CLEVE HILL SOLAR PARK

THE APPLICANT'S RESPONSES TO SUBMISSIONS RECEIVED AT DEADLINE 7

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CLEVE HILL
SOLAR PARK

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List of Abbreviations

AR HMA	Arable Reversion Habitat Management Area
AADT	Annual Average Daily Traffic
ACC	Arizona Corporation Commission
ARC	Aliianz Risk Consulting
BESS	Battery Energy Storage System
BSMP	Battery Safety Management Plan
BSMP	British Standard
CCC	Canterbury City Council
CEMP	Construction Environmental Management Plan
CHSP	Cleve Hill Solar Park
CHSPL	Cleve Hill Solar Park Ltd
CPRE	Campaign to Protect Rural England
CTMP	Construction Traffic Management Plan
CTMP	Construction Traffic Management Plan
dB	Decibel
DCO	Development Consent Order
dDCO	Draft Development Consent Order
DL	Deadline
DSR	Demand Side Response
EA	Environment Agency
ES	Environmental Statement
ExA	Examining Authority
EXQ1	Examining Authority's First Written Questions
ExQ2	Examining Authority's Further Written Questions
FES	Future Energy Scenarios
FOI	Freedom of Information
FTC	Faversham Town Council
GB	Great Britain
GREAT	Graveney Rural Environment Action Team
HGV	Heavy Goods Vehicle
HMSG	Habitat Management Steering Group
HRA	Habitat Regulations Appraisal
HSE	Health and Safety Executive
ISH	Issue Specific Hearing
KCC	Kent County Council
KFRS	Kent Fire and Rescue Service
kV	Kilovolt
KWT	Kent Wildlife Trust
LBMP	Landscape and Biodiversity Management Plan
LGM HMA	Lowland Grassland Meadow Habitat Management Area
Li-ion	Lithium ion
LVIA	Landscape and Visual Impact Assessment
MEASS	Medway Estuary and Swale Strategy
MMO	Marine Management Organisation
mph	miles per hour
MR	Managed Realignment
MW	Mega Watt
MWh	Mega Watt Hours
NE	Natural England
NFPA	National Fire Protection Association (USA)
NGET	National Grid Electricity Transmission
NSIP	Nationally Significant Infrastructure Project
OEM	original equipment manufacturer
PINS	Planning Inspectorate
PRoW	Public Right of Way
PV	Photovoltaic
RIAA	Report to Inform an Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
SBC	Swale Borough Council

SNCB	Statutory Nature Conservation Body
SoCG	Statement of Common Ground
SoS	Secretary of State
SPA	Special Protection Area
SPA CNMP	Special Protection Area Construction Noise Management Plan
USA	United States of America
WHO	World Health Organisation
WR	Written Representation

1 INTRODUCTION

1. This document provides Cleve Hill Solar Park Ltd's (the Applicant's) response to the 79 submissions made to the Planning Inspectorate (PINS) for Deadline 7 on 13 November 2019, relating to the Development Consent Order Application (the DCO Application) for Cleve Hill Solar Park (the Development).

2. Table 1.1 lists the 19 organisations which made submissions at Deadline 7. The Applicant has responded to the points raised by these stakeholders in Section 2 of this document.

3. The remaining 60 responses were submitted by members of the public. These responses have been grouped by topic and are addressed on that basis in Section 3 of this document.

4. References to other Application documentation are provided where necessary according to the reference system set out in the Cleve Hill Solar Park Examination Library.

Table 1.1: List of Submissions by Interested Party Organisations at Deadline 7

PINS Reference	Submission Received from
REP7-073	Faversham Town Council
REP7-074	Kent County Council
REP7-081	CPRE Kent
REP7-082	CPRE Kent
REP7-086	Environment Agency
REP7-088	Faversham and Oare Heritage Harbour Group
REP7-089	Faversham and Swale East Branch Labour Party
REP7-090	Faversham Society
REP7-093	Gowling WLG on behalf of Blue Transmissions London Array
REP7-095	GREAT
REP7-096	GREAT
REP7-097	GREAT
REP7-098	GREAT
REP7-099	GREAT
REP7-100	GREAT
REP7-107	Kent Wildlife Trust
REP7-108	Marine Management Organisation
REP7-109	Natural England
REP7-142	Sadie Hennessy on behalf of Whitstable Amblers *Non-interested Party*
N/A[1]	The Faversham Society

5. This response is supported by the following appendices (included within this document):

- Appendix A - HSE Review of Outline Battery Safety Management Plan;
- Appendix B - HSE Track Changes to Outline Battery Safety Management Plan (Prior to Submission to the Examination); and
- Appendix C - Public Responses, Topic Analysis; and
- Appendix D - Response of the U.S. Energy Storage Association to the ACC Determination letter.

[1] As referred to in the Rule 8(3) and 17 letter dated 27 November 2019 [PD-011]

2 DEADLINE 7 SUBMISSIONS AND THE APPLICANT'S RESPONSES

2.1 REP7-073 Faversham Town Council

6. This section of the Applicant's response addresses submission [REP7-073] in Table 2.1.

Table 2.1: The Applicant's Comments on REP7-073

Statement	**Applicant's Comment**
This letter summarises the views of Faversham Town Council (FTC) with regard to the above application. Faversham is a town of 20 000 inhabitants lying 2km South-West of the proposed development. FTC recognise that climate change as a consequence of the burning of fossil fuels poses a clear and present threat to the future health and wellbeing of our planet. We agree that the UK should be investing in, and supporting renewable energy. FTC, as the elected representative body of Faversham residents, object to the proposal to construct and operate a solar power station on Graveney marshes as we consider that, on balance, the identifiable concerns outweigh the potential 'clean energy' benefit of this project. Our key concerns are summarised below:	The Applicant disagrees with the assertion that the concerns regarding the project outweigh its benefits, and has worked with statutory agencies to reach agreed positions in respect of all Principal Issues identified in the Rule 6 letter [PD-003]. The Applicant's Closing Statement submitted at the end of the examination (document reference 16.3.1) sets out the Applicant's final position in respect of those Principal Issues.
1. The Size and Adverse Visual Impact	
• We understand the site is planned to cover an area of approximately 890 acres (365 hectares). This is an area of land larger than the village of Graveney and the town of Faversham combined. The size of the proposed facility and its close proximity to towns and villages are to our knowledge, unprecedented in the UK. The facility will, if constructed, dwarf the communities which border it. • We consider the probable effect on the landscape character and visual amenity of the site and its surroundings for some distance to be severely negative and we do not agree that the landscaping mitigation which has been described would materially minimise the negative effect. • It is our view that this facility would fundamentally and detrimentally change the appearance of this locality from the moment its construction begins. This will adversely impact upon the public's perception and enjoyment of the unique character of this place.	Landscape and visual impacts are assessed in Chapter 7 - LVIA of the ES [APP-037]. The assessment concludes, at paragraph 480, that: "While the large scale and extent of the Development are acknowledged, the overall effects of the Development on landscape and visual amenity are limited to a small geographical area and a small number of visual receptors."
2. The Increased Flood Risk	
• Faversham is low lying and consequently at risk from flooding and rising sea levels. This is always apparent when there is a spring tide. • The applicants of the Solar Park will have the responsibility for maintaining of the sea wall that	The Applicant summarised in its Deadline 6 submission, 'Responses to Written Representations Received at Deadline 5' [REP6-015], section 2.7.3, that the Development does not increase flood risk in Faversham through the continued presence of the sea wall, and a

Statement	Applicant's Comment
forms a large proportion of its northern boundary. The presence of this sea wall acts to increase the flood risk at Faversham.	potential delay to managed realignment. Implementation of managed realignment under the MEASS (i.e., realignment of the existing flood defences is predicted to increase flood extents at Faversham: "Appendix I - Medway and Swale Strategy Study (MEASS) Modelling Report (Mott MacDonald March 2018) of the EA's MEASS document (September 20192) clearly shows that under a managed realignment scenario at the Site (benefit area BA6.2) there would be a greater extent of flooding in Faversham. This is shown on Figure 140: Flood extents of the baseline (light blue) and the Leading Option (pink) results for the 1:200- year present scenario in Swale and Medway estuaries. The highlighted red boxes denote areas were the flood extent is increased compared to the baseline. The flood modelling used to inform the MEASS was undertaken by Mott MacDonald using industry standard software and a recognised methodology."
3. The detrimental impact of construction and site access	
• Construction is planned to take place over a 2-year period. All of the equipment, materials and plant will have to be brought in by large vehicles from the M2 via junction 7 which is already over capacity at peak times of the day. • The subsidiary roads leading to the site will struggle to accommodate large vehicles. We understand there is expected to be around 80 construction vehicle movements (one every 6 minutes) per working day. This will inevitably have a detrimental impact on the quality of life for resident and the children attending the village school on the route. • The road to the site also forms part of Sustrans National Route 1. This an extremely popular route for cyclists and no consideration has been given to this.	Access and traffic impacts are assessed in Chapter 14 - Access and Traffic of the ES [APP-044]. In this chapter, the primary school is classed as a high sensitivity receptor to changes in road traffic. As set out in Table 14.6 of Chapter 14, 2018 baseline Annual Average Daily Traffic (AADT) flow data indicates there are 1,625 total vehicle movements per day along Seasalter Road, of which 65 are HGVs. While all traffic has been assessed through Junction 7 of the M2 it is there is the potential that traffic will approach the site from the east and will avoid this junction. Daily traffic flows on this stretch of the M2 are over 59,000. Proposed Development traffic would result in an increase in flows of under 1%. Measures proposed to manage construction traffic, including in the vicinity of the school are described within the Outline CTMP [REP7-021]. Measures include restrictions on HGV movements to avoid school opening / closing time and a construction vehicle speed limit of 20 mph past the school. The outline CTMP has been produced as a 'live' document which will continue to be updated on an ongoing basis through consultation with stakeholders during examination of the Application. This will then form the basis of a final CTMP to be approved by the relevant local planning authority before construction can

Statement	Applicant's Comment
	commence (see requirement 12 of the draft DCO [REP7-005]). The Applicant has reached agreement with KCC Highways, the local highway authority, on all highway related matters, including the content of the Outline CTMP, as set out in the SoCG between the Applicant and KCC [REP7-029]. Cyclists are considered throughout Chapter 14, notably in sections 14.2.1.7, 14.2.2, 14.3.7, 14.3.9 and paragraph 238. A temporary, moderate adverse effect on cycling amenity along Seasalter Road was identified, with mitigation measures included in the Outline CTMP [REP7-021], e.g., those set out in Table 4.1; Contractor briefing, speed restrictions and signage.
4. Concern over battery safety	
• Faversham Town Council is extremely concerned about the scale of the 'mega battery' proposed for the site. We understand that it has now increased in size from 350 to 700 MWh, nearly doubled. That now makes the Cleve Hill mega-battery site five times the size of the World's largest Lithium-ion (Li-ion) battery currently in service at Hornsdale Power Reserve in South Australia. This flies in the face of safety warnings from around the world. • There is a recognised fire risk associated with Li-ion batteries and we are very concerned that neither the operator or the Kent Fire and Rescue Service are suitably equipped or experienced to deal will a large fire at the site should one of occur. • Li-on batteries when alight give off toxic gases. With prevailing winds that would give the village and village school of Graveney, 6 minutes and Faversham 9 minutes to evacuate if a disastrous fire were to happen. The council have doubts whether or not our Rescue and Health Service would be able to cope. • The Faversham Town Council insists that independent expert advice is sought.	Table 5.2b on page 15 of Chapter 5 - Development Description of the ES [APP-035], as submitted with the application, clearly states that the approximate total energy storage capacity will be 630 MWh / 700 MWh, depending on the type of solution deployed. The design of the energy storage facility and its safety features is controlled by its physical characteristics rather than its capacity. The Applicant has engaged with the Kent Fire and Rescue Service and the Health and Safety Executive to agree an Outline BSMP which is the subject of Requirement 3 of the dDCO [REP7-005] and ensures that as well as taking responsibility for fire detection and suppression directly, the Applicant must continue to liaise with KFRS to ensure they have the necessary information to deal with an incident at the energy storage facility in the unlikely event that one should occur. The Applicant's independent air quality consultants undertook an assessment of air quality impacts of a fire at the battery storage facility using parameters provided by battery suppliers at Deadline 4 [REP4-051]. This assessment corrected several of the assumptions made by Dr Erasin in an earlier submission related to the air quality impacts of a fire (appended to [REP4-051]) and reported in the local press. Dr Erasin subsequently acknowledged the limitations and likely overestimations in his previous work [REP5-037]. The Applicant's Air Quality Impact Assessment [REP4051] has not been challenged further subsequent to this submission.

Statement	Applicant's Comment
5. Detrimental Impact on Wildlife	
• The proposed site is immediately adjacent to The Swale which is a Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar site. The Swale Estuary is also a National Nature Reserve (and Marine Conservation Zone) and the site is bordered on the North and West, by both the South Swale Local Nature Reserve and the Oare Marshes Local Nature Reserve. The site is almost wholly enclosed by land which is designated as Wetland of International Importance (Ramsar sites). • Although the land which would be used to accommodate the facility is not itself protected or designated as a Ramsar site, it is of a markedly similar character and quality to the surrounding Ramsar areas. • Rare birds and other species which use the surrounding protected areas also use the nearby land including the site itself as habitat. There is a high likelihood of long-term negative effects on Dark-bellied Brent Geese and Breeding Marsh Harriers. The nearby SPA boasts a population of 24 pairs of the latter, representing at least 15% of the breeding population in Great Britain. • We believe that over reliance is placed on the suggested 40-hectare habitat management area north of the Cleve Hill substation. The plan assumes that the potential negative effects on these species will be simply offset by establishing a small grassland area nearby and / or that such species will simply relocate to similar habitats elsewhere.	The land which will accommodate the Development is not at all similar to the character or quality of the surrounding Ramsar areas. The area that will accommodate the solar arrays and associated infrastructure is intensively farmed arable land, whereas the SPA/Ramsar site comprises intertidal habitats and coastal freshwater grazing marsh. The assessment has been carried out in full knowledge of the adjacent designated habitats and their qualifying interest features and has concluded that there will be no adverse effects on the integrity of the designated site, subject to the provisions outlined in the LBMP, CEMP and SPA CNMP. Natural England agree with the conclusion of no adverse effect on integrity [AS-050].
6. The potential value of the site as a coastal salt marsh	
• There may be an opportunity in the future to return Graveney marshes to a coastal salt marsh. This opportunity would be lost should the proposed development proceed. • Restoring Graveney Marshes to a salt marsh would not only benefit Faversham by reducing its flood risk in Faversham, the site by increasing its biodiversity, but also the wider environment by acting as a 'carbon sink.'	The opportunity for MR at Cleve Hill would not be 'lost' as a result of the Development. Requirement 17 of the dDCO [REP7-005] secures the ability for the EA to undertake managed realignment (MR) at Cleve Hill in Epoch 2, as is proposed under the 'no solar park' scenario in the MEASS. MR at Cleve Hill under the MEASS is not expected to reduce flood risk in Faversham, for the reasons set out in response to '2. The Increased Flood Risk', above. The Development represents the best option for decarbonisation at the Cleve Hill site. Evidence of this was presented in a WR submitted by the Applicant at Deadline 3 [REP3-025], which provides a comparison between managed realignment on the site and the proposed Development, finding greater decarbonisation benefits as a result of the Development.

Statement	Applicant's Comment
	The Applicant has demonstrated [REP4-052] that the Development represents a 65% biodiversity net gain relative to the existing baseline as a result of the measures set out in the Outline LBMP proposed [REP7-013].
7. The lack of any substantial benefit to local communities	
• Faversham has a vibrant community who have worked hard over the last few decades to attract both visitors and new residents. A key part of the attraction is the built environment of the town itself but of course this is only enhanced by the semi-rural setting of the town. • Faversham is bounded by an area of outstanding natural beauty to the south, the Swale Estuary to the north and characterful fruit farms and marshland both east and west. • The placing of such a vast Solar Power Station so close to Faversham will inevitably, change perceptions of the area and affect its attractiveness as a place to live, work and spend time. • FTC works alongside local civic groups seek to promote our town based on its rich natural and built heritage. We fear this development will thwart of efforts to the eventual detriment of the almost 20,000 people who live and work here. • This proposal is projected to have no direct positive economic impact on the local economy. There are no projections for increases in local employment, spend with local business, development of a supporting business ecosystem etc. • The only benefit (of any kind) that Cleve Hill Solar Park can identify for the local area is their obligatory business rates payments to Swale Borough Council. We consider to be a poor value exchange in light of the concerns we have described in this response. Faversham Town Council, acting in the best interests of the residents of Faversham, are opposed to the granting of permission for the development of the Cleve Hill Power Station.	The socio-economic impacts of the Development are assessed at a district level in Chapter 13: Socio-economics, Tourism, Recreation and Land-Use of the ES [APP-043]. Public perception of renewable energy Development is discussed in section 13.2.4.4. No likely significant long-term socio-economic effects on the economy of Swale have been identified in the assessment. The Applicant recognises that the project presents an opportunity to develop skills and expertise locally in an important sector for the future of the UK economy, and has incorporated Requirement 16, Local Skills, Supply Chain and Employment into the dDCO [REP7-005]. In support of Requirement 16, an Outline Skills, Supply Chain and Employment Plan was submitted to the examination at Deadline 5 [REP5-026] which sets out a series of commitments by the Applicant to develop a 'supporting business ecosystem'. The Applicant consulted on a range of community benefits during the pre-application phase, including footpaths, a community orchard, and improvements to land management such as biodiversity enhancements. The proposals in the application, such as the permissive footpath between Graveney and the coast, biodiversity enhancements including measures such as the lowland grassland meadow in the south east of the Development site, and the decision not to proceed with the community orchard proposals were directly related to the outcome of the consultation undertaken. Further detail on this is provided in section 2.8 of the Applicant's Response to Deadline 6 submissions [REP7-027].

2.2 REP7-074 Kent County Council

7. This section of the Applicant's response addresses submission [REP7-074] in Table 2.2.

Table 2.2: The Applicant's Comments on REP7-074

Ref.	Question	Kent County Council's Response	Applicant's Response
R17.3.7	Does KCC consider the content of paragraph 283 of the updated outline LBMP [REP6-005] to be sufficient in terms of public or permissive rights of way?	The County Council understands that maintenance would take place to prevent trees/shrubs encroaching on the public or permissive rights of way. This approach is acceptable in terms of public or permissive rights of way.	The Applicant welcomes KCC's agreement on this point.
R17.6.2	Does KCC consider the 'hierarchy of actions' for potential closures of PRoW to be satisfactory?	The County Council considers that the 'hierarchy of actions' set out in the Construction Traffic Management Plan (CTMP) August 2019 is acceptable.	The Applicant welcomes KCC's agreement on this point, which is also addressed in the SoCG between the Applicant and KCC [REP7-029].
R17.6.3	Can the Applicant provide an update on discussions with KCC regarding potential path closures and diversions? Does KCC consider the outcome of these discussion to be satisfactory?	The County Council has been in discussions with the applicant's consultant, Curtins, and agreed an approach for the management of temporary PRoW closures and diversions to be included in the CTMP. The County Council considers the outcomes from these discussions to be satisfactory.	The Applicant welcomes KCC's agreement on this point, which is also addressed in the SoCG between the Applicant and KCC [REP7-029].
R17.7.1	The ExA notes KCC's request in [REP5-032] for further measures beyond those currently proposed in the outline Construction Traffic Management Plan [REP4-014] to manage HGV movements in a more controlled manner. The Applicant, in its submission at Deadline 6 [REP6-015], states at section 2.1.1 that it is committed to further discussions with KCC with regards to mitigation measures proposed within the Outline CTMP. Can both parties confirm if discussions have been held and whether the issues have been resolved to the satisfaction of KCC? If not, what matters remain outstanding and what further measures are intended with a view to seeking agreement.	Further discussions have taken place between KCC and the Applicant. Measures involving holding areas and communication links with traffic marshals to coordinate HGV movements through Seasalter Road and Head Hill Road, so as not to conflict with one another, are now to be included within the CTMP.	The Applicant welcomes KCC's agreement on this point, which is also addressed in the SoCG between the Applicant and KCC [REP7-029].
R17.7.3	Following the response by the Applicant in [REP6-015] regarding carriageway width constraints, can KCC confirm	KCC can confirm that agreements are in place with local farmers to cut back vegetation twice a year, outside	The Applicant welcomes KCC's agreement on this point, which reflects the Applicant's understanding, and response to

Ref.	Question	Kent County Council's Response	Applicant's Response
	overhanging vegetation is cut by landowners at least twice a year?	of the bird nesting season.	the same Rule 17 request [REP7-030].
R17.7.6	In KCC Deadline 5 submission [REP5-032] it is stated that there would be costs associated with the creation of a new PRoW and that funding would be required to cover the legal costs of the Footpath Creation Agreement and any physical establishment works that may be required on the ground (such as signage, vegetation clearance and surfacing). KCC acknowledge that the act of dedication may be beyond the control of the Applicant. However, KCC requested whether the Applicant would be willing to cover these costs, potentially through a proposed Community Benefit Agreement. Please can parties confirm whether recent discussions have covered this topic? If not, please can the Applicant provide a response?	The applicant has stated that it is willing to facilitate ongoing discussions with stakeholders to progress the creation of the proposed new footpath. Further, KCC has offered to participate in these discussions to progress matters. However, KCC has not been involved in any recent discussions covering this topic.	The Applicant will continue to progress discussions with the relevant landowners outside of the examination process, as per the Applicant's response to the same Rule 17 request [REP7-030].
R17.7.10	In the event of the 25 measurements referred to in R17.7.9 not being agreed by joint verification, and if the ExA was to base its consideration on the worst-case measurements, is the Applicant/KCC content with its assessment of traffic impacts and the adequacy of Head Hill Road/ Seasalter Road as the route for construction and related vehicles?	KCC is content that the worst-case measurements presented would not alter its opinion on the adequacy of the route to accommodate construction vehicles. It has always been appreciated that there are narrow locations along the route where two HGVs cannot pass one another, and it has considered this. Consequently, mitigation is proposed to reduce the likelihood of two HGVs encountering one another, and the purpose of the condition survey is also intended to address damage to verges that may occur from overrunning. In addition, consideration was given to forward visibility approaching the narrow sections for traffic to see in advance of the pinch points whether other vehicles were approaching, and they would have the ability to wait for it to clear before proceeding.	The Applicant welcomes KCC's agreement on this point, which is also addressed in the SoCG between the Applicant and KCC [REP7-029].
R17.8.1	Can parties provide an update	The County Council has been	The Applicant welcomes KCC's

Ref.	Question	Kent County Council's Response	Applicant's Response
	with regard to discussions in relation to the proposed Minerals Assessment? Can the Applicant confirm whether this is going to be submitted into the Examination and, if so, when?	provided with a Minerals Assessment for review and does not have any objection to the proposal on mineral safeguarding grounds. KCC accepts that an exemption under the Kent Minerals and Waste Local Plan (2013-2030) Policy DM7 criterion (3) can be invoked.	agreement on this point, which is also addressed in the SoCG between the Applicant and KCC [REP7-029].

2.3 REP7-081 CPRE Kent - Biodiversity and MEASS

8. This section of the Applicant's response addresses submission [REP7-081] in Table 2.3.

Table 2.3: The Applicant's Comments on REP7-081

Statement	Applicant's Comment
Biodiversity	
Marsh Harriers	
In past responses from CPRE Kent and other interested parties and experts many scientific papers were cited that strongly indicate that the Graveney marsh harriers are highly likely to be negatively affected by the solar farm were it to go ahead. This army of evidence already cited gives a strong indication that there will be an AEoI (Adverse effect on integrity) of the Swale SPA despite any view of Government bodies. There should be a sound scientific basis on which decisions are based and any established functionally linked land should be given the same degree of consideration as a SPA. If the marsh harrier were to be displaced and dissipate over the Swale possibly to the Isle of Sheppey and beyond, this can't help but increase pressure on the marsh harriers that already occupy a suitable niche. This in turn is likely to increase pressure on any delicate predator prey balance. The high risk of this occurring would, without much doubt in our opinion, negatively impact the integrity of the Swale SPA. Report on the Implications for European Sites, Page 42, 4.2.138: The developer stated that there is rarely absolute certainty, which leading case law on the HRA process accepts is 'almost impossible to attain'. However, when weighing up the science that is available (although limited), the balance of probability tips heavily towards adversely affecting the integrity of the SPA. CPRE Kent cannot stress this strongly enough. Furthermore, the HRA goes on to say; 'A key requirement of the Habitats Directive is to determine whether the Plan is likely to have a significant effect when considered in combination with other plans and projects. The main driver for addressing plans in combination is ensuring that cumulative effects are captured. For example, the effects of a plan on air quality may be insignificant when considered alone, but when combined with the effects of increased air pollution from other plans, may lead to significant adverse impacts on site integrity'. This clearly indicates that the sheer scale of solar panels on their own are likely to cause significant harm to the integrity of the SPA despite being only one Plan. Therefore, when also taking into consideration the noise/human activity during	The Applicant disputes that there is direct and robust evidence to indicate that marsh harriers are highly likely to be displaced from the Development site (see for example the Applicant's response 2.15.1 of [REP6-015]). The Applicant's additional submission on marsh harriers in relation to The Swale SPA [REP7-037] concluded that there would be no adverse effect on the integrity of the SPA, whether or not marsh harriers will forage in the grasslands between the solar arrays; that position is supported by Natural England, as documented in the SoCG [AS-050]. Off-site compensation is therefore not required. Natural England's view is that off-site mitigation is not necessary, and the remedial actions in the Deadline 6 version of the Outline LBMP [REP6-005] are sufficient [AS-050]. The comparison with a wind farm's effect on breeding golden plovers is not relevant to the Development. The Applicant has demonstrated [REP4-052] that the Development represents a 65% biodiversity net gain relative to the existing baseline as a result of the measures set out in the Outline LBMP proposed [REP7-013]. The Applicant is therefore content that not only does the Development address the challenges of the climate emergency, it represents a substantial contribution to biodiversity net gain. The Applicant set out in Chapter 10 - Hydrology, Hydrogeology, Flood Risk and Ground Conditions of the ES [APP-040] (e.g., paragraph 129) that the Development is expected to lead to improvements to water quality over the existing baseline, predominantly due to the cessation of intensive arable cultivation of the land, and the associated application of agricultural chemicals to the land. The existing baseline levels of chemical application are set out in the Applicant's Deadline 4 submission [REP4-050].

Statement	Applicant's Comment
construction/decommissioning and operation, human disturbance, light pollution, fencing, glint and glare, loss of habitat etc. then anyone, regardless of academic background, is likely to conclude that there will be a significant negative affect on the marsh harrier and other SPA species. So far, the developer has not offered any tangible compensation in the event of the displacement of marsh harriers nor any tangible mitigation to prevent the displacement of marsh harriers. Indeed, CHS seem to be adopting a reckless approach, content to take a gamble, as it is of no consequence to them if the marsh harrier stays or is driven away, were the solar park to go ahead. This indicates that the developer's main concern and priority is driven by cost and profit and not the integrity of the SPA, and that the Graveney Marshes are nothing more than a convenient place to hook up to the grid with the marsh harrier serving no other purpose other than being a mere inconvenience to them along with the Brent Geese, golden plover, lapwing and other flora and fauna. CHS have not demonstrated nor given any reassurance along this process that they value nature or indeed Graveney Marshes; to the contrary, the mere statement they made that 'there is no requirement for absolute certainty, rather the requirement is to demonstrate beyond reasonable scientific doubt there will not be a significant adverse effect on a SPA…' demonstrates their intention to do only the bare minimum necessary regarding the overwhelming science suggesting otherwise. Despite this, the scientific evidence clearly weighs heavily against harm to the SPA along with the assembly of experts who have disagreed with CHS. In verbal communications with Natural England they stated that it is a 'population' that gives a SPA its significance. This may be so, but you cannot have a population without individual birds to make that population. A study led by Dr Alex Sansom illustrates just how damaging bad decisions can be when development is allowed in a sensitive area. This study found that the numbers of golden plover dropped by 80 per cent within a wind farm during just the first two years of operation.1 Lead researcher Dr Alex Sansom was quoted as saying: 'Golden plovers breed in open landscapes and it is likely that the presence of wind turbines in these areas leads to birds avoiding areas around the turbines. This study shows that such displacement may cause large declines in bird numbers within wind farms.'	

Statement	Applicant's Comment
Whilst CHS project is not a wind farm, this study clearly shows what a devastating effect an ill thought out project can have on a protected bird species and in this case, send a once healthy population into catastrophic decline.	
Brent Geese, Golden Plover and Lapwing:	
The 'lumping together' of these three species, again for the developer's convenience, be it cost or not wanting to give up more space for mitigation or buy more land for the purpose of mitigation, will inevitably put a strain on the available land thus increasing the competition for resources. The bird days, whilst an industry accepted way of working out mitigation, is nevertheless a mathematical model and does not in reality, necessarily reflect the diversity and dynamics of biology. Graveney marshes have sustained around 3,000 brent geese in recent years. The land given over for mitigation won't support this figure. Furthermore, pooling the lapwings and golden plover onto the same piece of mitigation places a further added strain on the mitigation site, despite the birds occupying different niches. Overcrowding can increase the parasitical burden on the land. Therefore, yet further pressure on the integrity of the SPA and serves to add to the accumulative negative effects. CPRE Kent fails to see any biodiversity net gain and in fact suggests the land given over for mitigation severely compromises, stifles and limits any natural biodiversity growth.	The mitigation set out in the AR HMA for brent goose, golden plover and lapwing has been defined using precautionary metrics such that there can be confidence in its capacity to support all three species. Brent geese use different resources (grass) than plovers and lapwings (invertebrates) and therefore do not compete for the same resources. Golden plover and lapwing use similar resources and there is sufficient area to sustain both species; that has been the subject of some discussion during the examination and has been satisfactorily resolved. The figure of 3,000 brent geese reflects more or less the entire Swale SPA population. On occasions, that entire population can be found within the arable fields on the site; however, the site does not support those numbers consistently within, or between winter seasons, as brent geese use the intertidal and grassland habitats within the SPA as well as other arable land outside its boundaries. Approximately 3,000 brent geese have been recorded using single arable fields at any one time within the site, so it is very reasonable to predict that the grassland AR HMA extending over several fields comprising over 50 ha in extent is capable of supporting 3,000 geese at any one time. It is unlikely to be capable of supporting 3,000 geese throughout the winter season, but it does not need to in order to mitigate for the numbers recorded using the site. The use of the peak-mean metric accounts for that variability in numbers and provides a precautionary measure on which the extent of the mitigation land is defined. Subject to the updates requested in the outline LBMP, which have been provided in the Deadline 7 revision (E) [REP7-013], Natural England is satisfied that the provisions of the AR HMA and other measures and procedures described in the outline LBMP are sufficient to avoid an adverse effect on the integrity of the SPA.
Insects	
Recent reports bring together the current scientific research studies from around the world. Some of the key findings of this synthesis of data include that we may have lost 50% or more of our insects since 1970, while 41% of the Earth's remaining five million insect species are now 'threatened with extinction'. In the UK: • 23 species of bee and flower-visiting wasp have become extinct in the UK since 1850 • The geographic ranges of many bumblebee species have more than halved between 1960 and 2012. • Numbers of butterflies fell by 46% between 1976 and 2017, with declines running at 77% in	As set out in paragraph 139 of Chapter 8 - Ecology of the ES [APP-038], the Development is assessed to have significant beneficial effects on invertebrates. The potential for adverse effects on invertebrates potentially attracted to solar PV modules is assessed in section 8.5.4.3 of Chapter 8, which assesses a not significant, negligible effect.

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'habitat specialist species' such as marsh fritillaries and wood white butterflies. • The abundance of larger moths such as the garden tiger dwindled by 28% between 1968 and 2007, with Southern England experiencing a 40% drop in numbers. Whilst it has been suggested that no insecticide is likely to be sprayed, which will undoubtably help with certain species of insects, it has been well documented that aquatic insects, including dragonflies mentioned as one of the insects most at risk (see footnote 2) are attracted to solar panels. As the panels are to be placed in a predominately aquatic environment it's highly likely that the panels will have an adverse effect on the efficacy of flying aquatic insects including some rare species already mentioned on site.	
MEASS	
Risk of flooding to Faversham	
The tidal water that runs through Faversham can over top and flood the surrounding houses and streets depending on the weather patterns (see Appendix 1). Attached are photographs taken recently (1 st October 2019) of a high tide coupled with high winds and the devastating effect these two combinations can have on the integrity and safety of the residents of Faversham. These photos are not unusual, and the situation will only get worse as our weather gets more extreme. Whilst CPRE Kent regards renewable energy as vitally important, when there are thousands of houses under construction around Faversham and not one of them has a solar panel on the roof - how important is renewable energy to the Government? Salt marsh, known for acting as a carbon sink, is at risk, along with the MEASS, (likely to provide flood relief for Faversham and deliver valuable habitat), could be put on hold indefinitely. CPRE Kent's flood expert took a careful look at the EA's mathematical modelling and using his personal expertise and extensive knowledge of the area as an engineer, having been the manager of Graveney marshes flood defences for many years, concluded that the EA's assessment along with CHS is likely to be inaccurate. Indeed, further evidence has come to light from Climate Central (see Appendix 2) 4 which states that large parts of Kent, including Seasalter, Graveney and Faversham will likely be underwater by 2050, indicating Faversham is at greater risk than the EA current forecasts. If the MEASS is delayed by any more than the 20 years, as it initially was to be, then the flooding in Faversham is likely to be compounded and become more frequent and more severe. People's lives, health, wellbeing and property are	The Applicant summarised in its Deadline 6 submission, 'Responses to Written Representations Received at Deadline 5' [REP6-015], section 2.7.3, that the Development does not increase flood risk in Faversham through a potential delay to managed realignment. Implementation of managed realignment under the MEASS is predicted to increase flood extents at Faversham: *"Appendix I - Medway and Swale Strategy Study (MEASS) Modelling Report (Mott MacDonald March 2018) of the EA's MEASS document (September 20192) clearly shows that under a managed realignment scenario at the Site (benefit area BA6.2) there would be a greater extent of flooding in Faversham. This is shown on Figure 140: Flood extents of the baseline (light blue) and the Leading Option (pink) results for the 1:200- year present scenario in Swale and Medway estuaries. The highlighted red boxes denote areas were the flood extent is increased compared to the baseline. The flood modelling used to inform the MEASS was undertaken by Mott MacDonald using industry standard software and a recognised methodology."* The Applicant has taken advice from the EA, as the UK's statutory body with responsibility for flood defence, since September 2018, using the data provided by the EA, and modelling undertaken on their behalf using the best available data (as reported in the flood risk assessment [APP-227]) to inform the design of the Development. A SoCG was agreed with the EA in May 2019 [AS-017]. The Applicant disagrees that the only obstacle standing in the way of MR at the Cleve Hill site is Cleve Hill Solar Park. In the absence of the solar park, managed realignment at Cleve Hill would be proposed in Epoch 2, 2039-2069, as there are other significant challenges (including the 400 kV overhead transmission line) which would make MR difficult to implement in the short-term. This position is clearly set out in the MEASS at Appendix A.6.2, BA6.2: Cleve Hill of

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being negatively affected for the foreseeable future by the threat of the solar park existence and the MEASS being delayed. The MEASS is an opportunity to follow Government policy to join up nature. The only obstacle standing in the way of this is the solar park. With biodiversity in serious decline, can we afford to pass over this invaluable opportunity?	Appendix H, Implementation Plan [REP7-058]. Indeed, Requirement 17 of the dDCO provides the opportunity for MR to proceed and for the development to be decommissioned where the EA has satisfied certain pre-requirements. The Development has been assessed to result in a biodiversity net gain of 65% from the existing baseline habitats [REP4-052].
After reviewing all the evidence CPRE Kent's conclusion is that the environmental cost of this solar farm would considerably far outweigh the benefits. Graveney marshes, simply put, is the wrong place for such a development especially on this scale, indeed any development in an area as sensitive as this, is nothing short of foolhardy and potentially extremely damaging.	The Applicant disagrees, and has worked with statutory agencies to reach agreed positions in respect of all Principal Issues identified in the Rule 6 letter [PD-003]. The Applicant's Closing Statement submitted at the end of the examination (document reference 16.3.1) sets out the Applicant's final position in respect of those Principal Issues.

2.4 REP7-082 CPRE Kent - Comments on 'EN010085-001607-Cleve Hill Solar Park - AS Drax power station', and Additional Information for Deadline 7

9. This section of the Applicant's response addresses submission [REP7-082] in Table 2.4.

Table 2.4: The Applicant's Comments on REP7-082

Ref.	Statement	Applicant's Comment
1	**Response to EN010085-001607-Cleve Hill Solar Park - AS Drax power station**	
1.1	**Secretary of State's (SoS) Decision**	
Cleve Hill Solar Power (CHSP) have submitted EN010085-001607, their commentary on the recent Drax Repower DCO Decision, and its potential relevance to this Examination. It should be noted that the Secretary of State disagreed with the Examining Authority (ExA) and that Interested Parties, in particular Client Earth, are considering a Judicial Review of this recent Decision. The Drax Repowering, as its name suggests, is re-powering an existing very large power station, so it is an existing industrial site, not a greenfield site with so many of the environmental constraints that apply to CHSP. This Examination should consider and draw its own views on the conclusions made by CHSP from that Decision.		The Applicant's position in respect of the Drax DCO decision is set out clearly in AS-042. It has nothing further to add to that in response to these comments.
1.2	**Sustainable Development & Planning**	
In Paragraph 4.13 of the SoS decision (shown on Page 2 of EN010085-001607), reference is made to the "principles of sustainable development", and these underpin all planning decisions. The principles depend on three "legs" - economic improvement, social improvement and environmental improvement, and it has long been planning policy that proposals must support all three. In other words a scheme which provides economic benefits but trashes the environment is unacceptable. Paragraph 4.20 refers to "places where it is acceptable in planning terms" which reinforces the previous point. Both of these mean that CHSP is unacceptable because of all its adverse impacts.		The Applicant's position in respect of policy and the applicable tests is set out clearly in: 1. its Planning Statement [APP-254]; and 2. its Written Representation - NSIP Policy and Procedure [REP2-026]. The Applicant has nothing further to add to these submissions, other than to note that the policy is in favour of granting consent, and that there are no adverse impacts which would render the development unacceptable.
1.3	**Decarbonisation, Security of Supply and Lowering Consumer Costs**	
CHSP paragraph 2.4, page 5, says: "CHSP would make meaningful and timely contributions to GB decarbonisation and security of supply, while helping lower bills for consumers" and "submissions by other parties about the contribution made by planned offshore wind farms and other technologies are not relevant. As the Secretary of State says, there is no guarantee those projects will reach completion" CHSP's argument about decarbonisation is wrong because		The Applicant describes, in Figure 5.3 of its

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	CHSP is not zero carbon, as demonstrated in next section. Likewise "security of supply" is only provided if the battery system is implemented – without the battery it cannot provide security of supply because output depends on light levels, which are not guaranteed. Therefore alternatives which provide greater security of supply to PV supplies on their own (without batteries) would receive economic preference (ie higher prices) by prospective purchasers of CHSP's electricity. If it is to enable security of supply this Application must include batteries as an integral part of the system for this DCO, and the impacts of the batteries and associated parts must be included in the DCO. CHSP has also quoted support for more electricity because of potential increases in demand, such as provided by National Grid's Future Energy Scenarios (FES) for 2050. However, like the government's own predictions, such predictions have been proved wrong as previously shown to this Examination, because it is impossible to accurately predict the future 30 years ahead. Predictions are even more of challenge because of the way consumption and supply can be flexibly managed as shown previously and below, and also the rapidly increasing actions to improve efficiency in use all combining to provide a lower and steadier demand, which existing supplies can easily manage. Similarly "lower bills for consumers" depends very heavily on the economics of CHSP. As demonstrated below and in other evidence to this Examination, Solar is not the cheapest, and would not provide the potential £600 million from the latest Contract for Differences (see end of 1.5, below). Therefore consideration of other technologies is very relevant, especially schemes such as offshore windfarms which are supported by both Government policy and funding, and therefore highly likely to be built.	Statement of Need [APP-253], the contribution solar generation can make to the decarbonisation of the GB electricity system. Paragraphs 5.31 – 5.36 of the same Statement of Need describe how solar works with other (renewable) generation technologies to improve security of supply. The role of the battery system in further enhancing the contribution the proposed development to the efficient operation of the GB electricity system, through the delivery of integration and stability services, is described in the Statement of Need, Chapter 5 Section vii). The Statement of Need, Chapter 4 confirms that today's view of future demand remains uncertain, but growing, for the same reasons as those stated in the 2011 NPS documents: the switching of sources of final-use power for heating and transport from carbon-intensive sources (hydrocarbons) to electricity, the generation of which can be decarbonised using technologies already available today. The Applicant further addressed this point in relation to the Summer 2019 Committee on Climate Change "net zero" report, quoted in paragraph 4.2 of "Additional Submission - Comments on Deadline 3 Submissions. The Applicant's Response to GREAT and Faversham Society Representations on Need" [AS-037]. This is further discussed in the Applicant's "Additional Submission - Comments on Deadline 3 Submissions. The Applicant's Response to GREAT and Faversham Society Representations on Need" [AS-037] at paragraph 1.2 The Statement of Need, Chapter 6, Sections i) and ii) describe the commercial operation of the GB electricity market, and the mechanism by which unsubsidised solar assets introduce downward pressure on wholesale market price by "taking" their price from the market due to a low or zero marginal cost of generation. The Applicant notes the analysis included in CHSP paragraph 2.4, page 5, as referenced by CPRE Kent, in answer to this last point, and it has nothing further to add to that.
1.4	**Decarbonisation - Emissions from Photovoltaic systems**	
	CHSP's Photovoltaic generation claims, in Paragraph 2.9, page 5, to be "without any carbon emissions" which is not true: the processes needed to manufacture, install, operate and ultimately dispose of the system cause emissions. It is not "Zero Carbon" and, in comparison with other Low	The Applicant undertook analysis of the lifecycle carbon emissions of the Development (including battery storage) in Chapter 15 - Climate Change of the ES [APP-045] at section 15.4.2. This section clearly acknowledges the carbon emissions associated with the Development, and

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	Carbon sources, it is certainly not the lowest carbon source. Where the panels are located on the ground, as in this proposal, they not only adversely affect the area occupied and reduce its ability to sequester and store carbon, but the ancillary structures such as roads, bunds, fencing, security lighting etc., all add to emissions. The Examination has already received evidence on the larger footprint of PV compared to wind, with its associated higher carbon footprint land use, but the actual equipment has a higher carbon impact. As noted above, to provide security of supply, this proposal must include batteries, and they also have their own significant, carbon footprint, which needs to be added to that of the photovoltaic system, which gives an even higher carbon footprint and cost overall. The United States Department of Energy publication "An Assessment of Energy Technologies and Research Opportunities"1 shows in Figure 10.(reproduced below), that the Green House Gas Emissions are comparable to Biopower and are higher than nuclear and several times higher than wind, especially offshore, which has the lowest emissions. This means it is not "Zero Carbon" nor is it reducing generation emissions as effectively as wind or nuclear, further diminishing its potential benefits.	accounts for them in the calculations of emissions savings and 'payback period'. The Development represents the best option for decarbonisation at the Cleve Hill site. Evidence of this was presented in a WR submitted by the Applicant at Deadline 3 [REP3-025], which provides a comparison between managed realignment on the site and the proposed Development, finding greater decarbonisation benefits as a result of the Development. The Applicant considered alternative low carbon technologies in section 4.4.4 of Chapter 4 - Site Selection, Development Design and Consideration of Alternatives of the ES [APP-034] and found no viable alternatives to the proposed Development to connect to the available grid connection at the existing Cleve Hill Substation.
1.5	**Economic Viability**	
1.5.1	**Solar is still much more expensive than offshore wind**	
	The Applicant claims that the Drax Repower DCO Decision (EN010085-001607) indicates that the issue of need is not relevant. However the issue of need is entirely relevant since if the Proposals produce expensive electricity relative to other supplies or to demand reductions, then no-one will buy it. The Marshes are a rare and unique area and therefore it is essential that the Examiners are satisfied that if approval is given then the scheme will go ahead and operate successfully and produce benefits greater than its impacts; otherwise this area would be blighted with all the consequential impacts of that. Solar is more expensive than wind and the cost of wind is rapidly decreasing. For example, the recent Contract for Difference auction3 showed that offshore wind is now cheaper than gas powered generation, and the Strike Prices for 2023/24 are £39.62 per MWh, which is some £8 to £9 below the government's 'reference price for that year. Since CHSP would be in competition with that, its prices would have to be lower to be competitive. The new wind schemes are achieving cost reductions because of larger turbines, a host of technical	The Applicant has not, and does not, claim that the Drax Repower DCO decision indicates that the issue of need is not relevant. That isn't the point arising from that decision at all. The Applicant's position in respect of the Drax DCO decision is set out clearly in AS-042. It has nothing further to add in respect of that decision. The Statement of Need [APP-253], Paragraphs 5.31 – 5.37, describe how solar and wind power together provide a more reliable power generation forecast, and enhance security of supply. In particular, paragraph 5.34 references the "wind drought" of summer 2018. In its response to REP5-053, contained in Section 2.8.1 of [REP6-015], the Applicant makes relevant points regarding the Q3 2019 CfD auction and refers to those points in response to this statement.

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	developments in turbine design, manufacture, installation and maintenance, as shown by the Department for Business, Energy & Industrial Strategy (DBEIS). These factors have also increased the capacity factors with existing offshore windfarms achieving around 47%, but the next generation are expected to achieve 60% - far greater than for solar farms. The higher capacity factor also means cheaper electricity for consumers. Offshore wind technology has rapidly developed, more than halving costs, and thus undercutting gas powered electricity, the price of which has remained steady and is expected to gradually increase in future, especially as carbon pricing increases. The impact of lower wind costs has meant that at times the wholesale price of electricity has become negative, further reducing the competitiveness of CHSP. These results support the expectation of offshore windpower to form the backbone of zero carbon electricity, with the government signing a 'sector deal' for an increase of 30 GW in offshore wind, up from the current 9 GW. The Crown Estate has begun a leasing round for another 7 GW offshore, which is additional to that already planned. Onshore wind is also cheaper than solar and is expected to continue falling in cost at a faster rate than solar. It also has a smaller footprint per MW than solar, providing further reasons to refuse this application. These aspects illustrate the greater benefits of wind power compared to solar power, and also show the need to keep the Cleve Hill Grid Connection available for replacing the Kentish Flats wind turbines with upgraded equipment, which would be far cheaper, and deliver more energy than the Application. Finally, it should be noted that if the market follows the government's reference price expectations, then these schemes will pay some £600 million towards consumer bills by 2027, which would be a much greater public benefit than the Applicant could achieve. This data shows that it is against the public interest to allow the Proposals to proceed.	
1.5.2	**Additional New Evidence of Alternatives which compete with CHSP**	
1.5.2.1	**National Grid ESO is encouraging the expansion of resources on the distribution network, rather than on the Grid**	
	It is clear that the National Grid Electricity System Operator (NGESO) is implementing measures to enable ever increasing provision of supply and demand facilities on the distribution networks rather than the traditional Grid connected suppliers and major demands. Evidence of this is shown on their website and includes	The Applicant has addressed this point in paragraphs 1.2 and 5.5, of "Additional Submission - Comments on Deadline 3 Submissions. The Applicant's Response to GREAT and Faversham Society Representations on Need" [AS-037]. Further, the Applicant responded to CPRE's assertion that distribution-

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	using Distributed Energy Resources (DER) for multiple purposes including Black Restart, as shown for example by their Distributed ReStart project4 . It is also clear that this is the way to maximise carbon reduction, as it increases efficiency of the overall system and therefore reduces energy use.	connected facilities will be developed in the place of transmission connected facilities in Table 2.13 of The Applicant's Responses to Submissions Received at Deadline 3 [REP4-041]. Further, the Applicant has previously stated (see paragraph17, pages 15-16 of "Response to GREAT Deadline 4 Submission [REP5-016]) that: "National Grid has made many public statements on their position in relation to the connection of generation utilising diverse technologies and of sufficient capacities to the electricity network. These have been referenced in previous submissions, including references 3 and 6 to the Applicant's response to the GREAT Statement of Need [REP3-030]."
1.5.2.2	**Efficiency and Maximising Low Carbon**	
	As previously stated, the cheapest energy is the energy that you do not use. Improving energy efficiency is far more cost effective and important than new energy resources such as the Applicant's proposals, which merely provide additional energy at huge monetary and environmental cost. Energy efficiency reduces carbon emissions and so should be a priority. In addition providing 'load' forms of Demand Side Resource is lower carbon than providing new renewable energy resources, because it is making use of available renewable generation, rather than spending resources on creating more generation. Promoting Demand Side Response should therefore be the next priority after improving efficiency. The third priority is then distributed renewable energy. Large renewable schemes which are sited appropriately should only be considered after all of these. Cleve Hill Solar is therefore both unnecessary and unsuitable.	See our response regarding future electricity demand side response growth as set out in 1.3 above. The Applicant's position is that DSR is valuable insofar as it is compatible with end-use technologies and commercial drivers, but DSR on its own will not deliver a decarbonised electricity system.
1.5.2.3	**Flexibility and Local Energy Markets in Distribution Network**	
	The two key factors which affect electricity costs are energy efficiency and flexibility in demand. Energy efficiency is the cheapest way to reduce costs, and flexibility in demand further reduces costs, as shown for example, by Day/Night tariffs which can more than halve costs per unit – Ecotricity currently charge 22.06 p/kWh for daytime use, but only 10.37 p/kWh at night. Similarly, for energy generators, flexible generation can pay more than inflexible supplies. Modern technologies are now supporting increasing flexibility both in demand and supply, which is completely transforming the market. This includes rapidly increasing developments in local energy markets (LEMs) and in the provision of flexibility by such markets, and examples are provided below.	The Applicant has addressed the point made in relation to DSR (and its capability to "reduce or increase demand as required") and embedded generation in paragraphs 1.2 and 3.2 of "Additional Submission - Comments on Deadline 3 Submissions. The Applicant's Response to GREAT and Faversham Society Representations on Need" [AS-037] as well as in the Applicant's Statement of Need [APP-253], Chapter 5, Sections ii) and iii). The Applicant has signposted the reader to its previous comments on electricity demand growth against paragraph 1.3 above. The Applicant consulted on a range of community benefits during the pre-application phase, including footpaths, a community

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	The key aspects of all these schemes is to provide flexibility for Distribution Network Operators DNOs), but also provide significant direct economic benefits to consumers and generators. These schemes improve energy efficiency, thereby also reduce energy usage and carbon emissions. This is in contrast to the Applicant's scheme which provides no direct benefits to local people but merely generates electricity, has significant carbon impacts (specially by reducing carbon absorption of the land) and has numerous other adverse impacts. Although the Applicant argues that even if other Grid connected sites could be used, their scheme is still needed because there is a need for more low carbon schemes. This argument is only valid if there is a lack of other alternatives, and they do not have to be on the Grid, because it is the total capacity that is important. As well as the total capacity the demand is equally important because the system now has increasingly flexible demand which can be reduced or increased as required. The cost of the supply is also vital because no one will buy expensive electricity, so unused generating capacity is a waste of resources. The key aspect is that demand is falling, with the National Grid's current Winter Prediction, being for a lower demand than last winter. There are so many schemes coming on stream in the distribution system, as well as the major offshore wind schemes quoted above, that Cleve Hill is now unnecessary, even for de-carbonising. Finally, the Cleve Hill grid connection is currently scheduled for 2024, and many of the other schemes are being implemented now or before 2024, meaning that Cleve Hill becomes even less viable and unnecessary. The schemes below would add more than enough low carbon electricity to the existing low carbon supplies to meet the falling electricity demand, and at lower costs than the Applicant's proposals. An extract from the report "Flexibility and Local Energy Markets in Distribution Network" 5 is appended at annex 1 to this document, and provides more details of the schemes summarised below:	orchard, and improvements to land management such as biodiversity enhancements. The proposals in the application, such as the permissive footpath between Graveney and the coast, biodiversity enhancements including measures such as the lowland grassland meadow in the south east of the Development site, and the decision to drop the community orchard proposals were directly related to the outcome of the consultation undertaken. Further detail on this is provided in section 2.8 of the Applicant's Response to Deadline 6 submissions [REP7-027]. The Development represents the best option for decarbonisation at the Cleve Hill site. Evidence of this was presented in a WR submitted by the Applicant at Deadline 3 [REP3-025], which provides a comparison between managed realignment on the site and the proposed Development, finding greater decarbonisation benefits as a result of the Development. The Applicant considered alternatives to the Development in Chapter 4 - Site Selection, Development Design and Consideration of Alternatives of the ES [APP-034] and found no viable alternatives to the proposed Development to connect to the available grid connection at the existing Cleve Hill Substation. The Applicant is in receipt of an offer from National Grid to connect at Cleve Hill Substation in 2024. A Modification Application will be prepared for National Grid to bring this connection date forwards, and National Grid have indicated that an earlier connection date would be achievable. As described in the Applicant's response to the GREAT Statement of Need [REP3-030], the Applicant believes that a diverse portfolio of generation projects in GB is required to support system adequacy, and that many technologies have important roles to play. The Statement of Need [APP-253] paras. 5.31 - 5.36 describes why this is the case. Further, the Applicant's position is not that CHSP should displace other low-carbon generation projects, but that more solar and other low-carbon generation projects are required within the future GB energy mix if we are to meet our decarbonisation targets, therefore CHSP and other low-carbon generation projects should be built. The Applicant's position is that the Cleve Hill project, if granted a Development Consent Order, is well placed to provide enough low-carbon electricity to power nearly 100,000 homes each year, from 2023 or earlier, and the Environmental Statement Chapter 4 [APP-034]

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		describes why solar, rather than wind, is better suited to the Cleve Hill location.
1.5.2.4	**Centrica identifies large market for Distributed Energy to reduce carbon, improve resilience and save money**	
Centrica being a major player in the energy market has the power to influence many energy using organisations, and their commitment to Distributed Energy, means that ever larger amounts of such resources will come into play, as well as their large residential schemes such as the Virtual Power Plant referred to in 1.5.2.5.		See final 3 paragraphs in response against 1.5.2.3 above.
1.5.2.5	**Centrica's Virtual Power Plant**	
Centrica are promoting major flexibility scheme of residential hot water tank scheme with Mixergy, providing a 2.5 GW virtual power plant by being able to adjust the demand for heating hot water in line with overall demand, and has already installed 100 systems for this. As well as benefitting Centrica and the national energy system these tanks will also reduce water and energy by up to 40%, saving consumers money too. - if that had been available for the Grid failure on 9 August 2019, it would have avoided the 3.47 minute grid failure, because the existing Social Energy's distributed load operated within 200 milliseconds of the Grid failure notification, demonstrating that increased flexibility in the distribution system also reduces grid risks.		See final 3 paragraphs in response against 1.5.2.3 above
1.5.2.6	**Plan Zero by OVO**	
OVO Energy has committed to eliminating its customer's household emissions and fit five million homes with flexible, clean energy technologies as part of a wide-ranging carboncutting initiative dubbed 'Plan Zero'. This demonstrates that not only can consumers have local clean energy but also reduce energy use.		See final 3 paragraphs in response against 1.5.2.3 above.
1.5.2.7	**EDF, UKPN to trial residential flexibility in local energy market project**	
EdF UKPN and Repowering London are providing peer-to-peer energy trading for solar and battery power between residents in Project CommUNITY, and this not only provides low carbon and economic benefits to users but also flexibility to the Distribution Network Operators.		See final 3 paragraphs in response against 1.5.2.3 above.
1.5.2.8	**DSR: adding a revenue stream for the water industry**	
Severn Trent Water provides an example of an industry which currently can provide 15 Megawatts of Demand Side Response, which could increase to 50 MW, which has with very good paybacks of three years, as well as providing other benefits to them.		See final 3 paragraphs in response against 1.5.2.3 above.
2	**Land and Climate Change**	
2.1	**Land**	

Ref.	Statement	Applicant's Comment
	Land is a scarce and finite resource, because we are not making any more, and in the case of Kent we are facing losing huge areas due to rising seas and flooding. In the face of so many additional competing demands for land, each area must be used for its best use. We are, as Government and local councils agree, facing a Climate Emergency, and that means Climate Change is our top priority for land. The Committee on Climate Change (CCC) which has already said we need major land use changes6 . That will mean ensuring that the Marshes are used for the purpose that will provide the greatest benefits. As the CCC says in its Executive Summary: "Land is a critical natural asset. It provides us with the fundamentals of life: clean water, food, timber, and the natural regulation of hazards such as flooding. Key to the effective functioning of these is biodiversity. Land is also an essential resource to mitigate climate change, naturally sequestering and storing carbon. Over the rest of this century and beyond, climate change combined with other social, economic and environmental pressures will present significant risks to the services provided by the land. Unless land is managed more effectively over this transition, its essential functions will not be maintained for future generations." Clearly the Applicant's Proposals will not provide improved and effective land management. Support for better management comes from the RSPB who have mapped out protected areas that are providing carbon benefits, and Figure 1 (overleaf) shows the local area: [FIGURE 1 EXTRACT] Although much of the Application Site is not covered by designations, it is bordered by the high carbon areas, so its management should be improved to provide even greater carbon benefits. The RSPB conclusions from this mapping are: "Natural climate solutions are essential to confront the climate change and biodiversity crises. All carbon and nature-rich areas need to be mapped, recognised and integrated into national land plans and initiatives to secure their protection. Government policies must prioritise and drive a turn-around of the poor ecological condition of the carbon and nature-rich areas across the UK. Public funding for land management must deliver the restoration and maintenance of these areas to secure long-term benefits for carbon and nature." RSPB's concerns are just one reason why need to protect this area. Their message is enhanced by the recent declaration by 11,000 scientists around the world8 that: "clearly and unequivocally … planet Earth is facing a climate emergency." Their recommended actions include: "We must protect and	The Development represents the best option for decarbonisation at the Cleve Hill site. Evidence of this was presented in a WR submitted by the Applicant at Deadline 3 [REP3-025], which provides a comparison between managed realignment on the site and the proposed Development, finding greater decarbonisation benefits as a result of the Development. The Applicant considered alternative low carbon technologies in section 4.4.4 of Chapter 4 - Site Selection, Development Design and Consideration of Alternatives of the ES [APP-034] and found no viable alternatives to the proposed Development to connect to the available grid connection at the existing Cleve Hill Substation. The Applicant has demonstrated [REP4-052] that the Development represents a 65% biodiversity net gain relative to the existing baseline as a result of the measures set out in the Outline LBMP proposed [REP7-013]. The Applicant is therefore content that not only does the Development address the challenges of the climate emergency, it represents a substantial contribution to biodiversity net gain. The Applicant's view is that the proposals clearly will provide improved and effective land management.

Ref.	Statement	Applicant's Comment
	restore Earth's ecosystems. Phytoplankton, coral reefs, forests, savannas, grasslands, wetlands, peatlands, soils, mangroves, and sea grasses contribute greatly to sequestration of atmospheric CO2. Marine and terrestrial plants, animals, and micro- organisms play significant roles in carbon and nutrient cycling and storage. We need to quickly curtail habitat and biodiversity loss." In particular they note: "Although available land may be limiting in places, up to a third of emissions reductions needed by 2030 for the Paris agreement (less than 2°C) could be obtained with these natural climate solutions" In planning terms the marshes are not scheduled for development, and the marshes already provide many benefits for carbon, nature, recreation, mental health, exercise etc., which could be improved. It is far better for them to be protected from the proposed development. The following section provides additional reasons for protecting these marshes.	
2.2	**Wetlands**	
	The importance of wetlands, which includes marshes such as Graveney, has not been emphasised enough, and we are very concerned at the inadequate recognition of their importance. The IET article "Why the World needs wetlands"10 (appended as Annex 2 to this submission) amplifies how important they are to our world. Not only are wetlands a scarce and vital habitat, but disturbing them causes large adverse effects, so the Solar proposals would be just about the worst possible thing to do in this area. To quote some examples from this article: "Since 1700, the world has lost 87 per cent of its wetlands according to the Ramsar Convention on Wetlands in its 2018 Global Wetland Outlook (GWO). That's three times the rate of loss of our rainforests. In the technological age, the rate of loss is even greater – 35 per cent since 1970." "What is now increasingly being realised, however, is that wetlands, rather than making human settlements susceptible to floods, provide us with natural protection from fast-rising waters." "When these environments are modified, they can lose their capacity to absorb the excess waters." "The Insurance Bureau of Canada announced in September 2018, that wetlands provide flood protection more effectively and more cheaply than dams, levees or other manmade solutions." "Wetland plants take carbon out of the atmosphere and store it as plant tissue and eventually soil, unlike on dry land where plants die, break down and release the carbon back into the air. However, according to a November 2018 Florida International University report, a wetland can only perform this function if it is healthy and intact. 'Draining or disturbing wetlands can actually release the stored carbon into the atmosphere very quickly,' Lehrter adds."	The Development site is proposed on intensively managed arable farmland. The Development represents the best option for decarbonisation at the Cleve Hill site. Evidence of this was presented in a WR submitted by the Applicant at Deadline 3 [REP3-025], which provides a comparison between managed realignment on the site and the proposed Development, finding greater decarbonisation benefits as a result of the Development.

Ref.	Statement	Applicant's Comment
	"Royal Academy of Engineering report {Referred to in previous evidence], published last September, said restoring wetlands could reduce greenhouse gases and help the UK to be carbon-neutral by 2050"	
3	**State of Nature 2019**	
	Our reading of the SoN report is that this update of the previous 2016 report shows continuing losses of wildlife with the majority declining, with no let-up in the losses to all animals, plants and marine life. At least a quarter of UK mammals and nearly half of the birds assessed are at risk of extinction. However the Report only covers the period since 1970. Major declines of nature have been going on for a long time, so we really need to not only recover what has declined since 1970, but to also try to recover losses from before then. This means that a scheme such as Cleve Hill cannot go ahead as it would totally alter and damage the environment over a very large area which harbours some of our scarcest nature. It would also have effects on the aquatic and marine environment which is also at risk. The website: www.nbn.org.uk/stateofnature2019/ has the Report with a wealth of other information supporting the main report.	The Applicant has demonstrated [REP4-052] that the Development represents a 65% biodiversity net gain relative to the existing baseline as a result of the measures set out in the Outline LBMP proposed [REP7-013]. The Applicant is therefore content that not only does the Development address the challenges of the climate emergency, it represents a substantial contribution to biodiversity net gain. The Applicant set out in Chapter 10 - Hydrology, Hydrogeology, Flood Risk and Ground Conditions of the ES [APP-040] (e.g., paragraph 129) that the Development is expected to lead to improvements to water quality over the existing baseline, predominantly due to the cessation of intensive arable cultivation of the land, and the associated application of agricultural chemicals to the land. The existing baseline levels of chemical application are set out in the Applicant's Deadline 4 submission [REP4-050].

2.5 REP7-086 Environment Agency

10. This section of the Applicant's response addresses submission [REP7-086] in Table 2.5.

Table 2.5: The Applicant's Comments on REP7-086

Ref.	Question	Environment Agency's Response	Applicant's Response
R17.3.6	Assuming that the Applicant updates the outline LBMP in the manner set out in R17.3.5 above, is the Environment Agency able to provide final confirmation that it is content that the measures set out in the updated outline LBMP [REP-006] are sufficient to ensure compliance with the Eels Regulations 2009?	We can confirm that we are content that the content of the Outline LBMP complies with The Eels Regulations 2009. The applicant has addressed the need to make any newly constructed water level management control structures eel/elver friendly (passable) and state they will ensure any new ditch/habitat creation is the same – both for construction and operational phases. We are satisfied with these plans.	The Applicant welcomes the EA's agreement.

2.6 REP7-088 Faversham and Oare Heritage Harbour Group

11. This section of the Applicant's response addresses submission [REP7-088] in Table 2.6.

Table 2.6: The Applicant's Comments on REP7-088

Statement	Applicant's Comment
Faversham and Oare Heritage Harbour Group (FOHHG) submission for Deadline 7	
We write further to our written submission for Deadline 6, as well as to all our earlier submissions, both written and verbal. The Applicant has made no response, so far, to our Deadline 6 submission, which therefore stands as written. This refers to all our earlier submissions. For ease of reference, these are summarised as follows:	The Applicant has provided a response to Deadline 6 submissions (including [REP6-023]) at Deadline 7 [REP7-027].
Our original, provisional, assessment was that there would be a significant and unacceptable visual impact from the proposed development on the existing valued shoreline, landscape and environmental setting, as viewed from afloat in the Swale and in Faversham and Oare Creeks . This would have an adverse effect on the attractiveness of the Swale and Faversham and Oare Creeks both to local users and particularly to craft visiting the Faversham and Oare Heritage Harbour from other areas. Equally, this visual impact would have the same effect for walkers, bird watchers and visitors in general to Faversham and Oare and their environment, not to mention those more directly affected. The FOHHG therefore also expresses support for the submissions made, in the wider context, by Swale BC, Faversham TC, The Faversham Society, The Faversham Creek Trust, Mr Chris Lowe and Dr Tim Ingram, amongst others. Many of their issues raised would also have significant adverse impacts on the aspirations of the FOHHG.	The Applicant has provided a response to Deadline 6 submissions (including at section 2.1 [REP6-023]) at Deadline 7 [REP7-027]. The Applicant understands FOHHG's previous position, and has continually sought to provide further information at each stage of the examination (as listed in section 2.1 of [REP7-027]) to help further inform that position. The Applicant does not agree that the provision of further information is necessary. The Applicant has responded to the submissions made, as listed, in the responses to previous Deadline submissions at each deadline during the examination.
We had suggested to the Applicant, from the outset, that the specific visual impacts could be unequivocally assessed by provision, by the Applicant, of empirical data on existing ground and building levels across the whole development site and its significant context, in comparison with those of the proposed structures. We accepted that this might disprove our own assessment but that, without the data and analyses requested, we could not withdraw our original assessment. The Applicant stated that, in their view, their assessments already provided a sufficient basis for comparisons to be made. Subsequently they did provide some further data, but this was not empirical and could not enable the comparisons we had requested to be made. As in our written submission for Deadline 6, we wonder why the Applicant appears still to be reluctant to provide the information or analyses we have requested.	The Applicant provided the empirical data (topographic survey results) used to inform all previous related submissions as Appendix A to the 'Applicant's Response to Deadline 6 Submissions' [REP7-027]. The Applicant used the topographic data provided to generate the cross sections requested, so this submission has no bearing on the Applicant's previously stated position in respect of views towards the Development site from The Swale and Faversham Creek.

2.7 REP7-089 Faversham and Swale East Branch Labour Party

12. This section of the Applicant's response addresses submission [REP7-089] in Table 2.7.

Table 2.7: The Applicant's Comments on REP7-089

Statement	Applicant's Comment
Examiners' Request for further information	
Marsh Harriers	
Natural England and Kent Wildlife Trust have not yet responded to the Applicant's deadline 6 version of the Landscape and Biodiversity Action Plan submitted following Hearing 6 on 11th September. There is still significant uncertainty regarding the behaviour of marsh harriers in response to the construction and operation over a 40- year period of this large-scale solar farm. The solar farm would occupy the greater part of the Graveney Marshes with the exception of a narrow 'borrowdyke' area inside the sea wall and the area set aside to be managed as the Arable Reversal Habitat Management Area. Other than these areas, only relatively narrow corridors will be available for marsh harriers to hunt for prey. The whole of the Graveney Marshes south of the Swale SPA is functionally linked land for marsh harriers, over which they forage by flying at low level looking for prey items. We note that the Examiners have asked the applicant to provide two estimates of marsh harrier habitat loss depending on whether the birds use the reedbed and grass corridors or not. They are also asked to justify why they consider that marsh harriers do not use the arable land and the extent to which they use the 'borrowdyke' area inside the sea wall. However, these would only be predictions and provide no certainty that this important and rare species would not be deterred from using what is now a large area of suitable habitat. Therefore, there would be no demonstration beyond reasonable scientific doubt that there would be no Adverse Effect on the Integrity of the Swale SPA for marsh harriers. It is considered that this situation is not satisfactory, and the Examiners are requested to conclude that this is a reason why the solar farm in this location is not acceptable.	The Applicant has provided a written representation on Marsh Harrier (draft version was appended to the SoCG between the Applicant and Natural England (November 2019) [AS-050], and an updated version with supporting figures submitted at Deadline 7 [REP7-037]) to the Examination, which sets out the potential impact on The Swale SPA under the two different scenarios requested by the ExA: one where marsh harriers are not excluded from the inter-array grassland areas (the Applicant's position) and one where they are excluded from those areas. Natural England's view is that this is helpful in demonstrating the areas of foraging habitat with or without excluding marsh harriers from areas between the solar arrays. NE's position is that there is sufficient precaution built into the assumptions such that they can advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of the SPA.
Public Footpaths	
With regard to public footpaths, the sea wall runs alongside the site, now the Saxon Shore Way and expected to become part of the England Coast Path. In questions R17.6.1 to R 17.6.3, the process for dealing with the other footpaths crossing the site is discussed. It is evident from these questions to the applicant and KCC that there has been little discussion between the applicant and KCC about potential closures of the public rights of way. The footpath from Nagden to Castle Coote is of particular importance as a 'short-cut' for walkers to reach the sea wall (Saxon Shore Way) for recreational purposes in winter even if the footpath	The Applicant and KCC have continued to discuss public rights of way throughout the examination, and agreement on public rights of way matters is set out in the SoCG between the Applicant and KCC submitted at Deadline 7 [REP7-029]. This includes agreement on a hierarchy of closure as set out in the Outline CTMP [REP7-021] and a condition survey of the PRoWs pre-construction in Appendix G - Public Rights of Way Management Plan. Recreational amenity effects are assessed in Chapter 13: Socio-economics, Tourism, Recreation and Land-Use

Statement	Applicant's Comment
would become a defile between fences with limited views. It is important that the footpaths should be kept open and maintained in a useable condition for as much of the time as possible. The public do not only walk along the Saxon Shore Way/soon to be England Coast Path to get from A to B as argued by the applicant in the hearings. The paths around and through the site are used for recreation including to view wildlife. The situation that appears to exist between the applicant and KCC is unsatisfactory. These matters should not be left unresolved as this would make it easier for the applicant to avoid their responsibilities in these matters because they are not set out in writing.	of the ES [APP-043]. Section 13.5.1.4 addresses effects during construction and section 13.5.2.2 addresses operational effects. The Applicant clearly acknowledges and has assessed the impact on the use of the PRoW network to view wildlife throughout Chapter 13, for example at paragraph 180.
Road traffic on Head Hill and Seasalter Road	
With regard to traffic on Head Hill Road and Seasalter Road, it is noted from the Examiners' Question R17.7.1 that there does not appear to have been sufficient discussion between the applicant and KCC about control of heavy goods vehicles to and from the site. Head Hill Road and Seasalter Road are very narrow single lane roads with a mix of residential and other uses including a school and church and it is important that an accurate figure for HGV use is available to influence the decision on the application. With regard to question 17.7.4, it would seem almost beyond belief that the applicant has not discussed with Graveney School the hours when HGVs should or should not be using the road. Following the discussions at Hearing 6 about the width of the highway in response to the submission from Tom King, it is essential that the Examiners are completely clear about the width of Head Hill and Seasalter Road. This is so that they can carefully assess the impact of the HGV traffic on the safety of all road users including cyclists and pedestrians, the safety and convenience for buses and the good access for cars of local residents to their jobs and services. Given the high volume of HGVs required to construct the scheme, this raises substantial doubt as to whether Head Hill Road and Seasalter Road are a suitable access, being the only access, to such a large proposal.	The Applicant and KCC have continued to discuss control of heavy goods vehicles to and from the site throughout the examination, and agreement on highways matters is set out in the SoCG between the Applicant and KCC submitted at Deadline 7 [REP7-029], in particular in Appendix A2, Highways SoCG. The Applicant consulted with all stakeholders regarding delivery timings, and from the outset, replicated the timings agreed and implemented for the existing Cleve Hill Substation construction. KCC has responded to R17.7.10 at Deadline 7 [REP7-074] as follows: "KCC is content that the worst-case measurements presented would not alter its opinion on the adequacy of the route to accommodate construction vehicles. It has always been appreciated that there are narrow locations along the route where two HGVs cannot pass one another, and it has considered this. Consequently, mitigation is proposed to reduce the likelihood of two HGVs encountering one another, and the purpose of the condition survey is also intended to address damage to verges that may occur from overrunning. In addition, consideration was given to forward visibility approaching the narrow sections for traffic to see in advance of the pinch points whether other vehicles were approaching, and they would have the ability to wait for it to clear before proceeding."
Report on the Implications for European Sites.	
This report is intended to assess whether or not the proposed development would have an Adverse Effect on the Integrity of the qualifying features of the Swale SPA/Ramsar site. There remain a number of areas where the applicant's conclusion of no Adverse Effect on Integrity is disputed. The situation regarding the three wintering waterbirds – brent geese, lapwing and golden plover – appears to have been largely resolved between the applicant and some of the parties in the Habitat	The Applicant has concluded no adverse effect on the integrity of the Swale SPA / Ramsar during construction, operation and decommissioning of the Development. Natural England has confirmed in the SoCG [AS-050] that the latest version of the Outline LBMP [REP7-013] provides all necessary information to resolve the previous outstanding issues raised with respect to the Habitats Regulations Assessment.

Statement	Applicant's Comment
Management Steering Group, although the latest version of the Landscape and Biodiversity Management Plan has not been agreed. There are still some issues about the timing of setting up the ARHMA and how the grass will be fertilised. The use of the 'bird day' metric also seems to have been agreed to assess the size and capacity of the ARHMA as a foraging resource. There have been discussions about the management of the ARHMA as a suitable habitat for wintering birds and whether there should be scrapes to attract the birds. What is not clear and has not been discussed in any public hearings is whether wintering birds would be put off from the area of the solar farm by its extensive coverage of the land inland of the sea wall and whether they will make their way to the ARHMA. The RSPB have not agreed on any of these matters so far and have not signed a Statement of Common Ground. With regard to marsh harriers, there is far less agreement between the applicant and the conservation organisations as to whether there would be an Adverse Effect on Integrity. Marsh harriers forage over the entire site all year as shown in the flight path diagrams. Natural England still have significant doubts that marsh harriers will forage along the ditches and grass strips in the site and comment that there is no existing equivalent for comparison. The development would create narrow corridors between extensive areas of solar panels which would deter the birds from trying to access their prey items even if the habitat at low level would be improved. Monitoring of the raptors at intervals throughout the life of the project would show how they are affected but if there is shown to be a decline, the applicant does not offer much remedy except discussion with the Habitat Management Steering Group. Natural England have suggested creation of off-site areas, but there is no promise of this. It is also not clear what proportion of the existing functionally-linked land will be lost. This is the subject of the Examiners' questions. Judgement in the ECJU and UK courts have made it clear that a high level of certainty is required in assessing whether a project is likely to adversely affect the integrity of a European site. We consider that without a high level of certainty, beyond reasonable scientific doubt, that there will be no Adverse Effect on the Integrity of the Swale SPA, this factor should weigh heavily in any decision on the scheme.	Kent Wildlife Trust's (KWT's) DL7 submission [REP7-107] confirms that within-site monitoring and remedial measures described in the Deadline 6 version (D) of the outline LBMP [REP6-005] are welcome. The same submission confirms KWT's position that there are no remedial measures to deal with the potential displacement from the grassland habitat between the solar arrays; the Applicant's position, agreed by Natural England, is that additional remedial measures are not necessary to conclude no adverse effect on the integrity of the SPA. KWT agrees with the proposed governance of the HMSG which has been described in the Deadline 7 revision (E) of the outline LBMP [REP7-013]. In response to the ExA's R17 question R17.3.8, KWT had no additional comments to make on the LBMP that have not been covered elsewhere. The issue as to whether or not geese, plovers and lapwings would be put off from the AR HMA by the adjacent solar arrays has not been discussed at any stage of the Examination because it has not been disputed by the conservation organisations. The RSPB declined to agree a SoCG and deferred to the submissions of Natural England and Kent Wildlife Trust; however, the RSPB continues to provide valuable input to the Habitat Management Steering Group (HMSG). Natural England has not had 'significant doubts' that marsh harriers will forage in the grasslands between the solar arrays. NE has consistently advised that those areas should be managed to provide good foraging habitat for marsh harriers; the Applicant has complied with that recommendation. Natural England's position is that "at least some individuals are likely to overcome any reticence towards the presence of the solar panels, if a plentiful food supply is provided". Further to the Applicant's additional submission of a report on marsh harriers in relation to The Swale SPA (updated for Deadline 7 [REP7-037]), Natural England confirmed agreement that there will be no adverse effect on the integrity of the SPA, whether or not marsh harriers forage in the grasslands between the solar arrays [AS-050]. With regards to all matters relating to the Habitats Regulations Appraisal, a signed SoCG [AS-050] confirms Natural England's agreement that the additional submissions on marsh harriers, constitution of the HMSG and SSSI measures described in the outline LBMP resolve Natural England's remaining concerns regarding impacts on the SPA, such that there are no outstanding issues. Natural England's view is that off-site mitigation is not necessary, and the remedial actions in the Deadline 6 version of the Outline LBMP [REP6-005] are sufficient. A Statement of Common Ground has been agreed with Kent Wildlife Trust (Final Submission document reference 16.2.2) and has been submitted to the Examination.

2.8 REP7-090 The Faversham Society

13. This section of the Applicant's response addresses submission [REP7-090] in Table 2.8.

Table 2.8: The Applicant's Comments on REP7-090

Statement	Applicant's Comment
The Faversham Society's Deadline 7 Submission	
The Faversham Society supports solar power, along with wind power and other forms of renewable energy. We are accordingly dismayed that hundreds of new houses are being built around Faversham without any sustainable energy provision. The Society supports clean solar. However, the Cleve Hill proposal is for dirty solar: we have major concerns about the batteries, safety and security and decommissioning. These concerns have not been allayed by anything presented at Deadline 6 or subsequently.	The Applicant does not agree that the Development represents 'dirty solar'. This statement is unsubstantiated. The Applicant notes Faversham Society's major concerns are stated in this submission as: • The batteries; • Safety and security; and • Decommissioning.
Need	
We do not consider that a strong enough case for need has been made to outweigh our concerns about the proposal from the developer. In our Deadline 5 submission (REP 5-053) we presented cogent arguments that in light of the rapid developments in small-scale localised solar PV it is impossible to establish that CHSP is needed to meet the requirements projected by the National Grid in their FES 19. This argument is reinforced by recent reports of potential growth in off-shore wind and 'floating' solar PV. The applicants in their submission to Deadline 6 (REP 6-015) unconvincingly seek to refute this argument by suggesting that the FES figures cannot be disaggregated between generation types and that the current proposals in planning are not an indication of projects which will materialise. We remain unconvinced since the disaggregation we used was that of the National Grid and it is clear that even if only about 60% of the projects in planning materialise, the FES 19 targets will be met without the need for CHSP. This argument coupled with the lack of National Planning Statements for Solar PV and BESS noted in our previous submission (REP 2-111) establish that it is perverse to proceed with a project on such unprecedented scale which is admitted to cause great harm and danger to communities, wildlife, environment and heritage.	As described in the Applicant's response to the GREAT Statement of Need [REP3-030], the Applicant believes that a diverse portfolio of generation projects in GB is required to support system adequacy, and that many technologies have important roles to play. The Statement of Need [APP-253] paras. 5.31 - 5.36 describes why this is the case. Further, the Applicant's position is not that CHSP should displace any other low-carbon generation projects, but more that solar and other low-carbon generation projects are required within the future GB energy mix if we are to meet our decarbonisation targets. The Applicant's position is that the Cleve Hill project, if granted a Development Consent Order, is well placed to provide sufficient low-carbon electricity sufficient to power nearly 100,000 homes each year, from 2023 or earlier, and the Environmental Statement Chapter 4 [APP-034] describes why solar, rather than wind, is better suited to the Cleve Hill location. The Applicant has made clear its views on the results of the recent CfD auction in Section 2.8.1 of [REP6-015] Finally, Section 2.19.1 of [REP6-015] describes how National Grid's FES documents should be interpreted, which remains different to the interpretation made by the Faversham Society.
Scale & Flood Risk	
As the examination concludes, we remain concerned about the scale of this proposal that will industrialise an area larger than Faversham with major aesthetic and environmental impacts including reduced and degraded recreational space for this rapidly growing town. As Tim Ingram's submission makes clear, the	The Applicant has assessed environmental impacts in the ES submitted with the DCO Application. Visual impacts are assessed in Chapter 7 - LVIA of the ES [APP-037]. Recreational amenity effects are assessed in Chapter 13: Socio-economics, Tourism, Recreation and Land-Use of the

Statement	Applicant's Comment
Environment Agency's MEASS demonstrates that they originally intended managed realignment for the site. The CHSPL proposal has raised the value of the land to the extent that the EA can no longer afford to purchase it. We share Graham Setterfield's concern that CHSPL has failed to prove that the risk of flooding in the town has not been increased by its proposed development.	ES [APP-043]. Section 13.5.1.4 addresses effects during construction and section 13.5.2.2 addresses operational effects. The Applicant summarised in its Deadline 6 submission, 'Responses to Written Representations Received at Deadline 5' [REP6-015], section 2.7.3, that the Development does not increase flood risk in Faversham through a potential delay to managed realignment. Implementation of managed realignment under the MEASS is predicted to increase flood extents at Faversham: "Appendix I - Medway and Swale Strategy Study (MEASS) Modelling Report (Mott MacDonald March 2018) of the EA's MEASS document (September 20192) clearly shows that under a managed realignment scenario at the Site (benefit area BA6.2) there would be a greater extent of flooding in Faversham. This is shown on Figure 140: Flood extents of the baseline (light blue) and the Leading Option (pink) results for the 1:200- year present scenario in Swale and Medway estuaries. The highlighted red boxes denote areas were the flood extent is increased compared to the baseline. The flood modelling used to inform the MEASS was undertaken by Mott MacDonald using industry standard software and a recognised methodology."
Enforcement of the DCO	
We argued in our verbal presentations at the last hearings, and our Deadline 5 submission that the local authority will struggle to exercise its ongoing responsibility for monitoring, discharge and enforcement of the requirements in the DCO within the eight-week time limit. CHSPL's assertion [2.10.7] that the DCO includes Requirements offers no assurance. The Requirements are unclear and therefore very difficult if not impossible for Swale Borough Council to enforce. In our submission at Deadline 5, the Faversham Society called for "enforceable requirements" to be included in the DCO and suggested those that we felt should be included in the construction and operational phases. We specified those agencies whose approval CHSPL should be required to obtain before their operational plan is presented to Swale Borough Council. The permission granted in Part 2 2 (2) (c) of the DCO: "the outline design principles, or such variation thereof as may be approved by the relevant planning authority pursuant to requirement 19", is very broad and will leave Swale with a large burden of oversight confronting a wealthy project undertaker. We seriously doubt the capacity of Swale or any other LPA adequately to secure the public interest in overseeing this development. The	The points made here criticise the statutory regime prescribed in the Planning Act 2008 and the competency of the local planning authority. The Faversham Society may not like it, but nonetheless the local planning authority is responsible for enforcement, and is the "discharging authority", under the Planning Act 2008. It is the local planning authority's duty to perform its statutory functions competently. This is outside of the power of the Applicant to change. The local planning authority has provided comment on Requirements and other terms of the DCO directly to the Applicant and examination, which have resulted in appropriate amendments having been made. The Requirements in the dDCO reflect those in other made DCOs and are no more complex. The Requirements comply with all relevant legal tests. In summary they are necessary, sufficiently precise, reasonable and enforceable. Requirement 20 does not require prior approval, however, it would clearly not be prudent for the discharging party to ignore any advice on its discharge application from consultees, who would then be called upon by the local planning authority to comment on the same application and offer the same advice. The requirement's purpose is to require the undertaker to carry out pre-application consultation in respect of the other Requirements, including 19. Who the undertaker should engage with in pre-application consultation is prescribed by each individual Requirement. The requirement was included at the request

Statement	Applicant's Comment
lawyers will have plenty of scope to challenge any attempt by Swale to enforce the DCO. We suggested that prior approval be required by the DCO. This has not been required. There is no prior approval requirement in §19 and §20. The project undertaker is merely required to consult prior to application. They are not required to secure approval. The public interest would be better protected if the agencies - HSE, Public Health England, KFRS, the Ambulance Service and NHS, the Kent Police Service and the Environment Agency – were clearly included as "discharging authorities" alongside the LPA, Swale. §18-§24 provides for appeals and we foresee threats of legal action becoming a regular feature of efforts by Swale to enforce a weak DCO in order to protect the public interest. We, therefore, request that the Planning Inspectorate ensure that the DCO is robust in securing the public interest. The provisions in §18-§24 may be reasonable for an infrastructure project using tried and tested technology, but the CHSP is not using a tried and tested technology and the risks of fire and subsequent explosion are great.	of Swale Borough Council, and drafted in consultation with its officers. The local planning authority was also consulted on the procedure for discharge of requirements in Part 3, Schedule 1, and the terms of that procedure were agreed between the Applicant and local planning authority. The dDCO provides sufficient control proportionate and relevant to the nature of the proposals. Indeed, there is more proposed control in the dDCO on both the solar and energy storage aspects of the project than any other consent made for such infrastructure previously. That is the welcome improvement to the consenting regime brought about by this project being the first its type to go through the NSIP process. No other solar or energy storage proposal has been as thoroughly scrutinised as the Cleve Hill Solar Park has in this examination, or has as great a degree of control over it. The Applicant would highlight that breach of a DCO brings criminal liability, in contrast to planning permissions under the Town and Country Planning Act 1990.
Batteries – Safety Risk	
In 13.11 CHSPL asserts that its Outline Battery Fire Safety Management Plan has been reviewed by the "HSE and is currently being reviewed by Kent Fire and Rescue." There has been very limited discussion with the KFRS, indeed CHSPL waited to be contacted by them before consulting with KFRS. It is clear that KFRS only contacted CHSPL after the Faversham Society raised its concerns with KFRS. CHSPL did not approach them and we regard this as unreasonable given the new hazards, and the scale of those hazards, that will result from the construction and operation of the batteries. In particular there is no evidence that KFRS have yet taken into account the fact that the proposed BESS at 700MWh is now over five times as large as the current largest in the world - the 129 MWh 'giant battery' built by Tesla at Hornsdale in Australia. Additionally, in their responses the applicants have failed to adequately reassure us that their proposed safety measures will be effective at this scale, given the repeated failure of these measures at sites around the world. In these circumstances we suggest that the DCO require that full approval of the Safety Management Plan be secured from KFRS and the HSE before submission of the final plans to Swale Borough Council. The Outline Battery Fire Safety Management Plan	As set out in Appendix 5 of the Consultation Report [APP-023], Kent Fire and Rescue Service were included as a Section 42 Consultee, consulted under Section 42 of the Planning Act 2008. Kent Fire and Rescue Service did not respond to Section 42 consultation. The Applicant is supportive of the position taken subsequently by KFRS, and the statements in emails (reproduced following GREAT's FOI request in [REP7-098]) and included in the Outline BSMP [REP6-021], at section 1.3 that: "All risk reduction strategies start with prevention and it is the 'responsible person' for the premises that has responsibility for this as stated in the Regulatory Reform (Fire Safety) Order 2005. We would also expect that our Central Consultation Team (CCT) will become more involved as the appropriate planning applications are submitted and that any applications would conform to any legislation that relates to this type of development and the design of the BESS will reflect prevailing legislative requirements and UK industry recommendations. Kent Fire and Rescue Service (KFRS) recognises the use of batteries (including lithium-ion) as Energy Storage Systems (ESS) is a new and emerging practice in the global renewable energy sector. As with all new and emerging practices within UK industry the KFRS would like to work with the developers

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will need to be revised when final decisions about batteries are made. That new plan should be approved by KFRS and the HSE before submission to Swale. The review of the Safety Management Plan for a very large installation using emergent and untested technology will not be a simple matter and it will take time. Swale will not have sufficient time, within the eight weeks, if there is not prior approval from KFRS and the HSE. Given the scale of the public safety risk we still regard it as essential that Public Health England, the NHS and the Ambulance Service approve the plan and risk mitigation. The DCO requires 3 (4) that Swale "must consult with the Health and Safety Executive and Kent Fire and Rescue Service before determining an application for approval of the BSMP." In 20 the undertaker is required merely to consult "another person or body prior to discharging a requirement" where the local authority is "required by this Order or other statute to consult with another person or body prior to discharging a requirement". The developer is not required in the DCO to secure prior approval from the regulatory public agencies which in our view should extend to HSE, Public Health England, KFRS, the Ambulance Service and NHS (they will need to have plans for a major incident), the Kent Police Service and the Environment Agency.	to better understand any risks that may be posed and develop strategies and procedures to mitigate these risks. The responses to the ARC recommendations set out in the OSMP details the information that we would expect to be provided during the planning application phase, we would then be working with our CCT and Water Services colleagues during the consultation phase to make sure that the Cleve Hill Solar Park conforms to the appropriate legislation and recommendations." The Outline BSMP will be revised when final decisions about batteries are made and will be approved by KFRS and the HSE before submission to SBC as stated in section 1.4 of the Outline BSMP [REP6-021] and in accordance with Requirement 19 of the dDCO. As set out above, Swale Borough Council, as the local planning authority is responsible for enforcement, and is the "discharging authority", under the Planning Act 2008. It is the local planning authority's duty to perform its statutory functions competently. Also, as set out above, it would be pointless for an applicant to ignore consultation advice from a party such as the HSE, when the same consultation advice would be provided to Swale Borough Council later, if the application was not in line with it. The Applicant will discharge their responsibilities in respect of the other public agencies stated in accordance with applicable legislation.
Security & Terrorism	
In 2.13.1 CHSPL's response that it will address the terrorism risk by installing CCTV is derisory. If the solar power station were to be approved, the status of the Cleve Hill site should be formally reviewed via a Security Considerations Assessment in particular because of the BESS and the significantly increased risks associated with it. CHSPL's response to concerns about terrorism suggests that they are not even aware of that need and raises the question of whether they've planned for the costs of enhanced security (including possible daily visits by security services) in their financial projections. Since there is no battery system anywhere in the world on the scale of the proposed BESS at Cleve Hill, CHSPL should provide explicit information on what parameters will be used to assess risk, who will shoulder security costs, at what stage that assessment will be conducted, to what extent the coastal location of CHSP exacerbates risk, and what the implications of the risk assessment are for insurance. If – as we believe likely – the security risk is assessed as being high, a final decision on whether the project should proceed should not be taken until the answers to these questions are known. CHSPL has argued	Security and project risk is the responsibility of the Applicant / Site Operator. It is not in the interest of this party for the site to be at risk in terms of a terrorism or other security event that threatens its operation. The security measures proposed are clearly set out in section 5.4.7.1 of Chapter 5 - Development Description of the ES [APP-035]. The information requirements set out in the Outline BSMP [REP6-021] are comprehensive and detailed, requiring the detail of the energy storage facility to be provided ahead of construction of the facility to discharge Requirement 3 of the DCO (following the consultation required). It is the Applicant's responsibility to secure adequate insurance for the Development, as discussed in ISH 6 on Environmental Matters and set out in the written summary of that hearing at section 16.16 [REP5-011]. As set out above, Swale Borough Council, as the local planning authority is responsible for enforcement, and is the "discharging authority", under the Planning Act 2008. It is the local planning authority's duty to perform its statutory functions competently.

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throughout the examination process that it will adopt the best available BESS. As the scale of the proposed system is unprecedented, the associated plans should be reviewed in fine detail by the relevant responsible agencies to ensure that they comply with the DCO, and that the DCO is sufficiently tightly written to ensure that environmental damage and health and safety risks are minimised, and that the development and its subsequent operation poses no threat to life. These conditions should be based on the precautionary principle, enforceable requirements and binding guarantees on decommissioning. Consultations with a Lloyds Underwriter suggest that "no one's going to insure that".2 Is there no way that the adequacy of the insurance can be subject to regulatory oversight? Given the consequences of a fire and explosion should this development not be subject to much more robust oversight than a local planning authority §18-§24 can provide?	
Traffic and Transport	
We are unconvinced by the applicant's Traffic Plans and remain concerned that such huge volumes of HGV and other construction traffic will, during the construction phase over a period of 2-3 years, be passing within a few metres of the primary school playground and classrooms with only minutes between vehicles. The impacts on young children of noise, pollution and danger should not be understated and in our view the applicant's mitigation proposals are totally inadequate. Regular monitoring will be essential with a facility to stop the traffic if unacceptable levels are reached or when children are required to use the road, for example to cross from the school to their playing field. Traffic disturbance will also continue throughout the lifetime of the plant, associated with regular maintenance as well as damaged and spent battery replacement. Li-ion batteries which have failed are likely to be highly toxic and dangerous and the applicants acknowledge this in their (still) Outline Battery Management Safety Plan submitted for Deadline 6 (REP6-021). The Faversham Society and local parents and teachers are deeply concerned that their children will be exposed to regular traffic which is acknowledged by the applicant to be subject to mandatory rules based on UN guidance concerning the 'International Carriage of Dangerous Goods by Road (ADR) 2019' as well as the UK Government's guidance on the transport of dangerous goods 'Moving dangerous goods, Guidance'. Further, we are dismayed that the applicants have dismissed our concerns, and those of others, regarding the width of the road	Access and traffic impacts are assessed in Chapter 14 - Access and Traffic of the ES [APP-044]. In this chapter, the primary school is classed as a high sensitivity receptor to changes in road traffic. As set out in Table 14.6 of Chapter 14, 2018 baseline Annual Average Daily Traffic (AADT) flow data indicates there are 1,625 total vehicle movements per day along Seasalter Road of which 65 are HGVs. Noise and vibration impacts from construction traffic are assessed in Chapter 12 - Noise and Vibration of the ES [APP-042], section 12.5.3. Chapter 16 - Air Quality [APP-046], addresses the air quality impacts of the Development. Measures proposed to manage construction traffic, including in the vicinity of the school are described within the outline CTMP [REP7-021]. Measures include restrictions on HGV movements to avoid school opening / closing time and a construction vehicle speed limit of 20 mph past the school. The outline CTMP has been produced as a 'live' document which will continue to be updated on an ongoing basis through consultation with stakeholders during examination of the Application. This will then form the basis of a final CTMP to be approved by the relevant local planning authority before construction can commence (see requirement 12 of the draft DCO [REP7-005]). Excluding replacing damaging equipment, which is only expected in exceptional circumstances, once operational, approximately three members of maintenance staff are expected to attend site per day, resulting in six additional vehicle trips per day. Staff are anticipated to work at the site between 08:00 and 17:00 and will likely be driving a 4x4 vehicle.

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through Graveney village, the lack of pavements and the impossibility of passing vehicles for much of the route. We assert that the traffic associated with this proposal makes passing places and pavements essential and that, were the project to go ahead, the applicants should be required to fund the necessary land acquisitions to ensure these.	The width of the Head Hill Road and Seasalter Road is discussed within Section 4.2 of the Construction Traffic Management Plan (CTMP - Document Reference: 6.4.14.1) as well as the Applicant's responses to the Rule 17 Letter dated 3rd October 2019 [REP7-030] The Applicant has reached agreement with KCC Highways, the local highway authority, on all highway related matters, including the content of the Outline CTMP, as set out in the SoCG between the Applicant and KCC [REP7-029].
Environmental Impacts	
The coastal landscape in which the proposed CHSP would be located is characterised by populations of iconic British wildlife species including marsh harriers, Brent geese, golden plover, lapwing, the critically endangered European eel, water voles and dormice to mention just a few. The neighbouring Swale Ramsar site, Special Protection Area and Marine Conservation Zone, as well as the Oare Marshes reserve, were established to protect those species and their coastal habitat and in recent years have become increasingly popular attractions for visitors to the area and as amenities for local residents. Because of its unprecedented scale, apart from its inevitable negative visual impacts the long-term effects of the proposed CHSP on species and habitat cannot be accurately predicted. As a result, most conservation organizations oppose the project and, if it does go ahead, have urged CHSPL to adopt a precautionary approach where wildlife is concerned. While the current low-grade agricultural land at the Cleve Hill site is not ideal for wildlife, the Environment Agency's proposal (in its draft Medway Estuary and Swale Strategy, MEASS) to allow over 200 hectares of the site to revert to tidal saltmarsh via managed realignment would have had multiple and profound benefits not only via improved wildlife habitat but also in the form of other ecosystem services including carbon sequestration, coastal protection and provision of nutrients for marine organisms. By its own admission, the alternative site to Nagden Marsh that was adopted by the EA in the final version of the MEASS – Chetney Marsh – is not suitable for managed realignment because of the presence of nationally-critical infrastructure so has been earmarked instead for the lesser intervention of "habitat adaptation." The opportunity cost of deferring managed realignment at Nagden Marsh by at least 40 years is therefore very substantial. Saltmarshes constitute the second most valuable ecosystem for humans after coral reefs, providing benefits to society valued in 2014 at just under US$193,000 per hectare per year – i.e. roughly	The effects of the Development on habitats, birds and other wildlife are assessed in Chapter 8 – Ecology [APP-038] and Chapter 9 – Ornithology [APP-039]. Recreational amenity effects are assessed in Chapter 13: Socio-economics, Tourism, Recreation and Land-Use of the ES [APP-043]. Section 13.5.1.4 addresses effects during construction and section 13.5.2.2 addresses operational effects. The Applicant clearly acknowledges the use of the PRoW network to view wildlife throughout the chapter, for example at paragraph 180. The Applicant does not agree with the unsubstantiated claim that 'most conservation organisations oppose the project'. Agreement between the Applicant and Natural England, the Statutory Nature Conservation Body with responsibility to advise the SoS on nature conservation matters is set out in the SoCG submitted [AS-050]. The Applicant would also like to draw the attention of the Faversham Society to the written summary of the oral submission by Swale Friends of the Earth [REP3-086], which states: "In summary, our position is that we support the development of the project because of the urgent need to install - at significant scale and great speed - a large amount of renewable energy generating capacity across the UK to meet critical climate change targets." The Development represents the best option for decarbonisation at the Cleve Hill site. Evidence of this was presented in a WR submitted by the Applicant at Deadline 3 [REP3-025], which provides a comparison between managed realignment on the site and the proposed Development, finding greater decarbonisation benefits as a result of the Development. In the absence of the solar park, managed realignment at Cleve Hill would be proposed in Epoch 2, 2039-2069, as there are other significant challenges (including the 400 kV overhead transmission line) which would make MR difficult to implement in the short-term. This position is clearly set out in the MEASS at Appendix A.6.2, BA6.2: Cleve Hill of Appendix H, Implementation Plan [REP7-058]

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£30m every year. On that basis, the Faversham Society's position is that – if other problems such as the BESS, security concerns, etc., can be overcome – the project should be relocated to an alternative site where the benefits of a renewable energy project could be achieved without the unacceptably high opportunity costs. The EA's reasons for stepping away from managed realignment at Nagden Marsh should be questioned, an independent study conducted of any increased risk of coastal flooding as a result of that decision, and the entire matter revisited if permission for the CHSP is declined and the price of purchasing the land for reversion to saltmarsh returns to a normal market level.	The EA has not 'stepped away' from MR at Cleve Hill, Requirement 17 of the dDCO [REP7-005] secures the ability for the EA to undertake MR at Cleve Hill in Epoch 2, as is proposed under the 'no solar park' scenario in the MEASS. The Applicant undertook an analysis of alternative sites to connect to the available capacity at the existing Cleve Hill Substation in Chapter 4 - Site Selection, Development Design and Consideration of Alternatives of the ES [APP-034] and found no viable alternatives to the proposed Development to connect to the available grid connection capacity at the existing Cleve Hill Substation.

2.9 REP7-093 Gowling WLG on behalf of Blue Transmissions London Array

14. The Applicant has responded to the Planning Inspectorate (PINS) confirming that the Deadline 7 iteration [REP7-093] of the draft DCO includes the protective provisions agreed with BTLAL.

2.10 REP7-095 GREAT - Late Filing of Wirsol Annual Accounts

15. This section of the Applicant's response addresses submission [REP7-095] in Table 2.10.

Table 2.10: The Applicant's Comments on REP7-095

Statement	Applicant's Comment
On behalf of GREAT I wish to make the ExA aware that Wirsol have not yet filed their annual accounts, which were due on 30 September 2019. Looking at the Companies House records, Wirsol have previously submitted their accounts on time so this raises concerns that there may be a reason why they are delaying the filing of their accounts until the examination period ends. https://beta.companieshouse.gov.uk/company/08989005 This makes us question the financial position of the company and we would like the ExA to question the reason for the delay and consider the impact this may have on their ability to fully assess the viability of Wirsol to finance this development.	The finalisation of the statutory accounts has been delayed and Wirsol is working with the auditors to finalise them as soon as possible. There is no impact on CHSPL as a result of this.

2.11 REP7-096 GREAT - Rare Bird Sighting

16. This section of the Applicant's response addresses submission [REP7-096] in Table 2.11.

Table 2.11: The Applicant's Comments on REP7-096

Statement	Applicant's Comment
On behalf of GREAT I would like to make the ExA aware of a rare bird sighting at Graveney Marshes on 30 October 2019. A desert wheatear was sighted on the sea wall next to the marshes which resulted in a flurry of activity and interest over the following days. Details of the sighting can be found at http://www.rarebirdalert.co.uk/RealData/gallery_show.asp?galleryid=68376 Details of the desert wheatear can be found at https://avibirds.com/desert-wheatear/ This is another example of the variety of birds that currently use this area which may be lost if the solar park and battery storage facility is approved.	The desert wheatear is a very rare vagrant bird in the UK. The Development site does not provide an important habitat for this species, nor is there any reason why a vagrant desert wheatear would not be found on the sea wall adjacent to the Development in future.

2.12 REP7-097 GREAT - Research into the Impacts on Marsh Harrier

17. This section of the Applicant's response addresses submission [REP7-097] in Table 2.12.

Table 2.12: The Applicant's Comments on REP7-097

Statement	Applicant's Comment
On behalf of GREAT I am submitting our concerns about the potential negative impacts on the marsh harrier population should this proposal be approved. As stated by Natural England in ISH 6 (11 September 2019), there is still uncertainty that the marsh harrier's may consider the changes to the site so great that they won't use the area. Although the applicant considers this unlikely, their opinion should not be considered due to a clear conflict of interest and lack of expertise in this matter. At the same hearing, Kent Wildlife Trust stated that the solar panels will make it more difficult for marsh harriers to survey to hunt, and that this is a unique project with no experience elsewhere to draw on. The ExA pointed out the fundamental disagreement between some parties and asked the applicant to respond. Mr Phillips suggested that the law only requires them to be sure beyond scientific doubt, yet they have not provided any research evidence to suggest 'beyond scientific doubt' has been proved. Whilst there is very limited research on the marsh harrier in the UK, there is a significant amount of research on the marsh harrier in Spain, examples of which are included below:	The Applicant has provided an additional written representation on marsh harrier (draft version was appended to the SoCG between the Applicant and Natural England (November 2019) [AS-050], and an updated version with supporting figures submitted at Deadline 7 [REP7-037] to the Examination, which sets out the potential impact on The Swale SPA under the two different scenarios requested by the ExA: one where marsh harriers are not excluded from the inter-array grassland areas (the Applicant's position) and one where they are excluded from those areas. Natural England's view is that this is helpful in demonstrating the areas of foraging habitat with or without excluding marsh harriers from areas between the solar arrays. NE's position is that there is sufficient precaution built into the assumptions such that they can advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of the SPA.
Effect of prey on a predator's breeding success (Appendix A)	
This research found a direct correlation between the populations of nesting pairs on the availability of common voles during spring. This demonstrates that a reduction in foraging area on the agricultural land for the marsh harriers could have negative impacts on the breeding success of the species.	The study quoted relates the cyclical abundance of voles to Montagu's harrier nesting density and appears to have little to do with marsh harriers in agricultural landscapes. The Applicant agrees that a reduction in foraging area, or foraging availability could negatively impact breeding success. However, in relation to the Development, such a conclusion would only be applicable if the availability of common voles is lower with the Development than in the arable baseline environment. The proposed habitat change from arable to grassland is expected to result in benefits for small mammals, as grassland is considered to be a higher quality foraging habitat than cultivated land (see response to next point). If marsh harriers continue to forage at the site, as the Applicant predicts, the foraging range is not reduced and breeding success would be unaffected.
Ranging behaviour of the marsh harrier in agricultural landscapes (Appendix B)	
This research found the increase and spread of the marsh harrier population has been noticeable in some agricultural regions, including those dominated by	The same study highlights that differences in home range size may be related to habitat quality and depends on prey availability. Home ranges are smaller

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intensified farmlands. Male home-range intensive-use areas were generally single areas, including the fields around the nest. This demonstrates the importance of retaining the current area of intensified farmland.	in grasslands than in arable areas because they are of higher quality. The discussion continues to state that "*In fact, conversion of grasslands into cultivated areas has been linked with impoverished food supplies (Butet & Leroux 2001)".* The conversion of arable to grassland at the site therefore improves the quality of foraging habitat for marsh harriers. The availability of that habitat to foraging marsh harriers is discussed in the context of effects on integrity of the SPA elsewhere in this response.
Factors affecting the expansion success of bird populations in human- transformed environments: The case of the Marsh Harrier Circus aeruginosus in the Ebro Valley (Appendix C)	
– This research found that land-use changes, habitat fragmentation, environmental pollution, invasive species and nutrient enrichment have been reported to be some of the major human-induced global changes that negatively affect population growth and species' geographic ranges. As the solar park will introduce significant land use changes, and there is an intention to enrich some of the areas with nutrients, these must be considered as potential negative impacts for the marsh harriers. Additionally, contrary to other farmland species, the marsh harriers' recovery has been pronounced in regions dominated by agricultural habitats, including regions of intensive croplands. The marsh harrier seems to be an example of a native species that has benefited from this transformation and still rely on traditional extensive cereal farmland for foraging. Unlike most farmland birds, intensive agricultural areas represent higher quality habitat for marsh harriers than extensive croplands. Indeed, the abundance of small mammals, a chosen and high-quality prey, seems to be greater in intensive agricultural areas. On a large scale, spatial constraints such as geographic barriers (e.g. a solar park) can limit the ability of a species to fully occupy its potential habitat. These points demonstrate that it is vitally important for this land to remain as intensive farmland to protect the marsh harrier and approval of this application will be detrimental to their survival in this area.	The Applicant agrees that there is significant land-use change with the Development, some of which will have positive influences on biodiversity. There is intention to apply farmyard manure to the c. 50 ha AR HMA. However, the application of fertiliser across the farm will be significantly (over ten times) lower with the Development than in the arable baseline. This is one of the effects of the Development that is expected to have a positive impact on biodiversity, particularly in the aquatic environment. The Applicant agrees that the study quoted here (Cardador et al. 2014) shows that marsh harriers in the Catalan Ebro delta have benefitted from the intensification of agriculture in that region. It appears that this may be linked to the increase in irrigation ponds and reservoirs needed to irrigate the crops. The study also states that small mammal populations in this intensively cropped and irrigated habitat in Spain are greater than in extensive cropping in the area. However, this comparison of cropped habitat in the Ebro delta with the arable landscape at the Development site is not supported. The Development site is currently drained, rather than irrigated as in the Cardador study, and the habitat management proposals are for conversion of arable (usually cereal, bean or rape) crops to rough grassland, rather than increasing intensification and irrigation of (particularly alfalfa) crops. In the subsequent paper by Cardador, (below, referred to in Appendix D of GREAT's representation), the study highlights that it is the irrigated and regularly mowed alfalfa cops that provide the suitable foraging conditions and higher small mammal densities and that intensive cereal (and maize) crops "*are used infrequently by Marsh harriers, probably because the height and uniformly dense growth that characterize these crops for much of the summer result in low availability of prey to hunting harriers.*"
Can intensive agricultural landscapes favour some raptor species? The Marsh Harrier in north-eastern Spain. (Appendix D)	
This research states the marsh harrier breeds mainly in wetlands and behaves as an open-habitat hunter. This open habitat would be removed by the solar park	In this paper by Cardador (Appendix D of GREAT's representation), the study highlights that it is the irrigated and regularly mowed alfalfa cops that provide

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development, reducing it instead to thin strips of green between array tables.	the suitable foraging conditions and higher small mammal densities and that intensive cereal (and maize) crops "*are used infrequently by Marsh harriers, probably because the height and uniformly dense growth that characterize these crops for much of the summer result in low availability of prey to hunting harriers.*" Intensive cereal, bean and oilseed rape crops dominate the agricultural practice on the site and has been demonstrated to be infrequently used for foraging in comparison to the ditches and ditch margin habitat. The Applicant maintains that conversion of arable crops to grassland between the solar arrays will provide more suitable foraging habitat for marsh harriers.
Predicting off-site impacts on breeding success of the marsh harrier (https://wildlife.onlinelibrary.wiley.com/doi/pdf/10.1002/jwmg.21266)	
This research highlights that this species is negatively impacted by artificial land use within 2 km of their range. As the Cleve Hill development will be within this distance we believe that, should it be approved, this will be detrimental to the continued success of the marsh harrier at this site.	This study's abstract does not provide details of the mechanism or type of human land use that affects marsh harrier breeding success, nor determines whether or not it is the presence of built structures or the level of human activity that has an influence on breeding success. Successful breeding by marsh harriers occurs near built environments, including nearby at Kemsley Paper Mill, and near urban environments such as at Radipole Lake and Potteric Carr. Another study, Alves et al. 2014, states "our field observations showed clear disturbance and avoidance behaviour of birds when, for instance, farmers and machines were operating in the area", but later qualifies that "The degree of disturbance caused by other human constructions, such as houses or warehouses, showed little or no relevance in the results".
Human Disturbance Affects Parental Care of Marsh Harriers and Nutritional Status of Nestlings (https://www.jstor.org/stable/3809289?socuuid=9651e34d-b28d-4e5baeb0-078af1ae5ad7&socplat=email&seq=1#page_scan_tab_contents)	
This research found minor human disturbances may cause long-term effects on lifetime reproductive success of marsh harriers by increasing energy and time expenditure in non-reproductive activities and by reducing condition of nestlings. The number of food items delivered and the time spent by males and females in the nesting area and on the nest decreased during disturbed periods, especially during incubation, whereas behaviours related to stress (alarm calls, chases against other intruding birds, and percentage flying time) increased. As the expected disturbance of the solar park will be significant, both in terms of duration and change, the negative impact will be much greater than that found in this report which is unacceptable.	This was a study into low-level recreational disturbance on marsh harrier breeding success and condition of nestlings. During construction of the Development, a Breeding Bird Protection Plan will be implemented, which includes special measures to avoid disturbance to nesting marsh harriers. Natural England is satisfied [AS-050] that the BBPP contains clear and sufficient measures to avoid an adverse effect on the features of The Swale Special Protection Area (SPA) and Ramsar site from construction disturbance. During operation of the Development, the level of human activity associated with the land use is predicted to decrease; i.e. activity associated with operation and maintenance of the solar arrays will be lower than the activity associated with the arable farming baseline environment. As such, it is expected that disturbance to nesting marsh harriers during the operation of the Development will be less than in the arable baseline.

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In view of this and other available research, which the applicant has not provided, we do not believe that this case has been proven 'beyond scientific doubt' and ask that the ExA consider this during their review.	The Applicant disputes the interpretation of the literature cited as clear evidence that marsh harriers will be negatively affected, as set out in the sections above. However, in response to the ExA Rule17 question R17.2.4, the Applicant has provided a written submission on Marsh Harrier (draft version was appended to the SoCG between the Applicant and Natural England (November 2019) [AS-050], and an updated version with supporting figures submitted at Deadline 7 [REP7-037]) to the Examination, which sets out the potential impact on The Swale SPA under the two different scenarios requested by the ExA: one where marsh harriers are not excluded from the inter-array grassland areas (the Applicant's position) and one where they are excluded from those areas. Natural England's view is that this is helpful in demonstrating the areas of foraging habitat with or without excluding marsh harriers from areas between the solar arrays. NE's position is that there is sufficient precaution built into the assumptions such that they can advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of the SPA.

2.13 REP7-098 GREAT - Battery Storage and Kent Fire & Rescue

18. This section of the Applicant's response addresses submission [REP7-098] in Table 2.13.

Table 2.13: The Applicant's Comments on REP7-098

Statement	Applicant's Comment
On behalf of GREAT I am submitting our concerns about the safety management plans for the battery storage element of this development, and the applicant's engagement with Kent Fire & Rescue. Our concerns are:	The Applicant notes the subject of this submission.
1. We made a Freedom of Information request to Kent Fire & Rescue (KFR) which details the interactions between the applicant and KFR (Appendix A). It is evident that the applicant had not engaged KFR at any time during the consultation period and, instead, left it to KF&R to learn about the application themselves and reach out to the applicant. The email from KFR to the applicant on 4 July 2019 proves this, which we find completely unacceptable when the application includes such a high risk battery storage element. It is therefore not surprising that KFR have been on the back foot from this point, whereas they should have been involved right from the very outset.	As described in Section 8 of the Consultation Report [APP-022] and listed in Appendix 5 [APP-023], Kent Fire and Rescue Service were included as a Section 42 consultee, and were properly consulted between 31 May and 13 July 2018 in accordance with Section 42 of the Planning Act 2008 and relevant guidance. Kent Fire and Rescue Service did not respond to Section 42 consultation. The Applicant is supportive of the position taken subsequently by KFRS, and the statements in emails (reproduced following GREAT's FOI request in [REP7-098]) and included in the Outline BSMP [REP6-021], at section 1.3 that: *"All risk reduction strategies start with prevention and it is the 'responsible person' for the premises that has responsibility for this as stated in the Regulatory Reform (Fire Safety) Order 2005. We would also expect that our Central Consultation Team (CCT) will become more involved as the appropriate planning applications are submitted and that any applications would conform to any legislation that relates to this type of development and the design of the BESS will reflect prevailing legislative requirements and UK industry recommendations.* *Kent Fire and Rescue Service (KFRS) recognises the use of batteries (including lithium-ion) as Energy Storage Systems (ESS) is a new and emerging practice in the global renewable energy sector. As with all new and emerging practices within UK industry the KFRS would like to work with the developers to better understand any risks that may be posed and develop strategies and procedures to mitigate these risks.* *The responses to the ARC recommendations set out in the OSMP details the information that we would expect to be provided during the planning application phase, we would then be working with our CCT and Water Services colleagues during the consultation phase to make sure that the Cleve Hill Solar Park conforms to the appropriate legislation and recommendations."* The Outline BSMP will be finalised when final decisions about batteries are made and will be approved by KFRS and the HSE before submission to SBC as stated in section 1.4 of the Outline BSMP [REP6-021] and in accordance with Requirement 20 of the dDCO.

Statement	Applicant's Comment
2. In view of the above, we feel it was unacceptable that KFR were not allowed to register as an interested party once they had learned about this application. As a result, they have not been able to contribute to the examination in a way that we would expect them to have been, particularly as they will be responsible for dealing with any incidents at the site should it proceed.	The Applicant believes that whilst the decision taken by PINS [OD-004] not to allow KFRS to become an interested party was procedurally necessary, it has not prevented KFRS from involvement in the examination, or from contributing to relevant documentation such as the Outline BSMP [REP6-021] as required.
3. We are also surprised that, in an email to KFR on 15 August 2019, the applicant appears to direct them on what their involvement should be. Again, we do not feel this is appropriate for a development which has nothing of a similar scale in the world to compare to.	The Applicant does not agree that it was inappropriate to provide referenced information relating to general industry recommendations to inform discussions. The principles of fire detection, fire suppression and avoiding fire propagation between containers within a battery energy storage system (BESS) are the same whether a development consists of 2 containers or 200. It is the consequences of failure which differ. The Applicant has ensured that the design of the BESS takes into account fire risk through Requirement 3, and the Outline BSMP.
4. Furthermore, we cannot see that the feedback provided by KFR to the applicant in an email on 20 September 2019 (Appendix B), on their Outline Safety Management Plan, has been incorporated into the version submitted at Deadline 6 (4 October 2019). We have been unable to find this annotated version and would request this is shared with the ExA so we can see their comments.	KFRS did not supply any comments beyond those in the email referred to, in particular the confirmatory statement in the final paragraph: "The responses to the ARC recommendations set out in the OSMP details the information that we would expect to be provided during the planning application phase, we would then be working with our CCT and Water Services colleagues during the consultation phase to make sure that the Cleve Hill Solar Park conforms to the appropriate legislation and recommendations."
5. We have also been unable to find the HSE's review of the Outline Safety Management Plan, referred to in an email from the applicant to KFR on 29 August, and would again request that this is shared with the ExA so we can see their comments.	The HSE's review documents are appended to this response (Appendices A and B). All comments were addressed in the latest version of the Outline BSMP [REP6-021].
6. The Graveney & Goodnestone Parish Council requested some information from KFR as they were also concerned about the lack of engagement. KFR sent a letter (Appendices C & D) which raised further concerns, particularly reference to allowing the fire to burn itself out if there was no immediate threat to life from the fire, as this did not consider the potential toxic pollution created by the fire. A follow up email was sent in response (Appendix E) and we contacted the Operational Centre of KFR to discuss our concerns. Additionally, two representatives from KFR attended the Parish Meeting on 11 November. During those discussions KFR made it clear that they are unable to comment at this stage as insufficient detail has been included in the application documentation. As a result, we have agreed with KFR that a public meeting will be held, should	The Applicant and KFRS have been clear in all submissions that further consultation will be necessary to guide the appropriate response in relation to the specific BESS technology installed. The Outline BSMP, secured by Requirement 3 ensures that KFRS will be an integral part of the development of the BESS solution for the Development. The Applicant's independent air quality consultants undertook an assessment of air quality impacts of a fire at the battery storage facility using parameters provided by battery suppliers at Deadline 4 [REP4-051]. This assessment corrected several of the assumptions made by Dr Erasin in an earlier submission related to the air quality impacts of a fire (appended to [REP4-051]) and reported in the local press. Dr Erasin subsequently acknowledged the limitations and likely overestimations in his previous work [REP5-037].

Statement	Applicant's Comment
the application be approved, to enable assurance to be provided to the local communities on how they will respond to any incidents.	
7. As we are aware, the Cleve Hill battery storage installation will be c.7 times larger than the current largest battery installation in the world (https://www.bbc.co.uk/news/av/world-australia-45648303/world-s-biggestbattery-a-look-around-tesla-project). This Tesla installation is in a remote part of Australia with nothing around it for miles, very different to the Cleve Hill scenario with residential properties less than 1 km away. We do not understand how such a large installation, with emerging and hugely dangerous technology, can even be considered in such a built up area with over 100,000 people potentially at risk (Faversham, Whitstable and Canterbury populations).	The Applicant has provided information (see above references to the air quality impact assessment [REP4-051]) that sets out that the risks characterised in this response are derived from inaccurate and inappropriate modelling and therefore do not exist at the magnitude set out. The Applicant has set out a clear set of parameters to control safety risks associated with the Development in the Outline BSMP [REP6-021] and considers that the controls are appropriate and more than adequate to control the level of risk identified. There are numerous other examples of BESS facilities using Li-ion battery technology in similar proximity to residential properties across the UK, including in Kent (e.g., 40 MW site at Glassenbury[2]).
8. There have been a significant number of fires at battery installations across the world and the causes are unclear. As a result, it is not possible to mitigate against something that is unknown. Just this year, following an inquiry into fires at a battery installation in Arizona, Arizona energy regulator, Commissioner Sandra D. Kennedy, concluded that lithium ion batteries – specifically those that release hydrogen fluoride – "are not prudent and create unacceptable risks". https://pv-magazineusa.com/2019/08/08/lithium-ion-not-prudent-and-create-unacceptable-risks/ (Appendix F)	As set out in the HSE advice received (Appendix A of this document), the regulatory environment relating to BESS facilities is fast evolving. The Outline BSMP [REP6-021] secures detailed consideration of safety issues prior to the detailed design stage, including the ability to learn from incidents in potentially less well-regulated markets globally. It is clearly in no-one's interests, particularly not the Applicant's for there to be any safety risk from the Development.
9. The Korean government's findings on battery facility fires, released in June this year, blamed four factors: poor grounding causing electrical shocks, bad contractor installation, a lack of integrated control and protection systems, and 'insufficient management of the operation environment'. https://liiontamer.com/south-koreaidentifies-top-4-causes-that-led-to-ess-fires/ It found that fires were more likely in certain environments, notably coastal sites, which caused humidity and salt damage to equipment. Of the 23 installations that caught fire, 18 were in coastal or mountain areas. In view of the location of the Cleve Hill development site, and the High Court case identified against Wirsol, we have grave concerns for the health and safety of the residents and visitors to the local area.	These comments are noted. As set out in the Outline BSMP [REP6-021], the Applicant will take a wide range of precautions from the detailed design stage onwards to ensure that the BESS can operate safely. Bloomberg New Energy Finance data shows that worldwide manufacturing capacity for li-ion batteries has almost tripled over the last five-years, and as of early 2019, there is over 300 GWh of Li-ion battery manufacturing capacity globally[3]. This GREAT submission has drawn on a small number (relative to the ubiquitous presence of li-ion batteries in the UK and globally) of specific instances of li-ion battery failure across a range of types of installation (mobile, personal, transport related etc) internationally. These examples are not considered to be relevant to the Development.
10. The decommissioning plans for these batteries are still unclear but what is clear is that the danger does not only extend during operation. Dumped household lithium ion	The disposal of li-ion batteries at the end of their operational life would be controlled by waste legislation extant at the time of decommissioning. It is highly unlikely that the li-ion batteries forming part of the Development BESS would

[2] https://www.lowcarbon.com/our-portfolio/portfolio-overview/our-projects/glassenbury-storage-park/
[3] https://www.bloomberg.com/news/articles/2019-04-03/battery-reality-there-s-nothing-better-than-lithium-ion-coming-soon

Statement	Applicant's Comment
batteries were blamed for setting 300 tonnes of refuse on fire in Scotland earlier this year. https://www.viridor.co.uk/who-we-are/latest-news/2019-news/lithiumion-battery-warning-issued-after-landfill-site-fire/ Forty firefighters and six fire trucks were needed to fight the two-day fire at a waste site in Dunbar in January. Afterwards recycling company Viridor warned a damaged lithium ion battery can project a shaft of flame for several minutes and can ignite surrounding waste material'. According to UK waste management trade body, the Environmental Services Association (ESA), a quarter of the 510 fires reported by ESA members across the UK in 2017-18 were attributed to discarded lithium-ion batteries.	illegally enter into household waste streams and contribute to the issues identified here, which are not considered to be relevant to the Application.
11. The risks are not confined to battery installations either. Charging batteries are suspected of triggering the recent blaze which sank the Californian dive boat Conception, claiming 34 lives. https://www.latimes.com/california/story/2019-09- 05/what-caused-fire-aboard-the-conception	This point is not considered to be relevant to the Application, as it relates to a specific incident with the press article cited referring to 'several theories' for the cause, none of which include the type of stationary battery deployment with monitoring and control systems proposed as part of the Development and secured in the Outline BSMP [REP6-021].
12. As recently as July this year, a Virgin Atlantic Airbus with 217 passengers on board was forced to make an emergency landing during a New York to London flight after a passenger's battery pack caught fire. https://www.telegraph.co.uk/news/2019/07/05/virgin-atlantic-london-flight-makesemergency-landing-phone/	This point is not considered to be relevant to the Application, as it relates to a specific incident which did not include the type of stationary battery deployment with monitoring and control systems proposed as part of the Development and secured in the Outline BSMP [REP6-021].
In view of this and other extensive evidence, we ask the ExA to refuse the application for such a large, and potentially devastating, battery installation in such an unsuitable location. Graveney is not the right place to test large scale battery storage installations, the Australian desert is.	The Applicant has engaged with KFRS and battery experts at the Health and Safety Executive to develop a comprehensive and appropriately detailed Outline BSMP [REP6-021] for the BESS. This document necessitates that when the final details of the BESS are known, all safety measures during construction and operation must be clearly documented, consulted upon with KFRS and the HSE and implemented on an ongoing basis. The 'extensive evidence' referred to by GREAT repeatedly relies upon safety concerns relating to the air quality impacts of a battery fire as was presented in Dr Erasin's submissions to the examination [REP3-059] and more detailed submission to the local press (reproduced as Appendix A to [REP4-051]), the findings of these submissions have subsequently been demonstrated to be highly inaccurate by the Applicant's air quality consultants [REP4-051], but have continued to be relied upon in several interested party's submissions to the examination regarding battery safety. The Applicant will continue to take all necessary steps to ensure the BESS is designed, implemented and operated safely. This is secured in the DCO by Requirement 3.

2.14 REP7-099 / REP7-100 Graveney Rural Environment Action Team (GREAT) / Able Acoustics - Review of Environmental Statement, Noise and Vibration Chapter

19. This section of the Applicant's response addresses two related submissions by GREAT regarding ES Chapter 12 - Noise and Vibration [APP-042].

20. [REP7-099] provides GREAT's summary of the Able Acoustics report (the "Able report"). All of the points raised in [REP7-100] repeat those in the Able report and are therefore not duplicated. Table 2.14 addresses the relevant sections of the Review of Environmental Statement Noise and Vibration Chapter, Able Acoustics, November 2019, including:

- Section 4, Review; and
- Section 5, Conclusions.

21. The Applicant welcomes the further scrutiny of the noise assessment undertaken, and notes that the Able report is generally supportive of the Applicant's assessment, with some clarification requested which has been provided in Table 2.14.

22. The Applicant would like to draw the attention of the ExA to the following statement at section 5.1.9 of the Able report:

"It is concluded that unless there are significant changes to the design and/or working methods additional assessment is not required"

Table 2.14: The Applicant's Comments on REP7-100

Ref.	Statements in Able report	Applicant's Comment
4	**Review**	
4.1	**Measurement Survey and Information to be Reported**	
4.1.1	The measurement survey was undertaken over a seven day period at three separate locations. The Able report indicates that the equipment was set to measure LAeq,1hr and LA90,1hr. However no numerical data is provided to allow data to be scrutinised in further detail and it is noted the LAeq,1hr data has not been presented. It is further noted the residual sound levels are required (by BS 4142) to be reported.	This data is provided graphically in the ES [APP-042] in Charts 12.1 – 12.3. It is not common practice to provide the full numerical dataset for background measurements due to the extremely large number of data points, and limited usability of the data in pdf format. The Applicant is happy to provide 'raw data' on request, and has done so previously in relation to 'raw' traffic data [REP3-024]. No such request in relation to noise data has been received by the Applicant to date. BS 4142 requires that the assessment of noise is based on the background ($L_{A90,t}$) level, rather than the higher residual ($L_{Aeq,t}$) level. Whilst BS 4142 suggests that the residual noise level should be considered when the overall impact has been modified due to the site context, no modifications to the impact have been made in this assessment. The residual noise level is not the key assessment parameter, and does not have any impact on this assessment.
4.1.2	BS 4142:2014 requires the details of the latest verification test including dates this data is absent.	As stated in paragraph 83 of Chapter 12 of the ES [APP-042], all monitoring equipment is calibrated to traceable standards. Sound meter calibration lasts for 2 years, the survey was undertaken commencing 20/02/2018 and all kits were under calibration.

Ref.	Statements in Able report	Applicant's Comment
		• Unit 510130 – 01/08/2017 • Unit 1062688 – 13/12/2017 • Unit 510131 – 01/09/2017 On site calibrator (unit 35105087) was calibrated 24/05/2017. Calibration for a site calibrator lasts 1 year.
4.1.3	BS 4142:2014 also requires a statement of qualifications, competency, professional memberships and experience directly relevant to the application of this British Standard of all personnel contributing to the assessment. This has not been reported.	Chapter 1 - Introduction of the ES [APP-031] sets out the lead author's expertise in Table 1.1. The main author of the Able report, Martin Stevenson, MIOA, is a full member of the Institute of Acoustics and an experienced acoustics consultant with over 10 years' experience in the modelling, prediction and assessment of noise from a wide range of Development types, including ground mounted solar PV, substations, energy storage and other energy generation and grid related developments.
4.2	**Operational Noise Assessment**	
4.2.1	The measurement results have been analysed and the range of background sound level values has been considered as is encouraged by BS 4142. The analyses present the data in tabular format and have considered the modal, median and mean values in determining a representative background sound level which has been used to derive a rating noise limit value. The analyses have been checked and it is considered the representative background sound levels have been determined correctly with the exception of Nagden during the daytime where a representative background sound level of 39dB LA90,1hr has been determined. Our analyses indicate this value to be 1dB higher and it is considered the consultant's value reflects a worse case.	The Applicant welcomes agreement that the assessment utilises a worst-case approach.
4.2.2	The values have been used to set a threshold above which will result in a moderate effect. This should be read with caution because the language of BS 4142 is clear: "A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context"	The Environmental Health Officer at Swale Borough Council states (Table 12.1b, Chapter 12 - Noise and Vibration of the ES [APP-042]) that: 'the greatest difference between the specific level and background noise was 4 dB in the night-time period at 1 Crown Cottages which is below the +5 dB threshold and therefore the noise is unlikely to be such that a complaint would be made'. In addition, it should be noted that in terms of context, this worst-case difference would only occur during night-time periods (i.e. when residents will be inside their properties). The Applicant's approach takes into account that an exceedance above the background of more than 5 dB may result in an adverse impact, by setting anything between 5 and 10 dB as of

Ref.	Statements in Able report	Applicant's Comment
		medium magnitude. By setting a level of small magnitude between 0 – 5 dB above the background, it is accepted that a small magnitude of impact may occur, this is not significant, in terms of the EIA Regulations (section 12.2.9 of Chapter 12 of the ES [APP-042]).
4.2.3	One of the contextual factors that an assessment should take into account is the residual sound level. The character of the residual sound at the time the monitors were deployed has been referred to in Section 12.3.2, but only from a subjective perspective. In the absence of the presentation of measurement data for the residual sound levels the possibility this may not have been fully considered for other times of day and/or night cannot be overlooked.	As discussed in the response to paragraph 4.1.1 above, BS 4142 requires that the assessment of noise is undertaken against the background level of noise, rather than the residual sound. As noted, the context of the site has been considered in Section 12.3.2 of the ES [APP-042], and the residual level of sound measured during the background noise survey does not change the conclusions of the assessment.
4.2.4	The Able report identifies the inverters and transformers as the primary sources of noise and uses a sound power level value LwA 63dB calculated from a sound pressure level of Lp 55dB(A). This is confirmed to be correct.	The Applicant welcomes this agreement.
4.2.5	The specific sound levels have been predicted using SoundPlan (the version the consultant has used is not stated). SoundPlan provides a software implantation of ISO 9613-2 which has limited accuracy beyond 500m.	Noise modelling has been undertaken using SoundPlan 8.1 noise modelling software. ISO 9613 is the industry recognised standard for the prediction of noise, including at distances greater than 500 m. In this instance, the nearest (i.e. most dominant) noise source to each receptor is within 500 m, and as such predictions are accurate at the assessment locations.
4.2.6	The Able report identifies the inverters and transformers as the primary sources of noise across the site and states: "Due to the high number of inverters across the site, it is not possible to input each inverter into the SoundPlan noise model."	While it may be technically possible to input each inverter, in practice inputting 3,071 point sources into a noise model is impractical, and as Able Acoustics has pointed out, will substantially increase calculation time. As stated by the reviewer in 4.2.8 and 4.2.9, this has been addressed through the use of an area source, which, in the absence of any screening provided by the panels themselves, constitutes a worst-case assessment, and noise levels are likely to be lower in practice.
4.2.7	The above statement maybe factually inaccurate in so far as SoundPlan has no upper limit on the number of sources that can be input into the model which can be inserted as one unit with a height relative to the ground and then copied multiplying the number of sources and moved into position in batches. However, as the solar array would consist of a series of angled panels (which would be put into the model as a series of angled floating screens) it is also possible the above statement may have been intended to be read in the context of nothing being provided within the relevant standard that specifically deals with reflections to the ground from a series of floating angled screens that would enable predictions to be made with confidence. It is further noted that depending on the number of reflections the model adopts, a large number of individual sources will significantly slow down the calculation process.	

Ref.	Statements in Able report	Applicant's Comment
4.2.8	The model has adopted a sound power level value for the inverters calculated from the total number of sources. This is confirmed to be correct.	The Applicant welcomes this agreement.
4.2.9	The model has adopted an area source over the areas over which the panels will be installed and it is considered that these will over predict the level of sound in the absence of any screens, but it is not possible to quantify by how much and it is considered the consultant's predictions will reflect a worst case scenario.	The Applicant welcomes this agreement.
4.2.10	The levels used for the batteries and inverters are considered to be appropriate.	The Applicant welcomes this agreement.
4.2.11	The levels used for the transformer cooling fan are considered appropriate in the absence of any available source data.	The Applicant welcomes this agreement.
4.2.12	The assessment has considered the possibility the facility could generate sound from sun rise which may occur during night time hours (23:00-07:00). It is considered assessing sound over this period would reflect a worst case scenario.	The Applicant welcomes this agreement.
4.2.13	The rating levels have been presented in Table 12.26 based on +2dB for just perceptible tonal characteristics. In the absence of data for the residual sound level data it is unclear how prevalent the specific sound may be over and above the residual sound environment, it is also possible the specific sound could be below the residual sound level. Sound from the operational facility could be controlled by condition and if necessary a condition requiring verification of commissioning.	The dDCO [REP7-005] contains Requirement 15, Operational noise which secures the operational noise assessment and any mitigation requirements in respect of the final detailed design of the Development.
4.2.14	BS 4142 considers the absolute level of sound to be a pertinent factor noting: Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night. It is further noted that the specific sound level at 1 Crown Cottages is 43dBLAeq,Tr. An open window provides circa 10-15dB of attenuation from outside to inside indicating internal levels could be 28-33dB(A). This potentially exceeds the level of 30dB(A) that the World Health Organisation guidelines recommends should not be exceeded for a good night's sleep and further discussion in respect of this maybe required.	The 43 dB $L_{Aeq,t}$ specific level (specified in Table 12.26 of Chapter 12 - Noise and Vibration [APP-042]) is the predicted noise level at Crown Cottages before the implementation of mitigation. As specified in Table 12.30, once mitigation has been taken into account, the predicted noise level at 1 Crown Cottage is 32 dB $L_{Aeq,t}$. When taking a 10 – 15 open window reduction, which would result in an internal level of 17 – 22 dB(A), which is well below the 30 dB(A) criteria specified in the WHO Guidelines.
4.2.15	The Able report considers the level of operational sound at eight separate receptors as follows: • Nagden Barn • Nagden House • Nagden Cottages • Warm House • Coneybank	The Applicant notes this confirmation.

Ref.	Statements in Able report	Applicant's Comment
	• 1 Crown Cottages • 4 Crown Cottages • Cleve Farm	
4.3	**Sensitivity of Receptors**	
4.3.1	It has been communicated by Ms L Stewart that there is a school for children with learning difficulties/autism in the vicinity of the application site. At the time of writing it has not been possible to verify this statement with reference to the planning portal, although it is noted that the planning portal does make reference to a school at Cleve Farm. Concerns have been raised as follows3: "There is also a children's home and a small school for young people with severe autism along the main road -- and the primary school itself too of course. Any traffic noise - will have an effect on learning and in addition the 2 autistic twins (in the special school) are noise sensitive."	All receptors have been assumed to be of high sensitivity – as discussed in Section 2.9 of ES Chapter 12 - Noise and Vibration [APP-042]. There are no specific restrictions on HGVs currently using this route, and while the average noise level has been predicted to increase slightly during construction, the L_{Amax} noise level will not exceed the existing baseline peak noise level.
4.3.2	The applicant's response to consultee (on Page 12-6 of the Able report) considers all receptors to be of high sensitivity and further notes that during peak times there is a predicted 2dB increase. On the assumption supporting traffic information is correct it is confirmed this falls into the category of "minor" magnitude of impact.	The Applicant welcomes this agreement.
4.3.3	The IEMA Guidelines [19] note the following in Section 2.45 page 14 in respect of Cognitive impairment to school children. "2.45 A World Health Organisation document on Burden of Disease41 references three European studies on cognitive impairment in school children from transport noise. There is evidence from the Munich42 and RANCH43 studies of an association between aircraft noise exposure and cognitive performance in school children (reading comprehension and recognition memory), but the same association was not seen for road traffic noise. Neither aircraft noise nor road traffic noise affected sustained attention, self-reported health of mental health."	The Applicant notes these comments.
4.3.4	When read in conjunction with the applicant's response (receptors being of high sensitivity) it is considered relevant guidance has been taken into account and that cognitive impairment is not anticipated. It should be noted, this does not preclude the occupants of non-residential buildings which are likely to be particularly sensitive to noise (these include commercial and educational establishments, hospitals and clinics) from applying to the developer for noise insulation mitigation.	The Applicant notes these comments.
4.3.5	It has further been communicated that there are concerns in respect of the age of residents. "…in our village the number of older people is significant and they live mainly (100+) along the main road."	The Applicant notes these comments. All receptors have been assumed to be of high sensitivity – as discussed in section 12.2.9 of ES Chapter 12 - Noise and Vibration [APP-042].

Ref.	Statements in Able report	Applicant's Comment
4.3.6	It is generally recognised that the risk of cardio vascular complications in humans increases with age. The IEMA Guidelines notes the following in Section 2.43 page14 in respect of Cardio vascular effects: "2.43 It has been shown that long-term exposure to road traffic noise may increase the risk of heart disease, which includes myocardial infarctions. Both road traffic noise and aircraft noise also have been shown to increase the risk of high blood pressure."	
4.3.7	The applicant's response to consultee considers all receptors to be of high sensitivity (P12-6) and indicates the level of change to be 2dB along the existing road. On the assumption supporting traffic information is correct, this is a "minor" magnitude of impact.	The Applicant notes these comments and welcomes agreement with the assessment.
4.4	**Construction Noise Assessment**	
4.4.1	The Able report includes three technical appendices which deal specifically with construction noise. These consist of construction calculations for human receptors, construction calculations for ecological receptors and piling calculations for ecological receptors. The Able report also contains a supporting Appendix: Appendix 6 - Arna Wood Solar Farm Piling Noise Investigation.	There are six technical appendices that deal with construction related noise: • A12.2: Construction Calculation Sheets – Human Receptors; • A12.3: Piling Rig Noise Data Extract; • A12.4: Piling Calculation Sheets – Ecological Receptors; • A12.5: Other Construction Activities Calculation Sheets – Ecological Receptors; • A12.6: Change in Road Traffic Noise Calculation Sheet; • A12.10: SPA Construction Noise Management Plan (SPA CNMP).
4.4.2	The calculations have been checked and verified and are reproduced in Appendices A-C. The reproduced calculations confirm the calculations from the technical appendices of the Able report are correct. However, areas of uncertainty have been identified in the calculations and clarification should be sought to address these.	The Applicant welcomes this agreement. Specific comments are dealt with in the following responses below.
4.4.3	The calculations are in places inconsistent. The calculation sheets for identical works and plant items for "Hardstanding and Tracks" show different percentage on times for the tracked excavator, dump truck tipping, vibratory roller and diesel bowser between the ecological receptor and human receptor calculation sheets, but no explanation is offered. As these differences range from 50% to 100% for the excavator, dump truck and vibratory roller and also from 5% to 100% for the diesel bowser there is the potential for a 3-13dB degree of uncertainty. The same differences are also present between the human and ecological receptors for the manoeuvring piling plant, PV panel installation and electrical compound installation and clarification should be sought in respect of this.	This is discussed briefly in Section 12.5.2.1 of Chapter 12 - Noise and Vibration [APP-042] of the ES. Calculations for human receptors take account of the likely on-time for each item of plant during each activity. This is standard practice for the prediction of construction noise at human receptors, where noise is predicted as an average over a 16-hour daytime period. As the threshold levels for ecological receptors do not account for the time over which the activities take place, as a worst-case assumption all construction activities have been set at 100% on times. This assumes that all plant is operational for 100% of the time, and as such it is anticipated that predicted noise levels at the ecological receptors are over-predicted in

Ref.	Statements in Able report	Applicant's Comment
		practice.
4.4.4	The calculations rely on BS 5228-1:2009+A1:2014. It is noted this standard is limited beyond 300m and does not take meteorological effects into account. On this basis it may be appropriate to consider setting controls in respect of noise from the site either through the Section 61 Consent process or by condition.	Air absorption and meteorological factors are more likely to reduce noise in practice rather than increase the level. The noise and vibration assessment undertaken in Chapter 12 - Noise and Vibration of the ES [APP-042] has assessed the realistic worst-case design parameters throughout, such that the as-built development will have the same magnitude of effects, or less, that those included in the ES during construction, operation and decommissioning. Controls beyond those in relation to working hours and practices already set out in the Outline CEMP [REP7-015] and Outline SPA CNMP [REP7-019] are not considered to be required by the Applicant, or relevant consultees.
4.4.5	The calculations have calculated back to the assessment locations, but it is unclear if the receptor point is the building itself or the perimeter of the premises. This introduces a potential 3dB degree of uncertainty applicable to the presence/absence of any façade corrections, but no details are provided and clarification should be sought in respect of this.	Predictions are made at the perimeter of the premises, and the predictions are based on the closest distance at which each construction activity takes place to each noise sensitive receptor. In practice, noise levels presented will be substantially lower than those presented for the majority of the construction period.
4.4.6	The calculations have been examined and it is noted these return an arbitrary whole number percentage value for the soft ground adjustment, typically 6% or 20%. No overt explanation is provided for the values used, but this is not considered to be incorrect.	The Applicant welcomes this agreement.
4.4.7	The Able report contains a supporting appendix (Appendix 6) where the sound power level for the same piling rig (Pauselli 500) is given as 121dB(A) when actively piling and 99dB(A) when the engine is on, but the unit is not piling. This is over 10dB higher than the values presented in the calculations for human receptors and is potentially inconsistent with the supporting appendix. It is considered the piling calculations should not be relied upon until clarification has been provided.	The calculation spreadsheets in Appendix A12.2 [APP-235] specify a sound power level of 124 dB, 3 dB higher than the 121 dB(A) level specified by the Reviewer. This can be seen in the Active Piling PDF for each receptor, in particular the 10th column of the first calculation table, headed 'Sound Power Levels'. The piling noise level used for this assessment is appropriate, and is calculated based on manufacturers data.
4.4.8	The calculations refer to 4No Pauselli 500 driven piling rigs. There is no explanation as to why driven piling is proposed for the site in preference to other piling methods for example CFA4 drilled piling. With specific reference to the Arna Wood Solar Farm piling was identified as an activity with the potential to cause disturbance and drilled piling was presented as a possible means of reducing noise impact. See Page 3 of the Arna Wood Solar Farm, Wintering Bird Mitigation: Construction Method Statement reproduced as Appendix E.	The Applicant has submitted to the examination the 'Push/Pull' report [REP4-053] that was produced (following onsite survey) to determine the foundation type best suited to the onsite ground conditions (driven piles).
4.4.9	It has been communicated that the duration of the construction phase for this nationally significant	BS 5228-1:2009+A1:2014 identifies daytime periods as being between 0700 – 1900, and

Ref.	Statements in Able report	Applicant's Comment
	infrastructure project is circa 30 months. It is noted that proposed working hours are 07:00-19:00 Mondays to Fridays and from 07:00 to 13:00 on Saturdays. It is further noted these hours do not include the additionally proposed hour either side for start-up and shut down. This is unusual for a project of this nature as construction work tends to be limited to 08:00-18:00 Mondays to Fridays and 08:00 to 13:00 on Saturdays. Comparative examples of solar farms where typical working hours have been advocated include Arna Wood Solar Farm (see page 5 Construction method statement reproduced as Appendix F) and also the solar farm at Maldon Road in Birch, Colchester, (see Condition 6 on page 2 of the planning decision notice reproduced as Appendix G). Decision makers should be made aware that additional hours for start-up and shut down risk being open to abuse and were works activities to start before 07:00 this would constitute night time works. It is recommended to minimise the impact of sound during the construction phase that works be limited to 08:00-18:00 Mondays to Fridays and from 08:00-13:00 on Saturdays with no working on Sundays or Public holidays. This could be controlled either via a Section 60 notice, a Section 61 Consent or by condition.	0700 – 1300 on Saturdays i.e. in line with the core working hours presented in the Able report. It should be noted that BS 8233 provides limits for evenings, weekends and night-time periods. In the interest of ensuring noise impacts are minimised, no construction works will be undertaken during these periods, and the assessment does not consider construction during these periods. The start-up and shut-down periods either site of the core working hours does not include the operation of plant or machinery likely to cause a disturbance (see section 1.1 of the Outline CEMP [REP7-015].
4.4.10	The calculations make no reference to the use of drilling metal or the use of compressed air tools. When assembling solar arrays a significant proportion of sound is attributable to the use of compressed air tools and drilling activity (occasionally accompanied by hammering) when fixing and assembling the frames to which the panels are then fixed. Measurement data and site notes made by Able Acoustics Ltd during the construction phase of the Solar Farm at Maldon Road, Birch, Colchester in November 2015 confirm this. It is recommended this element be added to the calculations.	In practice, any noise from hand-held drilling activities (usually undertaken by relatively quiet battery powered drills) will be significantly lower in noise level than the large-scale equipment (telehandler and diesel bowser) included in this assessment already. As such noise from installation of the PV panels will not exceed the 65 dB(A) limit. While it is agreed that some noise will occur from drilling / screwing in the panels, construction will only occur at the closest point to each receiver for a short period of time before moving away, further minimising any impact of the nearby receptors.
4.4.11	The Able report does not provide any indication of potential cumulative noise levels although it is recognised that at the time of writing a detailed works programme may not have been drawn up. Activity on construction sites is rarely limited to one works activity and multiple activities are expect to take place simultaneously For example concreting works to form a compound or haul road construction works could take place at one location while piling works took place at another. It is recommended cumulative noise levels of the pre-construction ambient level, plus all site construction activity that would take place simultaneously, be provided to enable a more measured estimate of the likely level of construction noise impact.	As a worst case, the construction assessment has been undertaken based on the closest point at which each activity is undertaken to the receptors. In practice, construction activities will not all take place at the same time, at the closest point to each receptor. While each activity is being undertaken at the closest point to a receptor this particular activity will dominate, and noise from other activities will not have an impact on levels at the receptor. The assessment is therefore suitably conservative in this regard.
4.5	**Traffic Noise Assessment**	

Ref.	Statements in Able report	Applicant's Comment
4.5.1	The Able report contains an appendix containing road traffic calculations. The calculation process has been verified and the values for Seasalter Road have been confirmed, while a difference of 0.1dB is generated for Head Hill Road (North) and Head Hill Road (South). This is considered attributable to rounding. The calculations confirm a 1.6dB increase which is a "minor" magnitude of impact.	The Applicant notes these comments and welcomes agreement with the assessment.
4.6	**Vibration Assessment**	
4.6.1	Vibration has been reported to have been assessed, but full auditable calculations are not provided. In the absence of detailed information on intervening ground/soil types, distances, number of vibrating drums etc. it is not possible to verify any calculations or confirm any statements made in respect of vibration.	It is noted that both the Reviewer and the Local Authority agree that given the separation distances, vibration will not result in significant effects. Notwithstanding this, vibration has been predicted using the method provided in BS 5228, as presented in Table 12.21 of Chapter 12 - Noise and Vibration of the ES [APP-042]. This confirms that there is no likely significant effect.
4.6.2	It is noted in reviewing the information the local authority's Environmental Health Officer has not raised any vibration concerns and given the separation distances to the closest vibration sensitive premises it is considered vibration may not give rise to any significant impacts, but that the degree of any impact cannot be verified at the current time.	
5	**Conclusions**	
5.1	**Summary of Conclusions**	
5.1.1	This review has considered the calculations, survey methodology and assessment methodology.	The Applicant notes these comments.
5.1.2	This review confirms the calculations finding no errors in the calculation process, but has identified some limitations to the reliability of the calculations attributable to the propagation distances involved as well as areas of uncertainty where further clarification is required.	Addressed above, e.g., in section 4.2.5.
5.1.3	This review has identified inconsistencies between supporting information and data (including absence of potential sound sources which may typically be present) used to form the basis of the calculations and also between calculations for identical activities, but for different receptors. Further clarification should be sought in respect of this.	Addressed above, e.g., in sections 4.4.7 and 4.4.10.
5.1.4	This review has noted the absence of relevant data that can be used to provide a greater degree of context, including details of residual sound levels, measurement data in tabular format and details of equipment and competence. Further clarification may be required in respect of this.	Addressed above, e.g., in sections 4.1.1 and 4.1.3.
5.1.5	This review has identified potential errors in respect of the source levels for the Pauselli piling rig and until adequate clarification is provided it is	Addressed above, e.g., in section 4.4.7.

Ref.	Statements in Able report	Applicant's Comment
	considered the calculations in respect of piling should treated with caution.	
5.1.6	This review considers the working hours of 07:00-19:00 Mondays to Fridays and 07:00 – 13:00 on Saturdays to be in excess of typical construction hours, but notes this could be addressed through either a Section 61 agreement or by condition.	Addressed above, e.g., in section 4.4.9.
5.1.7	This review observes vibration has been reported to have been assessed, but fully auditable calculations are not provided. In the absence of this it is not possible to verify any calculations or confirm statements made by the consultant in respect of vibration.	Addressed above, e.g., in sections 4.6.1 and 4.6.2.
5.1.8	Based on the potential inconsistencies highlighted, this review considers the use of driven piling may give rise to significant impacts and notes that no reason has been offered as to why other methods of piling that would reduce the level of noise cannot be used.	The Applicant has submitted to the examination the 'Push/Pull' report [REP4-053] that was produced (following onsite survey) to determine the foundation type best suited to the onsite ground conditions. The assessment has assessed the realistic worst-case design parameters throughout, such that the as-built development will have the same magnitude of effects, or less, that those included in the ES.
5.1.9	It is concluded that unless there are significant changes to the design and/or working methods additional assessment is not required, but that further clarification should still be sought to address any potential inconsistencies and areas of uncertainty (i.e. data used to form the basis of any calculations and subsequent conclusions). It is further concluded that a decision in respect of noise and vibration, regardless of what that decision may be, should not be made until such time as these elements have been addressed.	The Applicant welcomes the agreement from Able Acoustics that: "unless there are significant changes to the design and/or working methods additional assessment is not required" The noise and vibration assessment undertaken in Chapter 12 - Noise and Vibration of the ES [APP-042] has assessed the realistic worst-case design parameters throughout, such that the as-built development will have the same magnitude of effects, or less, that those included in the ES. Swale Borough Council considers that noise and vibration has been appropriately assessed, and confirmed noise and vibration as an agreed matter in the SoCG [REP4-037].

2.15 REP7-107 Kent Wildlife Trust

23. This section of the Applicant's response addresses submission [REP7-107] in Table 2.15a.

24. The KWT response includes Appendix 1 - a track change version of KWT's review of the draft HMSG governance subsequently incorporated into the Outline LBMP at Deadline 7 [REP7-107].

25. The Applicant and KWT have also agreed a SoCG, submitted to the examination as part of the final submission (document reference 16.2.2). There are a small number of residual issues of disagreement where the Applicant believes it would assist the ExA if the Applicant's final position were made clear. This is set out in Tables 2.15b-e.

Table 2.15a: The Applicant's Comments on REP7-107

Ref.	Question	Kent Wildlife Trust's Response	Applicant's Response
R17.2.3	At the Environmental Matters ISH (ISH6), the likelihood of marsh harriers using the habitat 'corridors' between array fields was discussed. The conservation interests thought that monitoring surveys, triggers and remedial measures were still needed to determine firstly if marsh harrier use is as predicted by the Applicant, and secondly to respond positively to a shortfall in predicted use, should it arise. (E.g. small mammal/ prey species monitoring as well as behavioural observations.) These points were reiterated in Natural England and Kent Wildlife Trust's Deadline 5 submissions [REP5-050] and [REP5-048]. The Applicant's Deadline 6 version of the outline LBMP [REP6-005] includes behavioural monitoring/ flight	Detail of the monitoring, including commitment to small mammal surveys (to establish prey availability for marsh harrier) and more detail of survey methods (e.g. to overcome constraints from solar panels on observation), previously committed to (i.e. at ISH 4 and 6) and now included within the LBMP, are welcome. The remedial measures to address failure of habitat creation are also welcome and necessary. However, there are still no remedial measures to deal with the potential displacement of marsh harrier by the solar panels (i.e. the habitat is suitable and potential prey is present but the marsh harriers do not use it). In this respect nothing has changed since the previous versions.	The Applicant welcomes Kent Wildlife Trust's confirmation that within-site monitoring and remedial measures for marsh harrier habitat are welcomed. The Applicant's position, agreed by Natural England in a SoCG [AS-050], is that additional remedial measures are not necessary to conclude no adverse effect on the integrity of the SPA, whether or not marsh harriers use the inter-array grasslands during operation of the Development.

Ref.	Question	Kent Wildlife Trust's Response	Applicant's Response
	surveys and small mammal sampling surveys (in relation to marsh harrier prey availability) to inform triggers and remedial actions. Do these updated proposals satisfy Natural England's and Kent Wildlife Trust's concerns in this respect?		
R17.2.5	Based on the Applicant's answer to question R17.2.4 above, can Natural England and Kent Wildlife Trust provide an opinion on the robustness of the estimates provided, and explain whether they consider each to represent such a high percentage loss or change in overall availability of foraging habitat that it could lead to a finding of AEoI relating to the marsh harrier population associated with the Swale SPA? Also, in each case, should you consider the estimated change to be small but the judged effect on integrity nevertheless adverse, would the Applicant's proposals to improve the remaining foraging habitats and foraging resource and to monitor and respond to any shortfall of use by marsh harriers combine to address any remaining uncertainties, such that the mitigated situation can be judged to be one of no AEoI?	As of the morning of Monday 11th November, we have still not received the Applicant's answer to R17.2.4. We have received a statement from them that "…we have been discussing further with Natural England to agree a position in a SoCG prior to issuing the agreed documentation to KWT for comment." We are not sure why that this needs to happen before the information is provided to us, and see no good reason why both organisations could not have been consulted at the same time. We are aware of the weight given to Natural England's position by the ExA, but this is the ExA's to give and the approach by the Applicant has only served to disadvantage us, or delay proceedings if this is to be avoided. In the absence of the Applicant's information sufficiently in advance of the deadline, we can only provide a limited response on this question at this time. We have based our response on the use of the site by marsh harriers as it is currently understood, as a proxy for forage availability.	The Applicant notes KWT's comments. The Applicant felt that it would be beneficial for KWT to understand the joint position of the Applicant and Natural England, as the SNCB, in order to inform its own position. The Applicant was hoping to reach an agreed position with Natural England earlier prior to Deadline 7 in order to provide this agreement to KWT and inform its response, however delays in internal sign off at Natural England prevented this. The Applicant and KWT have now agreed a SoCG which has been submitted to the examination as part of the final submission (document reference 16.2.2).
		There is no up-to-date population measure for Marsh Harriers within the Swale SPA of which we are aware. Natural England's document 'What do we know about the birds and habitats of the North Kent Marshes?' (NECR082, 2011) mentions the results of the 2005 national survey stating 35 on Sheppey and 7 in south Swale. The most recent estimate appears to be within the Kent Bird Atlas, which gives an estimate of 80-100 breeding females in Kent for 2008-13, with about 50% of these on Sheppey (other 50% just 'Rest of Kent'), stating that there is some evidence of a reduction in numbers breeding on Sheppey in recent years. It seems likely therefore that a single breeding female constitutes greater	KWT's comments on the SPA population status of marsh harriers concurs with that set out in the additional submission on marsh harrier provided by the Applicant (draft version was appended to the SoCG between the Applicant and Natural England [AS-050], an updated version with supporting figures submitted at Deadline 7 [REP7-037], and minor revisions to this updating Figure 1, and the associated area calculations to address KWT comments at Deadline 7 are set out in the final submission (document reference 16.5.2 and 16.5.3). These minor updates have no bearing on the conclusions of the report.

Ref.	Question	Kent Wildlife Trust's Response	Applicant's Response
		than 1% of the Swale SPA population, and is probably closer to 2%. We know from the Ornithology Chapter of the ES (APP-039] that: "Up to three marsh harriers were frequently recorded at any one time foraging within the Core Survey Area and adjacent grazing marsh, particularly along the ditches and KWT South Swale nature reserve." "Marsh harrier, the primary target of the surveys, was the most frequently recorded target species during the FAS [Flight Activity Survey] with a total of 239 flights. Birds were frequently observed hunting within the Core Survey Area throughout the year. Marsh harriers were observed in flight for 17.9% of survey observation time in the non-breeding season and 10.5% of survey observation time in the breeding season." "Marsh harriers have nested in most years between 2004 and 2017 (information from confidential KWT reports) within the Development site, almost always within the KWT reserve and occasionally in reedy ditches or crops close to the reserve. Breeding density was much higher between 2004 and 2012, with breeding attempts by three to eight pairs each year. However, since 2013, there has only been one nesting attempt each year. The baseline survey in 2016 covered a larger geographical area and it was thought that a pair attempted nesting in The Swale SSSI/SPA/Ramsar site to the south-west of the site."	
		The Conservation Objectives for The Swale Special Protection Area of relevance are: "Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;…the populations of each of the qualifying features and; the distribution of qualifying features within the site."	The Applicant agrees that this is an accurate summary of the SPA Conservation Objectives.
		Owing to the importance of the Site for marsh harrier, particularly the ditches for foraging a breeding (though we point out that marsh harriers have bred within the crops in previous years, as stated in the ES), it is clear there will be an Adverse Effect on Integrity assuming that marsh harriers do not use the corridors of reedbed and grassland habitat between the solar array fields post-construction for	The Applicant disagrees with the assertion that there will be an adverse effect on integrity of the SPA. The Applicant has provided an additional submission on marsh harrier (draft version was appended to the SoCG between the Applicant and Natural England (November 2019) [AS-050], and an updated versions with supporting figures submitted at Deadline 7 [REP7-037] and the final submission to the Examination

Ref.	Question	Kent Wildlife Trust's Response	Applicant's Response
		behavioural reasons (i.e. to answer the question regarding the second estimate).	(document reference 16.5.2 and 16.5.3), which sets out the potential impact on The Swale SPA under the two different scenarios requested by the ExA: one where marsh harriers are not excluded from the inter-array ditch and grassland habitats (the Applicant's position) and one where they are excluded from those areas. The assessment based on those scenarios concludes that there would not be an adverse effect on the integrity of the SPA. NE's position is that there is sufficient precaution built into the assumptions such that they can advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of the SPA.
		Trying to answer whether or not there will be an Adverse Effect on Integrity if the marsh harrier do use the mitigation (the first estimate) is the crux of the disagreement between parties at present. The question is not a binary one however, as there will be a point between total failure and complete success where AEoI occurs (the Applicant has accepted that some birds will be displaced, but has supposed that these will be replaced by others). Kent Wildlife Trust maintains that, given what we know about the species' habitat preferences, and the absence of any robust evidence that marsh harriers will continue to use the site (rather, a couple of anecdotes that we have previously stated are exceptions, given the tiny proportion of nesting location that these represent), that there is still reasonable scientific doubt regarding whether or not there will be an AEoI.	
		UPDATE: Kent Wildlife Trust has received the information from the Applicant, attached as an appendix to a SoCG with Natural England, dated October 2019 (sent on the 12th November, received on the 13th). We do not consider this sufficient time to provide a proper response to it for DL7, but we have picked up some points from it below.	The Applicant notes KWT's comment. The Applicant and KWT have now agreed a SoCG which has been submitted to the examination as part of the final submission (document reference 16.2.2).
		Paragraph 18 of the additional submission on marsh harrier states that the 55.5ha Arable Reversion Habitat Management Area (AR HMA), alongside other grassland areas, "…will provide more suitable grassland habitat for foraging than in the current arable baseline…" This contradicts information provided by the applicant in the Carrying Capacity Report for Small Mammals [REP4-022] which stated "Grazed pasture and arable farmland is also typically suboptimal for small mammals. In intensively grazed grassland, there is little cover for small mammals such as voles and mice, leaving them more susceptible to predation, and also creating a habitat which is less suitable for shelter. In addition, there are reduced food sources with a low sward height (reduced vegetation and insects) and increased competition with large herbivores such as sheep for the remaining food resources." As set out in the Outline Landscape and Biodiversity	The Applicant agrees that the target habitat of the AR HMA is not optimal foraging habitat for marsh harriers. However, the Applicant maintains that the AR HMA habitat will provide more suitable habitat for foraging marsh harriers during the breeding season than the current baseline rotation of cropped cereals, beans and oilseed rape. Rather than 'intensively grazed', the outline LBMP [REP7-013] sets out that the area will be grazed at low density. As such, the AR HMA will be better habitat for supporting small mammals and other avian prey which will be more accessible to marsh harriers than under dense crop growth.

Ref.	Question	Kent Wildlife Trust's Response	Applicant's Response
		Management Plan (REP6-005), "Grazing within the AR HMA will take place during the summer months (April to September)". While there is some flexibility in the management plan (i.e. an autumn cut), the LBMP will not provide suitable habitat for marsh harrier for the reasons set out in the Carrying Capacity Report for Small Mammals. The ditches and ditch edges within the AR HMA could provide suitable habitat, subject to the measures within the LBMP to prevent poaching being put in place.	
		The Applicant has provided an estimate of suitable marsh harrier foraging habitat at paragraph 19. As predators of small mammals and birds (etc), suitable foraging will be defined by the presence of this prey, which will be determined by the management and vegetation structure within the various habitat types, which will vary. It seems unlikely that information to inform the amount of suitable foraging habitat for marsh harrier is available to any meaningful degree (one of the reasons we looked at marsh harrier population above), but the actual area of suitable forage is likely to be much lower than suggested. In addition, for forage to be 'available' we have to assume that it is not already being exploited by other marsh harriers. Ecological principles assume that the population of a species expands to fill suitable habitat over time, and conversely contracts as habitat is lost (as has been suggested for marsh harriers on Sheppey). What is clear is that in the event of failure of the marsh harrier mitigation, there will be a net loss of available forage for marsh harriers.	In the written representation on marsh harriers [REP7-037], the Applicant has quantified habitats that will be present under the different scenarios at the Development site and has quantified saltmarsh, grazing marsh and arable habitats within 1 km of the SPA boundary, which was considered to be a conservative estimate of habitats available to marsh harriers which are known to range further than 1 km. This is an estimate of those habitats available to marsh harriers in that area. The same principles would apply to the quantification of available foraging area for marsh harriers at the Development site in the baseline, so the comparison is like for like. Whilst the Applicant considers that the local population is unlikely to be at full carrying capacity, the assessment in the written representation [REP7-037] does not claim that displaced marsh harriers would be accommodated in the wider area, but instead takes the approach that under the worst-case scenario of complete displacement from the site, 1-2 pairs might be lost to the population. Thus, it is irrelevant whether foraging habitat outside the site is being totally exploited by other marsh harriers or not, for the purposes of the assessment in the written representation [REP7-037].
		Unfortunately no map has been provided to accompany the figures provided within the text. We are not sure therefore whether or not the figures for inter-array grasslands (27ha) excludes the areas identified for scrub planting for landscape reasons (areas along the PROW, and in the west and south of the site). As these areas are stated as providing '…optimal foraging conditions for marsh harriers' we assume not, but	An updated submission [REP7-037] has been submitted to the Examination, which includes maps to display the areas described. Areas with low density scrub planting have not been excluded as the Applicant considers that they will be suitable foraging habitat for marsh harriers. In the baseline environment, low-density scrub is present around the periphery of the site (e.g., within the KWT South Swale nature

Ref.	Question	Kent Wildlife Trust's Response	Applicant's Response
		clarity would be appreciated.	reserve) and marsh harriers were observed hunting in those areas. However, areas of dense scrub and woodland have been excluded.
		As a population for marsh harriers for the SPA is not stated there is a lack of clarity regarding what would constitute a AEoI. We note, however, that the conservation objectives for the Swale include restoration, not just maintenance of a population. In this respect, anything that prevents the continued restoration of the marsh harrier population could be considered contrary to these objectives.	The Applicant has provided a realistic estimated range of the SPA population for the purposes of the assessment of effects on integrity. The conservation objectives refer to the site being: *"maintained or restored as appropriate"*. It is clear that the population is considerably larger than at the time of citation of the SPA.
R17.3.2	The outline LBMP provided at Deadline 6 [REP4-008] includes two sections about the HMSG (sections 1.4 and 19), but these are currently blank. Could the Applicant advise when the ExA will be provided with the information about the constitution and role of the HMSG, as agreed with the HMSG members, including how the essential mitigation and possible response measures that will be guided or decided by the HMSG will be secured through any DCO?	As we are rather closer to the conclusion of the examination than is ideal to still be discussing this, we are providing input as members of the HMSG. Subsequent to deadline 6 the Applicant provided a draft section regarding governance of the HMSG to be included within the final Outline LBMP. A number of amendments were proposed, and these were accepted by the Applicant. We include the version of the document we agreed upon, which was a draft with track changes, submitted as a separate document (Appendix 1 to this response). We expect this to be submitted by the Applicant at Deadline 7.	The Applicant confirms that the sections on governance of the HMSG, as agreed with the consultees in the HMSG, have been included in revision E of the outline LBMP submitted at Deadline 7 [REP7-013].
R17.3.8	Do Natural England or Kent Wildlife Trust have any further comments or outstanding concerns on the updated outline LBMP provided by the Applicant at Deadline 6 [REP6-006] that are not covered elsewhere in your responses to these Rule 17 ExA questions?	We have no additional comments to make on the LBMP that have not been covered elsewhere.	The Applicant notes this comment.

Table 2.15b: The Applicant's Response to issues not agreed in the SoCG between the Applicant and KWT (in response to the 'Scope and Methodology of the Assessment')

Applicant Statement (limited to matters not agreed)	KWT Comments	KWT Status	Applicant's Response
Following embedded mitigation measures in the design of the project and applied mitigation measures implemented through the latest versions of the Outline CEMP, Breeding Bird Protection Plan (BBPP, Appendix B of the outline CEMP), outline SPA Construction Noise Mitigation Plan (SPA CNMP) and Landscape and Biodiversity Management Plan (LBMP), all submitted at Deadline 7, the Development has the potential to result in adverse and positive effects of low magnitude. No effects are significant in terms of the EIA Regulations.	There is a shortfall in mitigation for brent geese as measured by the Peak Mean mitigation requirement. Uncertainty remains regarding the mitigation for marsh harrier.	Not agreed	Given the overall precaution built into the assessment, the shortfall referred to in the AR HMA of 360 brent goose bird days is considered by the Applicant and Natural England to be insignificant. Natural England stated in its response to ExQ2 [REP4-069]: *"Natural England considers that the difference of 360 goose-days when taking into account the unfertilised buffer along the ditches is not significant in the context of the number of goose-days supported by the whole AR HMA."* Where there has been residual uncertainty in relation to marsh harrier, the Applicant has set out the alternative scenarios and considered the impact on the assessments undertaken in the RIAA [REP7-011] and ES ornithology chapter [APP-039] in an additional written representation on marsh harrier submitted at Deadline 7 [REP7-037] (with minor amendments to address KWT DL7 comments submitted as part of the final submission (document reference 16.5.2 and 16.5.3)). The conclusions of those assessments remain unchanged. Natural England agrees with the Applicant's position on marsh harrier, as set out in the agreed SOCG [AS-050], which states: *"The written representation on marsh harrier is helpful in demonstrating the areas of foraging habitat with or without excluding marsh harriers from the solar array. Therefore, our view is that off-site mitigation is not necessary, and the remedial actions in the Deadline 6 version of the Outline LBMP [REP6-005] are sufficient. At the meeting between the Applicant and NE on 28/10/19, potential additional remedial measures outside the developed area were discussed (habitat management for*
Following embedded mitigation measures in the design of the project and applied mitigation measures implemented through the latest versions of the Outline CEMP, Breeding Bird Protection Plan (BBPP, Appendix B of the outline CEMP), outline SPA Construction Noise Mitigation Plan (SPA CNMP) and Landscape and Biodiversity Management Plan (LBMP), all submitted at Deadline 7, the Development is not predicted to result in an adverse effect on the integrity of The Swale SPA/Ramsar Site (Section 8 of the RIAA (Deadline 7 document reference 5.2, Revision B).	There is a shortfall in mitigation for brent geese as measured by the Peak Mean mitigation requirement. Uncertainty remains regarding the mitigation for marsh harrier.	Not agreed	

Applicant Statement (limited to matters not agreed)	KWT Comments	KWT Status	Applicant's Response
			marsh harriers in the AR HMA and FGM HMA could be considered provided they don't conflict with the other management aims) and are expected to be included in the Deadline 7 version of the Outline LBMP (Revision E), NE's position is, therefore, that there is sufficient precaution built into the assumptions in the RIAA [APP-026] such that we can advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of the SPA."

Table 2.15c: The Applicant's Response to issues not agreed in the SoCG between the Applicant and KWT (in response to [RR-799])

KWT Comments (Relevant Representation [RR-799])	Applicant's Response	KWT Status	Applicant's Response
KWT-4 It is unclear what impact the significant change to the landscape will have on Marsh Harrier, which at present forages across the site. While we appreciate the distance between the ditch bank tops and the fence line has been increased compared to the original design – giving more habitat that can be managed for Marsh Harrier and increasing the distance between areas of panels – there remains uncertainty as to if the effectiveness of this.	The outline LBMP [REP6-005] sets out the prescriptions for establishment of large areas of 'grazing marsh grassland' between the solar panel arrays deployed in each field and has been developed further to include objectives and prescriptions for enhancing the water environment, including establishment of new reedbed. There is no published evidence either way regarding the reaction of marsh harriers to solar arrays of this scale, or any other scale, in the landscape. The inter-array grasslands will be a minimum of 30 m wide (or more, allowing for the ditch width), extending up to 80 m wide in some places and will be unbroken for substantial lengths spanning the site. A marsh harrier	Not agreed. There is still uncertainty regarding the response of marsh harriers. There is no new information within the document that would remediate the loss of this area as marsh harrier foraging. More detail is included in our DL7 response [REP7-107]. We note from the figures within the marsh harrier document provided at Deadline 7 [REP7-037] (that we did not see before DL7) that the areas measured as providing optimum habitat include areas of scrub planted for landscape screening.	The responses in Table 2.15b address the issue of marsh harrier uncertainty. An updated submission [REP7-037] has been submitted to the Examination, which includes maps to display the areas described (minor amendments to address KWT DL7 comments have been submitted as part of the final submission (document reference 16.5.2 and 16.5.3)). Areas with low density scrub planting have not been excluded as the Applicant considers that they will be suitable foraging habitat for marsh harriers. In the baseline environment, low-density scrub is present around the periphery of the site (e.g., within the KWT South Swale nature reserve) and marsh harriers were observed hunting in those areas. However, areas of dense scrub, shelterbelt screening and woodland have been excluded.

KWT Comments (Relevant Representation [RR-799])	Applicant's Response	KWT Status	Applicant's Response
	was witnessed foraging along a narrow grassland strip adjacent to a solar array on the Isle of Sheppey; the Applicant accepts the difference in scale, but the observation demonstrates that they are not averse to the presence of solar panels. On the basis of the provision of large quantity of good foraging habitat over and above the baseline availability and the absence of evidence that marsh harriers would be displaced at landscape scale, the assessment in Chapter 9 – Ornithology of the ES [APP-039] concluded that harriers will continue to forage at the site and will benefit from utilising the substantially increased area of suitable foraging habitat. The Applicant has also submitted a written representation on Marsh Harrier (draft version appended to the SoCG between the Applicant and Natural England (November 2019), and updated version with supporting figures submitted at Deadline 7 (document reference 15.6.2) to the examination, which sets out the potential impact on The Swale SPA under two different scenarios: one where marsh harries are not excluded from the inter-array		

KWT Comments (Relevant Representation [RR-799])	Applicant's Response	KWT Status	Applicant's Response
	grassland areas and one where they are excluded from those areas. Natural England's view is that this is helpful in demonstrating the areas of foraging habitat with or without excluding marsh harriers from the solar array. NE's position is that there is sufficient precaution built into the assumptions such that they can advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of the SPA.		
KWT-6 The Medway Estuary and Swale Strategy proposes Managed Realignment at the development site in order to compensate for habitat loss in the SPA from coastal squeeze. The site provides a unique opportunity for Managed Realignment in the area, and creating a continuum of habitats from mud flat to grazing marsh is a more appropriate use of the site, consistent with wider national aims with regard the environment, biodiversity and landscape. The solar park would prevent this.	The Applicant expects the Development to operate for a finite period, anticipated to be 40 years. Whilst the DCO is not time limited, the Applicant has incorporated a suitably worded DCO Requirement which would result in the end of the operational phase of the Development after 40 years of operation subject to the EA (or equivalent body at the time) demonstrating that the MR proposals can be delivered on the Cleve Hill site. The Applicant discussed the wording of Requirement 17 (previously 15 and 16) during the Issue Specific Hearing 2 on the draft DCO [REP3-015]. Updated wording for this Requirement was provided in the version of the draft DCO submitted	We recognise EA's acceptance of the revised Requirement wording with regard to the MEAS. The significant delay to the managed realignment is unacceptable given the imperative for realignment projects of this type and the lack of opportunity elsewhere (outside of the relatively narrow remit of the MEAS).	The MEASS includes a 'Plan B' for managed realignment in the 'with solar park' scenario, confirming the acceptability of the proposals to the EA, which is responsible for the implementation of the MEASS. Plan B is set out in Appendix H of the MEASS [REP7-058] on page 118 and states: *"'**Plan B'*** *Should the plans for the solar farm at Cleve Hill be approved and this moves forward to construction, the following will replace the current policy:* *• The Environment Agency will not take responsibility for continued maintenance of the defences in this area.* *• A managed realignment site would be proposed in the longer term following the lifetime of the solar farm.* *• Managed realignment in other parts of the Strategy would be bought forward to provide second epoch rather than third epoch habitat. Chetney marshes (BA4.7) adaptation policy*

KWT Comments (Relevant Representation [RR-799])	Applicant's Response	KWT Status	Applicant's Response
	at Deadline 6 [REP6-003].		*could be accelerated with additional management/breaches to create intertidal habitat earlier. This would require some additional works, however the impacts on the current landowner would be similar as initial overtopping is expected from Year 15. Freshwater compensation for BA4.7 would be required earlier than currently programmed."* In the context of the overall 100 year timescales of the MEASS, the Applicant does not agree that there is a 'significant delay' to MEASS caused by the Development. Requirement 17 of the dDCO [REP7-005] secures the ability for the EA to undertake managed realignment (MR) at Cleve Hill during Epoch 2, as is proposed under the 'no solar park' scenario in the MEASS.

Table 2.15d: The Applicant's Response to issues not agreed in the SoCG between the Applicant and KWT (in response to [REP5-048])

KWT Comments (Summary of Oral Representations Given at Issue Specific Hearing 6 [REP5-048])	Applicant's Response	KWT Status	Applicant's Response
Carrying Capacity of AR HMA for Brent goose The revised calculations for the carrying capacity for the AR HMA with regard to Brent geese that take into account the necessary avoidance of spreading manure within 10m of the ditches has resulted in the carrying capacity being 360 birddays short of the mitigation target. Kent Wildlife Trust sticks to the principle of meeting the mitigation target.	The Applicant and Natural England have agreed in the November 2019 SoCG that: "the difference of 360 goose-days when taking into account the unfertilised buffer along the ditches is not significant in the context of the number of goose-days supported by the whole AR HMA."	Not agreed. We don't consider this a precautionary approach given the principle established to mitigate the peak mean.	Addressed in Table 2.15b.
Remedial measures for marsh	The Applicant believes that the	Not agreed. There is still	Addressed in Table 2.15b and 2.15c.

KWT Comments (Summary of Oral Representations Given at Issue Specific Hearing 6 [REP5-048])	Applicant's Response	KWT Status	Applicant's Response
harrier The behavioural response of marsh harrier to the development is an unknown. If it is negative the LBMP does not provide any remedial measures that can address it. There are still changes required to the LBMP with regard to triggers and remedial actions. For example, a suggested remedial measure is to adapt the survey methodology – this is not a remedial measure, as survey methodologies will need to be robust enough to monitor changes from the start. We are also conscious that the presence of the development will make it harder to monitor the marsh harriers, owing to their hunting behaviour. As this is a unique project, we have nothing to compare it to with regard to marsh harriers' reaction their reaction, and the success of the mitigation remains an uncertainty with no remedial measures in LBMP. The applicant has done what they are able to do within the constraints of the development design. We provided a hypothetical example at the HMSG that if marsh harriers were seen to use a minimum width of corridor decommissioning of solar panels to ensure that all corridors were of this minimum	updates to the Outline LBMP submitted at Deadline 6 [REP6-005] address these issues. The Applicant has provided a further submission on marsh harrier to the examination (draft version appended to the SoCG between the Applicant and Natural England (November 2019), and updated version with supporting figures submitted at Deadline 7 (document reference 15.6.2). The Applicant is clear that it is not necessary to incorporate measures in the DCO such as decommissioning solar panels for marsh harrier to increase the available habitat.	uncertainty regarding the response of marsh harriers. There is no new information within the document that would remediate the loss of this area as marsh harrier foraging. More detail is included in our DL7 response [REP7-107]. We note from the figures within the marsh harrier document provided at Deadline 7 [REP7-037] (that we did not see before DL7) that the areas measured as providing optimum habitat include areas of scrub planted for landscape screening.	

KWT Comments (Summary of Oral Representations Given at Issue Specific Hearing 6 [REP5-048])	Applicant's Response	KWT Status	Applicant's Response
width could be undertaken. Essentially what would be needed would be to increase the available habitat.			

Table 2.15e: The Applicant's Response to issues not agreed in the SoCG between the Applicant and KWT (in response to [REP5-049])

KWT Comments (Comments on responses to the Examining Authority's Further Written Questions and Comments on responses submitted for Deadline 4 [REP5-049])	Applicant's Response	KWT Status	Applicant's Response
Marsh Harrier Owing to the lack of progress regarding impacts on this species, we have initially 're-capped' the issue so that we can respond to the information provided at Deadline 4, and incorporate further evidence we have found, in context. **Displacement** The development site is important for marsh harrier, forming an important foraging area throughout the year, and supporting nesting sites. The Report to Inform Appropriate Assessment stated that without mitigation, a Likely Significant Effect on Marsh harriers resulting from the loss of functionally linked land cannot be discounted (APP-026, paragraph 81). Owing to the significant change in	Other examples of marsh harriers breeding near urban environments are at Radipole Lake in Dorset and Potteric Carr in Doncaster. KWT provided information from a paper by Alves et al. (2014) regarding the habitat use by marsh harrier. However, the Applicant disagrees with the interpretation by KWT of the conclusions of this study. The paper states "our field observations showed clear disturbance and avoidance behaviour of birds when, for instance, farmers and machines were operating in the area", but later qualifies that "The degree of disturbance caused by other human constructions, such as houses or warehouses, showed little or no relevance in the results but we believe they must also be considered. In fact, the consequences of this type of	Not agreed. There is still uncertainty regarding the response of marsh harriers. There is no new information within the document that would remediate the loss of this area as marsh harrier foraging. More detail is included in our DL7 response [REP7-107]. We note from the figures within the marsh harrier document provided at Deadline 7 [REP7-037] (that we did not see before DL7) that the areas measured as providing optimum habitat include areas of scrub planted for landscape screening.	Addressed in Table 2.15b and 2.15c.

KWT Comments (Comments on responses to the Examining Authority's Further Written Questions and Comments on responses submitted for Deadline 4 [REP5-049])	Applicant's Response	KWT Status	Applicant's Response
the landscape, including reduction of foraging area to linear strips between arrays, we have contended that marsh harriers, given their habitat preferences and foraging behaviour, may not use the mitigation provided, either in whole or in part. The phrase 'in whole or in part' can be taken to refer to either individual birds or the Swale population as a whole, but in both cases the result is a reduction in the carrying capacity of the Swale SPA for this species. Until recently the Applicant has not acknowledged this potential outcome of the mitigation being constrained by the development design, though the widening of the space between the arrays in response to Regulation 20 consultation to provide more habitat was welcomed. Within the Ornithology Chapter of the Environmental Statement (App-039, paragraph 360) and Report to Inform Appropriate Assessment (App-026, paragraph 209) the Applicant predicts that marsh harriers will continue to forage between the arrays. An example of a marsh harrier nesting within 100m of a haul road at Kemsley is also given, though as there are an	disturbance are often difficult to detect and quantify, especially because they are not immediate. Yet, birds may be affected indirectly by them, for instance in terms of reproductive success (Fernández and Azkona, 1993)." This research is therefore not as clear cut as KWT describe when alleging similar comparisons between this study and the potential for displacement effects of the solar arrays; it is perhaps the element of human activity associated with the "human constructions" that has the negative association, rather than the constructions themselves. The solar park will operate with less intense human and vehicular activity than baseline farming operations. The Applicant has acknowledged KWT's assertion regarding the uncertainty of birds' responses to the presence of the Development but considers that there is sufficient certainty to conclude no adverse effect on integrity. The Applicant has provided a further submission on Marsh Harrier (draft version appended to the SoCG between the Applicant and Natural England (November 2019), and updated		

KWT Comments (Comments on responses to the Examining Authority's Further Written Questions and Comments on responses submitted for Deadline 4 [REP5-049])	Applicant's Response	KWT Status	Applicant's Response
estimated 80-100 breeding females in the County as a whole, we suspect this may be the 'exception that proves the rule'. An observation of a marsh harrier foraging along the edge of a solar park on Sheppey is also reported, though it is acknowledged that it was a casual observation, not part of a quantitative study, and this would still appear to be a much more open landscape than that proposed. In the most recent version of the Statement of Common Ground between the applicant and Natural England (REP4- 039), the Applicant states "There is no published evidence either way regarding the reaction of marsh harriers to solar arrays of this scale, or any other scale, in the landscape" and "…absence of evidence that marsh harriers would be displaced at landscape scale." We have undertaken another literature search (necessarily limited to that freely available online) with slightly broader search parameters (i.e. not specifying solar parks) and found a paper titled "Habitat Use and Selection of the Marsh Harrier Circus aeruginosus in an Agricultural-Wetland Mosaic" by Alves et al.1	version with supporting figures submitted at Deadline 7 (document reference 15.6.2)) to the examination, which sets out the potential impact on The Swale SPA under two different scenarios: one where marsh harries are not excluded from the inter-array grassland areas (the Applicant's position) and one where they are excluded from those areas. Natural England's view is that this is helpful in demonstrating the areas of foraging habitat with or without excluding marsh harriers from the solar array. NE's position is that there is sufficient precaution built into the assumptions such that they can advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of the SPA.		

KWT Comments (Comments on responses to the Examining Authority's Further Written Questions and Comments on responses submitted for Deadline 4 [REP5-049])	Applicant's Response	KWT Status	Applicant's Response
Alves et al identified the factors that influenced the occurrence and abundance of marsh harriers in an agricultural wetland landscape in Portugal. They identified that there was a negative association (with a strong statistical significance) between roads and 'Human constructions' (stated as "e.g. buildings, industry") and the presence of marsh harriers during the breeding season. While solar arrays are not mentioned per se, given the industrial look and scale of the solar arrays proposed for Cleve Hill, we see no reason why marsh harriers would react to them any differently than to any other form of building or industry. Alves et al state "Human disturbance variables, such as agricultural machinery, constructions, road occupancy and cattle, presented a general negative effect on marsh harriers." This latter variable, cattle, also has potential implications for the LBMP, though it was only detected in the non-breeding period, so may not be an issue. In the absence of anything better, this study appears to be the best available evidence regarding the impact of industrial development on marsh harriers,			

KWT Comments (Comments on responses to the Examining Authority's Further Written Questions and Comments on responses submitted for Deadline 4 [REP5-049])	Applicant's Response	KWT Status	Applicant's Response
and casts doubt on whether the proposed mitigation will avoid a Likely Significant Effect. As stated in our answer to ExQ2.1.15 (REP4-068) and at ISH6 there are no remedial measures in the LBMP that would 'remediate' this impact.			

2.16 REP7-108 Marine Management Organisation

26. This section of the Applicant's response addresses submission [REP7-108] in Table 2.16.

Table 2.16: The Applicant's Comments on REP7-108

Ref.	Question	MMO's Response	Applicant's Response
R17.4.1	In its SoCG with the Applicant [AS-028], MMO previously noted that amendments to the dDCO were required to enable the MMO to fulfil its obligations post-consent; for example, the inclusion of contact details for the Marine Pollution Response Team at Part 2, 5(1)(c). Is the MMO now content that all such requests have been met in the Deadline 6 version of the dDCO [REP6-003]?	This question was directed at the MMO. The Deadline 6 version of the dDCO [REP6-003] does not currently enable the MMO to fulfil its obligations post-consent. The MMO has liaised with the Applicant and understands that the details required will be included in the Deadline 7 dDCO.	The amendments sought by the MMO have been included in the final submission version of the dDCO (document reference 3.1, Revision I). Confirmation of the MMO's agreement is provided as part of the final submission (document reference 16.5.4).

2.17 REP7-109 Natural England

27. This section of the Applicant's response addresses submission [REP7-109] in Tables 2.17a and b.

Table 2.17: The Applicant's Comments on REP7-109

Statement	Applicant's Comment
Comments on the RIES [PD-010]	
Natural England's view is that the RIES is an accurate presentation of the advice that we have given throughout the Examination. Since Natural England's last submission at Deadline 5, the Applicant has submitted an updated outline Landscape and Biodiversity Management Plan (LBMP) at Deadline 6 [REP6-005], confirmed the terms of reference and governance of the Habitat Management Steering Group to be included in the Deadline 7 version of the outline LBMP, and produced a written representation on marsh harriers in response to the Rule 17 request for further information. As set out in our Statement of Common Ground submitted for Deadline 7, this additional material enables Natural England to advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of The Swale Special Protection Area (SPA) and Ramsar site.	The Applicant welcomes Natural England's comments.

Table 2.17b: The Applicant's Comments on REP7-109

Ref.	Question	Natural England's Response	Applicant's Response
R17.2.2	The Applicant has added the creation of additional surface water features, including scrapes, to the operational management prescriptions for the FGM HMA in the updated outline LBMP at Deadline 6 (in table 2 on page 26 and at Appendix K [REP6-006]). The Applicant considers that the further details of the management of the FGM HMA in the SSSI are such that *'NE should be able to conclude no adverse effect on integrity with regards to lapwing and golden plover'* [REP6-015]. However, the ExA notes that details of the constitution and status of the HMSG are yet to be added to the outline LBMP [REP6-006], as addressed in R17.3.2 below. Further to its view set out in [REP5-050], can Natural England confirm if the Applicant's assertion in [REP6-015] is correct and provide its	Natural England welcomes the SSSI enhancement measures that have been added to Appendix K of the Outline LBMP [REP6-006]. As noted in our answer to ExQ2.1.12, the uncertainty over whether lapwings and golden plovers will use the AR HMA was discussed at the HMSG meeting on 23 August 19. The experience of the land managers on the HMSG was that waders are attracted in by the bare earth of arable. Therefore, the recommendation was to create a scrape on the SSSI grassland to attract birds in, so that they are more likely to use the AR HMA for foraging. As the Outline LBMP now includes this provision (section 16.2.2) subject to consultation with the HMSG and SSSI consent from Natural England, we are satisfied that the	The Applicant welcomes Natural England's comments.

Ref.	Question	Natural England's Response	Applicant's Response
	current position on whether an Adverse Effect on Integrity (AEoI) of the Swale SPA and Ramsar site for brent goose, lapwing and golden plover can be excluded?	recommendation of the HMSG has been acted on. Natural England can confirm that our advice is that the mitigation measures set out in the Outline LBMP are sufficient in relation to lapwings, golden plovers and brent geese. Therefore, NE can advise that when a formal appropriate assessment is undertaken, the evidence before the Secretary of State is sufficient to support a conclusion of no adverse effect on the integrity of the SPA.	
R17.2.3	At the Environmental Matters ISH (ISH6), the likelihood of marsh harriers using the habitat 'corridors' between array fields was discussed. The conservation interests thought that monitoring surveys, triggers and remedial measures were still needed to determine firstly if marsh harrier use is as predicted by the Applicant, and secondly to respond positively to a shortfall in predicted use, should it arise. (E.g. small mammal/ prey species monitoring as well as behavioural observations.) These points were reiterated in Natural England and Kent Wildlife Trust's Deadline 5 submissions [REP5-050] and [REP5-048]. The Applicant's Deadline 6 version of the outline LBMP [REP6-005] includes behavioural monitoring/ flight surveys and small mammal sampling surveys (in relation to marsh harrier prey availability) to inform triggers and remedial actions. Do these updated proposals satisfy Natural England's and Kent Wildlife Trust's concerns in this respect?	At the Common Ground meeting on 28 October, potential additional remedial measures outside the developed area were discussed (habitat management for marsh harriers in the AR HMA and FGM HMA around the outside edge of the array could be considered provided they don't conflict with the other management aims of those habitat areas) and are expected to be included in the Deadline 7 version of the Outline LBMP. Subject to that potential remedial measure being added, Natural England is satisfied that the updated triggers and remedial actions (along with the additional evidence supplied by the Applicant in answer to R17.2.4) are sufficient to address our concerns relating to marsh harriers.	Paragraph 87 of revision E of the outline LBMP [REP7-013] includes the requested remedial measure: "Adjust other management plans, such as AR HMA MP and FGM HMA MP to improve foraging resources for marsh harrier (without conflicting with the purpose of those plans, such as providing resources for over-wintering species)."
R17.2.5	Based on the Applicant's answer to question R17.2.4 above, can Natural England and Kent Wildlife Trust provide an opinion on the robustness of the estimates provided, and explain whether they consider each to represent such a high	The Applicant provided Natural England with its written representation on marsh harriers, in response to R17.2.4, on 25 October, ahead of a Common Ground meeting on 28 October. That written representation is attached at	The Applicant welcomes Natural England's comments. An updated submission on marsh harriers has been submitted to the Examination [REP7-037]. That updated the estimated foraging areas available to marsh harrier, which resulted in

Ref.	Question	Natural England's Response	Applicant's Response
	percentage loss or change in overall availability of foraging habitat that it could lead to a finding of AEoI relating to the marsh harrier population associated with the Swale SPA? Also, in each case, should you consider the estimated change to be small but the judged effect on integrity nevertheless adverse, would the Applicant's proposals to improve the remaining foraging habitats and foraging resource and to monitor and respond to any shortfall of use by marsh harriers combine to address any remaining uncertainties, such that the mitigated situation can be judged to be one of no AEoI?	Appendix B of the SoCG between the Applicant and Natural England, submitted for Deadline 7. Natural England made some comments on points of detail within the written representation on marsh harriers at the meeting on 28 October. However, our view is that the calculations areas of habitat loss, are helpful in determining potential impacts on marsh harriers. The Applicant calculates that 4.4% of the available foraging habitat will be lost under the solar arrays in the scenario where marsh harriers continue to use the ditch habitats. Natural England's view that this would not constitute an adverse effect on integrity as the management of the inter-array grasslands and other habitats is designed to provide greater prey availability than the current situation. The Applicant calculates that if the marsh harriers are deterred from using the inter-array grasslands, this would constitute a loss of 5% of foraging habitat. Natural England's advice is that this would not lead to an adverse effect on the integrity of the SPA, based on the fact that improved foraging habitat will be provided around theedge of the solar park and along the ditches in the AR HMA; and also because it is unlikely that marsh harrier population is so constrained that loss of that part of the supporting habitat would lead to a reduction in productivity to the extent that the SPA population would be affected. This conclusion is also supported by the remedial measures set out in the Deadline 6 version of the outline LBMP [REP6-005], and referred to in our answer to R17.2.3 above	lower proportions of loss with respect to the SPA being estimated under the different potential displacement scenarios, therefore Natural England's advice regarding integrity is further supported. Further minor amendments to address KWT DL7 comments have been submitted as part of the final submission (document reference 16.5.2 and 16.5.3), these changes do not affect the conclusions.
R17.2.6	The Applicant's position [REP6-015] that further remedial	Whilst this question is directed to the Applicant, Natural	The Applicant welcomes Natural England's comments and

Ref.	Question	Natural England's Response	Applicant's Response
	measures for marsh harrier are not required to conclude beyond reasonable scientific doubt that there will not be an AEoI of the Swale SPA is noted. Notwithstanding this, in light of Natural England's suggestions regarding off-site habitat creation for marsh harrier [REP5-050], does the Applicant intend to pursue available mechanisms to deliver any additional land that might be required? How would any such additional land be secured through the DCO or other legal mechanism?	England would like to confirm that we now consider that the Applicant has provided enough information (through its answer to R17.2.4) to demonstrate that the remedial actions for marsh harrier in the outline LBMP (Deadline 7 version) are sufficient. Therefore, we no longer consider off-site habitat creation a necessary solution.	confirms that they do not intend to pursue mechanisms to deliver additional land for mitigation.
R17.2.8	Do Natural England or Kent Wildlife Trust have any further comments or outstanding concerns on the updated outline LBMP provided by the Applicant at Deadline 6 [REP6-006] that are not covered elsewhere in your responses to these Rule 17 ExA questions?	Natural England has no further comments on the outline LBMP.	The Applicant welcomes Natural England's comment.
R17.7.7	The ExA notes the response provide by Natural England to question ExQ2.8.17 in [REP4-069]. However, please can Natural England provide an updated response in regard of progress of the designation of the proposed England Coast Path?	As noted in Natural England's response to ExQ2.8.17, the England Coast Path (ECP) proposals for Whitstable to Iwade stretch, which includes the application site, were submitted to the Secretary of State in June 2017. However, the need for a Habitats Regulations Assessment has delayed a decision. Natural England does not have a timescale for when a decision will be announced, but it will not be before the Examination closes. Nevertheless, as set out in our written representation, the England Coast Path in this location will follow the Saxon Shore Way, and the visual impact on users of this route has been assessed appropriately in the Environmental Statement (ES). In Natural England's view, a decision on this stretch would not change the outcome of the assessment in the ES.	The Applicant welcomes Natural England's comments.

2.18 REP7-142 Sadie Hennessy on behalf of Whitstable Amblers

28. This section of the Applicant's response addresses submission [REP7-142] in Table 2.18.

Table 2.18: The Applicant's Comments on REP7-142

Statement	Applicant's Comment
I am the chairwoman of the Whitstable Amblers and I am writing to beg you to reconsider your plans for the Cleve Hill Solar Park. The Whitstable Amblers regularly walk past the proposed site, which is much-loved by local people and visitors alike, and which is teeming with wildlife, especially birds. We object to the scale of this proposed development and we fear for the future of the local flora and fauna. We would like to register our objection in the strongest possible terms.	Recreational amenity effects are assessed in Chapter 13: Socio-economics, Tourism, Recreation and Land-Use of the ES [APP-043]. Section 13.5.1.4 addresses effects during construction and section 13.5.2.2 addresses operational effects. The effects of the Development on habitats, birds and other wildlife are assessed in Chapter 8 – Ecology [APP-038] and Chapter 9 – Ornithology [APP-039]. The HRA documented in the RIAA [APP-026] provide an assessment of the potential effects of the Development on bird species, including the impact of the loss of functionally linked land. Mitigation and biodiversity enhancement measures included within the Development are described in the outline LBMP [REP7-013]. The Applicant has worked with consultees, including Natural England as the Statutory Nature Conservation Body on the mitigation proposals, and has reached agreement on all matters with Natural England, as set out in the SoCG between the Applicant and Natural England [AS-050]. The scale of the project responds to an urgent need for greater renewable energy production as set out in the Statement of Need submitted with the Application [APP-253] and its Addendum [AS-008].

2.19 Addendum to Deadline 7 Submission by the Faversham Society to the CHSP Examination Relevant to the Dangers Associated with Lithium-ion Battery Energy Storage Systems

29. This section of the Applicant's response addresses an additional submission made by the Faversham Society and referred to in the Rule 8(3) and 18 letter (published on 27 November 2019) in Table 2.19.

Table 2.19: The Applicant's Comments on the Addendum to The Faversham Society's Deadline 7 Submission

Statement	Applicant's Comment
1. Introduction	
Throughout the course of the CHSP Examination, the Faversham Society and others have raised serious concerns about the safety of Li-ion Battery Energy Storage Systems (BESS) as evidenced by the incidence of runaway fires and explosions at BESS around the world. All such incidents involved BESS considerably smaller than that proposed by the applicants for CHSP. In our previous submissions and discussions during the examination, one of the more serious BESS fires - the 2 MWh battery fire in Flagstaff Arizona in 2012 was referenced, but at that time no conclusions had been drawn by the US authorities.	The safety of the BESS is secured in the DCO through Requirement 3 of the dDCO and the content of the Outline BSMP [REP6-021]. The Applicant has taken full and detailed account of the concerns raised by the Faversham Society during the examination. Safety considerations in relation to international examples of BESS facilities were discussed at length with a BESS technology supplier, Leclanché, during Issue Specific Hearing (ISH) 6 on environmental matters, as set out in section 16 of the Applicant's Deadline 5 written summary of oral submissions [REP5-011]. This Faversham Society submission takes a single document from an open case by the Arizona Corporation Commission which remains the subject of further submissions (Docket E-01345A-19-0076[4]), with the 2019 incident referred to being the subject of an ongoing investigation[5]. To date, further documents have been submitted by: • Tesla, Inc. • US Energy Storage Association • Tucson Electric Power • Cadenza Innovation Inc. • Arizona Public Services Company (APS) • Union of Concerned Scientists Of particular relevance is a statement by Tesla: *"Also, the NFPA 855 Energy Storage Standard," which is a new NFPA standard for the installation of energy storage systems is in its final stages of development and is expected to be approved by the end of 2019. NFPA 855 is designed to mitigate hazards based upon various battery technologies and it imposes a high bar for safety based on historical precedent and documented technology safety claims.* *To avoid future events like those that occurred at the McMicken and Elden energy storage facilities, the Commission should ensure that all new energy storage systems meet the requirements of the new NFPA 855 standard and the 2021 IFC code. These new codes and standards stipulate the use of validated detection, suppression, and other*

[4] https://edocket.azcc.gov/Docket/DocketDetailSearch?docketId=22496#docket-detail-container2
[5] https://www.aps.com/mcmicken

Statement	Applicant's Comment
	safety features, such as deflagration venting and exhaust particularly for indoor and containerized systems which would have prevented the McKicken and Elden storage systems from being deployed as designed. Instead, large-scale fire testing would have been required to understand the hazards posed and design changes based upon the results of the large-scale fire testing would have been necessary to mitigate the risks posed by the McMicken and Elden energy storage systems." The Applicant has included reference to the NFPA 855 standard under paragraph 20 of the Outline BSMP [REP6-021]. The Applicant welcomes the ongoing scrutiny of specific incidents by regulators and the industry in order to inform the ongoing and future safe operation of BESS facilities globally.
2. Summary of the Determination	
Commissioner Sandra D Kennedy of the relevant Regulator - the Arizona State Commission, has now reported on the incident (attached). Her conclusions are of great significance and include: "The Flagstaff Fire Department report "....references fires with "10-15 ft flame lengths" that grew into "flame lengths of 50-75 ft" with fire "appearing to be fed by flammable liquids coming from the cabinets" '. This highly significant piece of evidence shows how a fire can spread from one container to another and flatly contradicts the CHSP applicant's assertion that 100 containers are no more of a fire hazard than a single container and that any fire will be contained within a single container. The Fire Department Report also states concerns about "a serious risk of large scale explosion" and "the cabinets involved are full of lithium (sic) batteries that are extremely volatile if they come into contact with water." The Commissioner clearly states: "Knowing now how easily a fire and/or explosion can evidently occur at these types of relatively small(2MW) lithium ion battery facilities, it appears that a similar fire event at a very large battery facility (250MW+) would have very severe and potentially catastrophic consequences, and that responders would have a very difficult time trying to handle such an incident." The BESS proposed for CHSP is even larger at 700MWh. The Commissioner recommends that any large scale BESS should be "built in isolation" and says "an explosion could potentially flatten buildings at some distance". She also draws the analogy that "a 2MW battery facility is equivalent to 1.72 tons of TNT" This makes the CHSP BESS equivalent to 602 tons of TNT. This is 1/20th of the TNT equivalent of the Hiroshima atom bomb. Moreover the CHSP BESS is within one	The Applicant notes that the comments from the Arizona Corporation Commission letter reproduced in this section of the Faversham Society submission relates to two specific examples of BESS fires in Arizona, United States of America, and predominantly refers to the detail of the incident at the APS Elden Substation facility seven years ago, in 2012. The assertions in the letter have been subsequently challenged in further submissions to the case (Docket: E-01345A-19-0076). The Applicant would caution against relying on the statements in the letter without the context of other submissions, and notes that the Commissioner's comments are not the final conclusions of the case. The Applicant's Outline BSMP [REP6-021] contains robust and deliverable mechanisms for ensuring that the safety of the facility is designed in to the proposals from the outset, to the satisfaction of the Kent Fire and Rescue Service and following review and advice from the Health and Safety Executive, as secured by Requirements 3 and 20 of the dDCO. The comparison between the energy density of li-ion batteries and TNT is not relevant. The most recent report from the McMicken incident (November 5 2019[6]) notes that the battery modules themselves did not explode.

[6] https://www.aps.com/mcmicken

Statement	Applicant's Comment
mile of Graveney village and two miles of the town of Faversham.	
The Commissioner also reinforces our community's fears about batteries "with chemistries that include compounds that can release Hydrogen Fluoride in the event of a fire and/or explosion and states clearly that "those types of lithium ion batteries are not prudent and create unacceptable risks" Moreover, contrary to the claims of the applicants the Commissioner reinforces Dr Erasin's evidence stating that "large amounts of hydrogen fluoride could be released and dispersed that would affect and harm the public at a substantial distance downwind" and adds that "There would be concerns about lingering hydrogen fluoride contamination in the affected areas."	The Applicant has undertaken an Air Quality Impact Assessment of a battery fire [REP4-051] which found (section 4.2) that levels of hydrogen fluoride would not exceed relevant Public Health England reference levels at any identified receptor. The Applicant's air quality assessment corrected several of the assumptions made by Dr Erasin in an earlier submission related to the air quality impacts of a fire (appended to [REP4-051]) and reported in the local press. Dr Erasin subsequently acknowledged the limitations and likely overestimations in his previous work [REP5-037].
The Commissioner is clear that: "water should not be used to suppress a fire such as a battery facility..." - yet this was the method the applicants and their advisors favoured for CHSP.	The Applicant is clear in the Outline BSMP [REP6-021] that the specific fire suppression measures implemented will be tailored to the specific battery technology selected and will be clearly presented in the final BSMP, as set out in Table 4.1 of the outline document. Water can form part of a fire suppression solution, in particular through its cooling properties. The Applicant wishes to ensure that the safest and most effective safety measures are available so has not excluded any potential fire suppression solutions.
The Comissioner [sic] also lays down stringent requirements for the protection of responders (fire and rescue services etc) to any incidents. None of these have been acknowledged by the proposers or by KFRS.	The Outline BSMP [REP6-021] includes (Table 4.1) a requirement for the Applicant to provide: *"Other information requested by KFRS to inform their Tactical Response Plan, to ensure that KFRS has the information it requires to adequately address a fire at the BESS."* The applicable guidance set out in section 2 of the Outline BSMP will be used by the Applicant and KFRS to help determine the requirement for any specific safety equipment to be used by responders to an incident.
Given the absence of National Planning Statements on BESS, it is important that the Examination is guided by authoritative sources with experience of BESS projects. We would urge that the attached ACC Determination is the most thorough and up-to-date such source currently available.	The Applicant disagrees that the ACC Determination is the most thorough and up-to-date source currently available and considers that the ACC Determination letter referred to, whilst offering useful insight to specific incidents, is of limited relevance to the Cleve Hill DCO Application, particularly if the context of other submissions to the case is not reported alongside the ACC Determination letter. The Examination has benefited from the input of Leclanché, who gave evidence to the Examination at ISH 6 specifically because of their expertise and experience, meeting the request for an "authoritative source with experience of BESS projects". As set out section 2, Guidance of the Outline BSMP [REP6-021], there is existing and emerging guidance,

Statement	Applicant's Comment
	which post-dates the design and implementation of both facilities referred to in the ACC Determination. Paragraph 22 of the Outline BSMP refers to emerging UK guidance and likely updates to the UK regulatory environment, which the Applicant also considers will be of far greater relevance to the BESS which forms part of the Cleve Hill Development.
3. Conclusion	
This Determination by the Arizona State Commission clearly reinforces the view of the Faversham Society and others, expressed in evidence to the Examination, that the risks associated with Lithium-ion batteries are unacceptable at any scale and especially when close to habitation. It is clear that a proposal for a Battery Energy Storage System close to Faversham, which will be over five times the size of the current largest in the world, poses unparalleled risks and must be regarded as recklessly dangerous and totally unacceptable.	The Applicant disagrees with all aspects of this statement. The safety of the BESS is secured through Requirement 3 of the dDCO and the content of the Outline BSMP [REP6-021]. The response of the U.S. Energy Storage Association to the ACC Determination letter (reproduced in Appendix D of this response) usefully summarises the wider context of the information presented in the Faversham Society submission: *"According to Wood Mackenzie Power & Renewables, at the end of 2018, 1 gigawatt of battery-based energy storage projects were operational in the United States across more than 20 states. Nearly 95% of these systems use lithium-ion battery technology, the same technology preferred by the world's leading automotive OEMs and safely deployed in vehicles for more than a decade. Grid battery energy storage systems are professionally designed and installed and are built to stringent safety standards with state-of-the-art monitoring systems. Some of the country's leading utilities - including all three of Arizona's largest utilities, Hawaiian Electric Company, Xcel Colorado, Duke Energy, NV Energy and California's investor owned-utilities - have chosen battery energy storage systems as a cost-effective tool for meeting their states' environmental and energy policy goals. Other private developers and independent power producers have also installed and safely operated these systems on the bulk transmission grid over many years."*

3 SUMMARY OF WRITTEN REPRESENTATIONS BY MEMBERS OF THE PUBLIC AND THE APPLICANT'S RESPONSES

30. Sixty-one written representations were received from members of the public at Deadline 7 and prior to the close of the examination. Thirty topics have been identified giving consideration to a wide breadth of issues. No issues have been raised which have not previously been the subject of discussion and submissions during the examination of the Application. Appendix C sets out a summary of topics raised in each individual submission.

31. The broad topics raised have been addressed in Table 3.1 with reference to documents submitted as part of the Application for the Development, and subsequent submissions to the examination.

Table 3.1: List of Topics Raised, Numbers of Representations, References to Relevant Information and the Applicant's Closing Position

Topic Raised	No. of Reps.	Application and Applicant's Closing Position
Wildlife / Biodiversity	44	The effects of the Development on habitats, birds and other wildlife are assessed in Chapter 8 – Ecology [APP-038] and Chapter 9 – Ornithology [APP-039]. The HRA documented in the RIAA [APP-026] provides an assessment of the potential effects of the Development on bird species, including the impact of the loss of functionally linked land. Mitigation and biodiversity enhancement measures included within the Development are described in the outline LBMP [REP7-013]. The Applicant has worked with consultees, including Natural England as the Statutory Nature Conservation Body on the mitigation proposals, and has reached agreement on all matters with Natural England, as set out in the SoCG between the Applicant and Natural England [AS-050].
Battery Safety	36	The Applicant has engaged with Kent Fire and Rescue Service (KFRS) and battery experts at the Health and Safety Executive (HSE) to develop a comprehensive and appropriately detailed Outline BSMP [REP6-021] for the BESS. The Applicant will continue to take all necessary steps to ensure the BESS is designed, implemented and operated safely. This is secured in the DCO by Requirement 3.
Landscape / Natural Beauty	11	Landscape and visual impacts are assessed in Chapter 7 - LVIA of the ES [APP-037]. The LVIA is supported by figures [APP-054] and visualisations [APP-063 to APP-196]. The assessment concludes, at paragraph 480, that: "While the large scale and extent of the Development are acknowledged, the overall effects of the Development on landscape and visual amenity are limited to a small geographical area and a small number of visual receptors."
Flood Risk	10	A Flood Risk Assessment is provided as Technical Appendix A10.1 of the ES [APP-227]. No part of the Site acts as a functional floodplain as the agricultural land is protected by engineered flood defences, as outlined in section

Topic Raised	No. of Reps.	Application and Applicant's Closing Position
		10.3.1 of Chapter 10 - Hydrology, Hydrogeology, Flood Risk and Ground Conditions of the ES [APP-040] and 1.3 of the FRA [APP-227]. As such, tidal waters do not flow into the site and no floodplain storage is offered by the site. The draft DCO submitted with the Application [APP-016] and subsequent updates include the powers and rights necessary for the Applicant to maintain the existing flood defences throughout the operational lifetime of the Development (see Work No. 9 in Schedule 1, Part 1, and the Deemed Marine Licence in Schedule 8). The EA has confirmed that they can delay managed realignment and still deliver their obligations under the Habitats Regulations. A Statement of Common Ground has been agreed between the Applicant and the Environment Agency in May 2019 [AS-017].
Existing site function as a carbon sink	9	The Development represents the best option for decarbonisation at the Cleve Hill site. Evidence of this is presented in a WR submitted by the Applicant at Deadline 3 [REP3-025], which provides a comparison between managed realignment on the site and the proposed Development.
Recreation	9	Recreational amenity effects are assessed in Chapter 13: Socio-economics, Tourism, Recreation and Land-Use of the ES [APP-043]. Section 13.5.1.4 addresses effects during construction and section 13.5.2.2 addresses operational effects. Visual impacts upon rights of way and public amenity areas are assessed in Chapter 7 - LVIA of the ES [APP-037]. Section 7.5.2 assesses landscape effects during operation, and section 7.6.2.2 assesses visual amenity effects during operation on recreation and public amenity receptors.
Scale	8	The scale of the project responds to an urgent need for greater renewable energy production as set out in the Statement of Need submitted with the Application [APP-253] and its Addendum [AS-008].
Development on Salt Marsh / Valuable Marshland	8	The Development is proposed on intensively farmed arable agricultural land. No saltmarsh or freshwater grazing marsh will be lost as a result of the Development, and the Outline LBMP proposed [REP7-013], will provide improved management with indirect benefits on water quality for adjacent saltmarsh and freshwater grazing marsh habitats. The Applicant set out in Chapter 10 - Hydrology, Hydrogeology, Flood Risk and Ground Conditions of the ES [APP-040] (e.g., paragraph 129) that the Development is expected to lead to improvements to water quality over the existing baseline, predominantly due to the cessation of intensive arable cultivation of the land, and the associated application of agricultural chemicals to the land. The existing baseline levels of chemical application are set out in the Applicant's Deadline 4 submission [REP4-050].
Site Location / Site Selection	8	A description of the site selection process (section 4.2), and an analysis of alternative sites (section 4.4.5) is provided in Chapter 4 - Site Selection, Development Design and Consideration of Alternatives of the ES [APP-034].

Topic Raised	No. of Reps.	Application and Applicant's Closing Position
		A description of the site selection process (section 4.2), and an analysis of alternative sites (section 4.4) is provided in Chapter 4 - Site Selection, Development Design and Consideration of Alternatives of the ES [APP-034]. Paragraph 114 of Chapter 4 - Site Selection, Development Design and Consideration of Alternatives of the ES [APP-034] states: *"As set out in the Statement of Need which accompanies the Application [APP-253] there is a clear and urgent need for greater renewable energy capacity and energy storage capability. Therefore if there is potential for renewable energy generation and energy storage to be accommodated on the alternative sites identified, this should be in addition to the Cleve Hill site, not instead of."*
Visual Impact	7	Visual impacts are assessed in Chapter 7 - LVIA of the ES [APP-037]. Section 7.6.2.2 assesses visual amenity effects during operation on recreation and public amenity receptors. The assessment is supported by figures [APP-054] and visualisations [APP-063 to APP-196]. The assessment concludes, at paragraph 480, that: *"While the large scale and extent of the Development are acknowledged, the overall effects of the Development on landscape and visual amenity are limited to a small geographical area and a small number of visual receptors."*
Suitability of Construction Traffic Route	6	KCC Highways, the local highway authority, responded to the ExA's Rule 17 request (R17.7.10) at Deadline 7 [REP7-030] as follows: *"KCC is content that the worst-case measurements presented would not alter its opinion on the adequacy of the route to accommodate construction vehicles. It has always been appreciated that there are narrow locations along the route where two HGVs cannot pass one another, and it has considered this.* *Consequently, mitigation is proposed to reduce the likelihood of two HGVs encountering one another, and the purpose of the condition survey is also intended to address damage to verges that may occur from overrunning. In addition, consideration was given to forward visibility approaching the narrow sections for traffic to see in advance of the pinch points whether other vehicles were approaching, and they would have the ability to wait for it to clear before proceeding."* The Construction Traffic route is currently utilised by HGVs. As set out in Table 14.6 of Chapter 14 [APP-044], 2018 baseline Annual Average Daily Traffic (AADT) flow data for HGVs on Head Hill Road (north) and Seasalter Road are 123 HGVs and 65 HGVs respectively, daily. The Outline CTMP [REP7-021] includes the measures necessary to ensure the suitability of the construction traffic route, which is currently used by HGV traffic, and will be subject to condition survey (and repaired where necessary) before, during and after construction to provide an improved running surface.
Construction Traffic Impacts	6	Access and traffic impacts are assessed in Chapter 14 - Access and Traffic of the ES [APP-044]. In this chapter, the primary school is

Topic Raised	No. of Reps.	Application and Applicant's Closing Position
		classed as a high sensitivity receptor to changes in road traffic. Measures proposed to manage construction traffic, including in the vicinity of the school are described within the outline CTMP [REP7-021]. Measures include restrictions on HGV movements to avoid school opening / closing time and a construction vehicle speed limit of 20 mph past the school. The outline CTMP has been produced as a 'live' document which will continue to be updated on an ongoing basis through consultation with stakeholders during examination of the Application. This will then form the basis of a final CTMP to be approved by the relevant local planning authority before construction can commence (see Requirement 12 of the draft DCO [REP7-005]). Noise and vibration impacts from construction traffic are assessed in Chapter 12 - Noise and Vibration of the ES [APP-042], section 12.5.3. Chapter 16 - Air Quality [APP-046], addresses the air quality impacts of construction traffic.
MEASS	6	A Flood Risk Assessment is provided as Technical Appendix A10.1 of the ES [APP-227]. The draft DCO [REP7-005] includes wording for Requirement 17, which limits the timescales for the operation of the Development to 40 years from commencement of power generation, if the EA can demonstrate that managed realignment can be delivered. The EA has confirmed that it can delay managed realignment and still deliver its obligations under the Habitats Regulations. A Statement of Common Ground has been agreed between the Applicant and the Environment Agency in May 2019 [AS-017].
Criticism of CHSPL JV Partners	6	The Applicant has provided all information required under the Planning Act 2008 to PINS throughout the project development phase.
Alternatives - Domestic / Rooftop / Small Scale	4	The Applicant considered alternative low carbon technologies, including alternative scales of solar PV development in section 4.4.4 of Chapter 4 - Site Selection, Development Design and Consideration of Alternatives of the ES [APP-034] and found no viable alternatives to the proposed Development to connect to the available grid connection at the existing Cleve Hill Substation.
Lack of economic case	4	The Applicant has provided all information required under the Planning Act 2008 to PINS throughout the project development phase, and is confident of the economic viability of the project.
Lack of info on Insurance	4	The Applicant has provided all information required under the Planning Act 2008 to PINS throughout the project development phase and is confident of the ability to secure appropriate insurance for the project.
Onsite Cycling Proposals	4	Since 2017, the Applicant has undertaken an extensive consultation process in support of the Application submitted in November 2018 for a Development Consent Order (DCO). As evidenced in the Consultation Report [APP-022] submitted as part of the Application, the Applicant has undertaken an iterative

Topic Raised	No. of Reps.	Application and Applicant's Closing Position
		consultation process over a consultation area of 12,800 local properties and business as well as with a number of statutory consultees and local interest groups. As part of the pre-application consultation in June 2018, the Applicant consulted on proposals for additional footpaths, cycleways and bridleways around and through the site. The feedback received indicated that additional pathways would be welcome. There was a lack of support for additional bridleways and cycleways from the community and caution raised by local environmental groups including Kent Wildlife Trust who were concerned about the impact to wildlife from horses and bicycles. A proposal for a community orchard was also introduced, in response to a suggestion by CPRE Kent, however, this proposal was strongly rejected by the local community with 63% of the feedback opposing this idea. Following consultation, we included in the Development design a permissive footpath which connects existing footpaths to the south and north of the site. The Applicant remains open to further suggestions or new interest in ideas for local enhancements such as cycle paths or other local recreational amenities.
ALC / Loss of agricultural land	3	The area of land to be developed is predominantly Grade 3b agricultural land, as set out in the Agricultural Land Classification Report submitted with the Application [APP-244], this is not 'best and most versatile' agricultural land. A Sequential Test report was submitted with the Application [APP-201] which demonstrates that there are no viable alternative sites to connect to the existing Cleve Hill Substation on poorer quality agricultural land.
Tourism impacts	3	The tourism impacts of the Development are assessed at a district level in Chapter 13: Socio-economics, Tourism, Recreation and Land-Use of the ES [APP-043]. Public perception of renewable energy Development is discussed in section 13.2.4.4. No likely significant long-term socio-economic effects on the economy of Swale have been identified in the assessment.
Impacts on local community	3	The impacts on the local community are assessed in all technical chapters of the ES [APP-031] to [APP-048] and their associated figures and appendices.
Decommissioning	3	The decommissioning impacts of the Development are assessed in all technical chapters of the ES [APP-031] to [APP-048] and their associated figures and appendices.
South East England already has plenty of renewables / Lack of Demand	3	There is an urgent need for greater renewable energy production as set out in the Statement of Need submitted with the Application [APP-253] and its Addendum [AS-008]. The Applicant considered alternative sites and technologies in Chapter 4 - Site Selection, Development Design and Consideration of

Topic Raised	No. of Reps.	Application and Applicant's Closing Position
		Alternatives of the ES [APP-034] and found no viable alternatives to the proposed Development to connect to the available grid connection capacity at the existing Cleve Hill Substation
Lack of consultation of KFRS	2	As set out in Appendix 5 of the Consultation Report [APP-023], Kent Fire and Rescue Service (KFRS) was included as a Section 42 Consultee, and consulted under Section 42 of the Planning Act 2008. KFRS did not respond to Section 42 consultation requests. The Applicant is supportive of the position taken subsequently by KFRS, and the statements in emails (reproduced following GREAT's FOI request in [REP7-098]) and included in the Outline BSMP [REP6-021], at section 1.3 that: *"All risk reduction strategies start with prevention and it is the 'responsible person' for the premises that has responsibility for this as stated in the Regulatory Reform (Fire Safety) Order 2005. We would also expect that our Central Consultation Team (CCT) will become more involved as the appropriate planning applications are submitted and that any applications would conform to any legislation that relates to this type of development and the design of the BESS will reflect prevailing legislative requirements and UK industry recommendations.* *Kent Fire and Rescue Service (KFRS) recognises the use of batteries (including lithium-ion) as Energy Storage Systems (ESS) is a new and emerging practice in the global renewable energy sector. As with all new and emerging practices within UK industry the KFRS would like to work with the developers to better understand any risks that may be posed and develop strategies and procedures to mitigate these risks.* *The responses to the ARC recommendations set out in the OSMP details the information that we would expect to be provided during the planning application phase, we would then be working with our CCT and Water Services colleagues during the consultation phase to make sure that the Cleve Hill Solar Park conforms to the appropriate legislation and recommendations."* The Outline BSMP will be revised when final decisions about batteries are made and will be approved by KFRS and the HSE before submission to SBC as stated in section 1.4 of the Outline BSMP [REP6-021] and in accordance with Requirement 20 of the dDCO.
Criticism of NSIP Process	2	The Development is NSIP development as it consists of two electricity generating stations of over 50 MW capacity. Any concerns regarding the NSIP process itself should be directed to the Planning Inspectorate and/or Her Majesty's Government (Department for Communities and Local Government (DCLG)).
Lack of Community Benefit / Employment Opportunities	2	As well as the substantial business rate contribution of the Development, the draft DCO [REP7-005] includes Requirement 16, local skills supply chain and employment which requires that a skills, supply chain and employment plan is submitted ahead of construction. This plan will identify opportunities for individuals and businesses to access employment and supply chain opportunities associated with the construction, operation and maintenance of the Development.

Topic Raised	No. of Reps.	Application and Applicant's Closing Position
		An outline Skills, Supply Chain and Employment Plan was submitted to the examination at Deadline 5 [REP5-026].
Fully Support	1	The Applicant welcomes support for the project.
General Construction Impacts	1	The impacts of construction are assessed in all technical chapters of the ES [APP-031] to [APP-048] and their associated figures and appendices.
Work No 9 not covered in Outline LBMP	1	The land on which Work No 9 - Flood Defences is situated is predominantly owned and managed by KWT as part of the South Swale Nature Reserve. The Applicant does not propose to change KWT's existing land management regime in this area, or any other part of Work No. 9, except where set out in the Outline LBMP [REP7-013].
Heritage	1	Chapter 11 - Cultural Heritage and Archaeology of the ES [APP-041] assesses the impact of the Development on heritage assets. A Heritage Statement is also provided [APP-257] which provides conclusions on heritage impacts in planning terms. The Applicant has reached agreement with Historic England in a SoCG submitted at Deadline 4 [REP4-038].

APPENDIX A - HSE REVIEW OF OUTLINE BATTERY SAFETY MANAGEMENT PLAN

COMMERCIAL IN CONFIDENCE

BESPOKE RESEARCH AND CONSULTANCY FROM HSE

Cleve Hill Solar Park – Technical Consultancy Services

Report authorised for issue by:	Stuart Hawksworth, BSc PhD
Date of Issue:	29th August 2019
Lead Author:	Jonathan Buston PhD, C.Chem, FRSC. Principal Scientist
Customer:	Cleve Hill Solar Park
Reviewer:	Stuart Hawksworth, BSc PhD
Project number:	PE20090

Disclaimer:
This report and the work it describes were undertaken by the Health and Safety Executive under contract to Cleve Hill Solar Park. Its contents, including any opinions and/or conclusion expressed or recommendations made, do not necessarily reflect policy or views of the Health and Safety Executive.

I have reviewed the file "2238_OutlineSafety ManagementPlan_v2-0_MB_20190823_HSEKFRS" provided by ARCUS Consultancy Services. I have provided comments within that document, in a file titled "2238_OutlineSafety ManagementPlan_v2-0_MB_20190823_HSEKFRS JB(HSE) comments". In addition, I have the following more general observations.

The guidance considered within the OBFSMP is limited and includes one document which has not yet been formally released (NFPA 855). It is should also be recognised that the state of the art knowledge in this area is constantly evolving. The primary document used, the ARC Tech Talk Vol 26 "Battery Energy Storage Systems (BESS) using Li-Ion Batteries" (2019) states:

> *"It must be clearly understood that there are currently no formal guidelines for the protection of BESS. The knowledge gaps include the following:*
> - *No public fire test data demonstrating fire behavior*
> - *Limited public fire test data related to large format batteries*
> - *Limited incident data on large-scale (grid size)*
> - *Methods of thermal runaway protection*
> - *Post-fire incident response and recovery procedures"*

The current level of knowledge should be similarly acknowledged within the OBRSMP, and a commitment made to review and update all relevant documents as and when new knowledge is made publically available.

With this caveat, the OBFSMP provided seems a reasonable starting point. Further documents to consider within revisions could include the following:

- The Energy Institute are producing a series of Battery Storage guidance notes. The first of these "Battery storage planning" was released 27th August 2019 (https://publishing.energyinst.org/topics/power-generation/battery-storage/battery-storage-guidance-note-1-battery-storage-planning). A further document on response to fires is currently going through editorial review, and a third on maintenance is in the pipeline.
- The IET Code of Practice for Electrical Energy Storage Systems (https://shop.theiet.org/code-of-practice-for-electrical-energy-storage-systems)
- The Energy Storage Operators Forum "Good Practice Guide" (https://www.eatechnology.com/engineering-projects/electrical-energy-storage/).
- "Considerations for EES Fire Safety" (https://www.nyserda.ny.gov/-/media/Files/Publications/Research/Energy-Storage/20170118-ConEd-NYSERDA-Battery-Testing-Report.pdf)

There is worldwide lack of knowledge referring to incidents. The ARC document refers to four incidents, although the first of these is more generally reported as involving lead acid batteries (for example see "Hazard Assessment of Lithium Ion Battery Energy Storage Systems" and references in section 2.5.1- https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Hazardous-materials/RFFireHazardAssessmentLithiumIonBattery)

In addition to these incidents, there has been a recent incident in Arizona (April 2019) and reporting of a number (probably over 20) of incidents in South Korea in the last couple of years. No formal reports on those have yet been published.

HSE's Buxton operations are certified to:
ISO 9001 OHSAS 18001

Health and Safety Executive
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APPENDIX B - HSE TRACK CHANGES TO OUTLINE BATTERY SAFETY MANAGEMENT PLAN (PRIOR TO SUBMISSION TO THE EXAMINATION)

TABLE OF CONTENTS

1 INTRODUCTION

1. This Outline Battery Fire Safety Management Plan ('OBFSMP') has been prepared by Cleve Hill Solar Park Ltd ('CHSPL') to accompany the Development Consent Order ('DCO') application for Cleve Hill Solar Park ('the Development'). Requirement 2 of the draft DCO provides for approval of the detailed design of the Development prior to commencement of works. This includes, at Requirement 2(1)(j), details of safety management. This requirement covers all of the Development, including the Battery Energy Storage ('BESS') component and so this OBFSMP has been prepared to ensure that the risk of fire in the BESS is understood, accounted for and mitigated as far as practicable, in agreement with relevant consultees, and in supplement to the Outline Design Principles [REP3-010] document to form the basis for the decision of the relevant local planning authority ('LPA') to discharge Requirement 2.

2. Following the adoption of the measures set out in this OBFSMP, the risk of a fire occurring will be reduced, and if a fire did occur, the risk of it spreading to the point where it became a major incident will be reduced to an acceptable level. The assessment of fire risk carried out in the Environmental Statement at section 17.7.3.2 of Chapter 17 - Miscellaneous Issues [APP-047] therefore remains applicable.

Commented [JB1]: I've not got access to this document, so I cannot comment on it.

1.1 Background

3. CHSPL is seeking to develop a solar photovoltaic array electricity generating facility and electrical storage facility at Cleve Hill, 2 km north east of Faversham and 5 km west of Whitstable on the north Kent coast.

4. Representations made by interested parties during the examination of the DCO application have raised concerns regarding the risk of fire in relation to BESS and specifically lithium-ion (Li-ion) batteries.

5. The specific detail of the energy storage component of the development has yet to be determined, and CHSPL has deliberately sought flexibility in the DCO application within the limits of the Rochdale Envelope assessed in the Environment Statement in order to ensure that the BESS can respond to the needs of this fast evolving sector at the time of construction of the Development. It is now known that a BESS consisting of containerised Li-ion batteries will be utilised at CHSPL and this document is specific to this solution.

6. A written representation on Electrical Safety [REP3-021] has also been produced and submitted to the examination, which sets out the legislation and regulations that apply to the Development. These regulations are not repeated here, but it is important to re-emphasise that the controls set out within that written representation on the safe deployment of energy storage technology apply alongside the planning process.

1.2 Document Structure

7. This OBFSMP includes the following sections:

- Introduction, including background, document structure, contributors and consultation requirements;
- Guidance;
- Cleve Hill Solar Park Battery Energy Storage Design Approach, including responses to recommendations;
- Battery Energy Storage Detailed Design Stage - Pre-Construction Information Requirements; and
- Conclusions.

1.3 Contributors

8. This document has been collated on behalf of CHSPL by Arcus Consultancy Services Ltd and reviewed by Pinsent Masons LLP with input provided by:

- Leclanché SA;
- Xero Energy; and
- Wirsol Energy.

9. This document has been reviewed by:

- Kent Fire and Rescue Service (KFRS); and
- Health and Safety Executive.

1.3.1 Leclanché SA

10. Leclanché SA is a world leading provider and manufacturer with over a hundred years of history of high quality energy storage solutions, principally based on lithium-ion cell technologies.

1.3.2 Xero Energy

11. Xero Energy provides electrical engineering consultancy services with expertise covering technical, commercial and regulatory issues for renewable and low carbon electricity generation and storage. Xero Energy provided the indicative layout design for the DCO application.

1.3.3 Wirsol Energy

12. Wirsol Energy, a joint venture party in CHSPL, co-developed and co-owns the largest solar plus energy storage facility in Australia, a 25 MW / 50 MWh BESS facility at the 60 MW Gannawarra Solar Farm in Victoria.

1.3.4 Kent Fire and Rescue Service

13. KFRS is the statutory fire and rescue service for the administrative county of Kent and the unitary authority area of Medway.

1.3.5 Health and Safety Executive

14. The HSE has been closely studying battery safety for a number of years, using its bespoke battery testing facility to help customers understand how best to manage the risks faced by many industry sectors during battery manufacture, storage, transport and use.

1.4 Consultation Requirements

15. Prior to the submission of the final version of this document to the LPA in respect of discharge of requirement 2 of the DCO, KFRS and HSE will be consulted on the content of this plan, which shall include the final detail as required by this OBFSMP.

2 GUIDANCE

16. The following international guidance has been considered during the preparation of this OBFSMP:

- Allianz Risk Consulting (ARC), Tech Talk Volume 26 (2019). Battery Energy Storage Systems (BESS) using Li-ion batteries[1];

Commented [JB2]: Suggestions are made in the covering letter for other guidance which might be considered. Not all would have relevant fire related sections, but would demonstrate diligence in seeking out all suitable information.

[1] https://www.agcs.allianz.com/news-and-insights/risk-advisory/tech-talk-volume-26-bess-english.html

- National Fire Protection Association (NFPA) 855, Standard for the Installation of Stationary Energy Storage Systems, (2020 edition currently under development)[2]; and
- UL 9540, Standard for Energy Storage Systems and Equipment[3].

Commented [JB3]: This document is not available to purchase until 6th September 2019

17. At the time of writing, the NFPA and UL United States of America standards are not specifically relevant to the United Kingdom but notwithstanding this provides valuable guidance, and are referred to in the ARC technical note which is addressed in section 3.1 of this document.

3 CLEVE HILL SOLAR PARK BATTERY ENERGY STORAGE SYSTEM DESIGN APPROACH

18. The Development will minimise fire risk by:

- Procuring components and using construction techniques which comply with all relevant legislation;
- Including automatic fire detection systems in the development design;
- Including automatic fire suppression systems in the development design;
- Including redundancy in the design to provide multiple layers of protection;
- Designing the Development to contain and restrict the spread of fire through the use of fire-resistant materials, and adequate separation between elements of the BESS; and
- Ensuring that KFRS recommendations and requirements are addressed to enable an adequate emergency response to a fire.
- Work with KFRS to develop a bespoke Fire Response plan in case of an incident.

3.1 Allianz Risk Consulting Battery Energy Storage System Design Recommendations

19. The recommendations set out in the ARC publication are set out in Table 3.1 with the project response.

Table 3.1 - ARC Recommendations

ARC Recommendation	Project Response
1. Fire department • Invite the fire department to your property to discuss BESS hazards. An adequate emergency response is the key to avoiding an uncontrolled fire. Keep in mind that some fire fighters will not fully understand the hazards and may assume that lithium-ion batteries are the same as lithium batteries. • Key questions to discuss with the fire department include: – What is the main difference between extinguishing and cooling? – How to handle a damaged battery? – How to manage the flammable and toxic gases? • Plan training exercises with the fire department when the system is commissioned.	CHSPL will address all of these recommendations through consultation with KFRS. This consultation is currently underway. KFRS will hold a Tactical Information Record for Cleve Hill Solar Park. CHSPL will engage with KFRS as required to provide the necessary information for this document prior to the commencement of construction of the BESS and will update the information during operation as required by KFRS.

[2] https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=855
[3] https://standardscatalog.ul.com/standards/en/standard_9540_1

ARC Recommendation	Project Response
• Standard Operating Procedures (SOP) & Standard Operating Guidelines (SOG) are of major importance and should be updated and tested on a regular basis.	
2. Construction and location • Install BESS outdoors a minimum of 20 m (65 ft.) from important buildings or equipment. Maintain a minimum of 3 m (10 ft.) separation from lot lines, public ways and other exposures. • Within the module, maintain a minimum of 1 m (3 ft.) separation distance between enclosures for all units up to 50 kWh when not listed, or up to 250 kWh when listed. • Install a thermal barrier where the minimum space separation cannot be provided. • If the BESS must be located indoors, install in a 2 hour fire rated cut-off room, which is accessible directly outdoors for manual firefighting. • Restrict the access to competent employees or sub-contractors. • Ensure enclosures are non-combustible.	A minimum of 3 m separation will be utilised between battery containers and between battery containers and other exposures. Separation between components within BESS containers/modules will comply with applicable UK regulations and legislation. Thermal barriers will be utilised where the minimum space separation cannot be provided, also in accordance with applicable regulations. The BESS containers will be located outdoors. Access to the BESS containers will only be available to operational staff, or under supervision of operational staff. All enclosures will be non-combustible with EI120 standard.
3. Material, equipment and design • BESS should be tested in accordance with UL 9540A, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems. This standard evaluates thermal runaway, gas composition, flaming, fire spread, re-ignition and the effectiveness of fire protection systems. Data generated can be used to determine the fire and explosion protection requirements for a BESS. • Place capacitor, transformer, and switch gear in separate rooms according to best engineering practices.	The BESS utilised will hold the relevant test certificates and meet the electrical safety regulation applicable under UK regulations and legislation.
4. Ventilation and temperature control • Install adequate ventilation or an air conditioning system to control the temperature. Maintaining temperature control is vital to these batteries longevity and proper operation as they degrade exponentially at elevated temperatures. • Ensure ventilation is provided in accordance with the manufacturer's recommendations. • Install and maintain the ventilation during all	All enclosures will include adequate Heating Ventilation and Air Conditioning (HVAC) installations incorporating redundancy. The behaviour of HVAC and air circulation in the event of a pre-alarm and main alarm will be defined by the manufacturer (and, if

Commented [JB4]: In the final document, you should identify the relevant regs/standards, and if none can be found, suggest international alternatives.

Commented [JB5]: These three sentences have the potential to be mutually contradictorary.

Commented [JB6]: You should consider and document how (or which) operational staff are deemed "competent".
You should also consider how those competent staff will supervise sub-contractors- ie if a Permit to Work scheme or similar is expected to be in place.

Commented [JB7]: Is this point being addressed in the plans?

ARC Recommendation	Project Response
stages of a fire. Ventilation is important since batteries will continue to generate flammable gas as long as they are hot. Also, carbon monoxide will be generated until the batteries are completely cooled through to their core.	applicable, the certifier) with due regard to the extinguishing agent used.
5. Gas detection and smoke detection • Install a very early warning fire detection system, such as aspirating smoke detection. • Install carbon monoxide (CO) detection within the container or BESS room.	A minimum of two types of fire detection system will be deployed, (e.g., optical, heat, chemical etc.). The fire detection system will be installed with fire resistant wires and components.
6. Fire protection and water supply • Install sprinkler protection within BESS rooms and ideally within BESS containers. The sprinkler system should be designed to provide 12.2 l/min/m² over 232 m² (0.30 gpm/ft2 over 2500 ft²). Water has been proven to be the best agent to fight a fire involving lithium-Ion batteries. It is important to note that other extinguishing agents, such as aerosols or gaseous extinguishing systems, will extinguish the fire, but they do not provide cooling like water. Insufficient cooling allows a hot and deep-seated core to remain. The heat will rapidly spread back through the battery and reignite remaining active sections. This is the primary reason ARC recommends the use of water for fighting the fire and cooling the batteries. • Implement a procedure for battery submersion in the pre-emergency plan performed by the fire department. Submerging batteries in water (preferably outdoors) after they burn has proven to be effective at cooling the batteries and neutralizing the thermal threat. They will continue to release gases, mostly carbon monoxide, but also flammable gas such as hydrogen. Therefore, never submerge several batteries in a confined space without adequate ventilation. • Ensure that sufficient water is available for manual firefighting. The ability of the fire department to control a fire involving a BESS depends on the presence of an adequate water supply and their knowledge of the hazards. The following should be considered: – An external fire hydrant should be located within 100 m (330 ft.) of the BESS room or containers. – The water supply should be able to provide a minimum of 1,900 l/min (500 gpm) for at least 2 hours.	The fire protection concept will be based on the prevention of propagation with high construction standards, suppression systems and distances to adjacent installations. THE BESS will include a gas-based extinguishing fire suppression system, (e.g., Novec 1230), as a first barrier of security against fire propagation within a container. Separation between adjacent installations is a security redundancy measure to limit fire propagation in case of a suppression system failure or a non-typical failure event. A system for water-based cooling will be implemented to ensure that adequate cooling can be delivered to batteries. This may take the form of an automated system (such as a sprinkler system) or a manually deployed solution. The justification for the system chosen to be implemented including its compliance with legislation will be provided in the pre-construction BESSFSMP. CHSPL will liaise with KFRS to ensure that a water supply able to supply a minimum of 1,900 litres/minute of water can be supplied to within 100 m of any part of the BESS area, and is available prior to installation of the BESS.
7. Maintenance	

Commented [JB8]: Battery fires can evolve significant amounts of dense smoke. Consideration could be given to ensuring alternative water supplies which could reasonably be accessed whatever the wind direction.

ARC Recommendation	Project Response
• Follow original equipment manufacturer recommendations for the inspection, testing and maintenance of BESS. In addition, ensure that the following are completed: – Measure the internal resistance of the cells. Replace the cells when a dramatic drop is detected. Keep in mind that the internal resistance is mainly independent of the state of charge, but increases as the battery ages. Therefore, it is a good gauge of predictable life. – Perform infrared scanning at least once per year. – Check for fluid leakage. – Implement electric terminal torqueing procedures to maintain connection integrity.	Internal resistance is measured as part of the State of Health (SOH) control system, with maintenance and replacement carried out regularly to respond to the results. Constant insulation monitoring of each battery bank detects potential leakage. Prepare an operating procedure for the swap-out of faulty cells/modules. This will include plans for suitable storage locations for the modules prior to removal from site. Torque tests are part of the operation and maintenance (O&M) processes.

Commented [JB9]: Will there be a maintenance contract with the supplier or other competent organisation, or will the operator carry out maintenance?

4 BATTERY ENERGY STORAGE SYSTEM DETAILED DESIGN STAGE - PRE-CONSTRUCTION INFORMATION REQUIREMENTS

20. Table 4.1 sets out the minimum information to be included with the final version of this OBFSMP:

Table 4.1 - Detailed Design Information Requirements

Requirement	Reason for Information Required
Statement of Compliance with Applicable Legislation	To demonstrate compliance with legislation, will cross reference to the other documents set out below.
Detailed Design Drawing of BESS	To ensure available and safe access to the BESS for fire appliances. To enable KFRS to evaluate the available access for fire appliances to all parts of the BESS. To show separation between components of BESS.
Statement of design responses to fire risk	To accompany the detailed design drawing and explain how the risk of fire spreading has been addressed through the Development Design.
Battery Specification	To ensure that KFRS are aware of the specific type of batteries installed. This would include the battery 'chemistry' as well as size and format of each cell.
Fire Detection System Specification	To demonstrate how the requirement for fire detection has been addressed.
Fire Suppression System Specification	To demonstrate how the requirement for fire suppression has been addressed.
Standard Operating Procedures and Guidelines (Relevant to Safety)	To demonstrate an ongoing commitment to regular checks and maintenance during operation. Could include plans for swap-out of suspected modules.

BESS Installation Contractor Emergency Protocol (during construction)	To demonstrate that protocols are in place to manage a fire during construction.
Site Operator Emergency Protocol (during operation, including decommissioning)	To demonstrate that protocols are in place to manage a fire during operation and decommissioning.
Other information requested by KFRS to inform their Tactical Response Plan	To ensure that KFRS has the information it requires to adequately address a fire at the BESS.

5 CONCLUSION

21. This document sets out the design approach to be taken, and the information which is required to be provided in advance of construction of the BESS at Cleve Hill Solar Park to demonstrate that the BESS will be constructed and operated safely.

APPENDIX C - PUBLIC RESPONSES, TOPIC ANALYSIS

		REP7-078	REP7-077	REP7-121	REP7-076	REP7-080	REP7-079	REP7-119	REP7-120
Topic Area Comments	**TOTAL**	Candice McGowan	Brian Jefferys	Ben Dickson	Andres Risvold	Christopher McGowan	Carl Baganza	Annabel Ridley	Anne Lavene
Wildlife / Biodiversity	**44**	1		1		1	1	1	1
Battery Safety	**36**				1		1	1	1
Landscape / Natural Beauty	**11**						1	1	
Flood Risk	**10**								
Existing site function as a carbon sink	**9**	1				1			
Recreation	**9**	1				1			
Scale	**8**								
Development on Salt Marsh / Valuable Marshland	**8**								
Site Location	**8**	1				1		1	
Visual Impact	**7**	1				1			
Suitability of Construction Traffic Route	**6**	1				1			
Construction Traffic Impacts	**6**	1				1			
MEASS	**6**							1	
Criticism of CHSPL JV Partners	**6**	1				1			
Alternatives - Domestic / Rooftop / Small Scale	**4**								
Lack of economic case	**4**	1				1			
Lack of info on Insurance	**4**	1				1			
Onsite cycling proposals	**4**		1						
ALC / Loss of agricultural land	**3**								
Tourism impacts	**3**			1					
Impacts on local community	**3**								
Decommissioning	**3**								
SE already has plenty of renewables / Lack of Demand	**3**			1					
Lack of consultation of KFRS	**2**	1				1			
Criticism of NSIP Process	**2**								
Lack of Community Benefit / Employment Opportunities	**2**								
Fully Supportive	**1**								
General Construction Impacts	**1**								
Work No 9 not covered in Outline LBMP	**1**								
Heritage	**1**								

		REP7-122	REP7-075	REP7-124	REP7-087	REP7-083	REP7-123	REP7-085	REP7-084
Topic Area Comments	**TOTAL**	Collene Rouse	Alison Keeler	Elaine Shoobridge	Estelle Jourd	David Burbridge	David Judson	Edward Kearton	Diane Langford
Wildlife / Biodiversity	**44**	1	1	1				1	1
Battery Safety	**36**		1	1	1		1		1
Landscape / Natural Beauty	**11**	1	1	1					
Flood Risk	**10**		1	1			1	1	
Existing site function as a carbon sink	**9**			1					1
Recreation	**9**		1					1	
Scale	**8**	1							
Development on Salt Marsh / Valuable Marshland	**8**								
Site Location	**8**								
Visual Impact	**7**							1	
Suitability of Construction Traffic Route	**6**								
Construction Traffic Impacts	**6**						1		
MEASS	**6**			1					
Criticism of CHSPL JV Partners	**6**								1
Alternatives - Domestic / Rooftop / Small Scale	**4**							1	
Lack of economic case	**4**						1		
Lack of info on Insurance	**4**								
Onsite cycling proposals	**4**								
ALC / Loss of agricultural land	**3**							1	
Tourism impacts	**3**								
Impacts on local community	**3**								
Decommissioning	**3**								
SE already has plenty of renewables / Lack of Demand	**3**								
Lack of consultation of KFRS	**2**								
Criticism of NSIP Process	**2**						1		
Lack of Community Benefit / Employment Opportunities	**2**								
Fully Supportive	**1**								
General Construction Impacts	**1**								1
Work No 9 not covered in Outline LBMP	**1**					1			
Heritage	**1**								

		REP7-125	REP7-103	REP7-091	REP7-094	REP7-092	REP7-104	REP7-105	REP7-106
Topic Area Comments	**TOTAL**	Helen Caddick	Harriet Simms	Francine Raymond	Graham Setterfield	Frankie Hewett	Jennifer Cutts	Jett Aislabie	John Gallen
Wildlife / Biodiversity	**44**	1	1			1	1	1	1
Battery Safety	**36**	1		1	1	1	1		1
Landscape / Natural Beauty	**11**	1							
Flood Risk	**10**				1		1		
Existing site function as a carbon sink	**9**								
Recreation	**9**								
Scale	**8**		1		1				
Development on Salt Marsh / Valuable Marshland	**8**						1	1	
Site Location	**8**				1				
Visual Impact	**7**		1						
Suitability of Construction Traffic Route	**6**						1		
Construction Traffic Impacts	**6**								
MEASS	**6**				1				
Criticism of CHSPL JV Partners	**6**		1			1			
Alternatives - Domestic / Rooftop / Small Scale	**4**								
Lack of economic case	**4**								
Lack of info on Insurance	**4**								
Onsite cycling proposals	**4**								
ALC / Loss of agricultural land	**3**								
Tourism impacts	**3**						1		
Impacts on local community	**3**					1			
Decommissioning	**3**		1						
SE already has plenty of renewables / Lack of Demand	**3**						1		
Lack of consultation of KFRS	**2**								
Criticism of NSIP Process	**2**								
Lack of Community Benefit / Employment Opportunities	**2**		1						
Fully Supportive	**1**								
General Construction Impacts	**1**								
Work No 9 not covered in Outline LBMP	**1**								
Heritage	**1**								

		REP7-132	REP7-131	REP7-129	REP7-126	REP7-127	REP7-128	REP7-130	REP7-133
Topic Area Comments	**TOTAL**	Liz Harold	Lauran Johnson	Kimmie McHarrie	John Brewer	Katarina Uzakova	Kim Ropek	Laura Daynes	Marilyn Phipps
Wildlife / Biodiversity	**44**	1	1	1	1			1	1
Battery Safety	**36**	1	1	1	1			1	1
Landscape / Natural Beauty	**11**				1		1		
Flood Risk	**10**							1	
Existing site function as a carbon sink	**9**				1			1	
Recreation	**9**							1	
Scale	**8**			1	1				
Development on Salt Marsh / Valuable Marshland	**8**			1					
Site Location	**8**						1	1	
Visual Impact	**7**		1					1	
Suitability of Construction Traffic Route	**6**		1					1	
Construction Traffic Impacts	**6**							1	
MEASS	**6**								1
Criticism of CHSPL JV Partners	**6**								
Alternatives - Domestic / Rooftop / Small Scale	**4**						1		
Lack of economic case	**4**								
Lack of info on Insurance	**4**							1	
Onsite cycling proposals	**4**					1			
ALC / Loss of agricultural land	**3**								
Tourism impacts	**3**								
Impacts on local community	**3**								
Decommissioning	**3**								
SE already has plenty of renewables / Lack of Demand	**3**								
Lack of consultation of KFRS	**2**								
Criticism of NSIP Process	**2**								
Lack of Community Benefit / Employment Opportunities	**2**								
Fully Supportive	**1**								
General Construction Impacts	**1**								
Work No 9 not covered in Outline LBMP	**1**								
Heritage	**1**								

		REP7-134	REP7-136	REP7-149	REP7-111	REP7-137	REP7-110	REP7-150	REP7-135
Topic Area Comments	**TOTAL**	Mary Stockton-Smith	Michael Philpott	Tracey Perret	Nigel Sherrat	Pamela Caney	Nicole Tibbels	Vivienne Jones	Mel Powis
Wildlife / Biodiversity	**44**	1			1		1	1	1
Battery Safety	**36**	1	1		1	1		1	1
Landscape / Natural Beauty	**11**			1			1		
Flood Risk	**10**		1						
Existing site function as a carbon sink	**9**								
Recreation	**9**								
Scale	**8**						1	1	
Development on Salt Marsh / Valuable Marshland	**8**							1	
Site Location	**8**						1		
Visual Impact	**7**			1					
Suitability of Construction Traffic Route	**6**								
Construction Traffic Impacts	**6**								
MEASS	**6**								
Criticism of CHSPL JV Partners	**6**								
Alternatives - Domestic / Rooftop / Small Scale	**4**								
Lack of economic case	**4**								
Lack of info on Insurance	**4**								
Onsite cycling proposals	**4**								
ALC / Loss of agricultural land	**3**								
Tourism impacts	**3**								
Impacts on local community	**3**								
Decommissioning	**3**								
SE already has plenty of renewables / Lack of Demand	**3**						1		
Lack of consultation of KFRS	**2**								
Criticism of NSIP Process	**2**								
Lack of Community Benefit / Employment Opportunities	**2**								
Fully Supportive	**1**								
General Construction Impacts	**1**								
Work No 9 not covered in Outline LBMP	**1**								
Heritage	**1**								

		REP7-145	REP7-143	REP7-141	REP7-116	REP7-112	REP7-118	REP7-117
Topic Area Comments	**TOTAL**	Shernaz Dinshaw	Sarah Holliday	Radoslaw Niemiec	Sara Thorling	Rebecca L Smart	Thomas Johnson	Stephen Ledger
Wildlife / Biodiversity	**44**	1	1			1	1	1
Battery Safety	**36**	1	1		1			
Landscape / Natural Beauty	**11**							
Flood Risk	**10**							
Existing site function as a carbon sink	**9**							
Recreation	**9**							
Scale	**8**							
Development on Salt Marsh / Valuable Marshland	**8**	1						
Site Location	**8**							
Visual Impact	**7**							
Suitability of Construction Traffic Route	**6**							
Construction Traffic Impacts	**6**							
MEASS	**6**		1					
Criticism of CHSPL JV Partners	**6**							
Alternatives - Domestic / Rooftop / Small Scale	**4**					1	1	
Lack of economic case	**4**							
Lack of info on Insurance	**4**							
Onsite cycling proposals	**4**			1				
ALC / Loss of agricultural land	**3**						1	1
Tourism impacts	**3**							
Impacts on local community	**3**							
Decommissioning	**3**							
SE already has plenty of renewables / Lack of Demand	**3**							
Lack of consultation of KFRS	**2**							
Criticism of NSIP Process	**2**							
Lack of Community Benefit / Employment Opportunities	**2**							
Fully Supportive	**1**							
General Construction Impacts	**1**							
Work No 9 not covered in Outline LBMP	**1**							
Heritage	**1**							

		REP7-138	REP7-146	REP7-144	REP7-113	REP7-147	REP7-139	REP7-114	REP7-148	REP7-101
Topic Area Comments	**TOTAL**	Posy Gentles	Simon Poole	Scott Bloomfield	Rod Lupton	Tim Philpott	Rachael Dickins	Rosa Bond	Tracie Peisley	Lut Stewart
Wildlife / Biodiversity	**44**	1		1	1	1	1		1	1
Battery Safety	**36**			1		1	1		1	
Landscape / Natural Beauty	**11**									
Flood Risk	**10**				1					
Existing site function as a carbon sink	**9**					1	1			
Recreation	**9**	1			1					
Scale	**8**						1			
Development on Salt Marsh / Valuable Marshland	**8**	1								1
Site Location	**8**									
Visual Impact	**7**									
Suitability of Construction Traffic Route	**6**									
Construction Traffic Impacts	**6**									
MEASS	**6**									
Criticism of CHSPL JV Partners	**6**									
Alternatives - Domestic / Rooftop / Small Scale	**4**									
Lack of economic case	**4**									
Lack of info on Insurance	**4**									
Onsite cycling proposals	**4**							1		
ALC / Loss of agricultural land	**3**									
Tourism impacts	**3**									
Impacts on local community	**3**									1
Decommissioning	**3**									
SE already has plenty of renewables / Lack of Demand	**3**									
Lack of consultation of KFRS	**2**									
Criticism of NSIP Process	**2**									
Lack of Community Benefit / Employment Opportunities	**2**									
Fully Supportive	**1**		1							
General Construction Impacts	**1**									
Work No 9 not covered in Outline LBMP	**1**									
Heritage	**1**									

		REP7-102	REP7-140	REP7-151	REP7-152	AS-052
Topic Area Comments	**TOTAL**	Alan Stewart	Roger Josty	Dr Tim Ingram	Alan B Smith	Easterly Cox
Wildlife / Biodiversity	**44**	1	1	1		1
Battery Safety	**36**	1			1	
Landscape / Natural Beauty	**11**		1			
Flood Risk	**10**			1		
Existing site function as a carbon sink	**9**		1			
Recreation	**9**	1	1			
Scale	**8**					
Development on Salt Marsh / Valuable Marshland	**8**	1				
Site Location	**8**				1	
Visual Impact	**7**					
Suitability of Construction Traffic Route	**6**		1			
Construction Traffic Impacts	**6**	1	1			
MEASS	**6**			1		
Criticism of CHSPL JV Partners	**6**				1	
Alternatives - Domestic / Rooftop / Small Scale	**4**					
Lack of economic case	**4**	1				
Lack of info on Insurance	**4**				1	
Onsite cycling proposals	**4**					
ALC / Loss of agricultural land	**3**					
Tourism impacts	**3**		1			
Impacts on local community	**3**	1				
Decommissioning	**3**		1		1	
SE already has plenty of renewables / Lack of Demand	**3**					
Lack of consultation of KFRS	**2**					
Criticism of NSIP Process	**2**		1			
Lack of Community Benefit / Employment Opportunities	**2**		1			
Fully Supportive	**1**					
General Construction Impacts	**1**					
Work No 9 not covered in Outline LBMP	**1**					
Heritage	**1**	1				

APPENDIX D - RESPONSE OF THE U.S. ENERGY STORAGE ASSOCIATION TO THE ACC DETERMINATION LETTER

ORIGINAL

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Energy Storage Association
www.energystorage.org

Arizona Corporation Commission
DOCKETED
AUG 28 2019

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AZ CORP COMMISSION
DOCKET CONTROL
2019 AUG 28 A 11: 50

August 28, 2019

Arizona Corporation Commission
1200 W Washington Street
Phoenix, AZ 85007

[redacted]

RE: Matter of the Commission's Inquiry of Arizona Public Service Battery Incident at the McMicken Energy Storage Facility Pursuant to Arizona Administrative Code R-14-2-101 (Docket No. E-01345A-19-0076)

Dear Chairman Burns and Commissioners:

The U.S. Energy Storage Association (ESA) appreciates the opportunity to address certain misunderstandings about energy storage in Commissioner Kennedy's letter filed August 2, 2019, in the above-referenced docket, as well as to provide additional information highlighting our industry's actions to ensure the continued safe and reliable deployment of energy storage across the country.

ESA is the national trade association dedicated to energy storage, working toward a more resilient, efficient, sustainable and affordable electricity grid – as is uniquely enabled by energy storage. With more than 180 members, ESA represents a diverse group of companies, including independent power producers, electric utilities, energy service companies, financiers, insurers, law firms, installers, manufacturers, component suppliers, and integrators involved in deploying energy storage systems around the globe. Further, our members work with all types of energy storage technologies and chemistries, including lithium-ion, advanced lead-acid, flow batteries, zinc-air, compressed air, and pumped hydro, among others.

Safety incidents related to grid-connected energy storage systems are rare in the United States; nonetheless, like all others forms of energy generation and electric infrastructure, they do require continuous efforts to manage risk effectively.

In the electric distribution system, utilities routinely and diligently make sure delivering electricity is safe by mitigating risks inherent in generating and transmitting high-voltage electricity over long distances across vastly different terrain and weather conditions. Large-scale batteries are one of the many resources of domestic energy and infrastructure that utilities regularly monitor to identify potential risks, as per the National Electrical Safety Code and other applicable codes and standards. All technologies currently operating on the grid must meet these requirements. In addition, a number of technical certification standards, developed by organizations such as Underwriters Laboratories (UL) and CSA Group (formerly Canadian Standards Association), govern the U.S. energy storage industry and manage risk in the design of energy storage systems. ESA and many of our members are also engaged

actively with the National Fire Prevention Association (NFPA) and the International Code Council (which authors the International Fire Code, or IFC) regarding standards that manage risk in the installation and operations of energy storage systems and recommended procedures for first-responders when encountering a battery fire event.

Advanced energy storage systems, including those that use lithium-ion chemistries, have been and can continue to be deployed safely and in ways that minimize the risk of fire and human injury. In May 2018, DNV-GL issued a public report, *Quantitative Risk Analysis for Battery Energy Storage Sites*,[1] that found that lithium-ion-based energy storage systems can be categorized as low-risk as long as sites include common safeguards, such as UL 1973 design criteria, active cooling and thermal management, active fire suppression, remote monitoring, and other features described in the report.

Leading system operators and utilities around the country today are repeatedly choosing energy storage in competitive tenders, demonstrating its crucial role in modernizing our grid to make it more resilient, reliable, efficient, sustainable and affordable.

According to Wood Mackenzie Power & Renewables, at the end of 2018, 1 gigawatt of battery-based energy storage projects were operational in the United States across more than 20 states. Nearly 95% of these systems use lithium-ion battery technology, the same technology preferred by the world's leading automotive OEMs and safely deployed in vehicles for more than a decade. Grid battery energy storage systems are professionally designed and installed and are built to stringent safety standards with state-of-the-art monitoring systems. Some of the country's leading utilities -- including all three of Arizona's largest utilities, Hawaiian Electric Company, Xcel Colorado, Duke Energy, NV Energy and California's investor-owned-utilities -- have chosen battery energy storage systems as a cost-effective tool for meeting their states' environmental and energy policy goals. Other private developers and independent power producers have also installed and safely operated these systems on the bulk transmission grid over many years.

Large scale, lithium-ion based energy storage systems have been in reliable operation for more than ten years in the US and globally; for example:

- In 2008, AES installed two, 1MW lithium-ion based energy storage systems at an Indianapolis Power & Light (IPL) substation.
- AES installed a 32 MW lithium-ion battery-based energy storage system that has been operating at its Laurel Mountain wind farm in West Virginia since 2011.
- Invenergy's 31.5 MW Grand Ridge Energy Storage lithium-ion energy storage system, along with the RES Group's 20 MW Jake Energy Storage and 20 MW Elwood Energy Storage plants have all been operating in Illinois since 2015.

[1] Report is available at https://www.dnvgl.com/publications/quantitative-risk-analysis-for-battery-energy-storage-sites-154811

- Invenergy's 31.5 MW Beech Ridge Energy Storage lithium-ion energy storage system has been operating in West Virginia since 2015.
- AES Energy Storage (now part of Fluence) built a 30 MW energy storage project using lithium-ion batteries at a San Diego Gas & Electric substation in Escondido, California. It has been in operation since 2017.
- GE Power Services commissioned a 10 MW lithium-ion battery integrated with a 50 MW gas-fired turbine in Southern California Edison territory. It has been operational since 2017.
- Tesla's 100 MW Hornsdale lithium-ion battery-based energy storage system has been operating in South Australia since late 2017.

We recommend the Commission and Arizona utilities ensure adoption of the appropriate standards applicable to new storage system installations and implement emergency response plans to minimize the low risk of safety incidents at storage facilities.

Energy storage *system*-level safety risks must be addressed, planned for, and mitigated. Grid energy storage projects are comprised of a system of technologies, not simply the storage medium. All types of battery chemistries and other storage technologies must be integrated with power electronics, system controls, environmental controls, safety equipment, transformers, and other electrical components to perform grid services as intelligent and safe systems. ESA welcomes the opportunity to work with the Commission to ensure that all future energy storage systems meet the applicable codes and standards and that appropriate response plans and training are in place aimed at addressing safety for all battery chemistries and storage technologies.

ESA recommends the Commission encourage Arizona's utilities and storage project developers to work with relevant state and local authorities, first responders, and code officials to ensure the orientation and information necessary to:

- Develop and implement appropriate emergency response plans to minimize risk to installers, operators, first responders and others;
- Incorporate the latest industry standards, such as NFPA 855 and UL 9540, into Arizona's rules governing the installation and operation of energy storage systems of all chemistries; and
- Ensure that all future energy storage systems deployed in the state meet these requirements.

ESA agrees safety is a priority and is working with our industry and stakeholders to ensure safe operation of lithium-ion energy storage systems.

ESA is committed to working together with industry members and stakeholders to ensure that all types of energy storage systems, including those based on lithium-ion chemistries, incorporate robust safeguards that ensure safety during all phases of the life cycle, including planning, construction,

operation, maintenance, and decommissioning. The first and foremost concern should be for the health and safety of first responders, as well as the general public. ESA and companies in the industry, including Arizona Public Service, are presently developing industry best practices on safety through our Corporate Responsibility Initiative, which was launched in early 2019. Through this effort, we are creating a template Emergency Response Plan that addresses a range of hazards -- extreme weather, fires, seismic events, and active shooters -- to further protect the safety of all people in and around storage systems – our employees, customers, first responders and communities.

We look forward to working with the Commission to ensure that the safety standards governing the deployment and operation of energy storage technologies in the State of Arizona reflect national standards as well as the industry's best practices. Please do not hesitate to contact us if you would like additional information about ESA.

Respectfully,

Kelly Speakes-Backman
CEO
U.S. Energy Storage Association