Lincolnshire COUNTY COUNCIL
Working for a better future

Open Report on behalf of Andy Gutherson - Executive Director for Place

Report to:	**Planning and Regulation Committee**
Date:	**3 July 2023**
Subject:	**Application by Gate Burton Solar for a Development Consent Order to install solar PV panels to generate 530MW, on site battery storage with 500MW/h capacity and associated infrastructure including access provision and an underground 7.5km 400kV electrical connection to the National Grid Substation at Cottam Power Station.**

Summary:

A 60 year Development Consent Order (DCO) for the construction, operation and maintenance of an energy solar park is sought close to the settlement of Gate Burton in West Lindsey. The Council is required to provide its comments on this application to the Examining Authority who will following a six month examination make a recommendation to the Secretary of State for Energy Security and Net Zero as to whether the Development Consent Order should be granted or not.

The Council is required to engage in the process by proving confirmation of its views on the proposal and this report sets out the matters the Council is required to comment on including consideration of the Councils Local impact Report.

Recommendation:

That the Committee resolves to :-

(A) Approve the Local Impact Report at Appendix A to be submitted to the Examining Authority.

(B) The County Council informs the Examining Authority in its written response that whilst the project would produce clean renewable energy that would support the nations transition to a low carbon future and deliver significant biodiversity net gain benefits through the creation of mitigation and enhancements as well as other more limited positive impacts (as identified within our Local Impact Report), these positive impacts are not outweighed by the negative, some significant, impacts that arise given the overall size and scale of the development both on its own and in combination with the three other solar projects proposed in this geographical area. This is due to the long term and negative impacts that this proposal would have on the landscape character and appearance of the area through the replacement of large areas of agricultural with Solar development

together with the cumulative impact from the other three solar projects in this area.

The cumulative change to the landscape will be considerable, and the combination of two or more sites has the potential to change the local landscape character at a scale that would be "*of more than local significance"* or would be *"in breach of recognised acceptability, legislation, policy or standards*". The cumulative impact of the four adjacent NSIP solar sites has the potential to effect the landscape at a regional scale through predominantly a change in land use: from arable to solar, creating an "energy landscape" as opposed to rural/agricultural one at present. This also has the potential to change the character from an agricultural landscape to that of an "energy" landscape when traveling through the area, and the sequential effects of multiple large scale solar sites, of which some are spread over extensive, fragmented redline boundaries, exacerbating the perception of being surrounded by solar development. In addition the loss of arable agricultural land of which at least 20% within the main development site and up to 50% of the required land for the cable route is classed as Best and Most Versatile agricultural land would have a cumulative or defined negative impact that will result in the loss of agricultural production in the development area generally and/or the permanent loss of production from mostly medium quality agricultural land.

That if the Secretary of State grants the Development Consent Order a comprehensive and appropriate package of Community Benefits is secured and delivered to compensate for the identified negative impacts that the proposed development would cause to the communities affected by this project.

The Application

1. The Applicant is seeking development consent for the construction, operation and maintenance of an energy solar park close to the settlement of Gate Burton in West Lindsey and the Council is required to provide its comments on this application to the Examining Authority who will following a six month examination make a recommendation to the Secretary of State for Energy Security and Net Zero as to whether the Development Consent Order should be granted or not. Attached to this report is Lincolnshire County Council's Local Impact Report (LIR) assessing the proposed Gate Burton Solar Energy Park and provides the evidence to support the Council's formal position on the application.

2. A LIR is a report in writing giving the details of the likely impact of the proposed development on the authority's area. When an Examining Authority accepts an application, it asks the relevant local authorities to prepare a LIR and these should focus around whether the local authority considers the development would have a positive, negative or neutral effect on the area. The LIR does not need to contain a balancing exercise between positives and negatives as this will be for the Examining Authority to carry out when making its decision. In addition to the LIR the Council is also being invited to submit Written Representations which can cover any matters relevant to the proposal. The LIR and Written Representation is

therefore an opportunity for the Council to set-out its overall position on the application.

3. The Council is not the determining Authority for the proposal; this is because Gate Burton Solar(GBS) is proposed to have a generating capacity exceeding 50 MW (stated to be 500MW) and, as such, is classified as a Nationally Significant Infrastructure Project (NSIP). This means that, to gain permission to build the project, the developer is required to submit a Development Consent Order (DCO) application to the Planning Inspectorate (PINS) which will be considered by a panel of independent Inspectors (the Examining Authority – ExA).

4. A DCO application for the project was made on 27 January 2023, and PINS confirmed that they accepted the application for examination on 22 February 2023. Following the pre-examination period, the PINs issued a 'Rule 6' letter on 31 May 2023 which sets out the examination timetable and includes various deadlines for submission of information. Of note, is Deadline 1 – 15 July 2023, which is the deadline for submission of Local Impact Reports (LIR) from any Local Authority and Deadline 2, 8 August 2023 which is the date the Council can submit its written representations.

5. The Planning Inspectorate has six months to carry out the examination. During this stage Interested Parties who have registered by making a Relevant Representation are invited to provide more detail of their views in writing. Careful consideration is given by the Examining Authority to all the important and relevant matters including the representations of all Interested Parties, any supporting evidence submitted and answers provided to the Examining Authority's questions set out in writing or posed at hearings.

6. Following examination, the ExA must prepare a report on the application to the relevant Secretary of State, including a recommendation, within three months of the close of the six month Examination stage. The relevant Secretary of State then has a further three months to make the decision on whether to grant or refuse development consent.

7. As a host authority, the Council are requested to submit a Local Impact Report (LIR) and Written Representation to the ExA. These are the written submissions that will form the Council's formal response to the GBS DCO application. A series of hearings, as set-out in the examination timetable on specific issues, are scheduled to take place over the coming months, up to 4 January 2024 when the examination period is scheduled to close.

8. LIRs are defined as a report in writing giving details of the likely impacts of the proposed development on the authority's area. The report should consist of a statement of positive, neutral and negative local impacts, but it does not need to contain a balancing exercise between positives and negatives. Written Representations can cover any matters relevant to the proposal. The Planning Inspectorate advise that Interested Parties must identify those parts of the

application with which they agree and those parts with which they do not agree, and explain the reasons why. This response is the opportunity for the Council to set-out its overall position on the application.

9. Officers of LCC have engaged with the applicants throughout the pre-application stage and worked with the other host local authority, West Lindsey District Council. Both local authorities will be submitting their own Local Impact Report (LIR) and Written Representation to ensure that the ExA is aware of the matters of concern to each authority.

Proposed Development

10. The proposed development will consist of the construction, operation, maintenance, and commissioning of a solar photovoltaic (PV) electricity generating facility, energy storage facility and export connection to the National Grid. The development would generate a substantial amount of low-cost renewable energy and aims to meet a national need for decarbonisation and security of supply.

11. The land within the Order limits is partly contained within Lincolnshire. The remaining land within the order limits is within Nottinghamshire.

12. The development's Order Limits consist of a single site with two distinct areas, both of which are locate within Lincolnshire. The Solar and Energy Storage Park, which is entirely contained within the County , makes up the bulk of the site as it includes all areas comprising solar panels, battery storage and the on-site substation. Secondly, The Grid Connection Corridor is the area of the site used for the grid connection between the Solar and Energy Storage Park and Cottam Substation, with the part located to the east of the River Trent being located within the County. The remaining Grid Connection Corridor to the west of the Trent falls within Nottinghamshire.

13. In addition to the operational site itself, six access routes are proposed as part of the order limits, situated at points along the roads: Gainsborough Road, Kexby Lane, and Marton Road.

14. The Scheme will be connected to the National Grid at the Cottam Substation. The closure of the former coal fired Cottom Power Station in this area means that there is available capacity for a significant amount of electricity generation to enter the National Grid. Gate Burton Energy Park aims to utilise this in order to not only export solar generated electricity to the national grid, but to also potentially import electricity for storage at the site. The cable route between the Solar and Energy Storage Park and Cottam Substation are planned to be placed underground to minimise landscape and visual impacts.

15. The estimated amount of electricity that the development will be able to generate will depend on the final layout of the Scheme and technology choice. The

proposed total installed capacity is approximately 531 MW so as to maximise the grid connection export capacity of 500MW.

16. The application documents have been consulted internally and with Landscape Visual Impact and Agricultural Land Use Consultants appointed by the Council as set out below.:-

- Minerals and Waste Policy Team - as Minerals and Waste Planning Authority for Lincolnshire;
- Highways and Transportation – as Local Highways Authority for Lincolnshire;
- Public Rights of Way – as Local Highways Authority;
- Surface Water Flooding and Drainage – as Lead Local Flood Authority for Lincolnshire;
- Lincolnshire Fire and Rescue;
- Public Health;
- Cultural Heritage; and
- Socio economics and Land Use.

17. (a) Minerals and Waste Policy Team (Lincolnshire County Council) - the vast majority of the Order limits are outside of the Mineral Safeguarding Areas (MSA), designated in the Lincolnshire Minerals and Waste Local Plan. A small section of the chosen Grid Connection Corridor is within the sand and gravel MSA, but the application documents note "It was also agreed that wherever possible, the route of the Grid Connection Corridor follow existing corridors/linear features (field boundaries), to minimise sterilisation of the MSA for sand and gravel. This has been considered in the final design of the Scheme". This approach aligns with previous discussions with the developer. When considering the nature and characteristics of the proposals, the Council is satisfied that there would be negligible impact in terms of any sterilisation of mineral resources.

Therefore, the Council have no mineral safeguarding objections to the proposal.

In respect of the Council's role as Waste Planning Authority developments such as this have a typical lifespan of 40 years and this proposal is for 60 years consequently it can reasonably be assumed that most of the infrastructure necessary for this project will need to be replaced at least once during the operational phase. Currently there are 10 other large solar projects in the County at various stage of the Development Consent Process creating a potential 5000MW of energy. All the infrastructure required for these projects, if approved, would be constructed during a similar timescale and is expected to be replaced at least once during the operational phase putting significant pressure on the County's waste facilities and consequently an appropriate strategy for sustainably disposing of the waste through out the operational phase and decommissioning of the project needs to be secured via an appropriately worded requirement.

(b) Highways and Transportation (Lincolnshire County Council) – the Highway Authority considers that the assessment within the Transport and Access Chapter is appropriate and provides a reasonable estimate of HGV and car traffic associated with the development during construction and shows that the impact will be within acceptable levels on the highway network. There is also a cumulative assessment which includes the other solar farms proposed in the area, due to their locations different minor roads are used for access, so the cumulative impact is acceptable. The assessment is based on working hours (Winter 08:00-18:00 / Summer 07:00-19:00) which mean workers will travel to/from the site outside peak network hours, this will be covered by the proposed requirement in the Draft DCO - Construction Traffic Management Plan (Schedule 2, Condition 14).

The Surface water Flood Risk is also appropriately addressed at this outline stage in the ES; and suitable mitigation measures proposed in the Construction Environmental Management Plan. More detail would be needed on areas of the site which are proposed to be made impermeable and these could be conditioned using suitably worded requirements. Again, the Draft DCO includes an appropriate requirement (Schedule 2, Condition 10) to address this.

(c) Public Right of Way as Local Highway Authority (Lincolnshire County Council) - the Public Rights of team have been consulted on the proposal and have not raised any specific concern about the impact on the users of the PROW network from a means of access perspective. The visual impact on users of the public footpath are considered in the landscape and visual section set out below.

There will be need to be an appropriate programme for the temporary closure orders and subsequently required extensions for the works proposed that will affect any of the footpaths affected during the construction phase to keep walkers and other users of the Public Rights of Way network away from construction traffic.

(d) Landscape and Visual Impact – the Landscape and Visual Impact assessment (LVIA) and the associated figures, appendices and documents provides a thorough analysis of the development. The assessment is detailed and laid out in a logical manner, and the process of assessment is thorough and well explained. It has been carried out to industry best practice and guidance, such as Guidelines for Landscape and Visual Impact Assessment (GLVIA3), by a team of competent Chartered Landscape Architects.

The LVIA clearly draws a distinction between landscape effects and visual effects, with the main chapter focussing on likely 'significant' effects (major and moderate effects are generally considered 'significant'). The LVIA

presents an assessment of “worst case” scenario of the development, based on maximum parameters presented in the Outline Design Principles.

The study area selection is explained in detail and the radius of the study area (“*approximately 2km around the Order limits of the Grid Connection Corridor, 3km west of the Order limits and 5km to the north, east and south*”) is justified and appropriate. A wider area has been also considered (up to 10km) beyond the main Study Area to include long distance views to the east, associated with the rising land of the ridge AGLV.

The masterplan has evolved through an iterative process, however there appears in places an over reliance upon planting just to screen proposals, without full attention to the potential impact of screening on this landscape. The LVIA and appendices does not go into detail about the level of care to ensure the design of mitigation enhances the physical landscape, or views from receptors, other than just screening the development.

The LVIA identifies significant landscape and visual effects at the four phases of construction, operation (year 1), operation (year 15), and decommissioning:

At Construction stage the following receptors were assessed as having significant effects:

- Construction activities are assessed as resulting in **Moderate adverse** visual effects for residential, recreational, and vehicle users, predominantly from close range views facing the Order limits. Vehicle users along the A156, are assessed as views of activity resulting in **Major adverse** visual effects. These effects are considered to be significant and would result from the introduction of construction activity at close range across a wide extent of a view.

At Operation (Year 1) the following receptors were assessed as having significant effects:

- Operation phase effects (year 1) are assessed as resulting in **Moderate adverse** visual effects for residential, recreational, and vehicle users, predominantly from close range views facing the Order limits. These effects are considered to be significant and would result from the introduction of the development at close range across a wide extent of a view. Several receptors and viewpoints are assed as resulting in **Major adverse** visual effects, as a worst case, however, subject to the establishment of advanced planting, these effects may be reduced to minor or moderate.

At **Operation (Year 15)** the following receptors were assessed as having significant effects:

- Operation phase effects (year 1) are assessed as resulting in a small number of **Moderate adverse** visual effects. These effects are considered to be significant and would result from the introduction of the development at close range across a wide extent of a view. The receptors and viewpoints with remaining significant effects are:

    - Outdoor workers / Farmers (Viewpoint 2);
    - Vehicle users, Outdoor workers / Farmers, Recreational users (Viewpoint 8);
    - Vehicle Users, Residents (Viewpoint 17).

The views and visual receptors with significant effects represent close range views of the development. However, fifteen sensitive receptors were assessed as having significant effects prior to any mitigation planting maturing (at operation year 1), along the southern extents, along with three receptors experiencing significant residual effects at year 15 along the southern site extents. This suggests an over reliance upon mitigation planting just to screen the proposals without full attention to the potential impact of screening on this landscape. Subject to a final review, there may be additional viewpoints and receptors that are assessed as having 'significant' visual effects, albeit these are likely from close range, and will be mitigated to an extent by established planting.

The construction effects appear to be under-estimated in places, including visual impact and the impact of damage or loss of vegetation due to access requirements. However, this has been discussed with the developer team, and additional information on wider highways works and vegetation removal is being investigated to clarify this through the examination process. Recommend limiting vegetation loss along site boundaries for access or sight lines, or along construction access routes as this has the potential to change the character of the local landscape beyond the limits of the development.

Regarding Cumulative effects (Cumulative landscape and visual effects are those that: "*result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments")*, the LVIA identifies that there will be adverse cumulative effects with those sites identified to be included within the assessment:

- Only **Minor** effects were identified at construction;
- **Moderate** effects were identified at operation with the site and West Burton Solar;
- **Moderate** effects were identified for the combined, West Burton Solar Project, Cottam Solar Project, Tillbridge Solar Farm and the Scheme.

The cumulative change to the landscape will be considerable, and the combination of two or more sites has the potential to change the local landscape character at a scale that would be "*of more than local significance"* or would be *"in breach of recognised acceptability, legislation, policy or standards*".

The cumulative impact of the four adjacent NSIP solar sites has the potential to effect the landscape at a regional scale through predominantly a change in land use: from arable to solar, creating an "energy landscape" as opposed to rural/agricultural one at present. This also has the potential to change the character from an agricultural landscape to that of an "energy" landscape when traveling through the area, and the sequential effects of multiple large scale solar sites, of which some are spread over extensive, fragmented redline boundaries, exacerbating the perception of being surrounded by solar development.

(e) Lincolnshire Fire and Rescue - having reviewed the application documents from a Fire Safety perspective the Council is content that the details appear to satisfy the requirements set out in the County Fire Officer standard advice for battery storage energy systems provided at the pre-application stage of the process.

However, without further specific details, e.g. detailed plans etc. the response is based very much on the details within the application documents. Request to continue to be engaged and views sought during the examination and reserve the right to comment on specific details of the fire strategy including drafting of suitably worded requirements to ensure the correct level of information is available and assessed before any development commences. This also includes any requirement for Hazardous Substance Consent for the battery storage facility if this is considered necessary to be included in the Development Consent Order.

(f) Cultural Heritage (Lincolnshire County Council) - the evaluation phases are complete and the Council have agreed the mitigation strategy. Other than agreeing the wording of any requirements connected to cultural heritage issues the Council does not anticipate raising any specific issues on cultural heritage through the examination and therefore no objection is raised from a cultural heritage perspective.

(g) Growth Team (Lincolnshire County Council) - based on the Economic impacts section of the Socio Economic chapter, from a Growth perspective, what is assessed, and the mitigation measures proposed appear reasonable.

Although what is included in the ES looks reasonable, the Council would expect appropriate energy related benefits to the local communities and economy provided and the Council would welcome the opportunity to explore these through the examination.

(h) Agricultural Land Use Classification - Landscope were instructed by the Council to review and report on the agricultural aspects of the applicant's application for a Development Consent Order for an extensive ground mounted solar array and associated infrastructure. The proposed development occupies a total area of 652ha plus connectors and the cable route.

The proposed development is likely to have a cumulative or defined negative impact that will result in the loss of agricultural production in the development area generally and/or the permanent loss of production from mostly medium quality agricultural land.

The majority of the site is shown as Grade 3 on the provisional ALC maps of the area. The two main land areas of BMV land are either side of the Lincoln to Gainsborough railway.

Cable route assessment - it is estimated that 50+% of the cable route will be BMV. However, irrespective of the land quality there will be issues of concern to farmers and landowners including –

- Land drainage
- Weed burden
- Biosecurity for plant diseases
- Timeliness of soil stripping and storage.

These matters will need to be addressed if the scheme is to proceed.

During the construction phase there will be significant damage to soil structure particularly on heavy clay soils. There is inevitably 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.

During the construction phase many of the areas will affect soil and water issues. To address this it is recommended that a requirement is imposed on any DCO granted to ensure a Soil Management Plan, both for the site and the cable route is submitted and approved.

There are a number of small(er) and several largescale Solar PV schemes in Lincolnshire, with others planned or proposed. There are five known solar project NSIP schemes; specifically in relation to impacts on agricultural land. The situation is a moving picture as new proposals come forward from time to time. Most of these sites are proposed on farmland. Lincolnshire is very much an agricultural area with substantial areas of land within the Best and Most Versatile category. Much of the non BMV land will be Grade 3b, still considered to be 'moderate' and productive land.

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 locally, and with specific consideration of agricultural land impacts.

(i) Director of Public Health (Lincolnshire County Council) - is undertaking research into the potential health impacts of large scale solar farms and to identify possible links to the sites of these projects and areas of deprivation. However, this will not be available in time for the Council's written response to the application but will be brought to the attention of the Examining Authority if concluded during the examination.

Decommissioning

18. The application is proposed for a period of 60 years. There will inevitably be significant improvements in the efficiency of solar panels over the lifetime of this development and this could result in the possible reduction in the overall site area covered by panels. If the DCO is allowed it should ensure that these future technological advances are secured and built into the ongoing operation of the scheme and where panels are no longer required that the land is returned back to agricultural use or formally restored to provide wider biodiversity enhancements.

19. As outlined above in the minerals and waste section a matter that needs to be addressed is the arrangements to be put in place for disposing the vast number of panels from all these projects once no longer viable or replaced by new technology this will have implications on the County's future waste needs requirements The Examining Authority will also need to consider the potential environmental impacts of any change to the panels used on the site throughout the life of the development as these could potentially have a greater impact than those currently been assessed as part of the DCO. Considerations needs to be given to how such impacts could be assessed without the need for future applications.

Community Benefits

20. Should the Secretary of State decide the national benefits out weight the negative impacts that have been identified, it will be essential that a full robust package of community benefits to compensate for this impacts that the local communities most affected will be expected to absorb for many years to come. To this end the Council expect a substantial offer from the developer to cover an annual programme of community benefits for the lifetime of the development, and its decommissioning, around the following themes:

- Renewable energy and energy efficiency;
- Biodiversity net gain;
- Reducing waste and increasing recycling;
- Rural business and agriculture/farming support;
- Community health and wellbeing support;

- Employment and skills development in renewables and supply chains;
- Active travel and public transport support;
- Education and young people.

21. The Council would request the applicant fund the provision of a community liaison post through out the life of the development in order to ensure that the scheme is constructed as approved and monitoring of the discharge and implementation of the schemes required by the requirements and any other legal agreements. Also to address any concerns from local communities especially during the construction phase of the development and the undertaking of the secured community benefits.

Discussion and Conclusion

22. The application before the Committee today is different to planning applications the Committee normally determines as the County Council is the decision maker on minerals and waste development applications as the Minerals and Waste Planning Authority. In this case the application is made under the procedures of the 2008 Planning Act and therefore the Council's comments on the application are required to be reported to the Planning Inspectorate for consideration during the examination stage of the application. Whilst the Council can make observations on any element of the proposal this report has focused on the Council's statutory areas of responsibility.

23. The attached LIR sets out the likely issues and impacts that LCC considers will arise from the construction and operation of the GBS. The LIR has identified positive, neutral and negative effects at this stage.

24. The GBS, by its nature offers positive impacts in terms of the production of clean renewable energy that can deliver power to over 150,000 households each year and the transition and movement towards Net Zero, as well as the potential to deliver significant biodiversity net gain through the creation of mitigation and enhancements proposed as part of the development. There are also some limited economic benefits arising from the potential creation of employment opportunities and increased spend on local services during the construction phase however these would be time-limited and therefore need to be balanced against any negative impacts identified.

25. A number of negative impacts, some significant, have been identified at this stage and these can be summarised as follows:

    - a permanent and negative impact upon the landscape character and the appearance of the area as a consequence of changes to the current arable agricultural land use. Affecting the wider landscape character by replacing large areas of agricultural or rural land with solar development which affects the current openness and agricultural character of the area;

- a long term and negative impact as a consequence of the loss of agricultural land, a proportion of (20%) which is classed as best and most versatile land. This loss is not only significant at a local level but significant when considered in-combination with the loss of land from other NSIP scale solar developments that are also being promoted and considered across Lincolnshire.

26. Overall, it is considered that the proposed development due to its overall size and scale will have a significant negative impact on Lincolnshire.

RECOMMENDATIONS

(A) That the Committee approve the Local Impact Report at Appendix A to be submitted to the Examining Authority.

(B) The County Council informs the Examining Authority in its written response that whilst the project would produce clean renewable energy that would support the nations transition to a low carbon future and deliver significant biodiversity net gain benefits through the creation of mitigation and enhancements as well as other more limited positive impacts (as identified within our Local Impact Report), these positive impacts are not outweighed by the negative, some significant, impacts that arise given the overall size and scale of the development both on its own and in combination with the three other solar projects proposed in this geographical area.

This is due to the long term and negative impacts that this proposal would have on the landscape character and appearance of the area through the replacement of large areas of agricultural with Solar development together with the cumulative impact from the other three solar projects in this area.

The cumulative change to the landscape will be considerable, and the combination of two or more solar projects has the potential to change the local landscape character at a scale that would be “of more than local significance” or would be “in breach of recognised acceptability, legislation, policy or standards”. The cumulative impact of the four adjacent NSIP solar sites has the potential to effect the landscape at a regional scale through predominantly a change in land use: from arable to solar, creating an “energy landscape” as opposed to rural/agricultural one at present. This also has the potential to change the character from an agricultural landscape to that of an “energy” landscape when traveling through the area, and the sequential effects of multiple large scale solar sites, of which some are spread over extensive, fragmented redline boundaries, exacerbating the perception of being surrounded by solar development. In addition the loss of arable agricultural land of which at least 20% within the main development site and up to 50% of the required land for the cable route is classed as Best and Most Versatile agricultural land would have a cumulative or defined negative impact that will result in the loss of agricultural production in the development area generally and/or the permanent loss of production from mostly medium quality agricultural

land. 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 locally, and with specific consideration of agricultural land impacts.

That if the Secretary of State grants the Development Consent Order a comprehensive and appropriate package of Community Benefits is secured and delivered to compensate for the identified negative impacts that the proposed development would cause to the communities affected by this project.

Appendix

These are listed below and attached at the back of the report	
Appendix A	Local Impact Report

Background Papers

The following background papers as defined in the Local Government Act 1972 were relied upon in the writing of this report.

Document title	Where the document can be viewed
Development Consent Documents	Nationally Significant Infrastructure Projects website https://infrastructure.planninginspectorate.gov.uk/
National Planning Policy Framework	The Government's website www.gov.uk
Lincolnshire Minerals & Waste Local Plan (2016)	Lincolnshire County Council's website www.lincolnshire.gov.uk

This report was written by Neil McBride, who can be contacted on 01522 782070 or neil.mcbride@lincolnshire.gov.uk

Lincolnshire County Council

LOCAL IMPACT REPORT

Gate Burton Solar Park

1. Terms of Reference

Introduction

1.1 This report is the Local Impact Report (LIR) for Lincolnshire County Council (LCC). In preparing this LIR regard has been made to the purpose of LIRs as set out in s60(3) of the Planning Act 2008 (as amended), DCLG's Guidance for the examination of applications for development consent, the Planning Inspectorate's Advice Note One: Local Impact Reports, as well as the Planning Inspectorate's 'Example Documents'.

Scope

1.2 This LIR relates to the impacts of the proposed development as it affects the administrative area of Lincolnshire County Council.

Purpose and Structure of the LIR

1.3 The LIR Covers topics where LCC has a statutory function or holds particular expertise. LCC defers to West Lindsey District Council on other matters.

1.4 The topics the subject of this LIR cover:

- Principle of the development
- Landscape and Visual Impact
- Highways and Transportation
- Public Rights of Way (PROW)
- Flood Risk, Drainage and Surface Water
- Minerals and Waste
- Cultural Heritage – Archaeology
- Socio-economics – Land Use
- Climate Change.

1.5 The LIR is structured by first identifying the relevant national and local policies, secondly identifying the local impacts, and lastly addresses the extent to which the development proposals accord with these policies. For each topic area, the key issues are identified on the extent the applicant addresses these issues by reference to the application documentation, including the DCO articles, requirements, and obligation, where relevant.

1.6 The LIR has sought not to duplicate material covered in the Statement of Common Ground (SoCG).

2. Summary of proposal

2.1 The proposed development will consist of the construction, operation, maintenance, and commissioning of a solar photovoltaic (PV) electricity generating facility, energy storage facility and export connection to the National Grid. The development would generate a substantial amount of low-cost renewable energy and aims to meet a national need for decarbonisation and security of supply.

2.2 The land within the Order limits is partly contained within areas governed by Lincolnshire County Council (LCC) and within the lower tier council area of West Lindsey District Council (WLDC), who will both act as the host authorities for the development. The remaining land within the order limits is contained within Nottinghamshire County Council (NCC) and the lower tier council area of Bassetlaw District Council (BDC), who will also act as host authorities.

2.3 The Development's Order Limits consist of a single site with two distinct areas, both of which are located within the area of West Lindsey District Council. Firstly, the Solar and Energy Storage Park, which is entirely contained within WLDC, makes up the bulk of the site as it includes all areas comprising solar panels, battery storage and the on-site substation. Secondly, The Grid Connection Corridor is the area of the site used for the grid connection between the Solar and Energy Storage Park and Cottam Substation, with the part located to the east of the River Trent being located within WLDC. The remaining Grid Connection Corridor to the west of the Trent falls within Bassetlaw District Council's authority.

2.4 In addition to the operational site itself, six access routes are proposed as part of the order limits, situated at points along the roads: Gainsborough Road, Kexby Lane, and Marton Road.

2.5 The Scheme will be connected to the National Grid at the Cottam Substation. The closure of the former coal fired Cottom Power Station in this area means that there is available capacity for a significant amount of electricity generation to enter the National Grid. Gate Burton Energy Park aims to utilise this in order to not only export solar generated electricity to the national grid, but to also potentially import electricity for storage at the site. The cable route between the Solar and Energy Storage Park and Cottam Substation are planned to be placed underground to minimise landscape and visual impacts.

2.6 The estimated amount of electricity that the development will be able to generate will depend on the final layout of the Scheme and technology choice. The proposed

total installed capacity is approximately 531 MW so as to maximise the grid connection export capacity of 500MW and a 60 year permission is sought.

3. Description of the area

3.1 The land within the development consists mainly of agricultural fields interspersed with individual trees, woodlands, hedgerows, linear tree belts, farm access tracks, and local transport roads.

3.2 The Agricultural Land Classification produced by the applicant concludes the application site is predominantly Grade 3b with some 3a. The hedgerows within the Order Limits are predominantly low and intermittent. The arable fields are large and generally of regular shape. Woodland is more prevalent in the north of the Solar and Energy Storage Park area.

3.3 The Site is situated closest to the village of Gate Burton, 50 meters to the west. Knaith is 200 meters, also to the west, and to the south-west in Marton at 500 meters. To the east is the village of Willingham by Stow at 700 meters, and Kexby at 1.8km.

3.4 There are limited industrial or commercial land uses within the immediate vicinity of the Order Limits. The A1500 (Stow Park Road/Till Bridge Lane) runs east to west, to the south of the development and intersects the grid connection corridor. The A156 (Gainsborough Road) runs north south, directly to the west, and intersects the grid connection corridor. The River Trent, which runs from the Humber Estuary, borders the development just west of the A156, and is also crossed by the grid connection corridor in the south.

3.5 There is a railway line connecting Lincoln and Doncaster that intersects the development. In addition, the B1241 and Willingham Road at Willingham by Stow runs from the north-south to the east of the order limits, while Marton Road and Willingham Road border it to the south.

3.6 There is one Public Right of Way (PRoW) crossing the development, and three further PRoW which run near its boundary. Around the grid connection corridor, footways are limited to the northern side of Cottam Road and the western side of Town Street both near and through the village of Cottam, as well as both sides of Torksey Ferry Road.

3.7 The main site connects to the National Grid at Cottam Power Station, with a generating capacity of 440MW, a substation and other electricity infrastructure. The method of connection is the grid connection corridor, consisting of underground high voltage cables that pass through largely agricultural land, as well as the River Trent, the A1500, and the A156.

3.8 Other infrastructure within the surrounding area include 400kv overhead powerlines and accompanying pylons, extending from Cottam sub station itself.

4. Development Plan Documents and Local Guidance

National Planning Policy

4.1 The Secretary of State is required to have regard to any relevant national policy statement (NPS), amongst other matters, when deciding whether to grant a DCO. Where there is a relevant NPS in place DCO applications are determined in line with Section 104 of the PA2008. However, where there is no relevant NPS in place then Section 105 of the PA2008 takes effect and provides the legal basis for determining DCO applications. Section 105 requires the SoS to consider 'important and relevant' matters which includes this LIR and any matters which the SoS thinks are both important and relevant to its decision.

4.2 The following NPS's are considered relevant to the determination of this DCO application however neither explicitly cover solar powered electricity generation. Nevertheless, they set out assessment principles for judging impacts of energy projects and are still a material consideration that the SoS will need to consider. The NPS's are as follows:

EN-1 - Overarching National Planning Policy Statement for Energy.
EN-3 – National Planning Policy Statement for Renewable Energy Infrastructure.
EN-5 – National Planning Policy Statement for Electricity Networks Infrastructure.

4.3 EN-1 (Overarching National Policy Statement for Energy) confirms the Government's commitment to the legally binding target to cut greenhouse gas emissions by 80% by 2050, compared to 1990 levels. It also identifies the need to increase dramatically the amount of renewable electricity generation capacity in order to meet the commitments under the EU Renewable Energy Directive and to improve energy security by reducing dependence on imported fossil fuels, decrease greenhouse gas emissions and providing economic opportunities. Solar is noted within the document as being an intermittent renewable technology.

4.4 EN-3 (National Planning Policy Statement for Renewable Energy Infrastructure) was published in 2011 and covers those technologies which were technically viable at generation capacities of over 50MW onshore and 100MW offshore. Solar PV is not included in the EN-3 because at the time it was published utility scale solar development was not considered to be commercially or technically viable. Nonetheless, it is a material planning consideration in the determination of the DCO application which the SoS will no doubt consider.

4.5 EN-5 (National Policy Statement for Electricity Networks Infrastructure) is also relevant as it recognises electricity networks as "transmission systems (the long

distance transfer of electricity through 400kV and 275kV lines), and distribution systems (lower voltage lines from 132kV to 230V from transmission substations to the end-user) which can either be carried on towers/poles or undergrounded" and "associated infrastructure, e.g. substations (the essential link between generation, transmission, and the distribution systems that also allows circuits to be switched or voltage transformed to a useable level for the consumer) and converter stations to convert DC power to AC power and vice versa." This is therefore relevant in so far as it relates to the proposed Grid connection.

Draft Revised National Planning Policy Statements

4.6 The Government is reviewing and updating the NPS's in order to ensure that the policy framework enables the delivery of infrastructure required to support the transition to Net Zero. Revised draft versions of EN-1 and EN-3 were first published and consulted upon in 2021. The revised drafts recognised and included reference to NSIP scale solar projects and contained specific policies and factors that should be taken into consideration when assessing such proposals. The draft NPS's have been updated and revised since 2021 with the latest changes being focused principally on seeking views on the importance of both onshore and offshore wind and cutting down the time to process applications relating to such projects as well as proposals to update the civil and military aviation and defence interests to reflect the status of energy developments and how impacts to civil and military aviation, meteorological radars and other types of defence interests should be managed. Much of the content relating to solar development as proposed within the first revised draft versions of EN-1 and EN-3 remains unchanged.

4.7 The revised draft EN-3 states that solar is a key part of the government's strategy for low-cost decarbonisation of the energy sector and that government expects a five-fold increase in solar deployment by 2035 (up to 70GW). It is also stated that solar farms can be built quickly and - coupled with consistent reductions in the cost of materials and improvements in the efficiency of panels - large-scale solar is now viable in some cases to deploy subsidy-free.

4.8 Section 3.10.9 to 3.10.39 of the draft NPS sets out the key considerations and factors that will need to be taken into consideration when selecting sites and these include irradiance and site topography, proximity of site to dwellings, agricultural land classification and land type, accessibility, public rights of way, security and lighting and grid connectivity (section 3.10.9 to 3.10.39 refer). The technical considerations are set out in sections 3.10.40 to 3.10.63) and include capacity of the site, site layout design and appearance, project lifetimes and flexibility. Impacts that will need to be considered are set out in Sections 3.10.64 to 3.10.117 and biodiversity and nature conservation, landscape, visual and residential amenity, glint and glare, cultural heritage, construction including traffic and transport noise and vibration.

4.9 Both draft EN-1 and EN-3 are not yet designated and therefore do not 'have effect' for the purposes of Section 104 of the PA2008. However, the transitional arrangements set out in these documents confirms that any emerging draft energy NPSs (or those designated but not having effect) are potentially capable of being important and relevant considerations in the decision-making process. The extent to which they are relevant is a matter for the SoS to consider within the framework of the Planning Act and about the specific circumstances of each DCO application. Therefore, both the current and draft NPSs identified above, are likely to be matters the SoS will consider relevant and important and considered in the determination of the application.

Development Plan

4.10 The documents that comprise the development plan are listed below. Other policy documents that that should be considered as a material consideration are also identified. The Local Policies of Relevance to the topic areas covered in this LIR are listed below.

Central Lincolnshire Local Plan

4.11 The Central Lincolnshire Local Plan 2023-2043 was adopted April 2023, replacing the Central Lincolnshire Local Plan adopted in 2017.

The Relevant Policies are:

- Policy S5: Development in the Countryside – Specifically Part E: Non-Residential development in the country. Reason for this is because of the criterion to be considered that "The development is of a size and scale commensurate with the proposed use and with the rural character of the location".

- Policy S14: Renewable Energy – Reason: "To consider if the impacts are acceptable having considered the scale, siting and design, and the consequent impacts on landscape character; visual amenity; biodiversity; geodiversity; flood risk; townscape; heritage assets, their settings and the historic landscape; and highway safety and rail safety".

- Policy S21: Flood Risk and Water Resources – Reason: majority of the sites are in flood risk zones.

- Policy S45: Strategic Infrastructure Requirements – Reason: Relevant for the infrastructure that would be constructed to enable the development to take place.

- Policy S48: Walking and Cycling Infrastructure – Reason: “protect, maintain and improve existing infrastructure, including closing gaps or deficiencies in the network and connecting communities and facilities”, this being relevant to the PROWs.

- Policy S53: Design and Amenity – Reason: “All development, including extensions and alterations to existing buildings, must achieve high quality sustainable design that contributes positively to local character, landscape and townscape, and supports diversity, equality and access for all”.

- Policy S54: Health and Wellbeing – Reason: This policy seeks to ensure access to adequate access to nature might run counter to the development essentially “taking away” open green space.

- Policy S57: The Historic Environment – Reason: archaeological interest within the sites.

- Policy S58: Protecting Lincoln, Gainsborough and Sleaford’s Setting and Character – Reason: “Protect and enhance the landscape character and setting of Gainsborough and the surrounding villages by ensuring key gateways are landscaped to enhance the setting of the town, minimise impact upon the open character of the countryside and to maintain the setting and integrity of surrounding villages”.

- Policy S59: Green and Blue Infrastructure Network – Reason: Relevant because of the nature the development itself or the development impacts on PROWs.

- Policy S60: Protecting Biodiversity and Geodiversity – Reason: Some of the woodlands near or bordering the order limit might be “irreplaceable habitats”.

- Policy S61: Biodiversity Opportunity and Delivering Measurable Net Gains – Reason: 10% biodiversity net gain is an ambition that all Development Consent Order projects are working towards as it will become mandatory for projects of this size to be comply with biodiversity net gain targets by 2025.

- Policy S62: Area of Outstanding Natural Beauty and Areas of Great Landscape Value – Reason: Relevant because of the development’s proximity to The Cliff to the east with views from and to this designated Area of Great Landscape Value to the east.

- Policy S66: Trees, Woodland and Hedgerows – Reason: Relevant because of the hedgerows around the site boundaries but could again be relevant to the Woodland areas nearby.

- Policy S67: Best and Most Versatile(BMV) Agricultural Land – Reason: there is BMV land present within the application site.

4.12 Also of Relevance is the Sturton by Stow and Stow Neighbourhood Plan (2022).

Relevant policies are:

- Sturton by Stow, and Stow Policy 1: Sustainable Development – Reason: Supports developments that get us closer to net zero gas emissions.
- Sturton by Stow, and Stow Policy 5: Delivering Good Design – Reason: identical to the above.

Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies

4.13 The planning policy framework for minerals and waste within Lincolnshire is set out in the adopted Lincolnshire Mineral and Waste Local Plan (2016)

Relevant Policies are:

- Policy DM1: Presumption in favour of sustainable development – Reason: "the County Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework".
- Policy DM4: Historic Environment – Reason: Potential archaeological interest.
- Policy M2: Providing for an adequate supply of sand and gravel.
- Policy M11: Safeguarding of Mineral resources.
- Policy W1 Future Requirements for new waste sites.

Other relevant Local Policies

4.14 In addition to the development Plan documents listed above, there are several additional policy documents which provide local policy on key topics of relevance to this development.

West Lindsey District Council Strategic Flood Risk Assessment (SFRA) Final Report – July 2019

4.15 The SFRA has assessed the flood risk issues at a strategic scale to inform the spatial planning process.

West Lindsey Sustainability, Climate Change and Environment Strategy

4.16 The strategy outlines West Lindsey District Councils strategy to reach net zero emissions by 2050.

5. Assessment of Impacts

5.1 The Following sections Identify, for each topic heading listed below, the relevant policies, the key issues and impacts raised by the proposed development and the extent to which the applicant has addressed these issues in the application document.

- Principle of the development
- Landscape
- Highways and Transportation
- Public Rights of Way (PROW)
- Flood Risk, Drainage and Surface Water
- Minerals and Waste
- Cultural Heritage – Archaeology
- Socio-economics – Jobs, Skills and land use; and
- Health and Well Being

6. The principle of the development

6.1 Local Policy

- Policy S14: Renewable Energy
- Policy DM1: Presumption in favour of sustainable development.

6.2 The theme of these policies centres around the desire to support developments that are sustainable/relate to renewable energy. The principle of this development is meeting a nation need for solar/renewable energy, so it should be assessed against these policies. Policy DM1 has no specific tests/criteria beyond developments meeting the standards laid out in the NPPF, but Policy S14 calls for the following specific criteria to be met:

- The impacts are acceptable having considered the scale, siting and design, and the consequent impacts on landscape character; visual amenity; biodiversity; geodiversity; flood risk; townscape; heritage assets, their settings and the historic landscape; and highway safety and rail safety; and
- The impacts are acceptable on aviation and defence navigation system/communications; and
- The impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic;

6.3 The GBS would make a significant contribution towards renewable energy generation, providing the electricity to power an equivalent of approximately 156,000 homes. This contribution aligns to key commitments at the national level and within the adopted and emerging National Policy Statements recognising the importance of the Government's commitments to cut greenhouse gases by 80% of 2050.

6.4 The Council recognises that solar energy development can help meet targets for reducing carbon emissions, reduce reliance on fossil fuels and provide local energy security. They can also provide economic diversification for farmers and landowners and support local employment opportunities. Therefore whilst the GBS, by its nature offers significant positive impacts in terms of the production of clean renewable energy and the transition and movements towards Net Zero, in order to be supported it must be demonstrated that there are no significant adverse environmental impacts that cannot be appropriately managed and/or mitigated through the DCO process.

6.5 The sections below consider the potential impacts of the development on other factors/topics and the Examining Authority will need to balance these positive impacts against any negative impacts identified within this LIR and those raised by other host authorities and Interested Parties.

7. Landscape

7.1 Local Policy

- Policy S5: Development in the Countryside
- Policy S53: Design and Amenity
- Policy S58: Protecting Lincoln, Gainsborough and Sleaford's Setting and Character
- Policy S62: Area of Outstanding Natural Beauty and Areas of Great Landscape Value
- Policy S66: Trees, Woodland and Hedgerows.

7.2 The theme for these policies centres around the promotion of "suitable" developments within the countryside. Specifically, developments should aim to be of a good design and scale that do not detract from the character of an area and not disrupt the availability of amenities within the area or neighbouring areas (agricultural land, woodland, hedgerows, etc.).

7.3 These policies are the key ones as this development entails a significant shift in both the use of the landscape as well as its overall visual appearance. It is also worth noting that the number of policies relating to this criterion indicate that this should be thoroughly assessed.

7.4 The Council commissioned AAH Consultants to assist in the consideration and review of the landscape and visual elements of the GBS proposal and have engaged and provided feedback and advice to the Applicants design team on behalf of the Council throughout the pre-application stage. A full copy of their report and comments having reviewed the DCO application documentation is provided in Appendix A and the following assessment is based on those comments and should be read in conjunction with them.

- The Landscape and Visual Impact assessment (LVIA) and the associated figures, appendices and documents provides a thorough analysis of the development. The assessment is detailed and laid out in a logical manner, and the process of assessment is thorough and well explained. It has been carried out to industry best practice and guidance, such as Guidelines for Landscape and Visual Impact Assessment (GLVIA3), by a team of competent Chartered Landscape Architects.

- The LVIA clearly draws a distinction between landscape effects and visual effects, with the main chapter focussing on likely 'significant' effects (major and moderate effects are generally considered 'significant'). The LVIA presents an assessment of "worst case" scenario of the development, based on maximum parameters presented in the Outline Design Principles.

- The study area selection is explained in detail and the radius of the study area ("*approximately 2km around the Order limits of the Grid Connection Corridor, 3km west of the Order limits and 5km to the north, east and south*") is justified and appropriate. A wider area has been also considered (up to 10km) beyond the main Study Area to include long distance views to the east, associated with the rising land of the ridge AGLV.

- The masterplan has evolved through an iterative process, however there appears in places an over reliance upon planting just to screen proposals, without full attention to the potential impact of screening on this landscape. The LVIA and appendices does not go into detail about the level of care to ensure the design of mitigation enhances the physical landscape, or views from receptors, other than just screening the development.

The LVIA identifies significant landscape and visual effects at the four phases of construction, operation (year 1), operation (year 15), and decommissioning.

- The construction effects appear to be under-estimated in places, including visual impact and the impact of damage or loss of vegetation due to access requirements. However, this has been discussed with the developer team, and additional information on wider highways works and vegetation removal is being investigated to clarify this through the examination process. Recommend limiting vegetation loss along site boundaries for access or sight lines, or along construction access routes as this has the potential to change the character of the local landscape beyond the limits of the development.

- Regarding Cumulative effects (Cumulative landscape and visual effects are those that: "*result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments")*, the LVIA identifies that there will be adverse cumulative effects with those sites identified to be included within the assessment:

    - Only **Minor** effects were identified at construction;
    - **Moderate** effects were identified at operation with the site and West Burton Solar;
    - **Moderate** effects were identified for the combined, West Burton Solar Project, Cottam Solar Project, Tillbridge Solar Farm and the Scheme.

7.5 The cumulative change to the landscape will be considerable, and the combination of two or more sites has the potential to change the local landscape character at a scale that would be "*of more than local significance"* or would be *"in breach of recognised acceptability, legislation, policy or standards*". The cumulative impact of the four adjacent NSIP solar sites has the potential to effect the landscape at a regional scale through predominantly a change in land use: from arable to solar, creating an "energy landscape" as opposed to rural/agricultural one at present. This also has the potential to change the character from an agricultural landscape to that of an "energy" landscape when traveling through the area, and the sequential effects of multiple large scale solar sites, of which some are spread over extensive, fragmented redline boundaries, exacerbating the perception of being surrounded by solar development.

7.6 In view of the conclusions from the Council's assessment of the landscape and visual impact of the development negative impacts have been identified for the site some of which may be mitigated by the production of further evidence but the cumulative impact when combined with the other proposed solar farms in this location is negative which results in a conclusion that the scheme would be contrary to Local Plan Policy S.14 and also the other relevant Landscape Policies outlined above.

8. Highways and Transportation

8.1 Local Policy

- Policy S45: Strategic Infrastructure Requirements

Policy S45 seeks to ensure that (amongst other matters) development proposals do not severely impact on the safety and movement of traffic on the highway network or that any such impacts can be mitigated through appropriate improvements, including the provision of new or improved highway infrastructure.

8.2 The Council as Local Highway Authority for Lincolnshire, has been involved in a number of meetings with the Applicant's design team and consultants during the pre-application stage. The Transport Assessment element of the ES examines the conventional road transportation impacts of the proposed development, both during the construction and the operational phases. Having reviewed the application, the primary impact of this development will be during the construction phase.

8.3 The Council considers that the Transport and Access Chapter is appropriate and provides a reasonable estimate of HGV and car traffic associated with the development during construction and shows that the impact will be within acceptable levels on the highway network. There is also a cumulative assessment which includes the other solar farms proposed in the area, due to their locations different minor roads are used for access, so the cumulative impact is acceptable. The assessment is based on working hours (Winter 08:00-18:00 / Summer 07:00-19:00) which mean workers will travel to/from the site outside peak network hours, this will be covered by the proposed requirement in the Draft DCO. Therefore the project meets the requirements of Policy S45.

9. Public Rights of Way (PROWs)

9.1 Local Policy

- Policy S48: Walking and Cycling Infrastructure
- Policy S54: Health and Wellbeing
- Policy S59: Green and Blue Infrastructure Network.

The theme of the above policies relates to the protection, maintenance, and availability of public rights of way, specifically on the grounds that they provide public access to green/natural spaces as well as provide places for exercise, health, and wellbeing. As the land parcel for the development contains PROWs which will be impacted, these policies are relevant

9.2 There are a number of Public Rights of Way in and around the Order limits and whilst these are to be retained and ongoing access maintained, albeit with some temporary diversion, there would nonetheless be a negative impact to the users of the recreational value of various public rights of way as a result of the development with a change of experience from that of woodland and open fields to a more industrial landscape when travelling through the solar park with its associated infrastructure creating a feeling of enclosure rather than the current open landscape views.

10. Flood Risk, Drainage and Surface Water

10.1 Local Policy

- Policy S21: Flood Risk and Water Resources.

The above policy's relevance is tied to the site's identified areas of flood risk. The theme of the policy regards developments being required to demonstrate:

a) that they are informed by and take account of the best available information from all sources of flood risk and by site specific flood risk assessments where appropriate;
b) that the development does not place itself or existing land or buildings at increased risk of flooding;
c) that the development will be safe during its lifetime taking into account the impacts of climate change and will be resilient to flood risk from all forms of flooding such that in the event of a flood the development could be quickly brought back into use without significant refurbishment;
d) that the development does not affect the integrity of existing flood defences and any necessary flood mitigation measures have been agreed with the relevant bodies, where adoption, ongoing maintenance and management have been considered and any necessary agreements are in place;
e) how proposals have taken a positive approach to reducing overall flood risk and have considered the potential to contribute towards solutions for the wider area; and
f) that they have incorporated Sustainable Drainage Systems (SuDS)/ Integrated Water Management into the proposals unless they can be shown to be inappropriate.

10.2 A Flood Risk Assessment (FRA) has been prepared and submitted as part of the DCO application documentation and the FRA concludes that the majority of the development is proposed outside areas with a risk of flooding and where development is proposed in areas susceptible to flooding there may be a requirement for mitigation measures to ensure no detrimental effect to flooding potential within or from the affected watercourses in the catchment once the scheme is operational.

10.3 The Council, as Lead Local Flood Authority for Lincolnshire concludes that the surface water Flood Risk is appropriately addressed at this outline stage in the ES; and suitable mitigation measures proposed in the CEMP. More detail would be needed on areas of the site which are proposed to be made impermeable and this could be captured by an appropriate requirement. The Draft DCO includes an appropriate requirement to ensure such details are provided.

10.4 In summary, subject to the development being carried out as proposed within the DCO application documents and further details being agreed as part of subsequent DCO Requirements, the Council as Lead Local Flood Authority for Lincolnshire, is of the view that impacts of this proposal would be neutral.

11. Minerals and Waste

11.1 Local Policy

- Policy M2: Providing for an adequate supply of sand and gravel.
- Policy M11: Safeguarding of Mineral resources.
- Policy W1: future Requirements for Waste Sites.

Policy M11 of the LMWLP seeks to protect mineral resources from permanent sterilization by other development. Proposals that are therefore proposed within a mineral safeguarding area must be accompanied by a Minerals Assessment and will only be granted where it can be demonstrated that it would not sterilise a mineral resource. Where this is not the case then proposals will need to demonstrate compliance with a range of criteria.

11.2 It is noted that the vast majority of the Order limits are outside of the Mineral Safeguarding Areas (MSA), designated in the Minerals and Waste Local Plan. A small section of the chosen Grid Connection Corridor is within the sand and gravel MSA, but the relevant section of the application document confirms that "It was also agreed that wherever possible, the route of the Grid Connection Corridor follow existing corridors/linear features (field boundaries), to minimise sterilisation of the MSA for sand and gravel. This has been considered in the final design of the Scheme". This approach aligns with discussions with the applicant

11.3 When considering the nature and characteristics of the proposals, the Council is satisfied that there would be negligible impact in terms of any sterilisation of mineral resources.

11.4 Therefore from a mineral safeguarding perspective the impacts of the proposal are neutral and there are no conflicts with the mineral safeguarding policies.

11.5 In respect of Policy W1 this requires the Council to make provision for sites to meet predicted future capacity gaps for wate arisings. Currently there are no waste facilities to process discarded solar infrastructure as it is replaced during the lifetime of the development and at the decommissioning stage. When combined with the other solar projects in the County that may be granted DCO in the next 12 months this will present an issue that will need additional facilities to ensure these products are sustainably disposed of. Therefore, it will be necessary for a requirement to be imposed on any DCO permitted that requires a waste management strategy to be submitted which demonstrates the expected quantity of solar infrastructure that will be discarded during the operational and decommissioning phases and the arrangements to be put in to ensure adequate facilities are available to sustainably dispose/recycle these items in the future.

12. Cultural Heritage – Archaeology

12.1 Local Policy

- Policy S57: The Historic Environment –to protect potential archaeological assets

Policy S57 relate to the theme of limiting the impact developments will have on heritage assets. Specifically, in relation to this development, it stipulates that:

"Development affecting archaeological remains, whether known or potential, designated or undesignated, should take every practical and reasonable step to protect and, where possible, enhance their significance. Planning applications for such development should be accompanied by an appropriate and proportionate assessment to understand the potential for and significance of remains, and the impact of development upon them."

12.2 The archaeological evaluation work has been satisfactorily completed and the mitigation strategy is agreed, so the proposed requirement in the draft DCO for Archaeology will ensure the fieldwork, report and archive deposition are captured in the mitigation strategy. Therefore, there are no negative impacts identified in respect of archaeology and the requirements of Policy S57 are not compromised by the proposed development.

13. Socio-economics and Land Use

13.1 Local Policy

- Policy S67: Best and Most Versatile(BMV) Agricultural Land

Policy S67 requires proposals to protect the best and most versatile agricultural land so as to protect opportunities for food production and continuance of agricultural

economy. Significant development resulting in the loss of BMV will only be permitted if the criteria of the Policy is met.

13.2 The Council commissioned Landscope to produce a report 'Review of Soils and Agricultural Land Classification for Gate Burton' attached at Appendix B which provides a detailed review of the impact of the proposal on the agricultural land affected by the proposal. Whilst the Council acknowledges that the GBS has been designed to remove fields that predominately comprise ALC Grade 3a, BMV land remains within the application site. The vast majority of the land proposed for the Solar PV site comprises grade 3b. However, at least 20% of the principal site and 50% of the corridor site is Grade 3a land which is classed as BMV. The proposed development is likely to have a cumulative or defined negative impact that will result in the loss of agricultural production in the development area generally and/or the permanent loss of production from mostly medium quality agricultural land.

13.3 The two main land areas of BMV land are either side of the Lincoln to Gainsborough railway.

13.4 Cable route assessment - it is estimated that 50+% of the cable route will be BMV. However, irrespective of the land quality there will be issues of concern to farmers and landowners including:-

- Land drainage
- Weed burden
- Biosecurity for plant diseases
- Timeliness of soil stripping and storage.

These matters will need to be addressed if the scheme is to proceed.

13.5 During the construction phase there will be significant damage to soil structure particularly on heavy clay soils. There is inevitably 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.

13.6 During the construction phase many of the areas will suffer soil and water issues. To address this it is recommended that a requirement is imposed on any DCO granted to ensure a Soil Management Plan, both for the site and the cable route is submitted and approved.

13.7 The loss of any agricultural land can impact upon arable food production with knock-on effects in terms of the associated food production economy and to farm enterprises affected by the development. The Council is of the view that the cumulative negative impacts of the loss of arable agricultural land places pressure on the function of this important part of the local and wider Lincolnshire rural economy as well as raising questions more generally regarding food security and the carbon

footprint impacts as a result of the need to import food due to the consequential changes in land-use. In the case of the GBS whilst the time proposed is for a specified period for a period of 60 years there is an acknowledgement in the application documents that this could be extended beyond the 60 year permission sought. In reality as technology improves the solar infrastructure will be in place for longer than this and therefore the impacts are also much greater as potentially the GBS would result in the permanent loss of the agricultural land and so should not be seen as reversible.

13.8 There are a number of small(er) and several largescale Solar PV schemes in Lincolnshire, with others planned or proposed. There are five known solar project NSIP schemes; specifically in relation to impacts on agricultural land. The situation is a moving picture as new proposals come forward from time to time. Most of these sites are proposed on farmland. Lincolnshire is very much an agricultural area with substantial areas of land within the Best and Most Versatile category. Whilst much of the non BMV land will be Grades 3b, but this is still considered to be 'moderate' and productive land.

13.9 In summary, given the overall scale of the project and the loss of agricultural land, a significant proportion of which is classed as BMV, the Council considers this loss to represent a significant negative impact not only within the local are but also when considered in-combination with the loss of land from other potential NSIP scale solar developments that are also being promoted and considered across the County. 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 locally, and with specific consideration of agricultural land impacts.

13.10 Therefore the Council consider that for the reasons set out above and the more detailed report attached at Appendix B there is a negative impact on BMV which is consequently contrary to the requirements of Policy S67.

14. Fire Safety

14.1 Local Policy

Policy S54: Health and Wellbeing

This policy seeks to ensure that where any potential adverse health impacts are identified the developer will be expected to demonstrate how these will be addressed and mitigated.

14.2 The Council's Director of Public Health is undertaking research into the potential health impacts of large scale solar farms and to identify possible links to the sites of these projects and areas of deprivation. However, this will not be available in time for the submission of the LIR but will be brought to the attention of the Examining Authority if concluded during the examination.

14.3 In addition the potential health impacts and associated pollution from a battery fire in the schemes Battery Energy Storage System needs to be considered in the assessment of the project. Having reviewed the application documents from a Fire Safety perspective the Council is content that the details appear to satisfy the requirements set out in the County Fire Officer standard response to the pre-application stage of the process.

14.4 However, without further specific details, e.g. detailed plans etc. the response is based very much on the details within the application documents and note that a requirement is proposed for details of a fire safety plan to be submitted and approved by the Planning Authority. The Fire Brigade wish to continue to be engaged and views sought during the examination and reserve the right to comment on specific details of the fire strategy including drafting of suitably worded requirements to ensure the correct level of information is available and assessed before any development commences.

14.5 This also includes any requirement for Hazardous Substance Consent for the battery storage facility if this is considered necessary to be included in the Development Consent Order.

14.6 Consequently at this time a neutral response in respect of the requirements of Policy S54 health, well being and pollution is identified which will be reviewed as further information for fire safety measures are provided.

15. Other Topics

15.1 The Council may wish to make further representations as appropriate during the examination and at issue specific hearings relating to matters that are not contained within this LIR. Therefore the comments contained above are provided without prejudice to the future views that may be expressed by the Council in its capacity as an Interested Party in the examination process.

16. Conclusions

16.1 This LIR has undertaken an assessment of the likely issues and impacts that the Council considers will arise from the construction and operation of the GBS. The LIR has identified positive, neutral and negative effects at this stage.

16.2 The GBS by its nature offers positive impacts in terms of the production of clean renewable energy and transition and movement towards Net Zero as well as the potential to deliver significant biodiversity net gain through the creation of

mitigation and enhancements proposed as part of the development. There are some limited economic benefits arising from the potential creation of employment opportunities and increased spend on local services during the construction phase however these would be time-limited and therefore need to be balanced against the negative impacts identified.

16.3 A number of negative impacts, some significant, have been identified at this stage and these can be summarised as follows:

- A permanent and negative impact upon the landscape character and the appearance of the area as a consequence of changes to the current arable agricultural land use. In view of the conclusions from the Council's assessment of the landscape and visual impact of the development negative impacts have been identified for the site some of which may be mitigated by the production of further evidence but the cumulative impact when combined with the other proposed solar farms in this location is negative which results in a conclusion that the scheme would be contrary to Local Plan Policies S5, S14 and S16.
- A permanent and negative impact as a consequence of the loss of agricultural land, a significant proportion of which of which is classed best and most versatile land. This loss is not only significant at a local level but significant when considered in-combination with the loss of land from other NSIP scale solar developments that are also being promoted and considered across Lincolnshire.
- Negative impacts on the users of Public Rights of Way in and around the proposed development as a consequence of changes to the visual appearance of the area and views from these routes.

Appendices

These are listed below and attached at the back of the report	
Appendix 1	Review of Soils and Agricultural Land Classification
Appendix 2	Review of Landscape and Visual Impact

Review of Soils and Agricultural Land Classification Gate Burton Solar Project

Lincs County Council

June 2023

Contents

Review of Soils and ALC Gate Burton Solar Project

1. Instructions to Landscope

Landscope is instructed by Lincolnshire County Council to review and report on the agricultural aspects of Low Carbon's application for a Development Consent Order for an extensive ground mounted solar array and associated infrastructure. The proposed development occupies a total area of 652ha plus connectors and the cable route.

A review of the grading of soils for agricultural land classification compares differences between expected grades and those found in the soils baseline. It is noted that an ALC survey has been undertaken by Land Research Associates (LRA) and this report seeks to clarify the findings and set them in context.

The proposed development is likely to have a cumulative or defined negative impact that will result in the loss of agricultural production in the development area generally and/or the permanent loss of production from mostly medium quality agricultural land.

2. The Site and Proposal

The Proposed Development comprises the installation of solar photovoltaic (PV) generating modules, cabling, and grid connection infrastructure with significant.

The Site is located within the administrative boundary of West Lindsey District, in the county of Lincolnshire. The Site measures approximately 652 hectares (ha) and extends either side of the Lincoln to Gainsborough railway line. The Site boundary is represented in **Appendix 1,** which also shows the findings of the LRA ALC report.

3. Geology and Soils

Geology
The geology of the area is shown on a British Geological Map reproduced in part (**Appendix 2**) for reference. The land is primarily shown as the Scunthorpe Mudstone Formation, a heavy clay-based mudstone and various smaller areas of drift, glaciofluvial deposits and diamicton.

Soils
According to available published data, local knowledge and the national soil map indicates that the area predominates with two main soil types (**Appendix 3**). In the majority is Wickham 2 (711f) with a smaller area of Dunnington Heath (572g)

These two soils are significantly different; with Wickham 2 described as slowly permeable seasonally waterlogged fine loam over clayey soils, or fine silty over clayey soils. Dunnington Heath is described as reddish coarse and fine loamy soils over clays, but also with slowly permeable subsoils and slight seasonal waterlogging. **Appendix 4** sets out a description of each of these two soil associations from Cranfield University.

The ALC survey undertaken has revealed three main soil types across the site; sandy soils, loamy over slowly permeable soils and heavy slowly permeable soils. A soil map is included within the ALC report and this broadly confirms the national soils map picture.

4. Agricultural Land Classification

The ALC should identify where BMV land is identified and the scheme should seek to protect and minimise damage to higher grade land wherever possible in line with national planning policy. There is undoubtedly BMV land in this general vicinity and only a full ALC will identify where it is and what the Grade and quality is. Laboratory analysis of representative samples should be used to determine textures, particularly where ALC findings differ significantly from expected or provisional results.

Land Research Associates (LRA) have undertaken an ALC over the whole area. Some small areas were not surveyed, but these are not in themselves likely to change the overall scale of BMV. The survey was at a reduced scale from the 1 borehole per hectare recommended in TIN049 and the report surveyed the land at approximately 1 borehole per 2 hectares.

The majority of the site is shown as Grade 3 on the provisional ALC maps of the area. **Appendix 5** shows the approximate location of the 2 main land areas either side of the Lincoln to Gainsborough railway, in relation to land grades. **Appendix 5** includes the map of predicted Best and Most Versatile (BMV) land indicated the area is expected to have only a medium (20-60%) chance of the presence of BMV.

It is normally expected that the ALC survey be undertaken in line with the MAFF 1988 guidelines and TIN049. These documents set out the precise methodology by which the ALC survey should be undertaken, with auger bore sampling at 1 hectare intervals and a suitable number of soil pits dug to determine the precise nature of the soil(s).

However, in this case it appears that Natural England have accepted the methodology on the basis that the expected level of BMV is only moderate. The findings of the ALC report essentially identify over 80% of the site as Grade 3b. The majority of any BMV land is shown to be Grade 3a.

5. Cable Route; Soil and ALC Assessment

LRA included an additional report estimating the land grades of the cable route as an appendix to the ALC report. They conclude that:-

> *The cable route is likely to comprise a combination of BMV and poorer agricultural quality land. Land formed on sand and gravel and recorded as Blackwood Association will likely give land of best and most versatile quality, (grade 2 and subgrade 3a). Land formed in alluvial deposits and in the mudstone geology will typically give heavy slowly permeable soils of poorer subgrade 3b agricultural quality.*

From viewing the maps included in the report it seems likely that 50+% of the cable route will be BMV. However, irrespective of the land quality there will be issues of concern to farmers and landowners including:-

- Land drainage
- Weed burden
- Biosecurity for plant diseases
- Timeliness of soil stripping and storage

These matters will need to be addressed if the scheme is to proceed.

6. Soil Damage During Construction

Soil structure can be significantly damaged during the construction phase of the process, particularly on heavy clay soils. There is inevitably 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.

During the construction phase many of the areas will affect soil and water issues. **Appendix 6** sets out a basic Soil Management Plan that should be established as part of the Construction Phase, to minimise the impact on soil resources. The following headings should be included in the Soil Management Plan, both for the site and the cable route.

- Site preparation;
- Import of construction materials, plant and equipment to Site;
- Establishment of Site construction compounds and welfare facilities;
- Cable installation;
- Temporary construction compounds;
- Trenching in sections
- Upgrading existing tracks and construction of new access roads within the Site;
- The upgrade or construction of crossing points (bridges /culverts) at drainage ditches within the Site;
- Appropriate storage and capping of soil;
- Appropriate construction drainage;
- Sectionalised approach of duct installation;
- Excavation and installation of jointing pits;
- Cable pulling;
- Testing and commissioning; and
- Site reinstatement (i.e. returning any land used during construction, for temporary purposes, back to its previous condition).
- Use of borrow pits

Appendix 7 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 ploughing and subsoiling become difficult.

7. Cumulative Impacts including County Wide ALC

There are a number of small(er) and several largescale Solar PV schemes in Lincolnshire, with others planned or proposed. There are five known solar project NSIP schemes; specifically in relation to impacts on agricultural land. The situation is a moving picture as new proposals come forward from time to time. Most of these sites are proposed on farmland. Lincolnshire is very much an agricultural area with substantial areas of land within the Best and Most Versatile category. Much of the non BMV land will be Grades 3b, still considered to be 'moderate' and productive land.

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 locally, and with specific consideration of agricultural land impacts.

For a project of this scale where the proposal will tie up the land for up to 40 years, there will be some significant impact. The area is large locally and although the quantities of BMV are relatively low the impact will still be moderately significant.

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 or County level, even though the use is 'temporary'. Any permanent loss of land due either to construction or through biodiversity designation may affect this assessment further.

8. Limitations of the ALC

a) Predictive versus Actual ALC

As set out above the ALC report is not fully in line with the MAFF 1988 guidance, which recommends auger borings at 1 hectare intervals, and soil pits dug in representative soils types. The report is more in line with a reconnaissance survey.

However, the results are not out of keeping with the expected finding given that the provisional map is showing Grade 3 land and the Predictive BMV map suggest only moderate amounts of BMV. The actual BMV findings are less than the expected findings, but this still falls within the normal range.

b) Farming Circumstance and Impact on Land Holdings

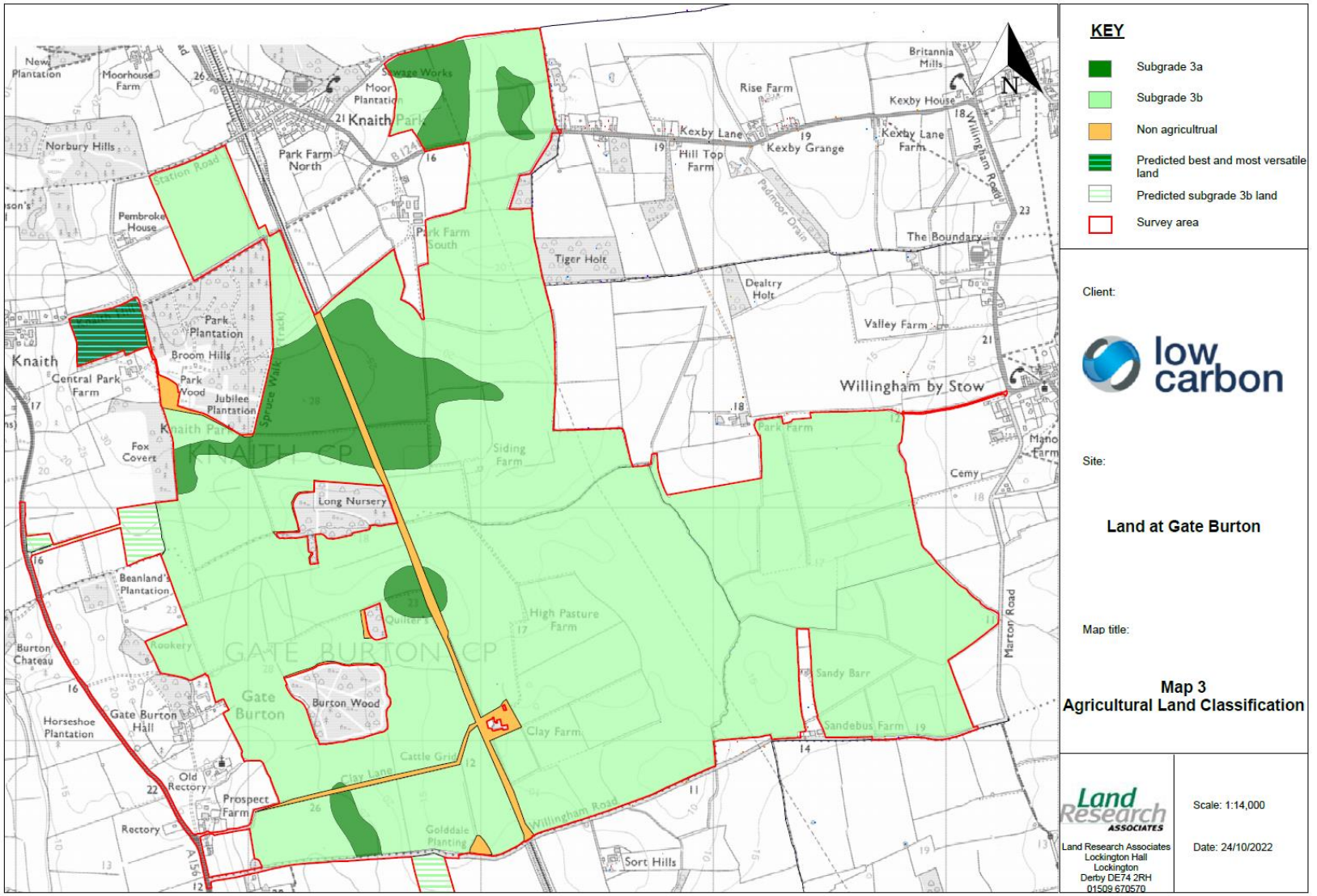
There is no mention of the impact on farm holdings or land structures affected by the proposal. From local knowledge there are 4 main landowners, or occupiers, but the report does not outline the impact on any of these occupiers or the nature of the tenure of their holdings.

In considering the impact on the overall farming enterprises both locally and across the District or County, it may be necessary to seek additional information on the impact on the individual farms themselves. This might include the loss of agri-environmental schemes, miscanthus production, as well as the more normal range of mainly arable crops and income. There should be some discussion about the impact on farm viability and profitability following the implementation of the proposed scheme.

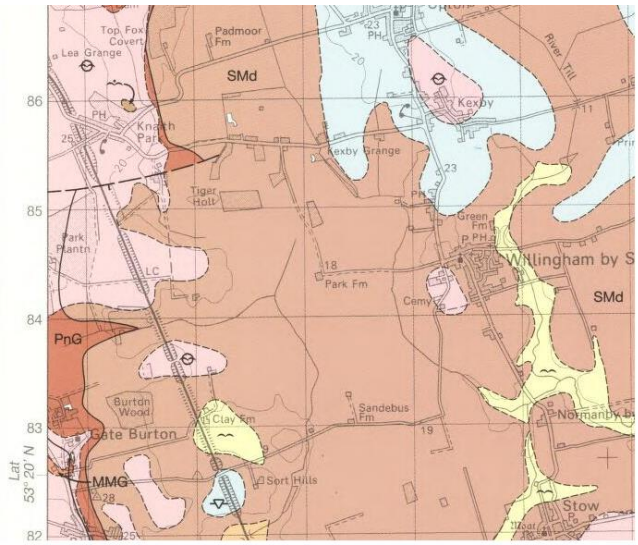
Biographical

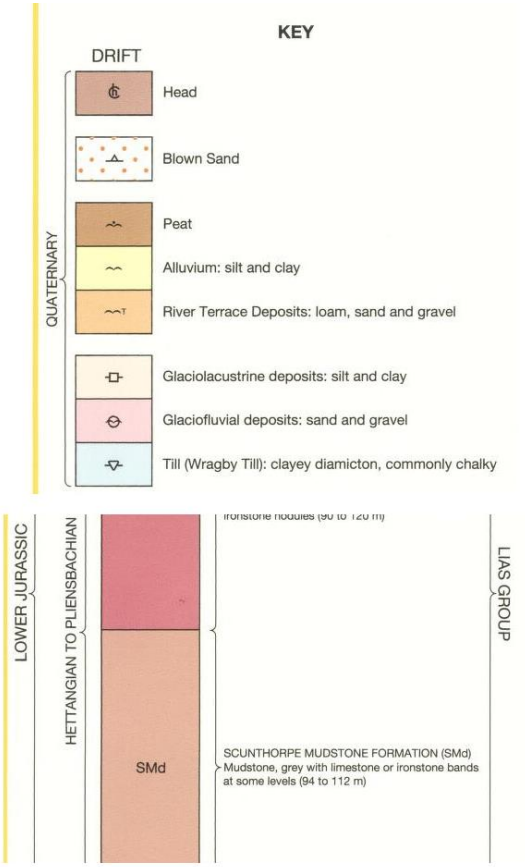
Sam Franklin BSc (Hons) MSc MISoilSci PIEMA FBIAC
A Panel Member of the Agricultural and Land Drainage Tribunal

- Sam is a Member of the Institute of Professional Soil Scientists and a Life Member of the British Society of Soil Science. He undertakes soil survey and land management work for private clients, developers, local authorities and government agencies and has worked on soil restoration, flood risk, drainage and land improvement projects, as well as Agricultural Land Classification for roads, development sites, renewable energy projects and EIA. He has been a Professional Associate of the Institute of Environmental Assessment, since 2001.
- He has an MSc from Cranfield University, attending Cranfield advanced training in Soil Matters, Land Evaluation, Soil & Water: Principles and Management in Production Systems and soil science courses of IPSS and Lancaster University. He has given talks, demonstrations and on-farm advice on ALC, soil and water management, land drainage, rainwater harvesting and soil husbandry. Sam has worked overseas in dryland climates and is familiar with land drainage, irrigation scheduling and reservoir design.
- He is from a family farm and has a BSc (Hons) in Agriculture from Newcastle University and considerable practical, farm-based agricultural, horticultural and soils management experience gained on mixed, livestock, horticultural and arable units and international work. Sam is a Fellow of the British Institute of Agricultural Consultants (FBIAC) and holds the Royal Horticultural Society Certificate in Horticulture.
- As a qualified chartered surveyor (MRICS, FAAV) and agricultural consultant he has over 35 years of experience across a wide range of property matters including both commercial and housing planning projects, compulsory purchase, new roads, pipelines and rail projects, development land, farming, property management, renewable energy, minerals, land restoration, archaeological surveys, and EIA.
- Sam has been managing director of a surveying and rural planning business since 2001 (www.landscope.co.uk). Previous employment includes five years at the RSPB, work for other environmental and conservation organisations, regarding landscape restoration & management, habitat creation, minerals restoration and woodland management; all requiring detailed soils, water and environmental knowledge.
- He has undertaken soil and water management, soil husbandry and Catchment Sensitive Farming work for Natural England and since 2003 has given regular rural planning consultancy advice to Local Planning Authorities, mainly across southern, eastern and midland England; acting as agricultural, equestrian and rural resource expert, regularly attending planning committees, public inquiries, hearings, NSIP and examinations in public.

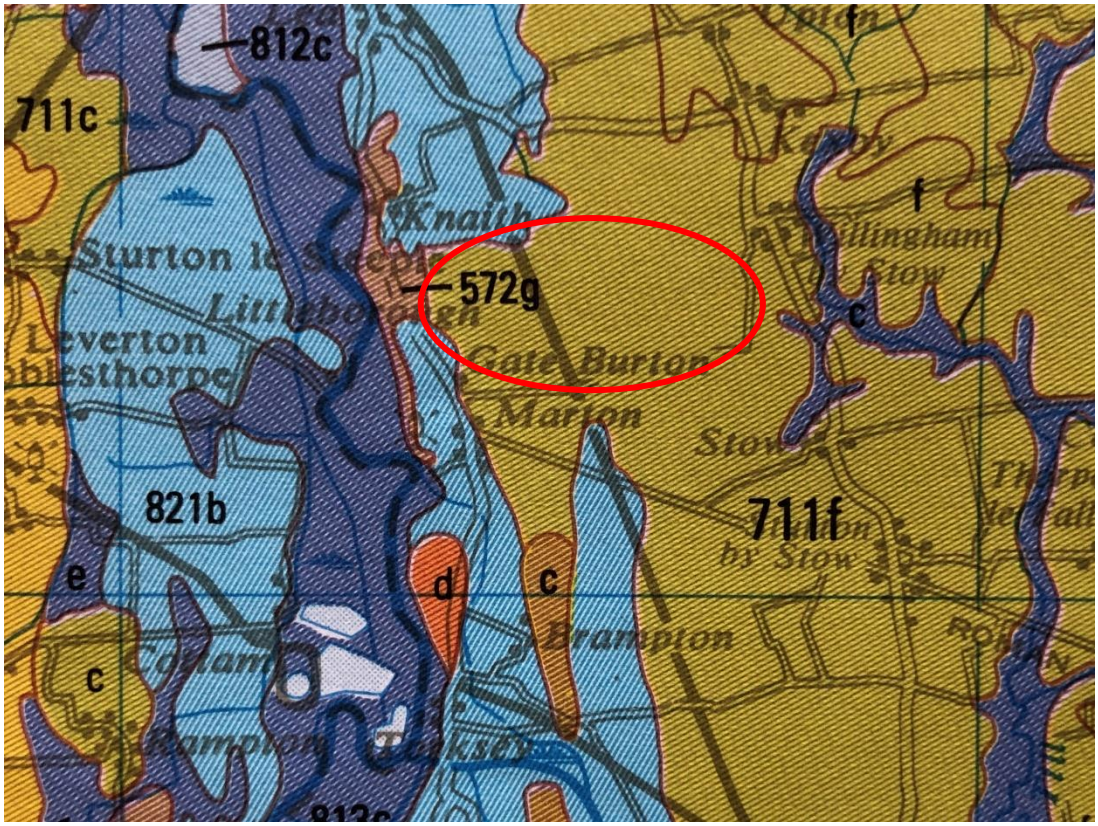

KEY
Subgrade 3a
Subgrade 3b
Non agricultrual
Predicted best and most versatile land
Predicted subgrade 3b land
Survey area
Client:
low carbon
Site:
Land at Gate Burton
Map title:
Map 3
Agricultural Land Classification
Land Research Associates
Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570
Scale: 1:14,000
Date: 24/10/2022
N
Knaith
Willingham by Stow
GATE BURTON CP
KNAITH CP
Gate Burton
Park Farm North
Park Farm South
Hill Top Farm
Kexby Grange
Kexby Lane Farm
Kexby House
Rise Farm
Britannia Mills
Tiger Holt
Dealtry Holt
Valley Farm
The Boundary
Willingham Road
Padmoor Drain
Moorhouse Farm
Moor Plantation
Norbury Hills
Pembroke House
Park Plantation
Broom Hills
Park Wood
Jubilee Plantation
Central Park Farm
Fox Covert
Spruce Walk
Station Road
Siding Farm
Long Nursery
High Pasture Farm
Clay Farm
Clay Lane
Cattle Grid
Burton Wood
Gate Burton Hall
Horseshoe Plantation
Burton Chateau
Beanland's Plantation
Rookery
Old Rectory
Prospect Farm
Rectory
Golddale Planting
Sort Hills
Sandy Barr
Sandebus Farm
Marton Road
Cemy
Mano Farm
Park Farm
Swage Works

Appendix 2





Appendix 3



0711f WICKHAM 2

Detailed Description

This association is extensive where thin loamy drift covers Jurassic and Cretaceous clay shales. It consists mainly of fine loamy over clayey typical stagnogley soils of the Wickham series but, where drift is absent, clayey soils of the Denchworth series are common. The better-drained stagnogleyic argillic brown earths of the Oxpasture series and calcareous clayey soils of the Evesham series, are sporadically distributed. There are many small inclusions of other soils; these are described below and are listed in the key.

The association covers approximately 320 km² mainly in valleys but also on plateaux of Middle and Upper Jurassic rocks in east Leicestershire where Wickham soils have a larger than average silt content. Narrow alluvial flats along many valleys carry clayey, wet Fladbury soils and in south Leicestershire there are calcareous St Lawrence series. Clayey Holdenby and Lawford soils are associated with patches of clayey drift. On the Rhaetic and Lower Lias sediments in east Worcestershire where the country rock is more calcareous than elsewhere, Evesham and Haselor soils and the former Wedmore series are important associates.

This association covers 545 km² in Eastern England mainly in Lincolnshire and Northamptonshire but also in west Norfolk. In Lincolnshire it is mainly in the Lias Clay vale between Lincoln and Newark where the Trent river terrace deposits are a source for the superficial loamy drift. Patches of sand and gravel give small inclusions of Quorndon soils, and some coarse loamy over clayey soils of the Kings Newton series occur on the edge of the river terraces. Oxpasture soils become increasingly common towards the limestone scarp of Lincoln Edge, and small patches of Beccles soils are included where the association abuts chalky till. Evesham soils are uncommon in the Lias vale and are found mainly in south-west Lincolnshire. However, Oxpasture and Evesham soils are more common on Upper Jurassic and Cretaceous rocks bordering the Fens. The association also occurs in the Ancholme valley north of Lincoln; north-east and east of Lincoln on slopes of narrow valleys cut into chalky till; on the western edge of the Wolds; and in the deeply dissected valleys of the southern Wolds. In Northamptonshire the association occurs both in narrow valleys cut into the clay shales and on the plateaux formed by Upper Jurassic rocks. Here in the valleys, Evesham soils are less frequent than elsewhere and in general the soils on the hilltops are siltier than those in the vales, and Oxpasture soils are common. Quorndon soils are a common inclusion in west Norfolk on flat or gently sloping land at the foot of the chalk scarp. Here Oxpasture soils are not found.

In the South West, the proportion of Wickham and Denchworth soils is greater than in the Midlands. Lawford profiles are common in places, but Evesham and Oxpasture soils are relatively rare. The association, which covers about 300 km², occurs mainly in the wide vales of Gloucestershire, Wiltshire, Somerset and Dorset on Jurassic and Gault Clays. It also occurs on the Oligocene clays of the Bovey and Petrockstow basins, where Wickham and clayey Teigngrace soils occupy two-thirds of the mapped area and the ancillary soils mainly belong to the Ipstones and Brickfield series. There is also some disturbed ground and waste heaps from ball clay working. Small patches of Oak and Hornbeam soils are included on the gravels that cap small knolls in Dorset and south Somerset, and in north Wiltshire where the gravels contain flint and sarsen stone derived from the chalk outcrop to the south.

In South East England the association occurs on low ground in Oxfordshire and Buckinghamshire, over Lower Lias, Oxford, Kimmeridge and Gault Clays. On the Lias, it is present on the lower slopes of valleys, particularly along the Cherwell, below ridges capped by Middle Lias ironstone or Great Oolite limestone. Elsewhere the association occurs below the Corallian scarp and at the margins of river terraces. Oxpasture soils feature only occasionally, and Evesham soils are restricted to river terrace bluffs and to ground near the Corallian scarp. Some Kings Newton soils have been recorded on the terrace drifts and near the Upper Greensand outcrop. Where the drift is clayey, Lawford soils occur. Rowsham soils have been recorded in the Tiddington area.

In Northern England the association covers 45 km², principally in the Howardian Hills of North Yorkshire. Here it occurs on plateau sites where thin drift from weathered sandstone and siltstones covers clay shale. In Humberside, small areas near Brigg, in valley drift, and near Kirton-in¬Lindsey, on Head below the Lincolnshire Limestone escarpment, have fewer clayey inclusions than elsewhere.

Soil Water Regime

Occurring mainly on level or gently sloping sites, these soils which have slowly permeable subsoils are seasonally waterlogged (Wetness Class III and IV). Wickham, Evesham and Oxpasture soils respond well to artificial drainage hut, because of their poor hydraulic conductivity, the Denchworth and Lawford series are more difficult to drain effectively. When the soils are waterlogged, excess water moves laterally mostly as surface run-off.

In the South West of England having slowly permeable subsoils and sited mainly on level or near-level ground the soils are waterlogged for prolonged periods during the growing season (Wetness Class V) where average annual rainfall exceeds 800 mm. In drier districts like north Gloucestershire, waterlogging is generally confined to winter (Wetness Class III).

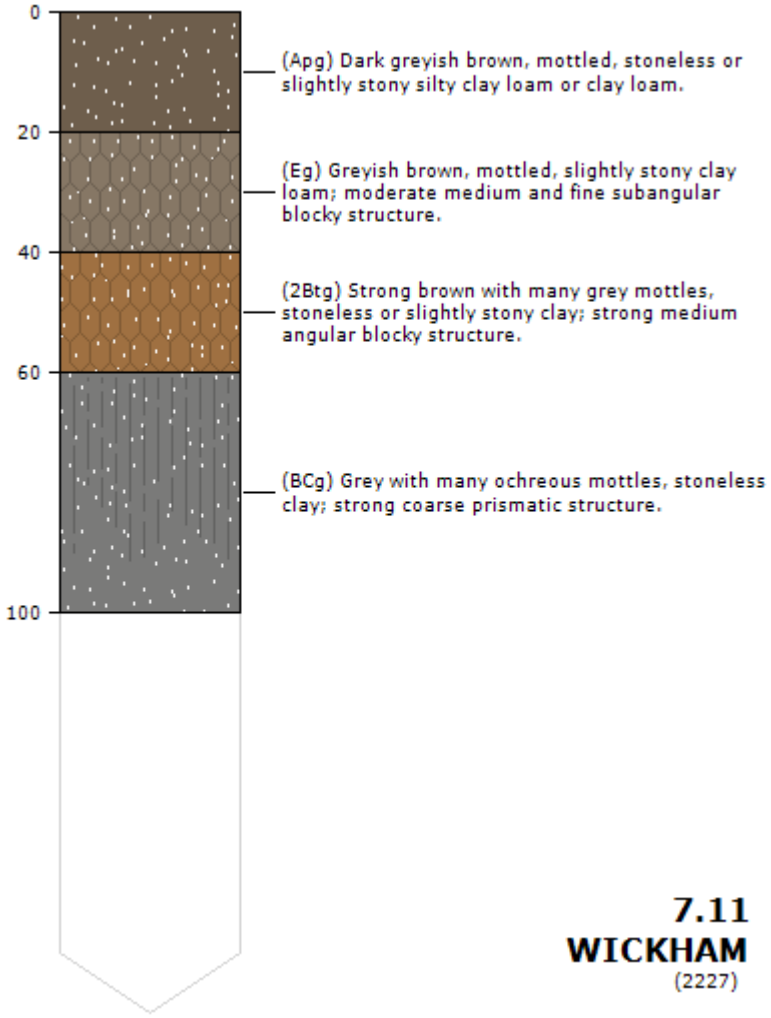
Cropping and Land Use

Over much of this association the land is used for cereals and ley grassland. Oilseed rape has expanded recently and provides an alternative break crop to ley grassland. There is little opportunity for spring cultivation so almost all cereals are autumn-sown. Cereal yields may be reduced by slight droughtiness. Soil structure is easily damaged if the soils are cultivated when wet and careful timing of field operations is critical. Grass yields are restricted by drought and the grazing period is limited during spring and autumn because of a risk of poaching. Wickham and Denchworth soils are acid in reaction but, Evesham and Haselor soils are neutral or slightly alkaline. In wetter districts most of the soils are under long-term grassland with small areas of autumn sown cereals. The grass yields are potentially large, and most of the soils are only slightly droughty though the grazing season is shortened because of the risk of poaching. In the wettest places, the maximum safe grazing period is as little as 100 days. Where the average annual rainfall is below 750 mm ley-arable farming is more usual. Where cultivated, the soils suffer from compaction and structural damage by machinery and the timing of cultivations is critical. Phosphorus levels are naturally low, but potassium is adequate for most plant needs.

7.11 WICKHAM Definition

Major soil group:	07 surface-water gley soils	Seasonally waterlogged slowly permeable soils, formed above 3 m 0.D. and prominently mottled above 40 cm depth. They have no relatively permeable material starting within and extending below 1 m of the surface.
Soil Group:	1 stagnogley soils	With a distinct topsoil. They are found mainly in lowland Britain.
Soil Subgroup:	1 typical stagnogley soils	(with ordinary clay enriched subsoil)
Soil Series:		medium loamy or medium silty drift over clayey material passing to clay or soft mudstone

Brief Profile Description



0572g DUNNINGTON HEATH

Detailed Description

Stagnogleyic argillic brown earths of the Dunnington Heath and Whimple series occur on Triassic mudstone where it is covered by thin loamy Head or glaciofluvial drift. Dunnington Heath soils are found on gently sloping or level lower slopes where brown coarse loamy upper horizons containing quartzite pebbles pass abruptly but at irregular depth into a reddish brown clayey and slowly permeable subsoil. Whimple soils otherwise similar, but with fine loamy upper horizons, are randomly mixed with Dunnington Heath soils on gentle slopes but are dominant on moderate slopes. Whimple soils often merge upslope into clayey reddish Worcester series.

The Dunnington Heath association is extensive on the west-facing slopes of the Soar valley north of Loughborough and south of the Trent between Kingston on Soar and East Bridgford. There are minor occurrences in south Derbyshire, eastern Nottinghamshire and near Leamington Spa. In total the association covers almost 125 km² of land. Most delineations include small patches of deep coarse loamy drift carrying Wick and Arrow soils, and some, south of Nottingham, contain small patches of till with Flint or Salwick soils. In places, particularly between East Bridgford and Cotgrave, some of the drift is derived from thin sandstone skerries within the mudstones. Bromsgrove and Staunton soils occur occasionally on these sandstones. Brockhurst series, often occurs in valley bottoms and other low places, sometimes adjacent to narrow strips of alluvial Fladbury and Compton soils.

The association covers about 3 km² of land near Knaith, south of Gainsborough and near Newton on Trent in Lincolnshire. Here Dunnington Heath series is dominant but Whimple soils cover between a third and a half of the ground. Soils similar to Dunnington Heath series but overlying greenish mudstone also occur. There are minor inclusions of Ollerton and Newport series on deep patches of sand.

The association only occurs on 5 km² of land near Epworth in the Isle of Axholme and at Holme on Spalding Moor. Near Epworth it is on gently sloping ground adjoining blown sand and consists mainly of the Dunnington Heath series along with Whimple soils and the Wick and Newport series. At Holme-on-Spalding-Moor the association occurs on a steep-sided hill with a capping of glacial sand and gravel and with blown sand at its base. Here the association is formed equally of the Worcester, Dunnington Heath and Newport series with a few profiles of the Kexby and Everingham series at the bottom of the hill.

Soil Water Regime

In Whimple and Dunnington Heath soils, upper horizons are relatively permeable but drainage is impeded by slowly permeable subsoils, causing temporary winter waterlogging. On level or concave sites, or where the clay subsoils are close to the surface, the soils are seasonally waterlogged (Wetness Class III), but elsewhere and where the loamy horizons are thicker, they are only occasionally waterlogged (Wetness Class II). Both soils, particularly Dunnington Heath series, respond to drainage which reduces the duration of winter waterlogging substantially. These soils can accept excess winter rain and delay run-off during wet periods.

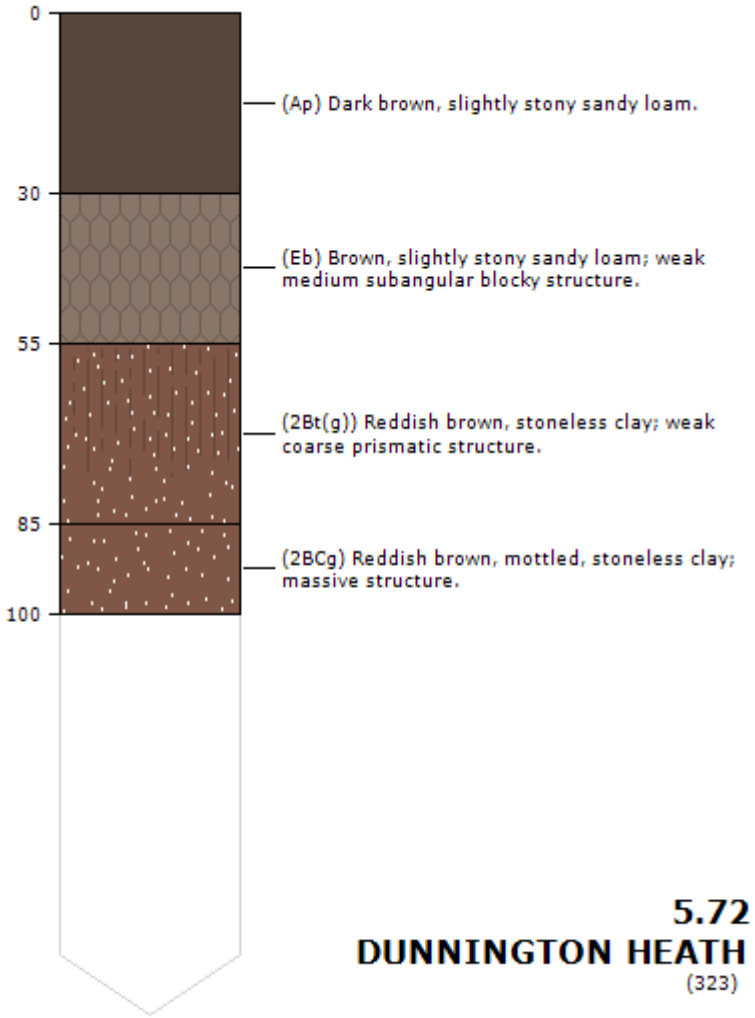
Cropping and Land Use

Climate and soil characteristics combine to give the Dunnington Heath association flexibility in use and a wide range of crops, but mainly cereals, is grown. Both Dunnington Heath and Whimple soils have adequate opportunity for spring field work in all but wet years so root crops can be sown, and the late return to field capacity permits the harvesting of root crops with risk of soil structural damage only on the heavier Whimple soils. Available water capacities, ranging from 110 to 150 mm, fall slightly short of arable crop water needs. Irrigation of drought sensitive crops such as potatoes is therefore desirable for maximum yields. The soils are slightly droughty for all crops and moderately droughty for grass. Both Whimple and Dunnington Heath soils are suitable for direct drilling of winter cereals but are less suited for spring sowings. Periodic liming is required to maintain pH; potassium and phosphorus status depends on past fertilizer practice though phosphorus is usually retained in a readily available form. Manganese deficiency occurs locally associated with poor physical conditions or high organic matter content.

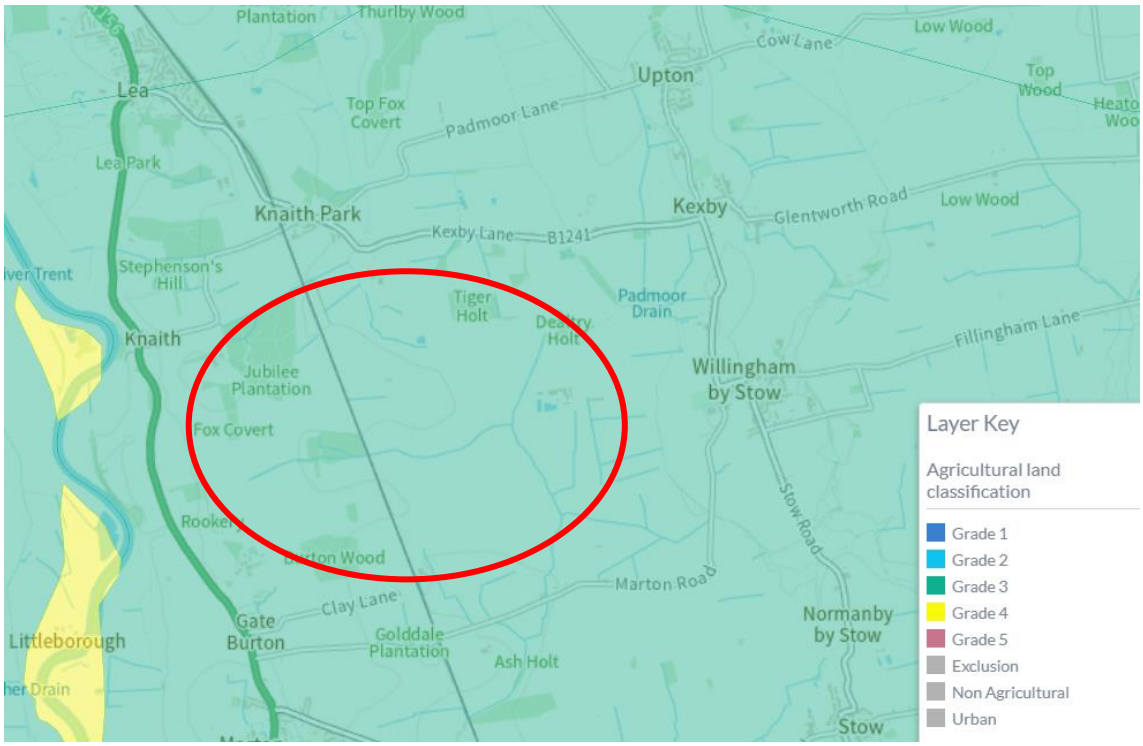
Definition

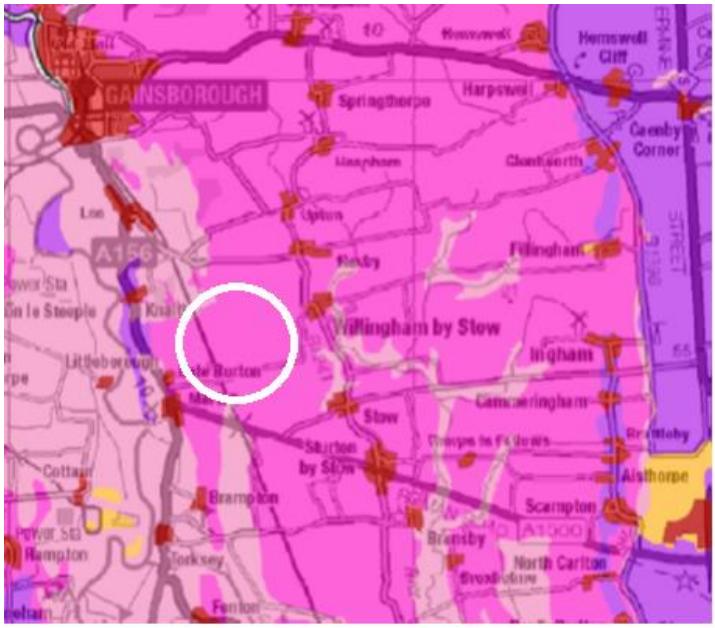
Major soil group:	05 brown soils	With dominantly brownish or reddish subsoils and no prominent mottling or greyish colours (gleying) above 40 cm depth. They are developed mainly on permeable materials at elevations below about 300 m.0.D. Most are in agricultural use.
Soil Group:	7 argillic brown earths	Loamy or clayey with an ordinary clay-enriched subsoil.
Soil Subgroup:	2 stagnogleyic argillic brown earths	(faintly mottled with slowly permeable subsoil)
Soil Series:		light loamy drift over reddish clayey material passing to clay or soft mudstone

Brief Profile Description



5.72
DUNNINGTON HEATH
(323)





Predictive BMV Land Assesment © Defra

- High likelihood of BMV land (>60% area bmv)
- Moderate likelihood of BMV land (20 - 60% area bmv)
- Low likelihood of BMV land (<= 20% area bmv)
- Non-agricultural use
- Urban / Industrial

Soil Management Plan (Outline)

1. The soil stripping, handling, storage and replacement operations should be undertaken in a manner that is consistent with suitable specification and methodology set out in a Soil Management Plan.
2. All topsoil and subsoil material shall be stripped from areas affected by top soil storage bunds, subsoil storage bunds, general fill bunds, hard-standings and other constructions including temporary access roads and vehicle trafficking routes, and shall be stored separately in bunds from any imported material and shall be used for the restoration of the temporary soil storage site unless otherwise agreed in writing by the Local Planning Authority.
3. Soils should be stripped, stored and replaced in line with the MAFF Good Practice Guide for Handling Soils Sheets 1, 2, 3 and 4 - http://webarchive.nationalarchives.gov.uk/20090306103114/http:/www.defra.gov.uk/farm/environment/land-use/soilguid/index.htm .
4. Topsoil and subsoil storage bunds should be placed in approved locations and constructed to ensure secure storage without damage, loss or contamination.
5. Topsoil and subsoil should be stored in bunds not exceeding 3m in height above adjacent existing ground level and shall be constructed and shaped by excavator only (dump trucks should not traffic across the bunds at any time).
6. Imported general fill material should be stored in bunds not exceeding 4m in height above adjacent existing ground level.
7. Bunds should be seeded to grass at the earliest opportunity and shall not be allowed to over-winter without grass cover.
8. No topsoil or subsoil should be sold or otherwise removed from the site.
9. Within 3 months of their construction, the Developer should provide a detailed plan of soil storage bunds showing details of position, volume and soil type. The Developer shall be responsible for maintaining an up-to-date record of all soil storage and general fill bunds throughout the life of the site.
10. The stripping, movement and re-spreading of topsoil and subsoil material should only be undertaken when the topsoil and subsoil material is in a dry and friable condition and the ground is sufficiently dry to allow the passage of heavy machinery and vehicles over it without damage to the soils.
11. All injurious weeds, as defined by the Weeds Act 1959, growing within the working site should be eradicated or adequately controlled by approved method.
12. All vegetation growing on soil storage bunds and peripheral areas within the site should be kept in tidy condition by cutting at least once during the growing season.
13. The boundary of the development should be made stock proof for the duration of the temporary development.
14. All temporary plant, machinery, buildings, fixed equipment, roads and areas of hard standing including site compounds should be removed.
15. The natural subsoil base material should be comprehensively ripped to a minimum depth of 500mm to break up surface compaction before any soil material is spread. The developer should give the Planning Authority notice of an intention to carry out this operation. All large stones and boulders, wire rope and other foreign material arising should be removed. Special attention should be given to areas of excessive compaction such as haul roads where deeper ripping may be necessary.
16. The Developer should be responsible for providing all necessary training of operatives and site supervision by suitably qualified personnel to ensure that the soil replacement operation is carried out in the approved manner.
17. Prior to the commencement of spreading soil, all stones, boulders or foreign objects likely to impede normal agricultural cultivations should be removed from that area.
18. The soil material set aside for use in any agricultural restoration should be spread uniformly in the correct sequence (subsoil followed by topsoil) over the ripped base material, and should be rooted and

scarified to full depth without causing mixing between different soil layers. The reinstated agricultural soil profile should be total 450mm thickness overlying prepared and free draining natural stony base material, and should consist of 250mm topsoil and 200mm subsoil derived from the soil stripping operation. This soil profile should meet the technical requirements of the identified Agricultural Land Classification Grade on restoration.

19. All base material ripping, soil spreading and cultivation operations should be carried out in such a manner as to minimise compaction and achieve unimpeded drainage down through the soil profile.
20. Any part of the site restored for agricultural purposes which is affected by localised settlement that adversely affects the agricultural after use should be re-graded including the re-construction of the soil profile to approved specification.
21. Following restoration of the soil materials, the land will be cultivated, seeded and managed appropriately for a minimum of a year and until agreed with the Local Planning Authority that the land meets satisfactory requirements.

Conditions during construction

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Conditions as construction proceeds

Commencement

Mid construction

Near completion