The National Food Strategy (Ref 7) was a government commissioned review into the national food system. A main recommendation of the review was to create a rural land use framework based on a three compartment model. One compartment is conventional high yield farms and the recommendation is that this is derived from a revised metric possibly derived from the ALC and yield data from the June Farm Survey. The strategy also refers to the importance of food security. *“Securing the nation’s food supply has been a central role of all states since history began”.*

The UK currently imports 40% of its food; it is probable that this will increase to 50%. Climate change will impact negatively on home-based food production and the ability to import food from some existing UK suppliers. Fragile food supply chains compound the issue.

As a result, protection of quality farm land is an important element of government policy (paras 1.1, 1.2 & 1.3 of this commentary).

Most of our land area is in agricultural use. How this important natural resource is used is vital to sustainable development. This includes taking the right decisions about protecting it from inappropriate development.

Policy to protect agricultural land

Government policy for England is set out in the National Planning Policy Framework (NPPF) published in March 2012 (paragraph 112). Decisions rest with the relevant planning authorities who should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of higher quality. The Government has also re-affirmed the importance of protecting our soils and the services they provide in the Natural Environment White Paper *The Natural Choice: securing the value of nature* (June 2011), including the protection of best and most versatile agricultural land (paragraph 2.35) (Ref 3).

Protecting BMV land Grades 1, 2 & 3a therefore remains a planning priority. (Ref 5).

7. CROPPING ON LONGFIELD SITE

The LRA report states that cropping on the site was Cereals and Oilseed Rape with potatoes in the south, sugar beet in the east and some grassland for beef. The ALC grade details (Appendix 1) describes 3a land as capable of moderate to high yields of grass, cereals, oilseed rape, potatoes and sugar beet. 3b land is described as producing moderate yields of cereals and grass. It is quite clear from the data provided that potatoes, sugar beet and oilseed rape are being grown on land that has been reclassified as 3b. Yield data for these crops is not available but local knowledge suggests reasonable yields are obtained.

8. CONCLUSIONS

This report does not challenge the accuracy of the data in the LRA document. It does note that the number of observations is significantly less than the guidelines (Ref 4). Key points are as follows:

- The site was originally shown on the strategic ALC maps as Grade 2 hence all BMV. 63% has now been re-designated Grade 3b.
- The downgrade has been based on the wetness criteria primarily by putting soils in category III. The field capacity of the soils shows this categorisation can be very marginal.
- There is an underlying calcareous (chalk influence) on the site that means that some 3b sites can be reclassified as 3a. LRA accept this but state that these sites could not be managed separately and are therefore limited by the constraints of the surrounding land. This statement is challengeable.
- The probability from the survey data is that over half the land is BMV.
- The 3b land is still capable of high/moderate yields of a greater range of crops than stated in the ALC definitions.

SUMMARY

This report concludes that the entire site proposed for Longfield Solar Farm should be protected from development on the basis that the area is valuable productive farmland. Developers are asked to try and use areas of poorer quality land and seek alternative sites. There is no evidence that alternative sites have been considered, though it should be noted there are 30,000 ha of Grade 4 land in Essex. A letter dated 29/7/21 from Parliamentary Under-Secretary of State, Rebecca Pow, M.P. clearly states the Government's current position.

As we have advised previously, in relation to the construction of solar farms on agricultural land, it is the Government's position that we strike the right balance. We recognise that we need to preserve our most productive arable farmland as best we can, which is why we continue to advise that the effective use of land is prioritised by focussing large scale solar farms on previously developed and non-agricultural land, provided that it is not of high environmental value.

We also advise that where a proposal involves greenfield land, poorer quality land should be used in preference to higher quality land. Where a proposal intends to use any land falling under Natural England's 'best and most versatile agricultural land' classifications (grades 1, 2 and 3a), this will need to be justified. The weight given to this issue will depend on the particular facts of an application.

Although the National Planning Policy Framework does not refer to agricultural land that is less versatile (graded 3b, 4 or 5 by Natural England), it does expect local planning authorities to have regard to the character and beauty of the countryside, and to protect valued soils and landscapes.

The ALC commentary, the NPPF guidelines (Ref 5), A Green Future (Ref 8) and the National Food Strategy (Ref 7), all indicate that the Longfield site is the wrong site for a solar farm.

References

1. Report by Land Research Associates December 2020
2. Guide to assessing development proposals on agricultural land. Natural England. Updated February 2021.
3. Natural Environment White Paper. *The natural choice, securing the value of nature*. June 2011.
4. Natural England TIN049. *Agricultural Land – protecting the best and most versatile land*.
5. National Planning Policy Framework 2019.
6. MAFF – ALC guidelines – 1988.
7. National Food Strategy – Independent Review July 2021.
8. A Green Future: Our 25 Year Plan to Improve the Environment.

APPENDIX 1

Grade Details

Grade 1 – excellent quality agricultural land

Land with no or very minor limitations. A very wide range of agricultural and horticultural crops can be grown and commonly includes:

- top fruit
- soft fruit
- salad crops
- winter harvested vegetables

Yields are high and less variable than on land of lower quality.

Grade 2– very good quality agricultural land

Land with minor limitations which 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.

Grade 3 – good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in grades 1 and 2.

Subgrade 3a – good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of crops including:

- cereals
- grass
- oilseed rape
- potatoes
- sugar beet
- less demanding horticultural crops

Subgrade 3b – moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally:

- cereals and grass
- lower yields of a wider range of crops
- high yields of grass which can be grazed or harvested over most of the year

Grade 4 – poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or levels of yields. It is mainly suited to grass with occasional arable crops (for example cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties using the land. The grade also includes arable land that is very dry because of drought.

Grade 5 – very poor quality agricultural land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX 2

Analysis of auger sites

Site number	Location & comments
47 3a/3b 53 3a	Sites south of Sandy Wood. The classification and location would suggest a larger area should be shown as 3a.
58 3b/3a	North of White House Farm with Wetness Class II/III adjoins Grade 2 land. This field should be classified 3a.
210 211 388	All three sites suggest more 3a land should be shown around Toppinghole Wood.
159	South of Ringers Wood, suggest there is more 3a in this area.
103	East of Rolls Farm, suggest there is more 3a in this area.
73	East of Sparrows Farm shown as 3b and should be 3a.
378	North of Halls Farm, suggest 3a could be extended in this area.

Calcareous and Chalky soils:

Topsoil designates as Ca and Chalky
34, 44, 62, 93, 185, 327

Upper subsoil designated Ca
39, 64, 126, 136

Chalky lower subsoil
35, 36, 56, 59, 81, 110, 166, 167, 168, 172, 178, 179, 183, 334, 340