



Meridian Solar Farm

EN010169

Volume 6

Environmental Statement

6.3 ES Appendix 11-3: Flood
Risk Assessment - Annex A

APFP Regulation 5(2)(a)

Infrastructure Planning (Applications:
Prescribed Forms and Procedure)
Regulations 2009

March 2026

Annex A - Correspondence with the Environment Agency

Title:	Meridian Solar Environment Agency Flood Risk Update Meeting		
Date:	28 July 2025	Time: 14:30	Location: Teams
Attendees:	[REDACTED] Development Manager, Downing Renewable Developments	[REDACTED] Planning Specialist, Environment Agency	
	[REDACTED] EIA Coordinator,	[REDACTED] Planning Advisor, Environment Agency	
	[REDACTED] Flood Risk r, AECOM	[REDACTED] Flood Risk Modelling Specialist, Environment Agency	
	[REDACTED] Flood Risk AECOM	[REDACTED] Flood Risk Specialist, Environment Agency	
	[REDACTED] Principal Consultant, ons		

No.	Key Discussion Points:
1	Project Update <ul style="list-style-type: none"> - Statutory consultation ran from 24 April to 8 June 2025. - 313 responses received; consultation events well attended.
2	Statutory Consultation Feedback <ul style="list-style-type: none"> - SB summarised draft responses to statutory consultation comments received from the Environment Agency on flood risk. Action: Environment Agency to review presentation slides for the draft responses and provide any further feedback, if required.
3	FRA and Hydraulic Modelling Update <ul style="list-style-type: none"> - SB summarised climate change allowances used for flood risk modelling (see slide 9 of the previously circulated presentation slides). Environment Agency commented that the climate change allowances were agreed. - SB provided an update on modelling undertaken to date and currently in progress. - SB provided a summary of the modelling results from the River Welland breach modelling. Environment Agency noted that the modelled breach locations were considered acceptable, however, queried the duration of the breach modelled. 30 hours is in accordance with current guidance, however, in practice it may take longer to close a breach and suggested testing a 72-hour scenario. It was discussed that in a 72-hour scenario, there would likely be no further impact on critical infrastructure (such as the substations and BESS compounds), as the design for them is already specifying flood protection for the breach event and any change in flood depth is likely to remain within the freeboard allowance. - SB provided a summary of the modelling results from the Postland pump failure scenario and set out mitigation parameters for land parcel A (the only parcel where flood depths could impact on the operation of panels in the breach scenario). - Environment Agency advised that the application should consider the resilience of solar panel support frames to flood events. A maintenance check should be performed following a flood event. Action: AECOM to incorporate measure in management plans. - Environment Agency advised that it is their preference that, where possible, mitigation measures should be implemented to minimise the impact of flooding on

No.	Key Discussion Points:
	<p>panels. Noting that it is less of a concern, if the panels are only impacted in the breach scenario and not in the defended flood events.</p> <ul style="list-style-type: none"> - SB summarised the calculations for volumetric loss of floodplain due to solar panel legs in the breach scenario. Environment Agency noted that the calculations should also account for the submerged panels themselves, in addition to the panel support legs. Calculations should also be repeated for the Postland and South Holland Main Drain flood events. Action: AECOM to update calculations - Environment Agency queried whether flood velocities could be considered as part of the assessment. BP noted that the model does not provide velocities, as the pumped catchments are represented as 1D reservoir units, which do not model velocity.

Title:	Meridian Solar Environment Agency Flood Risk Update Meeting		
Date:	20 January 2026	Time: 15:00	Location: Teams
Attendees:	[REDACTED] Development Manager, Downing Renewable Developments	[REDACTED] Planning Specialist, Agency	
	[REDACTED] EIA Coordinator,	[REDACTED] Flood Risk Specialist, Environment Agency	
	[REDACTED] Flood Risk, AECOM	[REDACTED] Flood Risk Modelling Specialist, Environment Agency	
	[REDACTED] Flood Lead,	[REDACTED] Flood Risk Specialist, Environment Agency	
	[REDACTED] EIA Coordinator,	[REDACTED] Planning Lead, Quod	

No.	Key Discussion Points:
1	<p>Project Update</p> <ul style="list-style-type: none"> - Submission of the DCO application has been delayed until March 2026 to take into account further information shared by NGET as part of its Grimsby to Walpole targeted consultation at the end of November. Meridian Solar is providing a connection to the planned Weston Marsh B substation. Meridian Solar is running a small, targeted consultation to reflect the new siting information regarding the Weston Marsh substation (to be delivered as part of Grimsby to Walpole).
2	<p>Presentation</p> <ul style="list-style-type: none"> - FRA and Hydraulic Modelling Review and Mitigation Parameters are unchanged since our last meeting with the Environment Agency. <p><u>Solar Panel Mitigation</u></p> <ul style="list-style-type: none"> - Flood plain volume loss in land parcel A from submerged panel legs is 1,927m³, an average increased flood depth of approximately 1mm across 197ha in land parcel A. - Flood plain volume loss in land parcel B from submerged panel legs is 1,641m³, an average increased flood depth of approximately 0.5mm across 336ha in land parcel B. - Flood plain volume loss in land parcel C from submerged panel legs is 295m³, an average increased flood depth of less than 0.1mm across 211ha in land parcel C. - One of the outcomes from the last meeting was whilst the impact from panel legs had been considered on flood plain volume loss, the EA asked for any panels which would be submerged to be considered as well in the River Welland breach scenario. There are some areas in Parcel A where panels would be submerged in the event of a breach, 2.7ha in total (0.3% of total panelled area). No other panels elsewhere would be submerged. The increase in flood depth caused by the submerged panels (including mounting infrastructure) in this worst case, River Welland breach event scenario is approximately 9mm in land parcel A. It is considered in the FRA that the overall floodplain depth increase across Land Parcel A (0.01m) results in a non-material increase to flood risk.

No.	Key Discussion Points:
	<ul style="list-style-type: none"> - <u>EA comment:</u> The project must ensure that proposed critical infrastructure is resilient to this 9mm increase. Meridian Solar confirm that it is, where required, critical infrastructure is protected by either bunding, flood wall or raising on plinths and that there is a 300mm freeboard to cover any increase in flood depth that is shown by the modelling. The EA note they have no significant concerns with the 9mm increase in flood depth, as this is for the breach scenario, and request that the FRA is clear that this is a breach scenario, residual risk, rather than it being 9mm increase in depth in a defended scenario. Meridian Solar confirm that this will be set out clearly in the FRA. <p><i>Depth Change Volume Assessment – River Welland Breach Event</i></p> <ul style="list-style-type: none"> - There are two areas outside the Order Limits that see increased flood depths, south east of Parcel A in agricultural fields in the 1 in 1000 year +28% CC event breach scenario. The flood depth increase is between 50mm and 200mm. The discussion in the FRA is that the overall increase in volume of 322 m³ on agricultural fields does not increase the risk to high risk receptors. In the non-breach scenario, there is no increase. - <u>EA Comment:</u> Queries if this considers the baseline, and then the breach with scheme and 1000-year climate change event. Meridian Solar confirm that it does. The EA request if they can come back on whether this is acceptable or if the EA have any concerns. However, as this is the breach scenario and not the design scenario, it does not seem too concerning. Meridian Solar project team confirm this would be appreciated and that we can provide some figures and reports to assist. Action: Meridian Solar to provide figures and reporting to help the EA confirm if the above is acceptable. <p><i>Postland Catchment Summary of Modelling Results</i></p> <ul style="list-style-type: none"> - The 400kV substation and BESS Compound and 132kV substation in Parcel C have been bunded and flood protection specified for solar stations, where required (in the form of plinths, flood wall or a bund). There is no infrastructure within FZ3a and 3b of the Postland Catchment, except for solar panels. - 1 in 30, 1 in 100yr+28% CC, 1 in 1000yr+28% CC modelled. Hydraulic modelling compared depth change analysis between pump failure and post-development scenario. Some small increases in flood levels in isolated areas up to 560mm within Order limits were identified. Some small ponds show increase outside Order limits but no increase to overland flooding. - <u>EA Comment:</u> Query what is included within the post-Scheme scenario. Meridian Solar confirm that it includes the solar panel supports, and bunds for any critical infrastructure. EA note that this seems reasonable for the event magnitude which is being assessed. EA add that in terms of the depth difference mapping, latest guidance has started to move away from a fixed threshold of no impact below 1cm. - <u>EA Comment:</u> PINS have often raised during examination about development in FZ3b, so it might be worth directly responding to this in the FRA. Policy states that if you are building in FZ3b, then flood compensation must be provided. However, if the application demonstrates an immaterial increase, then it is up to the applicant team to consider whether flood compensation should be provided. Meridian Solar confirm that the FRA does cover this, specifically for the Gotts catchment and that the FRA assesses it in line with the NPS and NPPF in that context.

No.	Key Discussion Points:
	<p><i>South Holland Main Drain Summary of Modelling Results</i></p> <ul style="list-style-type: none"> - For the 400kV substation and BESS location in the north of land parcel B, the SHMD does not actually breach the banks in 1 in 30 year or 1 in 100 year event. It is only in 1 in 1000 year event and the in 1 in 1000 year River Welland Breach event that this area would be flooded. Mitigation for the 400kV substation and BESS Compound required for the SHMD 1 in 1000 year event scenario is superseded by what is required to mitigate for the River Welland Breach Event. - With regards to the Gotts catchment (northern part of land parcel D), there are 6 solar stations located within FZ3b in Gotts. They cannot be moved fully outside of this extent because they need to be in close proximity to the solar panels in this area. This causes a modelled flood depth increase of 7mm in the 1% AEP + 13% cc Pump On Scenario, in just the Gotts catchment. The remainder of the SHMD and tributaries catchments do not flood up to the 1% AEP plus climate change event. The solar will be raised on plinths to provide 300mm freeboard from the design flood event to mitigate any impact to them, and ensuring they remain operational during a flood event. This is considered to be a non-material impact to the functional floodplain within the Gotts Catchment, with no further mitigation required. - <u>EA Comment:</u> Request whether we can provide 600mm freeboard rather than 300mm, to avoid any objects during a flood event getting caught in the void underneath and potentially increasing flood depths and to de-risk potentially higher flood depths. The EA mentioned guidance to this effect, although the guidance does allow for 300mm freeboard when there is confidence in modelled flood levels. Meridian Solar asked if this should be for all critical infrastructure, or just the affected solar stations in the Gotts catchment. The EA clarify this to be considered in all areas where critical infrastructure is located within the FZ3b extent, whether the mitigation provided is bunding, flood wall or raised on plinths. However, the EA appreciate that there may be other environmental or technical considerations why this level of freeboard may not be able to be accommodated. Meridian Solar confirmed that in all other areas beside the Gotts catchment in Parcel D, critical infrastructure is located outside FZ3b. Action: Meridian Solar to consider 600mm freeboard for solar stations located in the Gotts Catchment, instead of 300mm. - <u>EA Comment:</u> Query whether the model is 1d or 2d in this location, Meridian Solar confirms it is 1d and, therefore, does not calculate flood velocity. The EA enquired what the surface water flooding shows in this location. Meridian Solar confirms that there are no overland flow paths in this catchment because it is so flat, and therefore surface water flooding just occurs in small pockets. Meridian Solar confirms the FRA will explain this and also confirms that the FRA will discuss velocities on a qualitative basis. - The 132kV substation in Parcel D in the Fleet Fen Catchment shows some very slight encroachment of flood waters into the substation area in the 1 in 1000 year plus CC pump failure scenario. The FRA will not prescribe bunding, rather the FRA will commit that infrastructure will avoid these areas of slight encroachment. The EA confirm that this sounds reasonable. Meridian Solar confirms that the maximum depth is 0.5m in this scenario, and there is no infrastructure other than panels in that area. The increase in flood depth in Fleet Fen resulting from the Scheme is 0.2mm.

No.	Key Discussion Points:
	<p><i>Grid Connection Route</i></p> <ul style="list-style-type: none"> - No flood compensation is required for pylon legs; each pylon occupies, in a worst-case scenario of a 2.0m flood depth, approximately 3.1m³. Spread out across 1 ha this equates to 0.31mm depth. Support bases will be set at ground level. With pylons set approximately 350m apart, it is considered compensation is not required. - There are two cable sealing end compounds (CSEC), of which the southern one abuts the edge of the defended Flood Zone 3 extent. Taking a precautionary approach, the southern CSEC will be bunded with a 1.3m high bund and 300mm freeboard. <p><i>Outline Drainage Strategy</i></p> <ul style="list-style-type: none"> - <u>EA Comment:</u> – EA query whether pollutant control elements would be part of the drainage strategy. Meridian Solar confirm that the project applies the simple index approach from the SUDS manual for treatment. For the BESS compound, a controlled penstock arrangement will catch firewater, and it will be a sealed system in terms of containing any firewater. - <u>EA Comment:</u> Query about non-fire pollution events, from events like oil spills. Meridian Solar confirms that the ES Hydrology and Flood Risk chapter considers mitigation requirements for all potential construction and operational pollution events. <p><i>Presentation Concludes</i></p> <p>Meridian request to get in touch with any further queries and to please CC in all Meridian project members on the call.</p>

Fro

Sent

Hi [REDACTED] Apologies for the delay in replying to your queries. Please find below a response regarding where the 0.1% + climate change scenario came from?. If you have further queries regarding this, please can direct them to [REDACTED] while I am

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Hi [REDACTED]

Apologies for the delay in replying to your queries.

Please find below a response regarding where the 0.1% + climate change scenario came from?. If you have further queries regarding this, please can direct them to [REDACTED] while I am on leave next week.

We will forward the void space guidance asap.

We have checked with the local Environment Agency Partnership and Strategic Overview (PSO) Team for Lincolnshire who cover this area and they state that “Essential infrastructure” for South Holland does require the use of the 0.1% scenario (breach analysis) to inform the development. Specifically;

Policy 4 of the South East Lincolnshire Local Plan sets out the flood risk requirements which states that:

Development proposed within an area at risk of flooding (Flood Zones 2 and 3 of the Environment Agency's flood map **or at risk during a breach or overtopping scenario as shown on the flood hazard and depths maps** in the Strategic Flood Risk Assessment) will be permitted, where:

2. It can be demonstrated that essential infrastructure in FZ3a & FZ3b, highly vulnerable development in FZ2 and more vulnerable development in FZ3 provide wider sustainability benefits to the community that outweigh flood risk.
3. The application is supported with a site-specific flood risk assessment, covering risk from all sources of flooding including the impacts of climate change and which:
 - a. demonstrate that the vulnerability of the proposed use is compatible with the flood zone;
 - b. identify the relevant predicted flood risk (breach/overtopping) level, and mitigation measures that demonstrate how the development will be made safe and that occupants will be protected from flooding from any source;
 - c. propose appropriate flood resistance and resilience measures (following the guidance outlined in the Strategic Flood Risk Assessment), maximising the use of passive resistance measures (measures that do not require human intervention to be deployed), to ensure the development maintains an appropriate level of safety for its lifetime;

The South East Lincolnshire Standing Advice Matrix (available here: [ELDC: Welcome to East Lindsey District Council's Website](#)) should be read in conjunction with Policy 4 which sets out the required mitigation which is based on the hazard mapping. The South East Lincolnshire Standing Advice Matrix specifically states that all applications for Essential Infrastructure must demonstrate that the proposal will remain operational during a 0.1% event (2115 scenario) and that appropriate mitigation measures/flood resilient construction techniques have been incorporated into the development.

We note that the language used within the matrix refers to scenarios and outputs from the Strategic Flood Risk Assessment and we recognise that you are undertaking your own site-specific breach modelling of the Cowbit Washlands. In this case the breach scenario should be reflective of the 0.1% (1 in 1000) annual exceedance probability (AEP) event with climate change applied over the lifetime of the development for the **higher central** scenario (or the closest suitable proxy). We recognise that it may be impractical to raise all solar panels to be above this water level particularly in the context of other environmental constraints. The key consideration here is that the solar panels would be resilient to flooding in this scenario and that any essential electrical

equipment and infrastructure is safe during this event, for example the Battery Energy Storage System (BESS) and any associated substation infrastructure.

Regards,

[Redacted]

[Redacted]

Specialist, National Infrastructure Team

Environment Agency

[Redacted]

Please accept my thanks for your email in advance, I have made a commitment to stop sending e-mails that just say thank you. This will help me to reduce my carbon footprint <https://carbonliteracy.com/the-carbon-cost-of-an-email/>

Fro
Sen

[Redacted]

[Redacted]

Good Afternoon [Redacted],

Hope you are keeping well. I was just getting in touch to request regarding when we can expect to receive the void best practice information, along with the document which

includes the wording regarding where the 0.1% + climate change scenario came from?
(please see meeting notes for more context)

Kind Regards,

█

From: █

Sent: 03 June 2025 14:04

█

Good Afternoon █

Thank you for getting back in touch. Happy with the amendments, we have attached an updated version of the meeting notes reflecting the changes for your records.

We don't have any further questions at present but will let you know if we do, we look forward to receiving the void best practice once available.

King regards,

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Fro █

Sen █

█

Good morning [REDACTED], Apologies for the delay responding to you. We have reviewed your meeting minutes and suggest the following changes (in red) be made to the second bullet point in the main conclusions: “It is accepted by both parties

Good morning [REDACTED],

Apologies for the delay responding to you.

We have reviewed your meeting minutes and suggest the following changes (in red) be made to the second bullet point in the main conclusions:

“It is accepted by both parties that whilst critical infrastructure (BESS compounds, substations, inverters etc) will be required to be mitigated against the 1% AEP year plus climate change scenario, and tested against the 0.1% AEP year plus climate change breach scenario, that the solar panels in principle could be flooded during this scenario where unavoidable (subject to agreement against number of panels inundated, depth of flooding, evidence no increases in flooding will be caused due to said panels and that the panels could remain operational). Agreement on other infrastructure such as substation, BESS, and solar stations to be discussed once the modelling output is available. The FRA will need to demonstrate that a sequential approach has been followed in determining the locations of critical infrastructure and the solar panels.”

The specific standing advice from Lincolnshire Area is as follows:

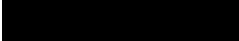
“The application should be supported by a flood risk assessment which demonstrates that the development will remain operational during a 0.1% event, allowing for climate change, including breach if relevant. Critical equipment should be above the estimated flood level for this event.” The key thing here is sensitive equipment such as the BESS and substations which should be above the estimated flood level for this event. Climate change can be taken as the higher central allowance for the 2080s epoch.


We are collating information regarding void best practice. As soon as we have this ready, we will provide this to you.

If you have any further questions, please let us know.

Many thanks,

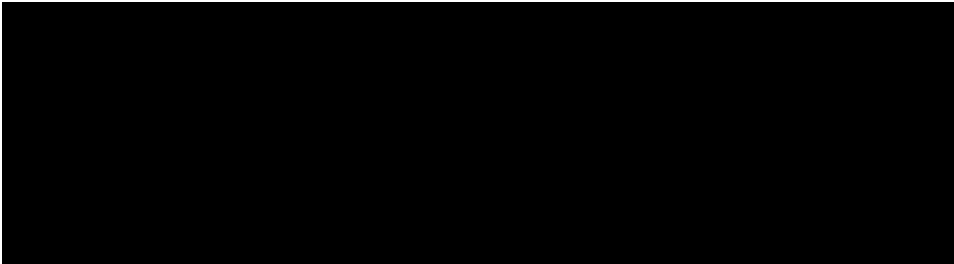


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Planning Advisor, National Infrastructure Team

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From 1 April 2024 the Environment Agency will be implementing new legislative powers to recover its costs for all stages of the Nationally Significant Infrastructure Project (NSIP) consenting regime. Please contact us for details for what this means for your existing or proposed NSIP.

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Fro
Sent

Good morning

Thank you for your consulting us on the River Welland Hydraulic modelling methodology report for Meridian Solar Farm, dated June 2025 (attached for reference).

We generally agree with the approach outlined within the method statement. However, we wish to raise two key points with regards to the application of fluvial climate change allowances and breach closure (highlighted in yellow below). A comment on minor reporting errors is also noted (highlighted in green below).

Software version

No comments. The use of Tuflow version 2025 is considered reasonable. Using a HPC solution scheme is reasonable.

Model extent

No comments. The method statement notes that this may be adjusted following initial breach runs to avoid “glass walling”, this is reasonable.

Grid size

The proposal to use a 4-metre grid resolution is reasonable, particularly given the largely rural nature of the model domain.

Lidar data

The proposal to use 1 metre resolution Lidar data flown in 2022 is reasonable. Please note, 0.25 metre horizontal resolution Lidar data is also available covering the River Welland

embankments and washlands. This may be useful in terms of defining embankment crest levels within the hydraulic model.

DTM modification

The proposal to use a “stubby buildings” approach for building representation within the 2d domain of the model is considered reasonable.

Boundary conditions

The proposal to use the stage-time series outputs from the River Welland 2016 MIKE hydraulic model to inform the boundary conditions to the 2d Tuflow breach model is reasonable.

Fluvial climate change

Whilst the development falls within the River Nene management catchment the River Welland which is the source of residual flood risk to the development falls within the Welland Management catchment. The 2080s higher central uplift for the Welland Management catchment is +28% rather than +13%. It may be that water levels are relatively insensitive to changes in flow as illustrated in table 2 on page 11 of the method statement but this should be checked and the correct climate change allowance acknowledged in the final reporting.

Tidal climate change

The sea level rise figures presented in table 3 and table 4 on page 12 of the method statement are correct and based on the latest guidance. There are some minor reporting errors in table 3 and 4 on page 12 of the method statement although these will not affect the overall calculations. For example, table 3 and table 4 suggest cumulative sea level rise to 2173 rather than 2073. The title of table 4 also refers to the Higher Central allowances when in fact the sea level rise in this table is for the Upper scenario.

Breach model set up

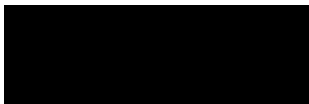
The use of the Environment Agency breach of defences guidance is reasonable in terms of defining breach model parameters. The selected breach locations appear reasonable with respect to the development. Running the four breaches and then merging the outputs together to create a composite breach output is considered reasonable and conservative. The proposal to use breach widths of 50 metres is reasonable and aligns with Environment Agency guidance for earth banks on estuarine/tidal watercourses. The breach trigger level of half the height of the defence and formation duration of 0.1 hours is considered reasonable, particularly noting the defended water levels on the “wet” side of the flood defence embankments. Table 6 of the

breach methodology report defines the breach toe level, defence crest level, breach trigger level, and breach opening duration. We have reviewed the defence toe and crest levels and trigger levels presented within table 6 against the latest 0.25 metre horizontal resolution Lidar data dated 2023. The defence toe and crest elevations and trigger levels presented in table 6 on page 15 of the modelling methodology report are considered reasonable.


The Environment Agency guidance recommends a time to breach closure of 30 hours for earth banks in rural environments. The reality is in such a location the closure time may be longer than 30 hours. Based on the stage time series data presented in figure 7 it is noted that water levels within the Welland are likely to be elevated over several days. Considering this it would be sensible to test a longer breach duration as a sensitivity test, perhaps 72 hours for one breach location to test the impact on flood risk.

Please let us know if you have any queries.

Kind regards,

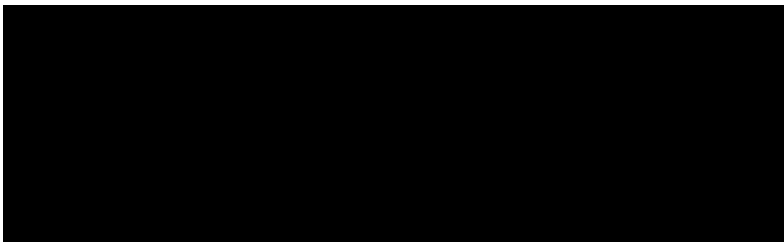


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