Planning Application 23/03875/APP by Statera Energy (the Applicant)

Development of a battery energy storage system (BESS), connected directly to the national Grid with associated infrastructure including access, drainage and landscaping.

Rookery Farm, Granborough, Buckinghamshire, MK18 3NJ

Consultation Response by East Claydon Parish Council

Clerk to East Claydon Parish Council
1 Darley's Close
Grendon Underwood
Aylesbury
Buckinghamshire
HP18 0SE
Email: parishclerk@theclaydons.org
Tel. 01296 77056

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Introduction

The natural reaction of any community to a proposed development, whatever the scale, is to resist change unless it satisfies some widely-held desire for change. This is especially so for local communities in East & Botolph Claydon, Granborough, Hogshaw and Winslow which have been so severely affected by other developments, such as HS2 and EWR over protracted periods. These have resulted in serious damage to local infrastructure which, it seems, will never be fully reinstated and communities are left with a degraded environment.

Buckinghamshire Council has declared a Climate Emergency. The need for sustainable means of energy generation and management is understood. Against that background, the location of the East Claydon National Grid Sub-Station has made it a focus for the speculative development of solar energy and battery storage installations. We are aware of at least five such schemes of varying scale proposed for the immediate area which, were they to proceed, would consume at least 1,035 ha (2,556 acres) of farmland. Numerous other schemes, principally solar energy installations, are planned or in development in the surrounding areas (https://www.nationalgrideso.com/data-portal/transmission-entry-capacity-tec-register/tec_register).

The need for measures to increase truly sustainable energy production and increase grid capacity is undeniable, but this does not mean that individual schemes, purported to be 'green', should not be viewed critically.

The villages located in the area surrounding these proposed developments have evolved around a rural economy, based principally on agriculture and associated activities. Centuries of agricultural activity have shaped and defined the landscape. Botolph Claydon is home to a company of national importance, serving medicine and biomedical research, that is reliant on large area of farmland for its very existence. The proposed developments, both individually and collectively, would have far-reaching and irrevocable implications for local communities, for the rural economy and the living landscape.

A common feature of the applications seen to date is that they seek to underestimate the scale of impact on the environment in its widest sense. In many cases, including the present application, this reflects undue reliance on desktop analyses of baseline conditions and a failure to consult local expertise to establish the true characteristics of the area.

Setting aside any natural resistance to change, we have sought to restrict our comments to matters relevant to the planning process. We consider real, practical issues which have important implications as to the feasibility of the proposal, its green credentials and the impact on local populations and the visual and living landscape, both from the Applicant's perspective as well as that of the local communities.

We are grateful to Statera Energy for the opportunity to visit one of their operational BESS sites (Minety, Wiltshire; 100 MW). Although a much smaller scale site than that proposed, it provided us with a better understanding of the nature of the development and its operation.

Comments are arranged along the lines of the eleven volumes of the Environmental Statement (ES). Numbered paragraphs refer to the location in the Applicant's document. Text in italics has been transposed from the Applicant's documents to facilitate cross-reference.

We conclude that the case for transforming a rural, agricultural site in open countryside into an industrial development of this nature and scale is not made. We strongly object to the proposal.

Summary

We recognise the potential value of energy storage systems to facilitate the balancing of the National Grid in terms of supply and demand. However, we are not convinced that the Applicant has made a case for selection of the proposed site or the scale of the development with the intended battery storage technology. Our reasons for this include:

Site selection

- Although the proximity of a NG sub-station is convenient for the Applicant, the case for constructing an industrial development on this scale in a rural setting is not made.
- Other developments show that close proximity to a NG sub-station is not an absolute requirement.
- The development would be more appropriately located on a brownfield site with better access for emergency services and the opportunity to improve efficiencies through heat recovery systems.
- The case for energy storage on this scale (3,500 MWh) appears to be based purely on commercial arguments.
- The National Grid's stated requirements for BESS units has been exceeded already with planned and approved installations.
- Despite claims that the installation would be 'temporary' (40 years), the Applicant makes a number of statements suggesting that this would not be the case.
- There is little comment on plans for decommissioning, who would be responsible, the extent of restoration to agriculture, the associated GHG emissions, haul routes and recycling of materials.

Reliability of data

- There are numerous inconsistencies and contradictory statements, (both qualitative and quantitative), across the documents in the Applicant's submission, casting doubt on the integrity of their conclusions.
- Over-reliance on desktop analyses results in failure to understand real world conditions.
- The cumulative impacts of other local infrastructure developments, planned or approved, have not been addressed adequately.
- Ecology and habitat surveys are incomplete.

Noise and vibration

- The impact of noise during construction, operation and decommissioning has not been adequately assessed.

Safety

- The risk of thermal runaway in a facility of this magnitude is high.
- We have serious concerns over safety, especially with regard to control of fire, thermal runaway and the release of toxic gases into the environment.
- We are concerned that insufficient thought has been given to the accessibility of the site and emergency services response times in the event of a major incident.
- The safety of cyclists, pedestrians and equestrians on rural roads has not been addressed.
- The safety of livestock and wildlife has not been considered.

Planning policies

- We do not agree with the Applicant's assertion that the conditions of planning policies S1, BE1, BE3, NE1, NE2, NE4, Ne5, C3, C4, I1, and I4 have been met.
- The Applicant has acknowledged that the NPPF now includes additional wording as follows: *"The availability of agricultural land used for food production should be considered, alongside the other policies in this Framework, when deciding what sites are most appropriate for development".* However, this does not feature in the Applicant's analysis of the environmental impact of the proposals.

Ecology and habitats

- Surveys undertaken to date are incomplete and do not reflect the full picture for the range of species and habitats present, including rare and at-risk species.
- The Applicant's assessment of the area as a low-grade habitat directly contradicts that of the Berks, Bucks and Oxfordshire Wildlife Trust.
- No attempt has been made to survey the ecological characteristics of the site for the proposed temporary haul road; a gross oversight that needs to be addressed.

Flood risk and water quality

- The Applicant's reliance on desktop assessments of flood risk is flawed and seriously underestimates real-life issues associated with the site's hydrology.
- On-site assessment of flood risk has not been undertaken.
- Creation of large areas of impermeable surfaces would add further to flood risk, both on-site, and in neighbouring areas.
- The proposed temporary haul road involves land subject to regular flooding.
- Construction work and the toxic products of a thermal runaway event risk polluting sensitive watercourses.

Landscape and visual

- For the most part, impact on the visual landscape, both for walkers using the PRoWs across the development site and adjacent areas, and for those residents with direct views has been dismissed as negligible. We disagree.
- Any perceived benefits from planting of trees would not be achieved until the second half of the project's claimed lifetime.

Built heritage

- Assessment of impact on built heritage has focussed on structures in the immediate vicinity of the development site. Insufficient attention has been given to the large number of heritage assets across the local settlements.
- The settings of heritage assets have not received due consideration.

Archaeology

- The Applicant's surveys have identified a number of interesting buried asset profiles. We endorse the LPA's officer view that these assets should be investigated further.
- No attempt has been made to survey the site of the proposed temporary haul road. This needs to be done, especially in the light of areas of particular interest identified in the northern section of the site.

Traffic and transport

- The Applicant's intentions as regards the principal haul route for construction vehicles remain unclear. In particular, mixed messages have been given as to whether the route through Granborough would be used.
- We are not confident that the planned route for abnormal loads over the bridge on Granborough Road has received proper assessment of the capacity of the bridge to accept such loads.
- The total disregard shown for the safety of pedestrians, cyclists and equestrians on rural roads is disturbing.

Climate change and carbon

- The Applicant has not provided a convincing argument for the scheme to have a net benefit on GHG emissions.
- The extent of energy wastage (estimated as 420 MWh per day), and its release as heat energy into the atmosphere, is a major issue that needs to be addressed.
- Carbon sequestration through newly planted trees would be a slow gain, most of which would be at the end of the scheme's claimed temporary lifetime.
- The Applicant has not provided clear evidence as to how or, indeed, whether the site would be decommissioned after 40 years and has not accounted for the associated GHG emissions or how the site materials (including Li-ion batteries) would be recycled.
- Required storage capacity for 2030 is more than met already by existing and planned installations and that the predicted storage capacity requirement for 2050 could be achieved with a small additional number of brownfield developments. The carbon cost of manufacturing the proposed BESS plus the estimated huge energy wastage during operation means that savings on GHG emissions are unlikely to be achieved.

Ground conditions

- The Applicant has underplayed the value of agricultural land classified as Grade 3b. Properly managed, this produces significant yields, especially for cereal crops and pastureland.
- The potential for altering the characteristics of neighbouring land and polluting sensitive watercourses has not been addressed.

Land use

- The Applicant acknowledges NPPF guidance that the impacts of a development on food production must be taken into consideration, but no effort has been made to do so.
- The fate of 'disturbed soil' on the site and the feasibility of restoring the site to agricultural use are not adequately addressed.

Cumulative impacts

- The cumulative impacts of the proposal with other planned and approved projects (including expansion of the East Claydon NG sub-station), as required in the LPA's Scoping Opinion, have received superficial consideration at best.
- The local area and its residents have suffered enormous inconvenience, stress and loss of amenity through the activities of major infrastructure projects such as HS2

and EWR. These activities continue and they leave a legacy of permanent damage to local infrastructure. The prospect of yet another such project is likely to be the straw that finally breaks the backs of local communities.

Conclusion

- We recognise the need to provide energy storage systems that facilitate balancing of supply and demand for electricity across the National Grid. However, we understand that existing planned and operating BESS sites exceed predictions for the necessary capacity.
- The proposed Li-ion battery technology is wasteful of energy and it is unlikely that the site would be carbon neutral over its operating lifetime.
- We do not consider the case to be made for transforming a rural, agricultural site in open countryside into an industrial development of a nature and scale that is likely to increase, rather than decrease, GHG emissions.
- We strongly object to the proposal.

Amended Design and Access Statement

Key points

- The Applicant has not provided convincing arguments regarding selection of the site and the claimed savings in GHG emissions;
- The results of informal consultation do not reflect the majority of local opinion.
- The Applicant's conclusions on the degree of support for the project do not reflect a majority view; most of those individuals offering support have a direct interest in the project or are not local residents;
- Haul route proposals are unclear and key safety concerns have not been addressed.
- The Applicant has not provided evidence that the submission complies with a number of key policies of Buckinghamshire Council or NPPF guidance;
- Site lighting during winter months would destroy the current dark skies conditions and would be contrary to Policy NE4;
- Claims that the benefits identified significantly and demonstrably outweigh any potential adverse impacts are rejected as unrealistic.

Site selection

[3.10] It is not clear how the proposal would facilitate development of sustainable energy production in the South-West as the Applicant claims.

[4.8 National Grid's FES indicates that up to 20GW of battery storage might be needed by 2030.]

Statera's own declared projects amount to 14 GW capacity and it is our understanding that existing planned projects, nationally, already exceed the 20 GW target. On this basis, the case for a 3,500 MWh storage facility is not made.

[6.6 & Appendix 1: The survey results show that 48% of respondents either support or are neutral regarding the Proposed Development. Appendix 1 – Give My View Executive Summary.]

Given that this section of the document refers to '*Relationship to Chickerell and surrounding areas'* (Chickerell being the site of another of the Applicant's proposed developments), we have no faith in the published data.

Whilst we respect the rights of individuals to express their individual views on the development, it will be noted that notices of support for the project from members of the public during the consultation derive largely from individuals from places geographically distant from the area, or have a personal interest in the development.

Consultation events provided very superficial information and representatives of the Applicant were unable to provide answers to a number of key questions.

Inconsistencies and contradictions

Inconsistencies and contradictions within and between documents

1. Number and scale of structures in the proposed scheme

The Applicant makes the following statement:

[3.12 The Proposed Development involves construction of the following elements:

• Installation of 888 battery containers, 37 inverter houses, 7 control rooms, 3 shipping containers for storage and one as a welfare unit and four fire water storage tanks.

• A large customer substation with elements up to 10m in height.]

However, in Vol. 3, Appendix 2, Appendix 5, & Appendix 6, a completely different statement is made:

[2.3. Proposed development; The proposed development comprises a 500MW Battery Energy Storage System (BESS) facility. The proposal involves the installation of 1,204 battery containers, 38 inverter buildings, seven control rooms and an attenuation pond.]

In the document 'Substation Elevations', the substation elevation is given as 10.5 m but its associated gantries as 12.5 m.

Which of these statements should we believe?

***2.* Timing of grid connection**

[7.6 The applicant holds an agreement with National Grid Electricity Transmission (NGET) to connect its BESS to East Claydon GPS substation. This agreement states a connection date in Q3 2026.]

[7.8 Should the Council be minded to approve the application, the applicant is requesting a 5-year implementation condition instead of 3 years.]

How would the commitment under 7.6 be met given the request for a delayed commencement of the proposed development under 7.8?

3. Construction traffic numbers

[7.32 The maximum number of traffic movements of construction vehicles in any one day will be circa 30 Heavy Goods Vehicles (HGVs).]

This contrasts with the following statement in Vol. 8, 1.1.44 *[The CTMP identifies the maximum number of daily two-way construction vehicle movements associated with the Application Site to be approximately 104 comprising approximately 56 cars / vans and 48 HGVs* and *Vol. 9 Table 1.4, 24 HGVs.]*

What is the correct number?

4. Haul routes

The initial plan shown at consultation meetings was for all construction traffic to travel along Granborough Road and Winslow Road to a site entrance on Hogshaw Road. At the final consultation meeting, this had been changed with provision for a temporary haul route along East Claydon Road with access to the site across a field and over the Claydon Brook. The EA includes this temporary route in some volumes but not in others. Where included, it is indicated as the principal route with exceptions for abnormal loads and at times when the temporary route is not available.

In a final iteration, notified only to Granborough Parish Council and the LPA's Planning Officer, the Applicant has stated that they could use the East Claydon route exclusively. We remain uncertain as to the Applicant's true intentions. In any event, no formal consultation on the matter has taken place with East Claydon Parish Council.

5. Area of impermeable surfaces

[Vol. 1; Chapter 2, 1.4.33 The site consists of the inclusion of approximately 3.5 hectares of impermeable ground cover.]

Elsewhere (e.g. Vol. 4; Appendix 4.1, 8.10) the area of impermeable surface is stated as 6.9 ha. Which is correct?

6. Location of SSSIs

[Vol. 5; 5.2.22 The Site lies within the Natural England SSSI Impact Risk Zones (Natural England, 2019) of Sheephouse Wood SSSI and Finmere Wood SSSI. All planning applications including solar schemes with a footprint greater than 0.5ha will require LPA consultation with Natural England on the likely ecological risks associated with the development.]

[Vol. 1; Chapter 4, Table 1.1 Ecology & Biodiversity] – This states that 2 SSSIs and 3 Local Wildlife Sites are within 2.8 km. They are stated elsewhere as 4.3 and 4.6 km distant (Vol. 1; Chapter 3, 2.1.15). Which is correct and why haven't they been considered in the wider ecological consequences of the proposed development?

7. Location of proposed Rosefield solar development

[Vol. 10, 1.8.2 The proposed Tuckey Solar Farm18 (application ref: 19/00983/APP) is located circa 360m to the north of the northernmost boundary of the Site and the proposed Rosefield Solar Farm19 is circa 2.6 km to the southwest of the Site.]

This is an absurd statement. The proposed site for the Rosefield BESS and sub-station is on the opposite bank of the watercourse that forms the north-western boundary of the Applicant's proposed development.

8. Working hours

In Vol. 2, 7.4 & Vol. 8; Appendix 8.2, page 3, summer working hours are stated as 07:00-20:00 and reference is made to night-time working on construction of the temporary haul road and yet we were assured during consultation discussions that work would not extend beyond 18:00.

Temporary or permanent?

[7.40 The Proposed Development would be operational for up to 40 years. After the 40 year generation period the development would be decommissioned and the land restored back to agricultural use.]

This statement is thrown into doubt in Volume 5, 5.10 and Vol.9, Appendix 9.2. We can find no guarantees that decommissioning will be undertaken, the nature and extent of that process and how it would be funded and managed. We understand that Statera has undergone a change in ownership since the project was first mooted. What would be the fate of the decommissioning programme in the event that further changes in ownership occur or, indeed, if the company ceases to trade?

Planning policy

Paragraphs 8.14-8.80 set out various policies relevant to the application, including S1 Sustainable Development, BE1 Heritage assets, BE3 Protection of the Amenity of Residents, NE1 Biodiversity & Geodiversity, NE2 River & Stream Corridors, NE4 Landscape Character & Locally Important Landscape, NE 5 Pollution, Air Quality & Contaminated Land (Noise & Light Pollution), C3 Renewable Energy, C4 Protection of Public Rights of Way, I1 Green Infrastructure, I4 Flooding (Management of Flood Risk, Flood Risk Assessment, SuDS) and Climate Change. We submit that the Applicant has underestimated the impact of its proposals, or ignored important elements of each of these policies.

As regards national planning policies, the Applicant has noted in some volumes the recent statement that, '*Footnote 62 of the NPPF now includes additional wording that "The availability of agricultural land used for food production should be considered, alongside the other policies in this Framework, when deciding what sites are most appropriate for development".*

We submit that this important consideration has not been adequately addressed in the application.

[8.33 NE4 Landscape character and locally important landscape:

Development should consider the characteristics of the landscape character area by meeting all of the following criteria:

> *e) minimise the impact of lighting to avoid blurring the distinction between urban and rural areas, and in areas which are intrinsically dark and to avoid light pollution to the night sky.]*

Currently, East and Botolph Claydon enjoy dark skies at night. (There is just one streetlight in the two villages). The need to have staff on-site on a daily basis to undertake safety checks and maintenance presumably requires that the site is lit during winter months. This would generate unwelcome light pollution and would be contrary to Policy NE4.

Paragaphs 8.1-8.9 appear to be missing from the document (page 19). A subsequent section (page 45 *et seq*) is designated Paras 8.1-8.73 so we are unsure as to whether text has been omitted from the document.

[8.4 Employment Benefits] - In stating, *["Once operational the Proposed Development, in conjunction with other similar developments, will provide two part-time jobs for operation and maintenance of the facility]," t*he Applicant seems to be assuming that other similar developments will proceed in the area and that, together they will create two part-time jobs. What are the grounds for that assumption and what consideration has been given to negative impacts on existing employment?

[9.3 For the reasons demonstrated in Section 8 of this report and the supporting statements, there are no significant adverse impacts associated with the Proposed Development.]

[9.4 In the balance of considerations, therefore, the presumption in favour of sustainable development is confirmed, as the benefits identified significantly and demonstrably outweigh any potential adverse impacts.]

These statements are a gross misrepresentation of the true effects of the proposed development, taken in isolation or in the context of other proposed developments.

They suggest a complete disregard for the impact on local communities and environment.

ES Vol. 1: Chapter 1 – Environmental Statement Overview

This sets out the structure of the ES and so no further comment is made here.

ES Vol. 1: Chapter 2 – The Project

Key points

- Key settlements, (notably East Claydon) are largely ignored;
- The 'Project' should include full consideration of the cumulative impacts of expansion of the East Claydon National Grid Sub-station;
- The Applicant's ecology assessments are diametrically opposed to those of BBOWT.
- The suitability of the location of the proposed temporary construction haul road is questioned.
- The risk of flooding has been grossly underestimated.

Extent and nature of impacts

[1.2.3] The Applicant ignores the close proximity of Station House on East Claydon Road and the entire village of East Claydon .

Fig. 2.1a *et seq* – The NSIP Scoping Opinion for the proposed Rosefield solar energy project considers the East Claydon Sub-Station to be part of the scheme and therefore should be included in the overall description of the site. Given that the proposed 500 MW storage facility also has significant implications for the NG Sub-Station, the same logic applies to the present application. The Scoping Opinion provided by the LPA requires that the Applicant includes expansion of the NG sub-station in assessing cumulative impacts of its proposals with other projects but this has not been addressed.

[1.2.16 - The arable fields and modified grassland are of low ecological value, with its value at site level only.]

The ecology surveys have not captured all of the species present and the claimed 'low ecological value' of the site contradicts the assessment of the Berkshire, Buckinghamshire & Oxfordshire Wildlife Trust (BBOWT).

[1.3.7] The suitability of the proposed temporary construction haul road is questioned given the unsuitable ground conditions and tendency to flood.

[1.4.33 The site consists of the inclusion of approximately 3.5 hectares of impermeable ground cover.]

This is another example of inconsistencies across the documents. Elsewhere (e.g. Vol. 4; Appendix 4.1, 8.10) the area of impermeable surface is stated as 6.9 ha. Which is correct? In any event, we are concerned that the Applicant has underestimated the flood risk and, hence, the additional impact of extensive impermeable surfaces.

ES Vol. 1: Chapter 2- Appendix 2.2 – Site Selection Process

Key points

- The Applicant has not made a case for a development on this scale at this location.
- The visual impact of the tallest sections of the development has not been considered.
- The Applicant's request for a 5-year period of grace to commence development is inconsistent with the claim that the site was selected on the basis that a connection to the grid could be achieved in 2026.

- We are concerned as to the Applicant's wider aspirations in facilitating further industrialisation of the local landscape.

[1.3 Statera has 1,020MW of assets operational or under construction, with a further 13 gigawatts (GW) in development, comprising a mix of pumped storage, battery storage, flexible generation and hydrogen production.]

14 GW is approximately 30% of current peak demand. It is understood that storage capacity units in operation, development or in planning in the UK already exceeds the National Grid's expectations for 2035 (Source: Energy & Climate Change Intelligence Unit). It is acknowledged that a case is made for large capacity facilities with availability of 275/420 kV and fast response times to serve National Grid balancing capacity. However, installations such as the 1 GW in development on a brownfield site at the Trafford Energy Park is an example of a similar development in the right place. The present proposal is the wrong development in the wrong place.

The Applicant has not made a case for an installation of this magnitude of storage capacity (3,500 MWh).

[1.3.7 The Proposed Development includes the following components:

• The development would include a substation compound comprising transformers, busbars and other equipment of up to 9m in height.]

The Applicant fails to mention that elements of the sub-station would extend to 10.5 and 12.1 metres (See documents *SUBSTATION ELEVATION* and *CROSS SECTIONS 28.11.23*). These will dominate the landscape when viewed from PRoWs.

[2.12, 2.20, 2.31, 2.33 2.49]

As presented, the Applicant's arguments in support of the site selection are circular and lacking logic. It is stated that the scale of the project is justified by the need to attract investment, but the Applicant has smaller (e.g. 50 MW) BESS sites which appear to have been successful in attracting investment. The proposed size of the installation is then used to justify the location.

Although proximity to a National Grid sub-station may be convenient for the Applicant, a recent development in Leicestershire (Normanton Energy Reserve, Earl Shilton) has taken advantage of access to a 275 kV line to develop a 500 MW (1 GWh) BESS.

Alleged 'Ease of Access' (which we suggest, is not proven) is required to achieve a 2026 grid connection and yet, under 2.31, it is stated that "*For NGET to facilitate the connection it is required to expand the existing substation which is subject to its own consenting and land optioning requirements."*

The Applicant argues that the site was selected on the basis that a grid connection could be made in 2026 but then asks for a 5-year commencement date. Were the project to be approved, a 5-year commencement would place unreasonable degree of uncertainty on local residents and local farmers. This would be further exacerbated by the threat of other development projects.

We submit that, overall, the Applicant's selection criteria are not met, especially as regards the scale of the development, flood risk, ecological impact, visual separation from residential properties and ease of access for construction.

[2.20 BESS's facilities open the door for more solar and wind power to be added to the grid while maintaining grid stability, enabling a green low carbon future. This does not necessarily mean more renewables in the immediate area/region but nationwide.]

The Applicant needs to be clear as to whether the scale of the proposed storage capacity is predicated on an assumption that other local projects, proposed or approved, would proceed or, alternatively, that it is part of a wider project to industrialise the whole of the Claydon Valley and beyond.

ES Vol. 1: Chapter 3 - Design Evolution and Site Selection

Key points

- The impact on heritage assets has not been adequately explored.
- The Applicant has underestimated the flood risk.
- Selection of the nature of the development and the site has focussed almost entirely on proximity to the East Claydon NG Sub-station to the exclusion of other important considerations.
- Energy losses from the BESS, potentially, could be recovered were the installation to be located on a brownfield site.
- The Applicant's dependence on desktop analyses means that they have grossly underestimated flood risk for the entire site.

Heritage assets

[2.1.13 There are a number of other listed buildings within the wider area of the Site, however, a site visit confirmed that there was no intervisibility between them and the Site].

This conclusion is disputed. The development would be within the sight lines of the White House, St Mary's Church and Botolph House. The Applicant seems to have ignored impacts on East Claydon and the need to consider heritage assets in the context of their settings, not just from the perspective of direct lines of sight.

[2.1.27 The outcome of this initial BS4142:2014+A1:2019 assessment showed that there is a negligible to low risk of impacts at the existing sensitive receptor locations during both the daytime and night-time periods, depending on the context.]

This statement is not justified. There will be significant impact on views from heritage assets in East and Botolph Claydon, during construction, operation and decommissioning.

[2.1.28 With regards to national and local planning policy it is considered that the results of the operational assessment demonstrate that Proposed Development will not result in an adverse impact to amenity of the nearby receptors manufacturer's data.]

This sentence does not make sense.

Flood risk

2.1.30 The EA Flood Map for Planning, which is available online, indicates that the majority of the site is located within Flood Zone 1, which is land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding. The western and southern portions of the site are located in Flood Zone 2 and 3.]

Local knowledge and experience inform us that the Applicant's reliance on arbitrarily defined Flood Zones is misplaced. This is a key issue that needs to be addressed (see Vol. 4). This is further emphasised by the soil analyses described in Vol. 11; Appendix 11.1, pt 1.

Site selection

[3.1.17] The benefits of storage capacity in the management of supply and demand are understood. However, the Applicant has argued elsewhere that the National Grid is country-wide and so does not have such regional requirements. Which is correct?

The Applicant has acknowledged that the system cannot distinguish between electricity generated from low and high carbon emitting processes and the case for storage capacity on the proposed scale has not been made.

3.3 Alternative Sites

Given that a recent development in Leicestershire (Normanton Energy Reserve, Earl Shilton) has taken advantage of access to a 275 kV line that is removed from an existing National Grid sub-station the Applicant could have investigated brownfield sites where there is access to a 275 kV line.

As noted under Vol. 9; Appendix 9.3, the proposed site would have daily energy losses of around 420 MWh, dumped into the atmosphere as waste heat. Were the installation to be on a brownfield site, potentially, this energy could be diverted to local heating systems or converted to other, useable forms of energy and so greatly improve efficiency.

ES Vol. 1: Chapter 4 – Scoping & Methodology

Key points

- Loss of food production should be included in the ES, especially in the light of potential cumulative effects with other developments.
- The impact of clay dust on air quality should be assessed.
- Scoping out of land use (especially with regard to food production), air quality (especially clay dust) and hydrogeology and ground conditions are important omissions.
- The Applicant's analysis of the cumulative impact of the proposed development with that of other projects is superficial and inadequate.
- We submit that the Applicant's confidence in their assumptions on the accuracy of baseline data derived from third party sources is misplaced.

Scoped out topics

[Table 1.1 Ecology & Biodiversity] – This states that 2 SSSIs and 3 Local Wildlife Sites are within 2.8 km. This is stated elsewhere as 4.3 and 4.6 km distant (Vol. 1; Chapter 3, 2.1.15). Which is correct and why haven't they been considered in the wider ecological consequences of the proposed development?

[Table 1.2 Scoped out topics]:

[Land Use] – Why hasn't food production been considered as part of the Applicant's analysis of the environmental impacts, given the comments in The Design and Access Statement Addendum: *Footnote 62 of the NPPF now includes additional wording that "The availability of agricultural land used for food production should be considered, alongside the other policies in this Framework, when deciding what sites are most appropriate for development"*?

[Air quality] - Dust – Clay dust in dry weather is an issue. This could have implications for local residential areas as well as the NG Sub-station.

[Hydrogeology and ground conditions] – What is the rationale for excluding this? The extent of flood risk implies that this should be included.

[Table 1.3]

Ref	***Project***
1	*Tuckey Solar Farm (consented under ref: 19/00983/APP)*
2	*Planned expansion by National Grid of the East Claydon Substation*
3	*HS2 Rail*
4	*East-West Rail*

In its Scoping Opinion, the LPA specifically requested that the Applicant gives consideration to the cumulative impact of the current proposals alongside those schemes listed in Table 1.3 in terms of the overall land take and environmental effects. Although we understand that the Applicant has been in discussion with representatives of the National Grid as regards plans for expansion of the East Claydon Sub-station, there is little consideration of its cumulative impact with this or, indeed, the other projects cited.

In the context of Vol. 1: Chapter 4 - Appendix 2.1 of the ES, consideration of cumulative impacts on the already high level of flood risk across the proposed development site and surrounding area must be given full and careful analysis.

[1.10.12, 1.11.1.] As will become apparent, we disagree with the accuracy of some of the baseline data. Were the other projects to be approved, the 'baseline' would continue to change over several years.

ES Vol. 1: Chapter 5 – Environmental Statement

[NB The version of Vol. 1; Chapter 5 posted on the planning portal is a copy of Vol. 1; Chapter 4].

Key points

- We conclude that the impact of the proposed development locally will be negative on all measures.
- There are serious concerns as to the validity of the Applicant's conclusion that there would be net benefits to global GHG emissions.

[Table 1.4 Summary of Significant Residual Effects. The Applicant concludes that there would be no significant residual effects associated with the proposed development on *Noise and Vibration, Ecology, Hydrology and Flood Risk, Built Heritage, Transport & Access (during construction, battery replacement and decommissioning) and Ground Conditions.]*

We cannot agree with these statements.

We agree that there will be adverse effects on *Landscape & Visual, Archaeology and Land Use.*

The Applicant has not provided convincing evidence that the impact global mass of Greenhouse Gases (GHG) will be positive. Certainly, in the short- to medium-term it will be markedly negative (see also Vol.9).

ES Vol. 2: Noise & Vibration

Key points

- Analysis of noise disturbance should include local residential areas in the surrounding villages.
- Average noise levels are not a true reflection of nuisance, especially during construction work.
- The range of potentially sensitive receptors assumed in monitoring studies is inadequate.
- The document assumes night-time working for construction of the haul road from Hogshaw Road. This is not acceptable.
- Impact through the use of a temporary haul road, accessed from East Claydon Road, does not appear to have been assessed.
- Assumptions that noise associated with the HS2 and EWR projects cannot be heard in local villages are erroneous.
- Cumulative impacts with other projects have been dismissed.
- Dependence on LAeq,8hr results in misleading representation of true potential noise pollution, especially at night when residents enjoy exceptionally low background noise levels. Although acknowledged as an issue by the Applicant, it does not appear to have influenced their conclusions.
- We dispute the Applicant's conclusion that night-time noise during operation of the site would not rise above baseline levels.
- Light pollution has not been covered.

[2.9.1 The study areas for noise and vibration have been chosen specifically for this project and are based on professional judgement.]

[2.9.2 The study area for the construction and operational noise assessment includes the nearest NVSRs and extends to approximately 500 m from the site boundary, beyond this distance, noise levels from typical construction and operational activities are unlikely to give rise to significant effects if suitably mitigated for the closer NVSRs.]

The Applicant has not explained on what principles 'professional judgement' was based. The statement in 2.9.2 is not accepted. Intrusive noise from piling and other activities associated with HS2 and EWR is apparent over kilometre distances. The analysis should be conducted over a wider area to include the principal surrounding villages.

[2.12.10 Battery Storage sites have limited noise and vibration effects during construction.]

The construction phase includes piling work so this statement seems unsupportable.

[2.12.6 Use of average noise levels does not reflect the level of nuisance caused. It is often the intermittent or repetitive noises that create the greater problem.]

The Applicant makes an important point. Residents are frequently disturbed by such noise from HS2 and EWR site operations several kilometres distant, so this is a critical consideration.

[3.1.1.] The assumptions on 'Site' ignore the proximity of Station House and East Claydon village and allow only for an access road from Hogshaw Road.

[4.1.1 Location of sound monitoring equipment].

Why was there no monitoring to the north-west of the site?

Why was there no monitoring at the receptors?

[7.2.4 Table 7.2 Shows that no significant effects are expected to occur during the site preparation works (phase 1) during the daytime period. However, during the night-time works, there is predicted to be an 8 dB exceedance at NVSR D. This is due to haul road construction activities, which have been modelled at the worst-case location, i.e., closest to NVSR D.]

Under 7.2.4, reference is made to night-time noise associated with construction of the access road. Given that the haul road is assumed to be from Hogshaw Road, no account has been made of the additional East Claydon Road route. Elsewhere, the Applicant has variously stated that there will be no night-time working and that summer working hours would extend until 20:00. Which is correct?

[9.3.5 At the existing residential receptors NVSR D the predicted rating levels are 1 dB above background sound levels during night-time. At all other receptors the predicted rating levels are equal to or below background noise level.]

This needs explanation! How can the addition of noise result in values below background?

No consideration has been given to non-human receptors (e.g. livestock and wildlife).

[10.1.5 The expansion to the National Grid Substation is currently referenced as a potential future scheme. At the time of writing no noise assessment, or details of the proposed scheme, are publicly available. With no information available on this project, the National Grid proposal is not considered as a cumulative impact within this assessment.]

Expansion of the NG sub-station is listed as a significant cumulative impact project in Vol. 1; Chapter 4 (Table 1.3). Given the interdependency of the Statera application and East Claydon Sub-station, it is imperative that a proper assessment of the cumulative effects, including noise, should be considered here.

[HS2

10.1.6 The HS2 rail line lies approximately 5 km south-west of the proposed development and closest NVSR considered within the scope of this assessment. At this distance it is highly unlikely that noise from HS2 will be audible at the existing receptors and therefore will not have cumulative impacts on the existing receptors.

East-West Rail

10.1.7 The East-West rail line lies approximately 2.5 km north the proposed development and closest NVSR considered within the scope of this assessment. At this distance it is highly unlikely that noise from East-West rail will be audible at the existing receptors and therefore will not have cumulative impacts on the existing receptors.]

The practical experience of local residents is such that these statements are completely erroneous and render the conclusions of this report unsafe.

ES Vol. 2: Appendix C

Comparison of the sound pressure levels for LT1-LT3 in Appendix C with the LAeq,8hr (dB) in Chapter 2, Table 4.2 shows how misleading 8-hour averages can be. It is clear that baseline sound pressure levels during the night, when most residents will be sleeping, are frequently as low as 20 dB. It is disingenuous to suggest that there will be no impact of the BESS during operation.

ES Vol. 3: Ecology & Biodiversity

Key points

- The Applicant has not adhered to the principle that absence of records of a given species does not imply they are not present. Consultation with local experts would have provided a more accurate picture of the baseline ecology.
- The Applicant's assessment of the low value of local habitats contradicts that of the Berkshire, Buckinghamshire & Oxfordshire Wild-Life Trust (BBOWT).
- We have serious concerns as to the adequacy of the bat surveys. The possible presence of Bechstein bats should be investigated.
- It is likely that the local population of grass snakes has been underestimated.
- The presence of nesting birds along the water courses raises concerns about the impact of construction work.
- We disagree with the approach adopted for GCNs. Local ponds are colonised by GCNs and we suggest that a full survey should be undertaken.
- Sections on badgers have been redacted in the copies posted on the LPA portal. What is the explanation for this?
- We disagree with the statement that loss of habitat for breeding birds is of 'minor significance' and low magnitude impact.
- Loss of habitat for grass snakes is a particular concern.
- The impact of site lighting during the operational phase on animals, invertebrates and, indeed, humans has not been adequately addressed.

[3.2.9 Data on species records obtained from local biological records centres do not represent the results of a full and systematic assessment of species abundance through a search area. As a result, necessary precautions were taken when drawing conclusions from the desktop study and an absence of records was not accepted as an absence of presence].

We agree with the opening statement but regret that the principle does not appear to have been adhered to in the Applicant's conclusions.

Bats

[3.2.10 The bat activity transect routes were amended to avoid disturbing nesting species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). The nests were located along the stream, which will be retained. Therefore the lack of data on bat activity within this location is not considered to be a significant constraint on the impact assessment.]

We are concerned by this statement. Watercourses are likely to be important foraging areas for bats and provide corridors to other locations, so the absence of data renders the surveys incomplete.

[3.2.12] Technical issues with the bat survey do not justify the Applicant's assumptions or conclusions. This does not seem an acceptable position, especially if the bat population includes rare/threatened species.

[4.2.19 A relatively low diversity of bats for the region was recorded in the survey area.]

Given the failure of the recording equipment during the first survey and the lack of measurements along the watercourses, the conclusions from the survey have to be called into question.

[4.2.21 The overall assemblage scored 6. To meet the threshold for County importance a minimum score of 13 is required. The bat community is therefore considered to be of local value.]

Given the previously stated limitations of the bat survey (3.2.10 & 3.2.12), these statements carry little weight. Bechstein bats have been identified locally and are known to forage over large areas locally. They should not be dismissed as being absent. The Bucks Bat Group should be consulted on the matter.

[5.1.14 Lighting during the construction phase could affect bat activity on and surrounding the proposed development. The bat activity was deemed to be of local value and the magnitude of change, if unmitigated, is likely to be medium adverse and therefore of minor significance.]

We refer again to the presence of a local Bechstein bat population.

[7.1.5 The measures set out in the CEMP will ensure that there are no impacts on active bat roosts, or on foraging bats resulting from lighting.]

This contradicts the previous statement under 5.1.14.

Reptiles and amphibians

[3.2.13 The reptile survey was amended to avoid disturbing the nesting species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).]

Whilst we understand and support the need to avoid disturbance of nesting birds, this challenges the validity of the survey, especially since the site is considered 'Exceptional' for grass snakes.

[4.2.11]. The presence of nesting birds along the stream raises major concerns as to the impact of construction work.

[3.2.14 Short sections of the watercourse were inaccessible during the late season survey due to the density of vegetation.]

The Applicant appears too accepting of incomplete surveys.

[4.1.3 The proposed development will apply for works to be completed under the Buckinghamshire District Licence for great crested newt. As such, great crested newt are also scoped out of further detailed assessment.]

We disagree with this approach. The area has known populations for GCNs and these should be considered carefully, especially in the light of cumulative effects of other developments, proposed or approved, in the locality.

[5.1.10 The arable habitat will be removed, however this habitat is not considered suitable to support reptiles. Short sections of hedgerow will also be removed which will result in a permanent adverse impact of negligible magnitude.]

Given that the site is considered 'exceptional' for grass snakes, how can a statement 'adverse impact of negligible magnitude' be justified?

Badgers

Sections on badgers (*4.2.23*; *5.1.18; 7.1.6)* have been redacted without explanation.

Otters

[5.2.5 The operational phase of the proposed development will result in a greater level of light which can have an impact on otter. The magnitude of such an impact is predicted to be medium. The significance of effect on commuting and foraging otter which is deemed to be of local value is therefore minor and adverse.]

Elsewhere, it is claimed that there will be no lighting other than security lighting. Please explain. What about maintenance work in winter time? Will the site be illuminated?

Area-wide ecology and habitats

[Designated sites 5.1.2 The risk of impacts to functionally connected populations are not anticipated.]'

The Applicant has dismissed the possibility of impact on local SSSIs but, given the limitations of their ecology surveys, what is the evidence to support this to be correct?

[5.1.4 The arable farmland will be lost in its entirety, whilst only small losses of modified grassland and neutral grassland are anticipated. This adverse effect is considered to be of negligible significance.]

This statement is oversimplistic and based on incomplete survey data.

[5.1.8 The loss of habitat for the breeding bird assemblage will be a permanent adverse impact of low magnitude. This adverse effect will therefore be of minor significance and particularly focussed on the ground-nesting arable specialists such as skylark.]

We disagree. What is the evidence that this is a low magnitude effect?

Given the limited number of species identified (compared to those known to frequent the area) and the fact that adequate surveys could not be undertaken (e.g because of birds nesting along the stream), this seems an extraordinary statement. The loss of skylark nesting habitat is of particular concern. The proposed mitigation for this species seems a token gesture.

Assessment of the area as being of low value in terms of habitat is contrary to the view expressed by The Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT):

> "The proposed Battery Energy Storage System (BESS) is located in one of the best remaining ecologically important landscapes in southern England. It is nationally important for rare habitats and species, such as wildflower meadows, hairstreak butterflies, bats and ancient woodland. BBOWT is greatly concerned about the number of substantial infrastructure projects in the immediate vicinity to Rookery Farm BESS and the cumulative impacts of these on habitats and wildlife."
>
> *BBOWT comment* on 23/03875/APP Rookery Farm BESS, 8th January 2024

[7.2.4 There will be no adverse residual effects following mitigation from the proposed development. As such, the likelihood of cumulative adverse effects with other projects is considered to be negligible.]

[8.1.1 During construction, the principal impacts are loss of habitats. These losses are largely restricted to habitats which are of lower ecological value, such as arable farmland and modified grassland. Habitats of higher value, including hedgerows and the adjacent stream will be protected from accidental damage through the installation of fencing and by following regulatory guidance on preventing pollution. The proposed development

incorporates a range of new habitats which will offset any habitat losses. These new habitats include hedgerows, woodland, ponds, scrub and species-rich grassland.]

These statements are devoid of evidential basis and so indefensible, especially in the light of comments by BBOWT. The Applicant has failed to address the issue.

The Applicant underestimates the value of existing habitats and the fact that, during construction, even for those habitats it claims to be protected, dependent species will be driven away by the construction work.

ES Vol. 3: Appendix 1

Not cited or present.

ES Vol. 3: Appendix 2 - Preliminary Ecological Appraisal

Key points

- Although plans to construct a temporary haul road are acknowledged here, little or no effort has been made to understand the ecology of the proposed route. This is a major deficiency that needs to be addressed.
- The true extent of the variety of species, especially birds, present on the proposed development site has not been established.
- Sections on badgers have been redacted from the document on the LPA portal.
- Desktop studies on fungi and plants are unlikely to provide a true picture.
- We disagree with the proposal to use a regional licensing approach to managing GCNs.

*[*1. *Foraging/commuting bats: The lines of trees, hedgerows and stream present on site provide a potentially valuable commuting and foraging habitat for bats. There is a low risk of the site supporting a notable commuting route for bats.]*

The streams have not been surveyed for bat activity and so no conclusion can be drawn as to their importance.

[2.3 Proposed Development The proposal involves the installation of 1,204 battery containers, 38 inverter buildings, seven control rooms and an attenuation pond.]

Elsewhere, the number of containers is stated as 888. Such inconsistencies across the documentation raise concerns as to the accuracy and validity of large sections of the ES and the possible extent of 'copy and paste' errors.

***[Badger:** Suitable foraging and sett building habitat is present onsite, however no evidence of badgers was noted during the site visit. Badger activity can significantly change over a short period of time and so a pre-commencement check is recommended immediately prior to construction. This should be included within the CEMP.]*

Why has this section has been redacted from the copy posted on the LPA planning portal?

[2.3] This section recognises that there is an additional haul route from the north but there has been little or no effort to survey the area for the ES. As the principal access route to the site, there is the potential for major negative effects on many aspects of the site, including its ecology. Why hasn't this been addressed?

[3.5] There is over-reliance on desktop surveys with just two 'walkover' visits (June 2022 and September 2023) which are not sufficient to capture a full picture of the ecological characteristics of the area.

[4.1] There is no mention of the Tuckey Farm solar energy installation, the Wings Farm solar energy installation, or the Rosefield solar energy project in the survey of local planning applications and yet these has an important bearing on the overall ecological impact of the proposed battery installation.

[4.3 Plants and fungi: This, along with the lack of diversity within these habitats, suggest the likelihood of protected or notable plant species being present is negligible.]

This statement is based on a desktop survey and very limited site survey. It cannot possibly conclude that the likelihood of protected or notable species is negligible.

[4.3 GCN Due to the pond present on Site with previous records of great crested newt, as well as the presence of suitable terrestrial habitat, the likelihood of great crested newt being present on Site is considered to be high.]

Was this surveyed?

[4.3 Birds The hawthorn and blackthorn in the hedgerows may provide a foraging resource for overwintering thrushes, such as redwing and fieldfare Turdus pilaris, however the hedgerows cover a relatively small area of the Site and are a common habitat in the wider landscape. Therefore, the likelihood of the Site supporting a significant wintering assemblage is considered to be low.]

We disagree with this statement. The diet of redwings and fieldfares is not restricted to berries. Redwings and fieldfares forage extensively for snails, earthworms, slugs and insects on open farmland. The area supports large flocks during the winter period. Indeed, this is confirmed by the survey findings in Vol 3; Appendix 6, Table 3.

The limited range of species identified in Table 4 fails to reflect the true picture. The MAGIC website, to which the report refers, records corn bunting, grey partridge, tree sparrow and arable assemblages as well as species included in the table. Barn owl, tawny owl and lapwings also frequent the area.

We agree that *"There is a high likelihood of nesting birds being present during the breeding season, with the risk of the Site supporting a notable assemblage moderate."* Of particular note is the presence of a significant assemblage of skylarks in the area. The impact of displacing them to other areas already occupied as skylark territories must not be underestimated.

[5. Ecological Constraints, Opportunities and Recommendations – Recommendation 3]

Amphibians – We do not support the proposal under Option 2 to undertake works under the Buckinghamshire Council's District Licence for GCNs. The potential for cumulative negative impacts on GCNs with other planned developments in the area needs to be considered. In any event, the Applicant is proposing to retain the pond and so a full assessment of existing species populating the area is fundamental to understanding how best to manage the resource. We respectfully suggest that the first part only of Recommendation 3 be adopted.

In any event, if GCNs are present, but not identified, we believe the Applicant would be committing an offence if the animals are destroyed during construction work (see 8.1; Appendix 1).

[p20, p25 & Table 5] The sections on badgers have been redacted from the document posted on the planning portal. Why?

[Recommendation 10 Light pollution from any lighting should be minimised both during and after the construction phase. A sensitive lighting scheme should be developed and secured through a planning condition to allow for suitable roosting and foraging areas for bats within the site with maximum use of appropriate luminaries and directed lighting.]

How does this sit with the need to provide lighting for routine maintenance and safety checks on a daily basis?

ES Vol.3: Appendix 3 – Bat survey

Key points

- Failure to survey for bat activity along watercourses is an important omission.
- The impact of lighting on the site (during construction an operation) has not been adequately addressed.

[1. Summary: Bat activity levels were low throughout the survey period. Relatively higher levels of activity were identified along the north and west boundaries of the site, where there is a stream, and along a hedgerow containing trees running through the centre of the Site. Bat activity at the south and east boundaries of the Site was very low.]

[5. Evaluation and recommendations (p27) It is concluded from the combination of data from transect and automated detector and surveys that the stream and lines of trees along the perimeter of the Site, as well as a hedgerow containing a line of trees running through the centre of the Site are valuable features for a low number of common bats and individual rarer bats. Whilst the full length of the stream was not surveyed due to access constraints, the habitat is relatively consistent throughout, and it is assumed a similar level of activity would be present.

These statements confirm the potential importance of streams as locations for bat activity. This is further supported by the finding that greatest activity was detected at sites L4, L3 and L6 – all of which are adjacent to watercourses. These link with other areas (including the proposed temporary haul route), which should be taken into consideration.

[3.5] Deferral of the springtime echolocation study until June as a result of equipment failure does not give confidence in the results of the study.

It is noted that no attempt was made to assess the bat populations associated with the proposed temporary haul route from the north. This route will involve gross disturbance to riparian and hedgerow habitats and so should be surveyed to determine the true impact on bat species.

5.1 Lighting: If a high intensity lighting scheme was incorporated in the final design, with light spill onto the remaining areas of grassland and bordering hedges, then there would be detrimental impact to bat activity at an immediate local level. Given the extent of the proposals, lighting is likely to have site-wide impacts.

5.2 Lighting: The important areas for bats highlighted in Figure 11 must remain in complete darkness, measured at 0.2 lux on the horizontal plane and 0.4 lux on the vertical plane]

Does the lighting scheme follow the recommendations for total darkness along the key habitat areas (Fig 11)?

ES Vol.3: Appendix 4 – Reptile survey

Key points

- The impact on the important grass snake populations has not been fully considered.
- No surveys of reptiles have been undertaken along the route of the proposed temporary haul road.

[1. Executive summary: Reptiles were found adjacent to hedgerows. According to Froglife (1999) the population size class of grass snake is considered to be 'Exceptional' and common lizard is considered to be 'Low'. As a result, the Site meets the criteria to qualify as a Key Reptile Site.]

Fig 3 shows that grass snakes and lizards were found in the areas most impacted by the proposed development. It seems implausible that numbers of the animals and their habitats would not be seriously damaged by the construction work.

Clearly, the observation that this is an 'exceptional site' for reptiles (notably grass snakes) is important. We are concerned that the proposed approach of pre-construction inspection, capture and release of reptiles together with a site management plan is insufficiently enforceable to make it reliable.

As with the bat survey, no attempt has been made to investigate the area of the proposed temporary haul road. This should be evaluated for all habitats before any decision can be made on the application.

ES Vol.3: Appendix 5 – Water vole and otter survey

Key points

- Watercourses have not been fully surveyed. This includes the area adjacent to the site of the proposed temporary haul road.
- Disturbance of otter corridors is almost certain to occur if the development were to proceed.

[2.4 Proposed development: The proposal involves the installation of 1,204 battery containers, 38 inverter buildings, seven control rooms and an attenuation pond.]

The number of containers is quoted as 888 elsewhere.

[3.5. Constraints: Short sections of the watercourse were inaccessible during the late season survey due to the density of vegetation (shown on Figure 1). The majority of these sections were to the south and not predicted to be impacted, however there was a small section which is likely to be the location of a temporary bridge.]

Failure to survey the site of the temporary bridge is an important omission.

The extent of the otter habitat along the entire watercourse bordering the site and the proposed temporary haul route raises concerns as to how well this species would be protected, especially in the area adjacent to the temporary haul route.

ES Vol.3: Appendix 6 – Breeding bird survey

Key points

- The breeding bird surveys have not captured the full range of species present.
- The site of the proposed temporary haul road has not been surveyed.
- The cumulative impact of this development together with adjacent areas for other projects would permanently remove key wildlife corridors.
- The impact of the development on breeding bird populations in general, and skylarks in particular, population is a major concern.

[2.3 Proposed development: The proposed development comprises a 500MW Battery Energy Storage System (BESS) facility. The proposal involves the installation of 1,204 battery containers, 38 inverter buildings, seven control rooms and an attenuation pond. These will be constructed on the agricultural land.

It should be recognised that the surveys and proposals for mitigation are predicated on the baseline as established from limited studies in a single year. The proposed mitigation assumes that adjacent land areas remain undeveloped and that, effectively, the site is self-contained. It should be recognised that any other development (e.g. expansion of the East Claydon sub-station, proposed Wings Farm solar installation and the proposed major infrastructure project (Rosefield EnergyFarm)) would negate any mitigation plans through further loss of habitat.

[3.6 Survey constraints: Following the breeding bird survey effort, the site boundary was extended north of Claydon Brook to provide access for a temporary haul route. The additional area comprises modified grassland, regularly grazed by livestock.]

The absence of data from this area is therefore not considered a significant constraint.

Disregard for the ecology of the proposed haul road site is unacceptable.

[4.2. Breeding bird survey A total of 50 species were recorded during the breeding bird survey; three species were confirmed breeding, 17 were considered to be probably breeding, 19 possibly breeding and 11 non-breeding. Out of the 50 species recorded, 28 of these were classified as notable species on the basis of their local or national designations].

This finding is in contrast with the statement that the area is lacking in habitats and species.

[5.1 No evidence of farmland indicator generalist species, including kestrel Falco tinunculus, reed bunting Emberiza schoeniclus and yellow wagtail Motacilla flava, or farmland indicator specialist species, such as grey partridge, lapwing, tree sparrow Passer montanus and turtle dove Streptopelia turtur, were recorded during the survey effort.]

This statement is at variance with the findings of the desktop study and so these species should not be considered absent from the area. It also contradicts species known to be present, based on local knowledge (e.g. kestrel).

5.2 Skylark are the most notable species found breeding within the arable fields on the site and four territories will be lost. The loss of four pairs is not considered highly significant as it is still a common local species.

We find this an extraordinary statement given that skylark is a species of concern.

The anticipated retention of the majority of breeding habitat seems to ignore the loss of foraging territories consequent on the proposed development. The two cannot be

separated. A number of the species identified are ground-feeders. Some will be attracted by cereal crops grown on the land. In the absence of foraging areas, how is it expected that breeding assemblages will survive?

ES Vol.3: Appendix 7, Pt 1 – Biodiversity Net Gain

Key points

- BNG calculations do not include areas affected by temporary and permanent access routes.
- BNG calculations appear to have omitted watercourses.
- Contributions made towards BNG by the proposed orchard and green roofs would only be realised if managed properly. Who would maintain these?
- Redaction of sections on several species is unexplained.

The calculations are flawed because the site boundary (Fig.2) fails to include the areas required for the temporary and permanent access routes.

Baseline estimates are further called into question by the statement at:

[2.4 Limitations: The UKHab survey took place during the optimal season (between March and September) when most plants are evident and in flower. However, a survey is only a snap-shot of the habitats and species observed on that day and cannot provide a full account of the ecology present.]

None of the data from actual surveys have been taken into account. Given that even those studies failed to provide a complete picture (as evidenced from local knowledge), we cannot accept the validity of the baseline estimates and, hence, the estimated BNG.

Why have existing watercourses been omitted from the BNG calculation?

[Table 3.2] This considers some species that have not been included in the ecology surveys (desktop or site survey). There should be consistency of approach across the various elements of the ES.

[Table 3.3] lists a very limited number of the species identified in site surveys but does not appear to make use of this information.

We have many concerns as to the validity of the BNG calculations. The provisional classification of habitats does not appear to reflect the data from site surveys (or, indeed, local knowledge of the area). Furthermore, it is not clear whether the net gain accounts for the very substantial, permanent loss of habitat that will result from the construction work (i.e. a negative factor in the calculation. E.g. in Tables 4.2, 4.3 and 9, what provision has been made for loss of habitat over baseline consequent on the proposed development?

Finally, it fails to account for effects on the proposed temporary and permanent haul routes which have not been included in the calculations or, indeed, in most of the desk-top and site surveys.

[4.1.6 Orchard] – Whilst the concept of generating an orchard is superficially attractive, how will this be managed over the lifetime of the operation of the development. What would happen to hedges, trees, orchard, etc once the site is decommissioned?

4.2.1 Biodiverse green roofs. Such installations require careful management, especially in t[he early years. How would they be managed? Who is responsible for checking their survival?

Section 4.4 -Subsections have been labelled as 4.3…

[4.3.5] It is common knowledge that skylarks use fields of arable crops in the area as nesting sites. Conversion of fields to an industrial site would permanently remove these nesting sites. That is not acknowledged here.

This is a perfect illustration of the fact that the site and proposed development should not be considered in isolation. Activity in adjoining sites would have major consequences for the present site and vice versa.

[4.3.7 Mammals] – badger, hedgehog, water vole, brown hare, otter. This entire section has been redacted from the version on the planning portal. No reason is given.

ES Vol.3: Appendix 7, Pt 2 – Landscape Specification

Key points

- The impact of security and deer fencing on wildlife corridors is not addressed.
- The Applicant appears to consider a 30-year management plan but the development has a claimed lifetime of 40 years. What happens after 30 years?

[Planting Works – General

All planting is to be monitored for signs of damage by deer: deer population information is currently unknown and there may be a requirement for additional deer protection fencing if significant damage to plants is recorded.

Elsewhere in the documentation, reference is made to the presence of Muntjac and Chinese Water Deer. If confirmed and deer fencing is installed, how are green corridors to be retained?

[Ground Preparation]

[Where necessary existing weeds will be treated with a glyphosate-based herbicide and a suitable period allowed to elapse, as recommended by the manufacturer, for the herbicide to take effect.]

How is this consistent with avoiding pollution of watercourses?

Proposals may look fine on paper but how would they be enforced both in the initial implementation and throughout the 30-year management period? What happens after 30 years?

ES Vol.3: Appendix 8

There is a problem with the formatting of this document. It is unintelligible as presented.

ES Vol. 4: Hydrology & Flood Risk

Key points

- The Applicant's wholesale reliance on publicly available data available from the EA means that they have grossly underestimated the flood risk for the site.
- No attempt has been made to determine the nature and location of existing land drains on the proposed development site (although some evidence was provided in the archaeological surveys – see Vol. 7; Appendix 7, Para. 2.6).
- Creation of 6.9 ha of impermeable surface has huge implications for management of water run-off. Against the lack of understanding of existing flood risk, the Applicant has not provided evidence that this will not be exacerbated by removal of large volumes of topsoil and creation of impermeable surfaces.
- Disruption of existing drains during construction will alter baseline conditions and potentially exacerbate flood risk.
- Cumulative effects with any other local developments (notably anticipated expansion of the NG sub-station) have not been considered in sufficient detail.

Flood risk

The Applicant appears to have relied exclusively on publicly available hydrological and flood risk data for its assessment of this important topic. In *2.7.6*, it is concluded that "*The available information is considered sufficient to establish baseline within the East Claydon Battery site hydrological and flood risk study areas for the purposes of EIA. Therefore, there are no data limitations that affect the robustness of the conclusions of this assessment."* This statement is made notwithstanding the EA's communication stating that "*It is possible that other flooding may have occurred that we do not have records for, and other organisations such as: local authorities or IDBs may have records"* (see Vol. 4; Appendix 4.1, Appendix A).

We believe that the failure to undertake on-site assessment means that the Applicant has failed to develop a true understanding of the hydrology and flood risk that are well-known to local residents.

The Applicant appears to have made no effort to establish the true conditions on the ground. Local residents are familiar with the propensity of the area to flood, including those areas designated as Flood Zone 1. This is amply illustrated in the photographs in Fig. 1, taken on 2nd January 2024 following a period of heavy rain. These demonstrate that areas designated as Flood Zone 1 (location for the proposed BESS installation) are significantly affected by floodwater. Flooding of the area is not an exceptional event.

As stated under 2.7.3, the EA's consultation response at Appendix A of Vol. 4; Appendix 4.1 makes clear that the definition of Flood Zones is based on 2D modelling and that no historic flood data are held for the area. Given the scale of the proposed development, the major challenges that would have to be faced during construction, operation and decommissioning of the site, it is astonishing that the Applicant has not placed greater emphasis on undertaking local site assessments of water quality or flood status.

In our view, the statements in 2.7.6 are unsound. Construction work involving stripping of topsoil and the creation of up to 6.9 ha of impermeable surface will, in itself, change the water retention properties of the ground. This is 26.3% of the entire site. The Applicant states that run-off from those areas will be directed to attenuation ponds prior to discharge

into local watercourses. Attention again is drawn to the photographs in Fig. 4.1. The Applicant needs to explain how that process of run-off and discharge into watercourses will be managed under conditions of heavy rainfall, especially given the Internal Drainage Board's condition that "*Any surface water discharge shall be restricted to the equivalent of 4 l/s per contributing impermeable hectare*." (Vol. 4; Appendix 4.1; 3.4).

The proposed temporary haul route from East Claydon Road is entirely within an EA designated Flood Zone 3. We can confirm that this area floods frequently and this is covered further under Vol. 8. This has important implications as to the viability of the proposed temporary haul route and the Applicant's assertions on construction traffic densities on the alternative route through Granborough.

Drainage

No systematic survey of existing field drains has been undertaken (3.8.1). Regrettably, this is a further example of the Applicant drawing conclusions in the absence of evidence. Field drainage throughout the area is highly critical. The Applicant needs to understand the nature and extent of existing field drain systems and ditches since they are inter-dependent. No conclusions can be made as to potential impacts of the proposed development in the absence of that knowledge. It is not accepted that the effect is of minor significance.

Most agricultural land in the area has drainage through a combination of mole drains and conventional land drains. If existing mole drains are indeed a feature of the proposed construction site, it is unlikely that they will be identified or protected during extensive excavation work.

Without a detailed survey of the area and engagement with the relevant members of the farming community, assumptions on baseline conditions may be compromised. Inadvertent disruption of drains during construction works would invalidate baseline assumptions

NB Evidence of field drains has been identified in the geophysical survey reported in para. 4.4 Appendix 7.2, Para. 2.6.

The Applicant acknowledges (5.2.2) that "*removal of field drains within the battery site could potentially cause a backup on surrounding field drains, in turn increasing the flood risk to the site and the surrounding receptors",* but considers that provision of an attenuation pond and wild flower meadow would offset this. No evidence is provided to support this assertion.

Vehicle wheel washing

Where will the wheel washer stations be located (4.1.1)? Will there be a facility for both haul routes? The nature of the clay soil means that cleaning of vehicles prior to exiting onto the highways would have to be extremely well-managed if serious pollution of local roads is to be avoided.

No.	Location
59	Field east of the proposed site.
60	Proposed site is on the other side of the hedge in the distance
62	The same field and hedge but closer to the proposed site (other side of hedge in foreground).
63	Footpath in the corner of the site field – (north-east corner of Field 1).
65	As for 65 viewed from the other side.
66	Stream that runs across the east and north side of Field 1.
67	The same but with a flooded field (Field 1)
70	Brook that runs along the north-west site boundary (Fields 2,3,4). The public footpath is inaccessible and there is flooding on both sides.
73	As for 70, looking south from the footbridge with Field 2 on the left.
74	Field adjacent to Field 2 on north-east boundary.
76	Southern tip of Field 1.
77	Field 4.
78	Stream running along south-west boundary of Field 4.
79	As for 78.
80	As for 78-79 with Field 4 other side of hedge
85	As for 80.

Fig 4.1. Annotated plan of proposed development site. Numbered circles refer to photographs taken on 2nd January 2024 (see succeeding pages) which show flooding in ALL areas of the proposed development site. Inset: EA Flood Zones (Zone 3 – dark blue; Zone 2 – light blue; Zone 1 – other areas)

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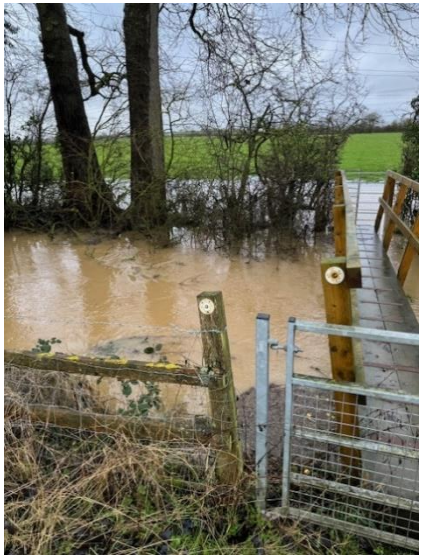

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Impermeable surfaces

[5.1.3 The site consists of the inclusion of approximately 3.5 hectares of impermeable ground cover.]

Elsewhere, the Applicant cites 6.9 ha of impermeable surface (e.g. Vol. 4; Appendix 4.1, 8.9). This raises concerns as to possible serious errors being introduced through calculations being based on a wrong assumption.

We believe that the Applicant has underestimated the flood risk in the proposed development area. At the time of writing (January 2024) many of the local fields are partly underwater, as demonstrated in Fig.1. During heavy rainfall, there are high rates of run-off from fields. The section of East Claydon Road in the vicinity of the point for the proposed temporary haul road is subject to frequent flooding.

Calculations of baseline run-off rates are based on a standardised value for the current surface conditions. The real-life on-site conditions include the presence of topsoil (which has water retaining properties, probable field drains plus ditches, all of which influence the rate of discharge into local watercourses. Removal of topsoil across 6.9 ha and replacement with impermeable surfaces with a dedicated drainage system will completely change the dynamics of water run-off. Has the Applicant undertaken dynamic estimates of rainfall, run-off, capacity of attenuation ponds and discharge rates into local watercourses?

Impacts on adjacent land

[5.1.6 The East Claydon Battery site will be mainly situated within a rural area, with few residential properties within the surrounding area. The site is partially located within Flood Zones 2 and 3, however when the limited residential properties within the study area are considered, it is deemed that the sensitivity of the receptor is therefore, considered to be medium.]

[5.2.5 Overall, the sensitivity of the receptor is considered to be medium and the magnitude of impact is deemed to be minor. The effect will therefore, be of minor adverse significance, which is not significant in EIA terms.]

We dispute this assessment. Sensitive receptors are not limited to residential properties. Surrounding fields and roads should also be taken into consideration. A flooded field may result in a lost crop. This is a highly significant loss to a farmer. We are not confident that the Applicant has shown adequate attention to detail in arriving at an assumed effect of *minor significance*.

We consider the Applicant to have based conclusions on insufficient or unsound evidence.

Sensitivity of watercourses

[5.3.2 With the incorporation of mitigation measures, the impact to ordinary watercourses is predicted to be of location spatial extent only impacting on surrounding receptors, short term duration, intermittent occurrence and can be reversible. The magnitude is therefore considered to be negligible.

5.3.4 Overall, the sensitivity of the receptors is considered to be high, and the magnitude of the impact is deemed to be negligible. The effect on the ordinary watercourse will therefore be minor adverse significance which is not deemed to be significant in EIA terms.]

It was our understanding that a (minimum) 9 metre exclusion zone would be imposed to protect all watercourse (as required by the IDB). In that case, there should be no damage to those watercourses.

We are strongly of the opinion that the Applicant has failed to consider the implications of heavy machinery working in the area, especially adjacent to watercourses during wet weather conditions. The surface layer of clay soil, when waterlogged, is highly mobile and so the integrity of watercourse margins is highly vulnerable. To conclude that the sensitivity of watercourse receptors is high but the effect is minor adverse significant is, in our view, unacceptable, especially given the ecological importance of these watercourses.

6.1.1 The proposed battery site has been subjected to an FRA in order to meet the requirements of planning policy and best practice. The proposed development of the battery site has been designed to ensure that surface water discharge from the site does not exceed the greenfield run off rate. With the incorporation of mitigation measures and the outline drainage strategy within the FRA, it has been determined that there will be no change from the baseline hydrological environment.

We consider this statement to be fallacious because calculations are based on assumptions from desktop analyses rather than real life conditions. See also under 5.1.3 above.

Accidents and disasters

Section 6.3 does not consider the risks associated with a thermal runaway incident and the management of water run-off and hazardous chemicals associated with fire management.

What provision has been made for bunding to prevent water run-off associated with any fire control measures to be retained and excluded from watercourses? (see also Vol. 4; Appendix 4.1; 8.25).

Cumulative effects

[8.1.1 New Substations (Substation and Substation Extension). The development of the substations forms part of the planning application so should not be considered as part of the 'cumulative' development.]

The Applicant has conflated proposed expansion of the East Claydon NG Sub-station with construction of the sub-station specific to the Applicant's proposed development. This cannot be allowed. The Applicant must include consideration of the cumulative impact of expansion of the NG sub-station in all aspects of its proposed battery storage facility, including hydrogeology, as required by the Scoping Opinion provided by the LPA.

The Applicant notes potential impacts of concurrent developments on water supply. What are the Applicant's demands on water supply for the proposed BESS project? Where will the supply (e.g. for wheel washing) be sourced and how will waste water be managed?

ES Vol. 4: Appendix 4.1

Relevant LLFA

[3.2 The site is within the administrative boundary of Oxfordshire County Council, who act as the LLFA for the site.]

This is a disturbing statement which questions the reliability of data and statements within the document. The relevant LLFA is Buckinghamshire Council.

Flood risk

[6.14 Figure 4 below, illustrates the proposed development, alongside fluvial and surface water extents. This highlights that development has sequentially located away from flood risk.]

The approach taken seems to assume that there are hard borders between the nominal flood risk zones. The proposed scheme gives the impression of a development on an island encompassed by areas at high risk of flooding. As noted above, this view is oversimplistic.

9.11 This FRA and supporting documentation illustrates that the development area is at low risk of flooding from all sources and meets the requirements of the NPPF and Planning Practice Guidance.

We consider this statement to be based on unsound assumptions and therefore unreliable.

Drainage

[6.22 No drainage records have been provided for the site. The land is currently agricultural land and therefore it is assumed that no artificial drainage systems will be present within the site area.]

This shows ignorance or disregard for farming methods. The Applicant should consult local expertise as to the presence of land drains. Ditches also play an important role in current water management. What would happen to these during construction, operation and decommissioning?

ES Vol. 4: Appendix 4.1- Flood Risk Assessment and Conceptual Drainage Strategy

Key points

- The Applicant is too reliant on desktop analyses of flood. As a result, the level of risk has been grossly underestimated.
- The development is likely to add to existing high levels of flood risk across the site.
- Flood risk associated with the proposed temporary haul route (Flood Zone 3) does not appear to have been considered.
- We fundamentally disagree with the Applicant's conclusions on the Sequential and Exception Tests (see also Vol. 4; Appendix 4.1).
- It is not clear whether, during heavy rainfall, local watercourses will cope with the proposed discharge rate of run-off water from impermeable surfaces.
- The need for on-site potable water supplies and management of foul water has not been considered.
- Systems for separation of contaminated water used to manage a fire or thermal runaway incident need to be presented more clearly.
- Arrangements for vehicle wheel washing facilities (supply and disposal of water) have not been provided.

Desktop definition of Flood Zones compared to real world conditions

[3.1 - The EA confirmed that they do not have any detailed flood risk modelling for the site. The response is provided in Appendix A for reference.]

This statement should alert the Applicant to the fact that it is unwise to rely on rather arbitrary and ill-defined Flood Zones as a basis for its design.

[3.2 The site is within the administrative boundary of Oxfordshire County Council, who act as the LLFA for the site. Consultation has been undertaken with the Flood Team regarding any information relating to flood risk and drainage.]

It is concerning to find statements such as this. The site is within the administrative boundary of Buckinghamshire Council.

[5.3 Site access will be via a track leading to the south east of the site, onto Hogshaw Road.]

This report makes no mention of the proposed temporary haul road accessed from East Claydon Road which crosses Food Zone 3. This suggests that the practicality of that route has not been rigorously assessed (see also under Vol. 8 for more detailed discussion).

[6.22 No drainage records have been provided for the site. The land is currently agricultural land and therefore it is assumed that no artificial drainage systems will be present within the site area.]

What measures have been taken to establish the presence of agricultural drains? If these have not been taken into account, then baseline conditions will be incorrectly characterised and any disturbance to the ground may have unpredictable consequences.

The usual management of agricultural land in this area includes the provision of field drainage and ditches. Indeed, scans of the site undertaken as part of the archaeological assessment provided some evidence of such drains.

[9.11 This FRA and supporting documentation illustrates that the development area is at low risk of flooding from all sources and meets the requirements of the NPPF and Planning Practice Guidance.]

This statement is not supported by real life observations (see Vol. 4).

Run-off from impermeable surfaces

[6.9 The EA surface water map indicates that the majority of the site is at a 'Very Low' risk of surface water flooding.]

[7.6 The proposed development involves the development of a Battery Storage Facility. It is considered that the vulnerability of the site will not increase as a result of the proposed works. The flood risk at the site is confined to the south west corner, which is located away from the proposed development at the site. No development is proposed in areas assessed as Flood Zone 2 and/or 3. No other significant risks have been identified in relation to any of the other sources assessed at the site. The site is therefore considered to pass the Sequential Test.]

The Applicant has stated that there will be 6.9 ha of impermeable surface created as part of the development which will create major changes in water run-off. As detailed in Vol. 4, the whole site is prone to flooding and, in our view, the 'Very Low Risk; assessment is a serious misjudgement.

[7.7 The PPG advises that 'Essential Infrastructure' development can be considered appropriate in Flood Zone 3, following satisfactory application of the Exception Test.

> *(a) it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA where one has been prepared;*
>
> *(b) a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.*

7.8 With reference to point (a) above, the proposed change of use will make greater use of the site.

7.9 With reference to point (b) above, this FRA demonstrates that the development will be safe, without increasing flood risk elsewhere. The vulnerability of the development will not increase as a result of the proposed works.

7.10 It is considered that the development passes the Exception Test.]

As regards (a) above, it makes different use, not necessarily greater. No evidence is provided in support of the statement under 7.8.

As regards (b) above, given that 6.9 ha of impermeable surface would be created, what is the evidence that the scheme will not exacerbate flooding in adjacent areas?

Passing the Exception Test is the Applicant's opinion. We do not share that opinion.

[8.20 Discharge of surface water from the site will be controlled to the 1 in 1 rate of 23.6/s for all return periods, through the use of a vortex Hydrobrake fitted immediately upstream of the proposed site outfall to local watercourse.]

[8.28 The site will be subject to topsoil strip and bulk earthworks to prepare the site to the correct level for development.]

It is not clear where this will be discharged and whether, under heavy rainfall conditions, the IDB requirement to constrain the rate to a maximum of 4 $l.s^{-1}$ per hectare is achievable.

Topsoil makes a major contribution to water retention and so helps to control run-off rates. How has surface stripping been taken into account when calculating runoff rates etc?

Requirement for potable water and management of foul/contaminated water

[8.21 The development site will be operated remotely, and so will not generate any foul drainage water. There is no requirement for any foul drainage provision on this site.]

In the Amended Design & Access Statement and elsewhere (e.g. Vol. Chapter 2, 1.3.7), reference is made to *storage containers providing welfare facilities*. It is our understanding from consultations with the Applicant's representatives that routine maintenance and safety checks across the site would require full-time presence of staff. Additionally, there will be considerable demands on staff time for the upkeep of habitat areas. Presumably, this will require proper on-site facilities for staff, in which case provision of water supplies and management of foul water would be required.

[8.25 Management of Fire Water] It is not clear how run-off from water used in management of any fire or thermal runaway incident will be kept separate from normal drainage channels. Given the likelihood of highly toxic chemicals contaminating the water in such an incident, this is a critical factor.

Wheel washing facilities will be required at both exits to the site. How will water provision and disposal for these facilities be managed?

The Sequential and Exception Tests

[The Sequential Test

7.6 The proposed development involves the development of a Battery Storage Facility. It is considered that the vulnerability of the site will not increase as a result of the proposed works. The flood risk at the site is confined to the south west corner, which is located away from the proposed development at the site. No development is proposed in areas assessed as Flood Zone 2 and/or 3. No other significant risks have been identified in relation to any of the other sources assessed at the site. The site is therefore considered to pass the Sequential Test.

The Exception Test.

7.7 The PPG advises that 'Essential Infrastructure' development can be considered appropriate in Flood Zone 3, following satisfactory application of the Exception Test. The Exception Test aims to ensure that more vulnerable property types are not allocated to areas at high risk of flooding. For the Exception Test to be passed:

> *(a) it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA where one has been prepared;*
> *(b) a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.]*

The Applicant's entire hydrology and flood risk assessment appears to be based on opinion rather than fact (e.g. "*It is considered that the vulnerability of the site will not increase as a result of the proposed works."*) None of the statements is backed up by evidence or calculation of water movements under different conditions of weather, changes in levels and removal of topsoil or other activity on site. We have no confidence in the Applicant's submission on the assessment of flood risk, both for the site itself and for adjoining areas, especially those served by watercourses linked to the site.

The Flood Risk assessment is based on the EA Flood Zone estimates but, as the email from the EA confirms in Appendix A, those zones are based on very limited information and may be unsound. By concentrating solely on the site (as defined by the area proposed for permanent development), the Applicant has ignored the wider area designated as Flood Zone 3 (dark blue area in the figure below) which includes the proposed temporary haul route from East Claydon Road. Note also that the Flood Zone 3 area extends to Tuckey Farm, the site of an application granted for a solar energy installation (see 21/04255/APP) and so the cumulative impact is of particular concern.

[7.9 …this FRA demonstrates that the development will be safe, without increasing flood risk elsewhere. The vulnerability of the development will not increase as a result of the proposed works.]

We can find no reference to consideration of any change in risk of flooding outside the proposed development site as a result of construction, operation or decommissioning activities. In the absence of such consideration, how can the Applicant conclude that risk elsewhere has not been changed?

Fig. 4.2 EA designated Flood Zone 3 areas

Fire water containment

[8.25 An onsite fire containment strategy will be incorporated into the overall site drainage design. It is proposed that a series of lined swales or interceptor channels will be located downgradient of battery storage units with a storage capacity of 250 m^3.]

How will this distinguish between normal run-off from rainfall as regards diversion to the attenuation ponds?

Groundwater

[9.4 The site susceptibility to groundwater flooding has been assessed as low.]

In its assessment of the application for a solar energy installation at the nearby Tuckey Farm (see 21/04255/APP), the LPA's Strategic Flood Management Team comments that, *"The Infiltration SuDS Map provided by the British Geological Survey 2016, indicates that the water table across both parcels is anticipated to be within 3m of the grounds surface. Therefore, it is considered that there is high groundwater flood risk and as such this may have implications on subsurface components."* The proximity of the two proposed development areas and the similarity of ground conditions are such that the Applicant's position does not seem tenable.

ES Vol. 5: Landscape & Visual Amenity

Key points

- Impact on local SSSIs has not been assessed.
- No visual impressions of the development in the landscape setting have been provided so the true impact has not been demonstrated.
- Cumulative impacts with other projects have not been adequately assessed.
- The Applicant's claims that negative impacts on landscape and visual amenity would be minimal are not accepted.
- The development would have a very significant negative impact on visual amenity viewed from PRoWs.

Impact on SSSIs

5.2.22 The Site lies within the Natural England SSSI Impact Risk Zones (Natural England, 2019) of Sheephouse Wood SSSI and Finmere Wood SSSI. All planning applications including solar schemes with a footprint greater than 0.5ha will require LPA consultation with Natural England on the likely ecological risks associated with the development.

See comments under Vol. 3.

Cumulative impacts

[5.4.33 It is likely that the East Claydon Substation will be expanded although no details are currently available.]

This statement is not supported by verbal comments at public consultation meetings where representatives of the Applicant indicated that they had seen details of planned expansion of the sub-station. The LPA's Scoping Opinion required the Applicant to include this as part of the cumulative impacts with other developments. This they have failed to do.

Impact on the landscape

[5.4.39 The Proposed Development will be out of keeping with the current rural character but will represent a new form of electrical infrastructure within an area where electrical infrastructure already has a strong influence on landscape character. The low lying, almost flat character of the Site, distant from residential properties and surrounding villages, combined with the strong hedgerow network, means that it has the ability to absorb a fairly low-level form of development.]

The question is whether the Landscape Value is assessed by the Applicant as low to medium is made worse by the installation of a further electrical infrastructure installation. In our view it is made substantially worse, especially viewed from Granborough, vantage points in East and Botolph Claydon or the ProW network. This would be a major industrial development in a rural landscape.

[Table 5.4: Effect of the construction phase of the Proposed Development on Landscape Character.]

The Applicant consistently underestimates the visual impact of construction work on residents of the surrounding villages, those who work in the area and visitors (walkers, cyclists and equestrians). Whilst it is accepted that the actual construction work is of a defined period, its impact would be cumulative with the legacy effects.

[5.7.5 Over time the changes in topography will be masked by the proposed landscape screening around the Site. The perceived effect of topographical changes on the landscape character areas and visual amenity will be Negligible.]

It is disingenuous to suggest that changes to the topography of the area will be negligible. Whilst terracing to accommodate the proposed development land profile may result in relatively minor changes in land profile, superimposition of the battery storage containers, inverter houses and sub-station will have a highly significant negative effect on landscape character and visual amenity.

[5.7.11 Overall, the effect of the Proposed Development on the wider LCA's is considered to be not significant and in the long term, Neutral.]

This statement is not supported by the foregoing text. We understand that the Applicant seeks to minimise the extent of impact on the landscape and visual amenity, especially by focussing on the longer term. Having walked the area and viewed the location from a number of viewpoints, especially those that are considered particularly valuable to residents and visitors, we submit that key attributes of the area will be lost for a generation.

5.7.12 This new 1.8 Km route will benefit those seeking to enjoy the countryside, particularly because it will run alongside an attractive water course and will create a circular walk, usefully connecting into existing ProW.

The Applicant needs to make clear the nature of the view that users of the permissive path will experience. No mention is made of the security fencing that would surround the electrical infrastructure and the desolate appearance of rows of shipping containers surrounded by concrete and gravel. What exactly would be the view?

[5.8.2 The Applicant is seeking a temporary consent (40 years) and so effects will be temporary, albeit for a long duration.]

Notwithstanding assurances regarding the 'temporary' nature of the development, the likelihood that the site will be decommissioned and returned to agricultural land in 40 years is considered vanishingly small. This view is reinforced by comments in 5.10.2, *"Whether the substation is retained or removed or reconfigured will depend on the grid management strategy at the time of decommissioning."*

We are forced to conclude that the effects will be permanent. It is noted that many of the 'temporary' effects on the visual landscape, even in the Applicant's view would be apparent 20 years or more after development is complete.

[5.8.4 In winter the electrical infrastructure will be visible as a rows of mid-green boxes. The customer substation will also be clearly visible. The electrical infrastructure will be less visible in summer].

The Applicant omits to say that the rows of green boxes will be set against a background of concrete and grey gravel which gives the site a marked sense of industrial desolation.

[5.9.4 Once all of the schemes have been built out the associated mitigation will integrate the developments into the landscape and the overall sequential cumulative effect will be Negligible.]

This is the Applicant's opinion. We fundamentally disagree with that opinion.

[5.11.10 While there is the potential for the Proposed Development to have an adverse cumulative effect in association with the consented, but not yet built, Tuckey Farm Solar Farm the effect is not considered to increase the effect beyond the Moderate adverse as already determined for the Proposed Development. Since the Proposed Development and

the solar farm will be separated by the existing East Claydon Substation the direct cumulative effect on visual amenity above the effects determined will be Negligible to most receptors. There will, however, be a Minor adverse sequential effect on those passing both developments when using the local ProW network.]

Throughout the document, the Applicant refers to rural views but is quick to point out that they are 'marred by the overhead transmission lines' as if to make the point that the imposition of a large, contiguous area of electrical infrastructure would have no further impact. The visual character of the proposed BESS is very different and its impact should not be underestimated.

The Applicant dismisses the cumulative impact of the proposed development and others on the visual landscape as being justified by the presence of the existing East Claydon NG Sub-Station. It is a curious argument to suggest that one blot on the landscape justifies wider proliferation.

[5.8.16-24 Views from Footpath EC4/2]

Footpath EC 4/2 is an important route for walkers. It runs parallel to the route of the ancient Drovers Way. Even the Applicant considers the development to have Moderate Adverse effect on this route. Such an impact on a key ProW is highly undesirable.

ES Vol. 5: Appendix A, Pt.1-3

The presentations lack any visualisations post-development. It is therefore difficult to appreciate the impact of the development, the reader being given no visual clues as to the elevation of the proposed structures.

Photographs have been taken at a time when the hedgerows are at maximum height, prior to seasonal trimming and so do not provide a 'worst case' view.

The impact on landscape views from Botyl Road (Figs 5.14.3-5) are of particular concern. The Mushroom Shelter (which shares the same aspect – see Buckingham Heritage List) was established over 100 years ago with the express intention of affording unrestricted views across the valley. Installation of the proposed BESS would destroy the community asset that it provides. It is imperative that the views from this position are not compromised.

The view from Quainton Hill (p75) demonstrates that the installation would dominate the valley floor, thus undermining the integrity of the rural landscape. It should be remembered that the development does not present just rows of green boxes. The green boxes are set against large areas of grey gravel which will be highly visible, especially when seen from elevated viewpoints, of which there are many.

ES Vol. 5: Appendix B

It is regrettable that the Applicant has not provided keys to the images which are made difficult to interpret by the absence of explanation.

ES Vol. 6: Built Heritage

Key points

- This is a very superficial analysis of the impact of the proposed development on heritage assets.
- The application should consider the impact on the setting of the 28 Listed structures in East and Botolph Claydon.
- The cumulative impact of this with other developments has been summarily dismissed. It warrants more detailed and sensitive consideration.

The Applicant notes under 3.2.2 that *"There has been one site inspection (1st February 2023)."* Details of this have not been specified.

[3.7.2 There are a number of other listed buildings within the wider area of the Site, however, the site walkover survey confirmed that there was no intervisibility between them and the Site.]

[3.15.4 No shared built heritage assets have been identified with the site from nearby cumulative schemes and there will be no cumulative effects.]

The impact of the proposed development on just a single Listed Building, Rookery Farm, has been considered in any detail. This is a paradox since it is the site of the installation. It is clear that, if properties in the Botolph Claydon Conservation area can be seen from the proposed development site, it follows that the reverse is true. Equally, views from East Claydon, especially those in Church Way have not been considered.

East Claydon and Botolph Claydon have no less than 28 Listed Buildings and other structures, many with views across the valley. Why have these not been considered? English Heritage makes clear that impacts on the setting of heritage sites should be considered in any planning proposal. This is not just limited to properties that are in direct line of vision. Rather, in the present case, the rural character of the surrounding area is an important contextual consideration as to the impact of the proposed development.

In this regard, the setting of heritage sites in the surrounding villages should be taken into consideration. This includes Rookery Farm.

Dismissal of cumulative impacts with other developments, planned or proposed is an indefensible position. It demonstrates a complete lack of understanding of the heritage assets of the area and their value to the community.

ES Vol. 7: Archaeology

Key points

- Ridge and furrow profiles, which Buckinghamshire Council seeks to protect, would be lost should the development proceed.
- The Applicant has not considered impacts on the full spectrum of built heritage assets in the local communities.
- The location for the proposed temporary haul road has not been surveyed for buried heritage assets.
- We endorse the Archaeology Officer's contention that extensive investigation is required to establish the nature of buried asset profiles revealed during field surveys.

Visible heritage assets

[3.7.7 The Site contains ridge and furrow throughout, as well as former field boundaries. Further areas of ridge and furrow survive in small patches over the landscape between Granborough and East Claydon.

3.12.7 The proposals will have a negligible adverse effect on later medieval and post-medieval cultivation remains.]

We disagree with this conclusion given that it is Buckinghamshire Council's policy to preserve ridge and furrow remains.

See also Vol. 7; Appendix 7.3.

[3.8.3 There are a number of other built heritage assets within the vicinity of the Site. However, these were discounted from further assessment due to their distance from the Site and the intervening built and landscape form.]

The Applicant has failed to consider the potential impact of the development of a number of Listed Buildings in East and Botolph Claydon, especially with regard to their settings (see under Vol. 6 & Vol. 7: Appendix 7.1.

[3.12.4, 3.12.5 The proposed development will have a moderate adverse effect upon the significant prehistoric remains and associated cut features relating to settlement and the agricultural management of the landscape. The proposals will also have a moderate adverse effect upon the significant Roman remains, cut features and finds of the period.

The effects of planned stripping of topsoil together with deeper excavations for ponds, etc. across large sections of the site are likely to have highly significant impacts on the integrity of historic remains. This must be considered carefully in arriving at any view on the planned development.

No studies have been reported for the land affected by the proposed temporary haul route. Given the number of findings in the north of the proposed development site, this is surely an important oversight and risks damaging unknown buried heritage assets.

We endorse the comments of the Archaeology Officer regarding the need for further investigations.

ES Vol. 7: Appendix 7.1 - Archaeological desk-based heritage assessment for East Claydon Substation Granborough, Buckinghamshire

Effects on heritage assets and their settings

[2.1 Designated Heritage Assets located within the study area.]

The study area is not clearly defined but some Listed Buildings in Botolph Claydon are mentioned whilst others are not. St Mary's Church is the only Listed Building in East Claydon to be considered and yet there are others in the immediate vicinity of the church. Between them, East and Botolph Claydon have 28 Listed structures. Whilst not all of these would be directly impacted by the proposed development in terms of sight lines, the Applicant should include a wider assessment to include the setting of those assets.

[3.3 Impact on key views - The proposed development will not affect views of the built heritage within East Claydon and Botolph Claydon because their distance from the ZTV renders them almost imperceptible.]

We disagree with the Applicant's conclusion that heritage assets in East and Botolph Claydon would not be affected by the proposed development. For example, as is noted under Vol. 6, the Applicant has provided photographic evidence that properties such as Botolph House can be seen from the proposed development site, (see also Fig. 5.7.8, Vol. 5; Appendix 5.1, pt 1). It follows, therefore that the site can been seen from those properties. In any event, the Applicant has undermined their own position by stating that they didn't have access to Botolph House to undertake the necessary assessment. The true position cannot be determined from a desktop analysis.

[Wider effects of the development The overall sprawl of the development undoubtedly constitutes substantial landscape change which will initially be harsh and will invoke the perception of unwelcome creep or spillage from the current facility rather than the sudden introduction of an altogether new feature. This effect will have a limited time frame because the proposed planting is expected to completely screen the battery storage units and partially conceal the new substation after a period of ten years.]

[Outcome When viewed from the ZTV, the proposed development will not alter views of the built heritage because the current substation facility is already dominant within the view. As such, the proposals will have a neutral effect and will not cause harm to the significance of the Listed Buildings, their settings or the ability to appreciate them.]

We disagree with the Applicant's analysis. The existing NG sub-station is out of direct view from East and Botolph Claydon whereas the proposed development would extend along the valley floor, transforming its appearance (acknowledged by the Applicant as 'harsh') and occupy a dominant position viewed from a 360° degree perspective.

[3.3 Sionhill Farmhouse]

Why does the Applicant consider this to be of 'low significance'?

Why wasn't the White House Farmhouse included in the assessment?

[3.9 Potential effects]

There is a paradox in the Applicant's concern to assess impacts on Rookery Farm, the site of the proposed development, at the expense of all other properties.

Buried Heritage assets

3.2 Buried Heritage

[The installation of the temporary haul road to the north of the main Site is not expected to significantly impact the archaeological remains, although compression of potential archaeological remains caused by heavy plant, for the construction of the temporary bridges and for the battery storage facility is possible.]

No surveys appear to have been undertaken along the route proposed for the temporary haul road from East Claydon Road to the construction site. As such, the Applicant has provided no evidence to support their statement. This is a gross oversight and should be corrected.

The overall conclusion from Section 3.2 is that any the value of any buried remains would be reduced to nil by the development.

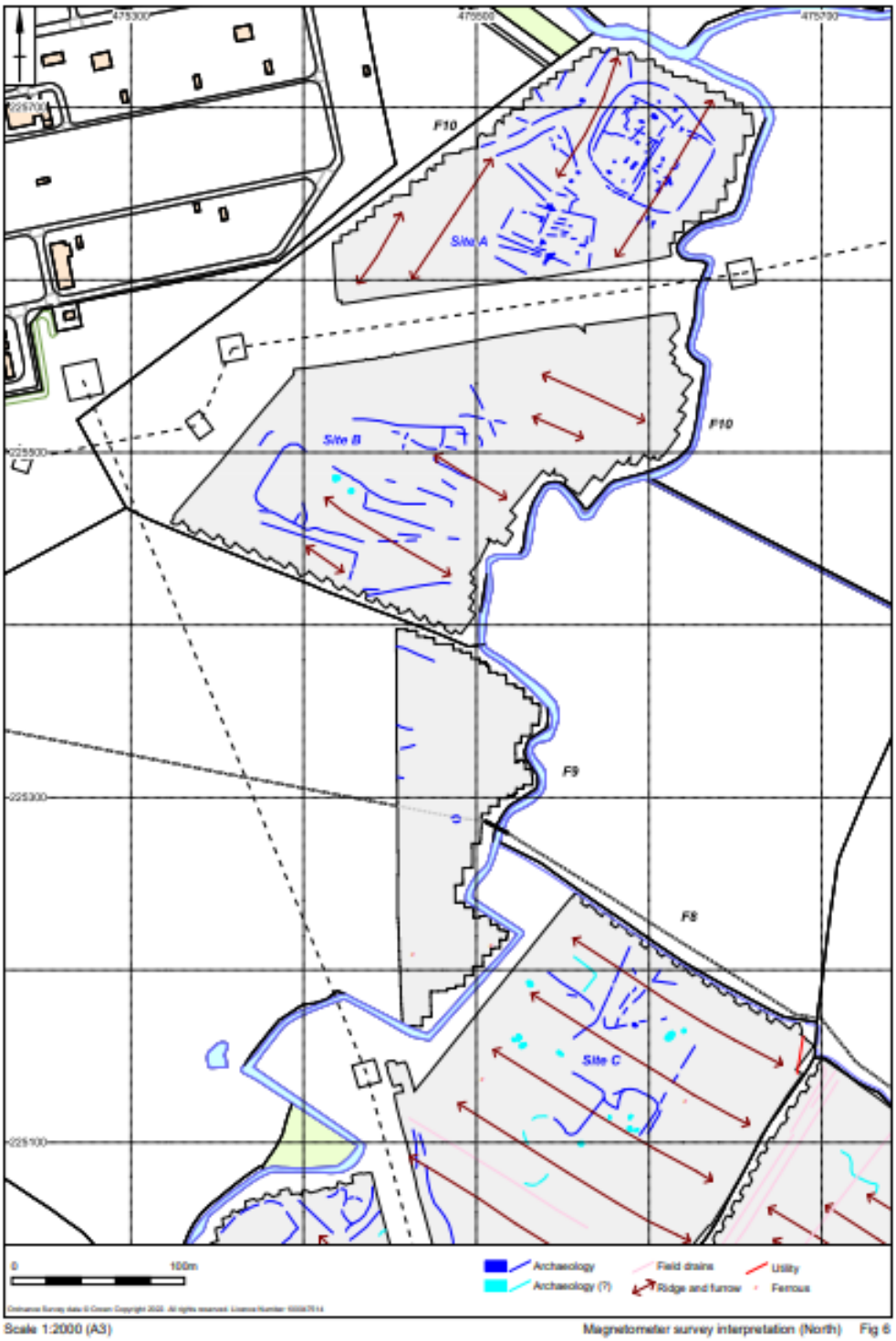
Permanent effects

[Permanence The proposed development is temporary and fully reversable with an expected lifespan of forty years.]

This statement is not supported by comments elsewhere which include the suggestion that the sub-station could be retained.

It is noted that Historic England, in its scoping opinion for the proposed Rosefield solar energy installation, states, *"The assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits, and can also lead to subsidence of buildings and monuments."* Since there appears to be a substantial body of buried remains across the proposed BESS site, we suggest that the same principle should apply. It adds, *"It does not seem that the possibility of damage particularly to archaeological deposits during decommissioning can be dismissed, especially at a distance of 40 years into the future. Some consideration should be given to this."* This is also a concern for the present application and should be a factor in examining plans for decommissioning.

ES Vol. 7: Appendix 7.2 - Archaeological geophysical survey on land at Granborough, Buckinghamshire



Sites A & B in Fig 6 appear to be of particular interest and potentially highly vulnerable to groundworks and infrastructure installations on the site. Shouldn't these receive more extensive investigation?

The figure also demonstrates the close proximity of numerous buried assets close to the route of the proposed haul road. No effort appears to have been made to establish the existence of any buried remains along the route from East Claydon Road to the site. Given that the majority of survey findings are clustered around the Claydon Brook at the northern end of the site, further surveys should be undertaken before any conclusions are made as to its suitability as a haul route or the vulnerability of any remains.

ES Vol. 7: Appendix 7.3 - Written Scheme of Investigation for an archaeological trial trench evaluation on Land off Hogshaw Road Granborough, Buckinghamshire

[Fig. 2 Trench Layout] - It is a paradox that the fields that will be subject to greatest disturbance through groundworks for installation of electrical infrastructure are those where ridge and furrow remains are apparent while the area reserved for habitat development has little evidence of such remains. It is the policy of Buckinghamshire Council to preserve ridge and furrow remains.

Why is there no plan to investigate the area in the north of the site that will be traversed by cable connections to the National Grid Sub-Station? The Applicant needs to explain this omission.

ES Vol. 8: Transport & Access

Key points

- The Applicant has given confusing messages on the principal haul route for construction, with conflicting statements issued to Granborough and East Claydon Parish Council on the use of East Claydon Road or Granborough Road / Winslow Road / Hogshaw Road.
- The routes along East Claydon Road and Granborough Road / Hoghsaw Road completely ignore key safety concerns for pedestrians, cyclists and equestrians.
- The proposed temporary haul road from East Claydon Road has not been adequately assessed in terms of:
    - Flood risk and likelihood of becoming inaccessible
    - Wheel washing facilities and fouling of roads with mud
    - Presence of buried heritage assets.
- A full assessment of the pitch and load-bearing limits of the bridge on Granborough Road, designated as the proposed route for AILs, does not appear to been undertaken.
- Both alternative haul routes involve unacceptable increases in HGV traffic on minor country lanes (240% for East Claydon Road; 2,400 % for Hogshaw Road) with limited space for two passing HGVs.
- There are inconsistent estimates of HGV numbers during the construction period.
- The access route for large, mobile cranes has not been considered.
- Local road infrastructure has been destroyed by HS2 and EWR construction traffic. The prospect of yet further damage has huge negative implications for local communities.
- Night-time working for construction of the proposed haul roads is totally unacceptable.
- No consideration is given to traffic implications for the decommissioning phase.

Designated haul route for construction traffic – baseline conditions

[1.1.27 Within Winslow it is proposed that HGVs turn right from the A413 High Street onto Vicarage Road before turning left onto Burleys Road. This is the signed through route to Granborough and allows through traffic to avoid Winslow town centre. Vicarage Road and Burleys Road also have a more appropriate width and horizontal alignment than Horn Street in the town centre. Burleys Road joins Granborough Road at the southern exit from Winslow before continuing south.]

Whilst it is agreed that Horn Street (unsuitable for HGVs) is not an acceptable route, Vicarage Road is subject to on-street parking. It is also a bus route and buses remain stationary for extended periods. Burley's Road invariably has street parking, effectively reducing the width of the carriageway. It is not appropriate for large loads. Also, the turn onto and off High Street from Vicarage Road is very tight, again making it unsuitable for frequent large vehicle movements. It should be clarified that this route only avoids part of Winslow town centre. The section of the High Street immediately adjacent to the junction with Vicarage Road proposed as the principal route is consistently reduced in width by on-street parking.

[1.1.42 The only exception to this is the AIL movements which will continue south on Granborough Road and Winslow Road to Granborough, and via Hogshaw Road to the

southern site access. This southern route may also be used by other construction vehicles in the unlikely event that the northern construction access is unavailable. The opposite of these routes will be followed when large construction vehicles depart the site.]

There are two major issues with the statements here. First, the temporary haul road is likely to be rendered impassable during periods of heavy rain because of flooding (see below) and so all traffic would be diverted to the Granborough Road/Hogshaw Road route. Second, this is contradicted by the following statement in a letter, dated 16th January 2024, from the Applicant to Granborough Parish Council (copied to the LPA*), "Statera is prepared to commit that all construction related HGV and LGV vehicles use the temporary construction haul route and will not use routes through Granborough even in the event the haul road is unusable*." Does this imply that all construction work would cease in the event that the temporary haul road is inaccessible?

[1.1.29] It is proposed that AILs (four) conveying 112 tonne transformers and some other traffic will use Granborough Road. The practicality of this approach over the single width bridge must be questioned. Equally, if this is an acceptable route for AILs, why is it unacceptable for other vehicles? What is the proposed route for large, mobile cranes?

[1.1.35 - Summary of Receptors and Associated Sensitivity]

We consider it irresponsible not to consider pedestrians, cyclists and equestrians using the East Claydon Road. Large numbers of cyclists use this road on a regular basis, both as a commuter link and for recreational purposes. The road itself has no footpath but it provides access to PRoWs and so pedestrians walk along the carriageway. A significant increase in HGV traffic along this road is a cause for major concern as regards the safety of walkers, cyclists and equestrians. Where two HGVs seek to pass one another, there would be no space for these other road users.

Assessment of impacts

[1.1.44 The CTMP identifies the maximum number of daily two-way construction vehicle movements associated with the Application Site to be approximately 104 comprising approximately 56 cars / vans and 48 HGVs. Adding this construction traffic to the existing traffic flows identified in Table 8.5 allows the percentage increase in traffic flows on the access route to be calculated as shown in Table 8.8 overleaf.]

NB There is a mismatch in HGV numbers with Table 1.4 in Vol. 9; Appendix 9.3.

The maximum number of HGVs quoted in the Design & Access Statement (7.32) is 30. Which is correct?

Table 8.8 seeks to minimise the changes to traffic flows by considering only total vehicle movements. Looking at the critical HGV movements alone, the anticipated increases would be 240% for East Claydon Road and (when used as the sole haul route) 2,400% for the Granborough/Hogshaw route.

Local roads are relatively narrow, country lanes. Passing of two large vehicles requires extreme care. Together with the need for all of the vehicles to turn in and out of the site, the proposed use of these roads as haul routes will have a serious impact on road safety.

It is well-recognised that a large HGV (e.g. 6 axles, 44 tonnes) can cause more than 100,000 x the damage to roads than an average car, road margins being particularly vulnerable. We have witnessed the damage caused to local roads through their inappropriate use by construction traffic associated with the HS2 and EWR projects. These roads were not constructed for frequent use by heavy vehicles. Some have been rendered

effectively impassable for cars because of the risk of tyre and suspension damage or to cyclists and motorcyclists because the road surface is unsafe.

Local residents have endured the destruction of the local road infrastructure for too long. The prospect of yet more roads suffering the same fate with the associated inconvenience, damage to vehicles, threats to safety and cost to Bucks Highways Department is deeply depressing.

[1.1.52 Fear and intimidation for pedestrians.

In the context of the thresholds identified in Table 8.3, the existing traffic flows on the A421 may represent a 'great' hazard for fear and intimidation and those on the A413 may represent a 'moderate' hazard but Granborough Road, East Claydon Road, Winslow Road and Hogshaw Road would not be classified. The additional traffic flows associated with construction traffic will not cause any change to this degree of hazard.

1.1.53 The overall effect on fear and intimidation during construction is considered 'neutral' for all receptors.]

[1.1.55 The overall effect on accidents and safety during construction is considered 'neutral' for all receptors.]

These statements reveal an astonishing and unacceptable disregard for pedestrians, cyclists and equestrians on local roads.

[1.1.77 During construction of the Proposed Development, the temporary effects on receptors will be minor adverse in respect of 'severance', 'driver delay' and 'pedestrian delay and amenity', and, neutral in respect of 'fear and intimidation', 'accidents and safety' and 'hazardous loads'.]

We fundamentally disagree with these conclusions.

[1.1.59 Once operational the traffic generation associated with the Proposed Development will be minimal. It will be a remotely controlled and monitored facility with no day-to-day on-site operatives. Visits to the site will only be made on an occasional ad-hoc basis for maintenance purposes, security checks and similar.]

It is our understanding that the site is of such a scale that it would have to be attended effectively on a daily basis in order to undertake routine safety checks and maintenance.

[1.1.61 The activities involved in decommissioning the Proposed Development are not yet known in detail as it has a design life of up to 40 years. There would be expected to be some vehicle movements associated with the removal (and recycling, as appropriate) of material arising from demolition and potentially the import of materials for land restoration and reinstatement.]

In order to fully understand the implications of the proposed development, the Applicant should submit details of the decommissioning procedures. Since the proposed haul road from East Claydon Road would be temporary, presumably, all traffic involved in decommissioning the plant would have to take the Granborough/Hogshaw route.

[1.1.72]. The Applicant considers that possible concurrent construction of the Tuckey Farm and Statera developments would not provide any additional concerns as regards HGV traffic. We disagree, especially since vehicles turning into and out of the respective sites does not appear to have been considered, especially since there is no refuge for pedestrians and cyclists on the common sections of the respective haul routes.

[Table 8.9 - People walking, cycling and driving on / beside the various roads within Granborough, Winslow and Padbury - Fear and intimidation – Neutral.]

This assessment is irresponsible and unacceptable.

Flood risk

The proposed, temporary haul road from East Claydon Road would cross a field bordered by the Claydon Brook and designated by the EA as being in Flood Zone 3. Recent heavy rainfall confirmed that the risk of flooding is very high (see Fig. 8.1) and this extends to East Claydon Road itself. Photo 3 in Fig. 8.1 shows the field proposed as the haul road to be completely underwater. The route would also require the construction of bridges over the brook. The Applicant does not appear to have taken flood risk into account when proposing the route.

ES Vol. 8: Appendix 8.1 - East Claydon Battery Energy Storage Access: Technical Note

For the temporary access route from East Claydon Road, how will drainage from the track be managed? (NB As noted above, this section of the road is vulnerable to flooding).

ES Vol. 8: Appendix 8.2 - Construction Traffic Management Plan

It is proposed that construction will be undertaken during the following times:

Day	***Winter working (Oct – Mar):***	***Summer working***
Monday	*07:00 – 18:00*	*07:00 – 20:00*
Tuesday	*07:00 – 18:00*	*07:00 – 20:00*
Wednesday	*07:00 – 18:00*	*07:00 – 20:00*
Thursday	*07:00 – 18:00*	*07:00 – 20:00*
Friday	*07:00 – 18:00*	*07:00 – 20:00*
Saturday	*07:00 – 13:00*	*07:00 – 13:00*

The proposed summer working hours are wholly unacceptable as is night-time working for construction of the haul road.

Appendix 2 – The estimated total number of HGVs over the construction period is 3,905. This places huge pressures on our road infrastructure.

Appendix 5 – The Applicant provides dimensions of typical large crane but there is no detail as to how vehicles of this size will access the site or whether their weight presents issues.

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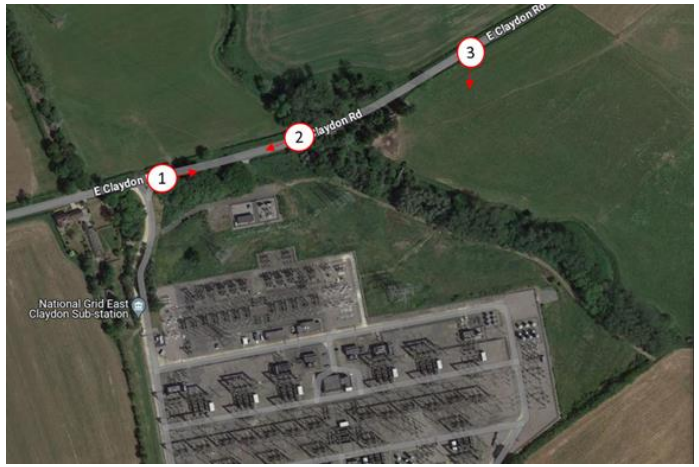

Fig. 8.1 Flooding on East Claydon Road and proposed temporary haul route. Numbered circles indicate locations of individual photographs (taken 2nd January 2024).

ES Vol. 8: Appendix 8.3 – Abnormal Indivisible Load access to proposed battery energy storage system (BESS) site at East Claydon

What discussions have taken place with Buckinghamshire Council to establish the weight bearing potential of the East Claydon Brook bridge on Granborough Road?

Whilst we recognise that the proposed haulage contractor has extensive experience of such matters, the swept path analysis for the bridge over Claydon Brook looks extremely tight (vehicle track to kerb over bridge provides about 40 mm clearance each side). Is the Applicant confident that the elevation and ground clearance available is acceptable and that the load bearing potential has been properly assessed?

ES Vol. 9: Chapter 1 – Climate Change

Key points

- Based on the assumptions made by the Applicant, we believe that construction phase GHG emissions have been grossly underestimated.
- No estimates of GHG emissions associated with shipping materials (mostly from China) have been provided.
- No estimates of GHG emissions associated with decommissioning have been provided.
- Notwithstanding the large variance in estimates of GHG net emissions or savings during the operational phase, losses incurred in the round trip of charging and discharging batteries (420 MWh per day) represent huge wastage of electricity generating capacity that is lost as heat to the atmosphere.
- GHG emissions associated with manufacture of materials and construction of the site would be equivalent to almost the entire carbon budget for Aylesbury Vale for the period 2023-2027.
- The Applicant suggests under Vol.9: Appendix 9.2 that the proposed BESS installation may be permanent, contrary to other assertions as to its temporary nature.
- Required storage capacity for 2030 is more than met by existing and planned installations and the predicted storage capacity requirement for 2050 could be achieved with a small additional number of brownfield developments. The carbon cost of manufacturing the proposed BESS, plus the estimated huge energy wastage during operation, means that savings on GHG emissions are unlikely to be achieved.

Construction phase Greenhouse Gas (GHG) emissions

[1.1.31; Table 1.4] The number of HGV journeys quoted here is half that given in Vol. 8; 1.1.44 so GHG emissions may have been underestimated.

[5.2.6 It is anticipated that the batteries would have an expected lifetime of 5,000 discharge cycles (IEA, 2020b). Therefore, over the forecasted 40 year assessment period, and assuming one full cycle per day, the battery packs would have to be replaced circa three times.]

If the batteries require replacing three times during the operational lifetime of the site, that implies 4 lots of batteries. This means that the figure for "*number of battery pack replacements for Proposed Development's assumed lifetime"* in Table 5.1 should be 4 (not 2.92 as stated). The figure of 2.92 appears to have been arrived at by assuming a battery lifetime of 5,000 cycles and then dividing the number of days in 40 years by 5,000. This makes little logical sense since a battery cannot be replaced 2.92 times.

We understand that the Minety BESS installation operates on a multiple cycle per day basis, albeit with 2h rather than 7h battery discharge time. If the proposed East Claydon site were to operate on more than one cycle per day, presumably battery lifetimes would be reduced. In any event, by using a figure of 2.92. rather than 3.0, the Applicant has deducted a possible 29,690 tCO_2e from the calculation. If 4 x sets of batteries were required, the discrepancy rises to 400,680 tCO_2e.

On this basis, the total for the upper estimate of construction-stage GHG impact for the battery element alone could rise to 1,498,064 tCO_2e (compared to the quoted figure of 1,083,320 tCO_2e).

Adding the other factors in Table 5.2 gives a total of 1,514,275 tCO_2e for the construction phase. This does not include GHG emissions through international shipping (see 5.2.17), which are very considerable.

This figure of more than 1.5 million tCO_2e compares with the proposed carbon budget for the whole of the Aylesbury Vale region of 1.8 million tCO_2e for the period 2023-2027 (*Source: Tyndall Centre, University of Manchester).*

Operational phase (GHG) emissions

In order to arrive at an estimate of GHG emissions, the Applicant has been obliged to make a number of assumptions and it is understood that there is likely to be a very substantial variance in the derived values. The basis for the calculations is covered in Vol.9: Appendix 9.3. We have significant concerns as to the reliability of the estimates obtained (see further comment at Appendix 9.3).

[Table 6.2 and 6.2.21] The suggestion that the development would have a positive impact on the Aylesbury Vale carbon budget is completely spurious. The alleged saving in carbon footprint is based entirely on electricity drawn from the National Grid which could be generated from fossil fuels or imported from third countries. The more realistic conclusion is that the development would increase the carbon footprint of the Aylesbury Vale area by virtue of construction work, battery replacement and loss of agriculture. As noted above, GHG emissions associated with manufacture and construction alone would be equivalent to almost the entire carbon budget for Aylesbury Vale for the period 2023-27. Any improvement in carbon footprint derived from tree planting would marginal until the end of the proposed operational life cycle.

[6.2.32 It is not considered likely that there will be any GHG-related operational-stage accidents and/or disasters, nor that there will be any operational-stage accidents and/or disasters that would cause GHG emissions.]

Given the likelihood of a battery fire event during the operational period, this is a brave assumption!

[Table 9.1] We believe that the Applicant has grossly underestimated the flood risk associated with the proposed development site. The assessments of 'Construction: minor adverse' and 'Operation: negligible beneficial' are rejected as completely unrealistic.

Decommissioning phase GHG emissions

We can find no reference to this in the Applicant's submission. We understand that, currently, Li-ion batteries are sent to The Netherlands or to China for recycling. The GHG emissions associated with this and the other decommissioning activities must be included in calculating the life-cycle emissions for the project if the Applicant's claims are to have any credibility.

Flood risk

[Table 9.1] We consider that the Applicant has grossly underestimated the impact of the proposed development on flood risk.

The proposition that the development will result in minor beneficial impacts on visual amenity is not accepted.

ES Vol. 9: Appendix 9.1 – Policy Review

[1.3.7] The Applicant notes that, under Paragraph 10.60 of the Local Plan, *"The Council supports renewable and low carbon energy provision wherever any adverse impacts can be addressed satisfactorily."*

It is our view that the Applicant has failed to give sufficient weight to understanding and reporting adverse impacts of the proposal.

[1.4.3 The effects of construction and supply chain emissions (including those taking place outside of the UK), and any associated mitigation, must be taken into consideration when considering the significance of emissions.]

We agree with this comment. It reinforces the view that shipping of batteries etc., from third countries, as well as decommissioning activities, should be taken into account when calculating total GHG emissions for the development.

ES Vol. 9: Appendix 9.2 – Climate Risk

[1.2.3 The Proposed Development is expected to be of a long-term/permanent nature as a key piece of electricity grid infrastructure. Climate change projections for two periods in the mid- and late century have therefore been considered: average conditions during 2040-2069 and 2070-2099.]

This contradicts the claimed 'temporary' nature of the proposed development.

[1.3.8 The most significant risk from climate change to the proposed development arises from flooding due to increased levels of precipitation. This is assessed in Volume 4: Hydrology and Flood Risk and appropriate flood management and resilience measures have been provided.]

This provides a different view compared to Volume 4 where flood risk is essentially dismissed as a possibility.

ES Vol. 9: Appendix 9.3 – GHG Calculations

[Table 1.2] By assuming a replacement rate of 2.92 rather than 3, there is a potential underestimate of 29,680 tCO_2e.

[Table 1.4] assumes 24 HGV and 56 car/van round trips per day but Vol. 8 Section 1.4.44 states 48 HGV and 56 car/van round trips. Which is correct? If the true figure is 48 HGV round trips, 1.3.31 grossly underestimates the total emissions which we estimate to be 11,808 tCO_2e, almost twice the amount suggested.

[1.3.34] Setting the estimated total amount of CO_2 sequestered by the woodland planting over an initial 30-year lifetime as an offset against the construction phase GHG emissions cannot be justified.

[Table 1.5] The Applicant has focussed on a 500 MW capacity of the installation but Table 1.5 makes clear that the storage capacity is 3,500 MWh (500 MW x 7h). What is the justification for a 3,500 MWh storage capacity?

[Table 1.5] The Applicant has assumed a Round Trip Efficiency of 85%. On this basis, Table 1.6 assumes a total output per year of 868,700 MWh (or an average of 2,380 MWh day^{-1}). For a round trip efficiency (RTE) of 85%, this means that an average of 2,800 MWh would be downloaded from the grid each day. Thus 2,800 – 2,380 = 420 MWh would be lost per day. This is 420 MWh energy lost from the grid every day that will be dumped as heat energy into the atmosphere. This is enough energy to boil 4.6 million x 1 litre kettles per day or the

equivalent of the electricity supply for 53,000 homes. Put another way, the entire output from 21 x typical (2.5-3 MW) onshore wind turbines, or the output for one hour each day from the Great Yarmouth gas turbine, 420 MW, power station would be devoted to heating the atmosphere around Granborough, Hogshaw and East Claydon. The Applicant needs to justify this energy loss as waste heat in terms of GHG emissions and assess its impact on local atmospheric conditions and microclimate.

The magnitude of the local heat losses further raises the question as to the appropriateness of installations on the scale proposed and, indeed, to the selection of a suitable site. Development on a brownfield site could be coupled with a system for recovering the heat energy which could be channelled to useful purpose rather than heating the atmosphere.

In summary, the Applicant has failed to account for:

- The totality of GHG emissions associated with the manufacturing and shipping of the initial wave of batteries and other components plus replacement batteries;
- Precise numbers of HGV movements during construction and battery replacements;
- GHG emissions associated with decommissioning;
- GHG cost of 15% energy loss from the grid as waste heat resulting from RTE of 85% amounting to 420 MWh per day.
- Required storage capacity for 2030 is more than met already by existing and planned installations and the predicted storage capacity requirement for 2050 could be achieved with a small additional number of brownfield developments. The carbon cost of manufacturing the proposed BESS, plus the estimated huge energy wastage during operation, means that savings on GHG emissions are unlikely to be achieved.

ES Vol. 10: Ground Conditions

Key points

- The Applicant has failed to acknowledge that much of the land around and including the proposed development site is subject to the Countryside Stewardship Agreements.
- The Applicant has downplayed the crop-growing potential of the land.
- Potential for pollution of existing watercourses has not been adequately addressed.
- The potential cumulative impacts of other developments (notably expansion of the East Claydon NG sub-station and the proposed Rosefield solar energy installation), especially with regard to flood risk, have not been considered.

The proposed development site and much of the surrounding land include large parcels subject to the Countryside Stewardship Agreement areas (see Fig. 10.1). We have found no reference to this in the Applicant's submissions; rather there is a bias towards dismissing the habitat value of the setting.

Fig. 10.1 Areas hatched in red indicate membership of the Countryside Stewardship Scheme (Source Magic Map).

[1.4.13 The Site has no Post 1988 Agricultural Land Classification, but the Pre-1988 Provisional Agricultural Land Classification grades the majority of the Site as Grade 4 (source DEFRA Magic Maps)[12]. This is considered as poor-quality agricultural land and land included within this grade suffers severe limitations that significantly restrict the range and/or yield of crops to be grown.]

The Applicant will be aware that this is a very broad-brush classification on a small-scale map (see Vol. 11; Appendix 11.1, pt 2) and is in contrast to the Grade 3b classification arrived at through more detailed analyses (Vol. 11; Appendix 11.1, pt 1).

[1.4.14 The LANDIS Soilscape classification13 for the Site is 18, described as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.]

This soil type is classified as 'moderate fertility'. It has significant value for food production, especially in droughty conditions.

[Table 10.12] The Applicant should also consider the risks to local communities in terms of windborne dust, both to residents and to properties.

[Table 10.13] We are surprised by the Applicant's conclusions here since artesian sources occur at a number of locations in the area. Potential effects on groundwater need to be taken seriously since livestock in the area may be dependent on natural sources of drinking water. In any event, wildlife is wholly dependent on these sources.

[Table 10.14] The Applicant seeks to minimise the level of risk with regard to pollution of watercourses. As noted above, the risk to livestock and wildlife is potentially high and the impact at least Moderate Adverse.

Cumulative impacts

[1.8.2 The proposed Tuckey Solar Farm18 (application ref: 19/00983/APP) is located circa 360m to the north of the northernmost boundary of the Site and the proposed Rosefield Solar Farm is circa 2.6 km to the southwest of the Site.]

It is completely erroneous to state that the proposed Rosefield solar energy installation is circa 2.6 km to the southwest of the site when the battery storage and sub-station elements of that development are predicted to be on the other side of the watercourse that defines the northern boundary of the Statera site.

[1.8.4] Any expansion of the East Claydon NG sub-station and the proposed Rosefield development could have very substantial, negative impacts on the hydrology of the area and associated flood risk.

Summary: The Applicant's analysis has failed to consider periods of flooding that characterise the area. The potential for cross contamination of fields and watercourses (e.g. from spillages) would be greatly increased at such times (see Vol. 4).

ES Vol. 11: Land Use

Key points

- There appear to be no guarantees that the land would be reinstated to agriculture after 40 years or the extent of the land that would be reinstated.
- The Applicant needs to address the impact of the proposal on food production.
- The fate of 'disturbed soil' needs clarification.
- Confirmation that the Applicant has not undertaken a formal assessment of flood risk across Rookery Farm reinforces our view that they have failed to understand the true nature of them site.
- Potential cumulative impacts of other developments (notably expansion of the East Claydon NG sub-station and the proposed Rosefield solar energy installation), especially with regard to flood risk, have not been considered.

[1.3.4 As set out in ES Volume 1, Chapter 3: The Project, The Proposed Development is intended to function for a maximum of 40 years. Following this 40-year lifespan, the development will be dismantled and the land will be returned to its original state for agricultural purposes. The effects on agricultural resources following decommissioning consider the permanent reinstatement of agricultural land at the site and enabling the on-site soil resources to fulfil their existing primary functions once again.]

[1.4.8 During enabling and construction, the effect on agricultural land will be direct and longterm. However this effect will be temporary given that the site will be returned to agricultural use following decommissioning.]

There is nothing stated in the ES to provide guarantees that this would be the case. Indeed, it is pointed out elsewhere that the sub-station element at least may be retained (Vol. 5; 5.10.2). A statement in Vol.9; Appendix 9.2, 1.2.3 goes further, implying that the installation could become permanent.

[Table 11-7] states that the loss of 20-50 ha to agricultural use is 'Not Significant'. This is not accepted. It is noted elsewhere that *"the NPPF now includes additional wording that "The availability of agricultural land used for food production should be considered, alongside the other policies in this Framework, when deciding what sites are most appropriate for development".* The Applicant should address the loss of food production capacity both in relation to the present proposal and the cumulative impact of other infrastructure developments in the area.

[1.4.7 Effects on agricultural land and soil resources are local effects, occurring within the site. Disturbed soil resources will be retained and re-used on-site as part of the enabling and construction of the Proposed Development.]

[1.4.14 Where practicable, the disturbed soil resources will be re-used on-site during enabling and construction activities for the Proposed Development.]

[5.1.6 It should be noted that given that soils will not be removed from the site.]

These statements are inconsistent. Will soil be removed from the site? What is the fate of 'disturbed soil' that is not re-used?

[4.1.1 Enabling and construction of the Proposed Development will require the development of the existing agricultural land at the site which is in Subgrade 3b and is a resource of low sensitivity.]

We disagree. Providing they are drained, which they are, soils of this character can and do produce high to very high yields of wheat in particular, with output above the national average in most years. They also produce high yields of other combinable crops most years, and are excellent for grass production. Being heavy, deep, clay soils they have a high water availability, making them particularly good in a dry droughty season. In short, they are very good at producing the crops that are grown on them.

[4.2 Decommissioning: 4.1.4 sic] If soil resources are moved elsewhere on the site how will it be returned to its previous condition during decommissioning? Also, how much land would be returned to agricultural use? If less than the existing area, the effects cannot be considered temporary.

[6.1.6 Effects on soil resources do not occur cumulatively as specific soil characteristics are unique to a site, and effects are heavily influenced by the management strategy adopted at each site. As such the following cumulative assessment focuses on the effects on agricultural land only.]

We disagree with this statement, particularly as regards changes in hydrology associated with cumulative development which can have far reaching impacts on land (therefore soils) beyond the immediate development area. The impact of other developments on the Site also needs to be addressed.

[6.1.9 Following the decommissioning of the Proposed Development, the cumulative effect would be Negligible and Not Significant.]

[7.1.1 During the construction phase of the Proposed Development there will be a temporary negative effect on soil resources which is significant.]

[8.1.1 & 8.1.2] The Applicant dismisses the overall impacts as being not significant which is not supported by evidence.

ES Vol. 11: Appendix 9.1

[2c) Flooding risk was not assessed over the farm since it requires observations to be made over a number of years. Appendix 2 at the end of this report details the observations required.]

This statement illustrates the Applicant's ill-judged reliance on desktop analyses. Appendix 2, Table 3 assesses the flood risk during winter as occasional to frequent (i.e. once in 3-9 years). Reference to comments in Vol. 4 shows that the risk is likely to be at the more frequent end of this spectrum. It is extraordinary that the Applicant has not undertaken a formal assessment of flood risk for the site.

TEMPORARY HAUL ROUTE STREAM CROSSING

What are the anticipated weight limits for this bridge and what will be the extent of foundations required to support the piers?

STOCK PROOF FENCE 28.11.23

If this is an accurate example of the fencing to be used alongside PRoWs and permissive paths, it presents an unacceptable 'prison-like' image.

BUCKINGHAMSHIRE FIRE AND RESCUE COMMENT - GRID SCALE BESS - NFCC GUIDANCE

Introduction

A particular concern with the proposed development is that of safety. We do not consider sufficient assurances have been given and we address this in the following sections.

Energy storage capacity of the proposed installation

It is worth putting the total energy storage capacity of the proposed system into perspective. The energy in one kiloton of TNT is considered equivalent to 1.162 GWh. The proposed development has potential capacity of 3.5 GWh, or the equivalent of 4 kt TNT. This is about 30% of the energy released by the Hiroshima atom bomb. Now, we are not suggesting that there is the potential for an explosion on that scale, but each shipping container, of which there would be 888, could store the energy equivalent of 4.6 tonnes of TNT (3.94 MWh).

Risk of thermal runaway

Risk of thermal runaway and potential associated explosions is of major concern to residents. There have been numerous reports of 'fires' (chemical or thermal runaway incidents) associated with Li-ion batteries in recent years. A large number of these have occurred in domestic situations or, for example, when charging batteries in electric scooters, often involving significant damage to property. There has also been an increasing number reported in BESS units around the world. The majority have been confined to single storage units, but their consequences have included difficulty in controlling the runaway event, serious injury to firefighters and emission of highly toxic chemicals. Where water has been used to prevent the spread of the runaway event, huge volumes have been needed. In one incident involving accident damage to a Tesla car in the USA (approximately 100 kWh battery) some 90,000 litres of water was used in managing it. Just one of the proposed storage containers would contain the equivalent of 40 Tesla batteries.

An incident on Merseyside in 2020 resulted in pressure build-up in the container which resulted in an explosion (see Fig. 1). The in-built halocarbon fire suppression system failed to contain the event which is a process driven by heat and chemical reaction, independent of oxidation. Paradoxically, delays in alerting the fire services to the incident meant that the explosion occurred before their arrival, thus avoiding injury.

An incident in 2019 at a 2.16 MWh BESS installation in Arizona, USA, involved emission of a cloud of toxic gases and an explosion in which four firefighters received serious injuries.

Numerous other 'fire' incidents at BESS sites have been reported around the world (see Fordham, Allison & Melville, 2021[2]), including a total of 21 during 2018-19 in South Korea. In 2023, three separate incidents were reported in New York, USA, over a 2-month period. A recent incident at a 50 MW installation at the Bouldercombe Battery Project in Rockhampton, Australia, was allowed to "burn out under supervision".

Events have occurred at the pre-commissioning stage as well as during operation. The level of destruction of individual battery cells means that it is not always possible to establish the cause of an incident but manufacturing defects, gradual changes in the conformation of lithium elements in the batteries are considered the most likely. Overcharging is also a risk factor. This should be prevented by battery control circuits but there is always the risk of system failures. Some batteries have failed on commissioning, but all batteries deteriorate with age.

Fig. 1 Image taken from MFRS report on the Merseyside BESS thermal runaway incident. The end section of the container was blown out by the explosion.[1]

Prevention of thermal runaway

During consultation events, the Applicant has been at pains to point out proposals which, it is considered, would prevent the occurrence of thermal runaway. As we understand it, each battery container would have its own temperature control unit. In the event that temperature increases are detected, there are three levels of alert, depending on the temperature detected as follows:

(Amended Design & Access Statement; Section 8.6)

The batteries themselves also have overtemperature protection and fire suppression initiation, which operates as follows, again well below thermal runaway temperatures:

> *• Level 1@54℃: reporting the warning message*
>
> *• Level 2@57℃: reporting the warning message will request to reduce the charge/discharge power by 50*
>
> *• Level 3@60℃: force open the relay and power shut down. At the highest alert level, the relevant battery unit would be shut down.]*

Three issues concern us:

- First is vulnerability to failures of the temperature control units. What happens if one of these were to fail or their power supply was interrupted?
- Second, and perhaps of greater concern, is what if the increase in temperature is caused by thermal runaway rather than ambient changes? Once initiated, the process will develop independent of the operating status of the battery. The report on the Merseyside incident noted a temperature increase of 40°C in two minutes. The time between the first detection of a temperature increase and a member of the public calling the fire service to report a visible fire was just 20 minutes, demonstrating the rapid progression of the event.

- Third, what does ”shut down” mean? The energy stored in the battery, and any chemical reaction, cannot be shut down by simply turning off the power. As with a collapsing dam, there are no easy options. Isolating the unit and cooling may prevent the problem spreading, provided enough water is available rapidly and units are very well separated. Even then the unit concerned will “burn out under supervision.”.

It takes just one faulty battery cell to initiate thermal runaway. Clearly, the risk of such a fault occurring is proportional to the number of cells in a given installation. We don’t know the exact detail of the proposed installation but, based on existing developments, a 3,500 MWh site could require perhaps 700 million battery cells. What is the probability of a failure in that number?

Toxic gas emissions

A product of thermal runaway is the emission of a number of toxic and inflammable gases. These include: hydrogen fluoride, hydrogen cyanide, hydrogen, hydrogen sulphide, hydrogen chloride, methane, ethylene and carbon monoxide. Containment of these within the battery container is not possible because, even though the air-cooling system may not require an external vent, containment during thermal runaway would lead to build up of pressure and greater risk of explosion so there would have to be a pressure release mechanism.

In the event of an incident at the East Claydon site, depending on the prevailing wind, residents in properties close by, the communities of Winslow, Granborough, Hogshaw, East and Botolph Claydon, as well as livestock and wildlife, could be exposed to a toxic cloud. Thermal runaway in a small BESS installation in Belgium resulted in at least 50 residents reported breathing difficulties and sore throats.

In contact with water, hydrogen fluoride generates hydrofluoric acid. This is a highly reactive substance capable of interacting with glass, ceramics, concrete and some forms of plastic. This is of particular concern with respect to the fate of run-off in the event that water is used to control runaway (see Management of thermal runaway below).

Management of thermal runaway

Thermal runaway is distinct from the process of combustion in that it is a chemical process independent of oxygen. As such, fire suppressant methods that seek to exclude oxygen are largely ineffective. Currently, there appear to be only two accepted approaches to managing thermal runaway:

1) Flood the affected storage unit with large volumes of water to lower temperature and so limit spread to adjacent battery cells. (NB This does not extinguish the ‘fire’).

2) Allow the ‘fire’ to run to completion. This was the approach was adopted in a recent incident in Rockhampton, Australia. We understand that this is the adopted policy of the local fire service in Wiltshire for the Applicant’s Minety BESS site.

Option 1 is limited by the availability of water. The Applicant makes provision for four fire-water storage tanks each of 62,500 litres capacity. (Note that 90,000 litres were used in the management of a 100 kWh Tesla battery fire). NFCC Guidelines, submitted with the application, recommend availability of a minimum of 1,900 litres/min water for 2 hours. At that rate of delivery, the contents of one such tank would be exhausted after 33 minutes, not 2 hours. We understand that there may be up to four such tanks on the site but the size of

the development and nature of the incident may present logistical issues in accessing them all.

Option 2 now seems to be the preferred approach with water been played onto adjacent battery storage units for cooling purposes in an effort to prevent spread of the fire.

As noted above under 'Toxic Gas Emissions', gases generated in thermal runaway, include hydrogen fluoride which, in contact with water, is converted to highly reactive and corrosive hydrofluoric acid. In the course of construction of the proposed BESS, some 6.9 ha of impermeable surface would be created. Rainwater run-off would be channelled to an attenuation pond prior to discharge into adjoining watercourses. It is not clear how containment of water discharged during a thermal runaway incident could be separated from the normal run-off channels. It seems likely that it would follow the same path and so hydrofluoric acid, along with other toxic products, would find their way into local watercourses with potential harmful effects on wildlife and livestock reliant on them for drinking water.

NFCC Guidance specifies two independent access routes so that fire-fighting teams can approach the affected storage unit safely from an upwind direction. As we understand it, the site layout, as currently proposed, has a single entrance with a junction on-site whereby separate tracks feed different sections of the site. It is not clear whether this is in compliance with the guidance.

Fire services response time

Whilst the Applicant indicates that systems are set to deal with normal malfunctions and overheating batteries, it is important to note the relative security and vulnerability of an installation that is remotely monitored and managed.

The nearest fire station is located in Winslow which operates on an on-call basis. It is assumed that a major incident would require crews from other centres such as Milton Keynes and Aylesbury to attend, which would involve considerable delays. Given the sensitivity of the site and the need for urgent attendance in the event of (e.g.) a thermal runaway incident, this raises serious concerns amongst residents.

Cumulative impacts

The proposed Rosefield solar energy development and expansion of the NG sub-station cannot be ignored in respect of potential cumulative safety impacts, especially since a similar installation (BESS and sub-station for the Rosefield project) may occupy the opposite banks of the watercourse on the north-west boundary of the proposed BESS.

The safety and integrity of the East Claydon NG sub-station needs to be considered also. What is the potential impact of a major incident at the proposed BESS on the functionality of this key component of the National Grid? The perceived national imperative of grid storage at a node like East Claydon should not be allowed to override the risk involved with such an exceptionally large installation, far removed from large firefighting teams.

[1] Merseyside Fire & Rescue Services Fire Investigation Report 132-20 Incident Number 018965 (Incident date: 15th September 2020).

[2] McKinnon, MB, DeCrane, S, Kerber, S. (2020) Four Firefighters Injured In Lithium-Ion Battery Energy Storage System Explosion – Arizona. UL Firefighter Safety Research Institute. https://ulfirefightersafety.org/posts/four-firefightersinjured-in-lithium-ion-battery-energy-storage-system-explosion.html

Fire and plume study – Rev 2

Key points

- This study focusses on a single point (farmhouse 750 m from the site) to determine risk of a toxic plume affecting a given receptor. Curiously, it ignores the NG sub-station which is close by and, potentially, is highly vulnerable to a major incident.
- We are puzzled as to why other receptors haven't been considered under different wind direction conditions.
- The distribution of highly toxic HF gas (forming hydrofluoric acid on contact with water) is considered to be limited to the BESS site. What are the consequences of this?