

**BICKER FEN SOLAR FARM
BICKER, LINCOLNSHIRE**

FLOOD RISK ASSESSMENT

Final Report v1.0
May 2022

Report Title	Bicker Fen Solar Farm, Bicker, Lincolnshire Flood Risk Assessment Final Report v1.0
Client	Axis PED
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1 INTRODUCTION

1.1 Purpose of Report

Weetwood Services Ltd ('Weetwood') has been instructed by Axis PED to prepare a Flood Risk Assessment (FRA) report to accompany a planning application for the proposed development of Bicker Fen Solar Farm, Lincolnshire.

The assessment has been undertaken in accordance with the requirements of the revised National Planning Policy Framework (NPPF) updated on 27 July 2021 and the Planning Practice Guidance (PPG) updated on 24 June 2021.

1.2 Structure of the Report

The report is structured as follows:

- Section 1** Introduction and report structure
- Section 2** Background information relating to the development site, the development proposals, ground conditions, existing site access arrangements and the flood zone designation
- Section 3** National and local flood risk and drainage planning policy
- Section 4** Potential sources of flooding to the development site
- Section 5** Flood risk mitigation measures based on the findings of the assessment
- Section 6** Presents effect of the proposed development on surface water runoff
- Section 7** Presents a summary of key findings and the recommendations

1.3 Relevant Documents

The assessment has been informed by the following documents:

- Strategic Flood Risk Assessment (SFRA), South East Lincolnshire Council, March 2017
- Preliminary Flood Risk Assessment (PFRA), Lincolnshire County Council, June 2011

2 SITE DETAILS AND PROPOSED DEVELOPMENT

2.1 Site Location

The site is approximately 106.3 hectare (ha) in extent and is located to the west of Bicker, near Boston, Lincolnshire. The centre of the site is at Ordnance Survey National Grid Reference TF 200 376, as shown in **Figure 1**.

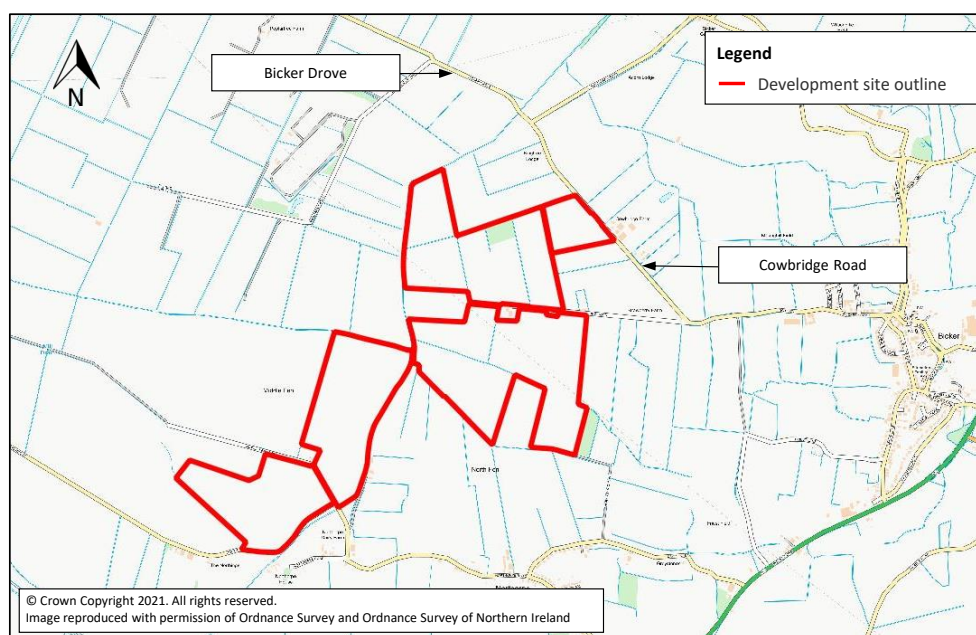


Figure 1: Site Location

2.2 Existing and Proposed Development

The site currently comprises of agricultural land.

The proposals are for the development of a solar farm and associated infrastructure accessed via Cowbridge Road to the east of the site (**Appendix A**).

The proposed infrastructure comprises: an access track off Cowbridge Road in the north-east corner of the site; a co-located switchgears building, control building and storage building adjacent to the access off Cowbridge Road; a battery storage container compound located in the northern part of the site; and circa 22 No. inverter/transformer stations located across the site.

The access track will cross drainage ditches (see **Section 2.3** below) in approximately 9 locations.

The PPG does not specifically classify the flood risk vulnerability of solar farms. However, solar farms are accepted to be Less Vulnerable to flood risk, in accordance with Table 2 of the PPG.

2.3 Waterbodies in the Vicinity of the Site

The South Forty Foot Drain is located approximately 1.2 km west of the site and flows in a southerly direction **Figure 2**.

Hammond Beck bisects the eastern and western parts of the site. Hammond Beck is pumped into the South Forty Foot Drain at three pumping stations:

- Donnington North Ing pumping station located approximately 2.5 km upstream of the site
- Bicker Fen pumping station located 2.5 km downstream of the site
- Swineshead pumping station located 6.1 km downstream of the site

There is a network of agricultural drains located within and in the vicinity of the site, which drain to the South Forth Foot Drain.

Larger rivers and streams are usually designated as a 'main river'. Other watercourses are called 'ordinary watercourses'. The Environment Agency carries out maintenance, improvement and construction work on main rivers to manage flood risk. Lead local flood authorities, district councils and internal drainage boards carry out flood risk management work on ordinary watercourses.

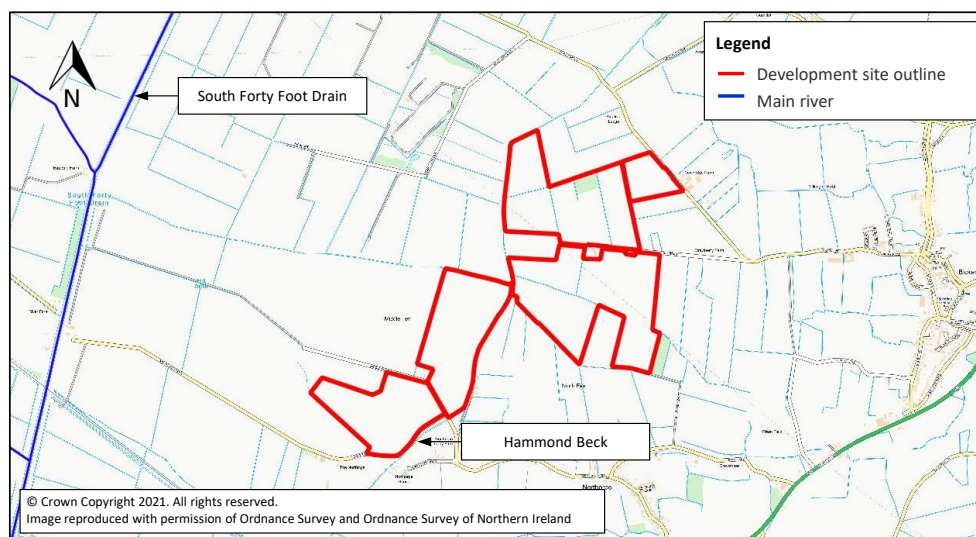


Figure 2: Location and Designation of Waterbodies

Source: gov.uk website; Accessed: May 2022

2.4 Ground Conditions

According to the Soilscape soils dataset produced by the Cranfield Soil and AgriFood Institute¹, soil conditions at the site and within the surrounding area are loamy and clayey soils of coastal flats with naturally high groundwater.

British Geological Survey mapping of surface geology² indicates the underlying bedrock formation comprises mudstone (Oxford Clay formation), overlain by clay and silt (Tidal Flat deposits) superficial deposit.

According to the MAGIC website³ the Tidal Flat superficial deposits and Oxford Clay bedrock is classified as an Unproductive aquifer. An Unproductive aquifer are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The site is not shown to be located within a designated groundwater source protection zone.

2.5 Site Levels

LiDAR data has been used to develop a digital terrain model of the site and surrounding area as illustrated in **Figure 3**. This indicates that ground levels across the site are generally in the range 1.5 to 2.5 m AOD. Ground levels along Cowbridge Road are between 2.2 to 3.2 m AOD.

¹ www.landis.org.uk/soilscape/

² <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

³ <https://magic.defra.gov.uk/MagicMap.aspx>

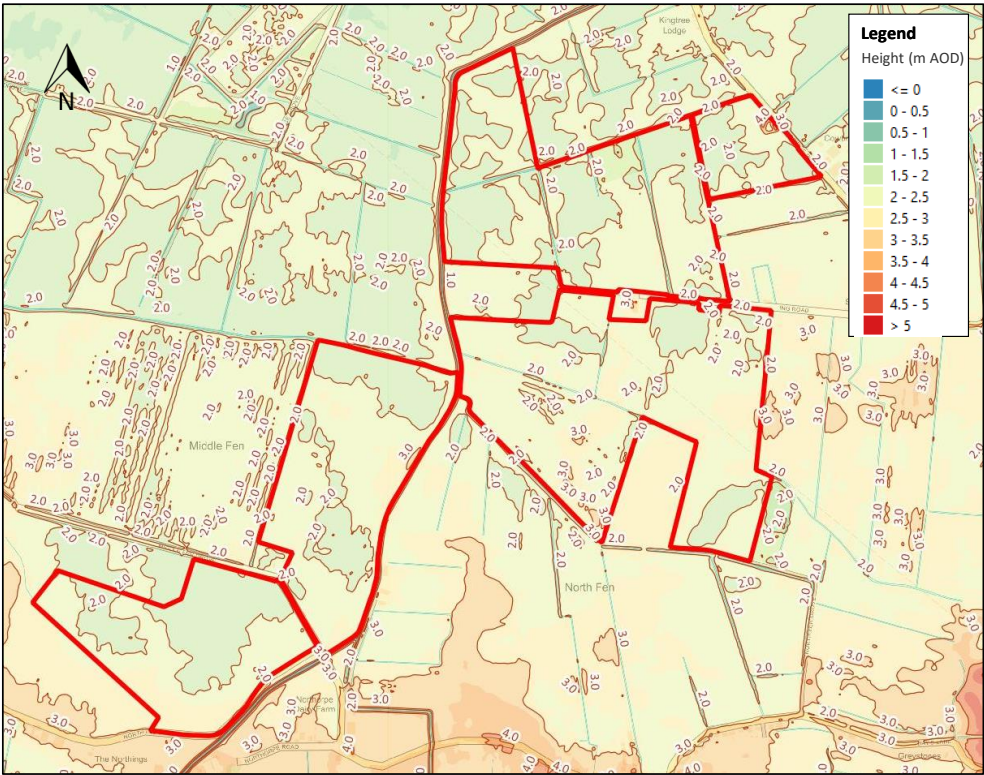


Figure 3: Digital Terrain Model from LiDAR Data

3 PLANNING POLICY AND GUIDANCE

3.1 National Planning Policy and Guidance

The thrust of national planning policy, as articulated in the NPPF is that inappropriate development in areas at risk of flooding should be avoided where possible, as summarised below:

- Inappropriate development in areas at risk of flooding should be avoided and that development should be directed away from areas at highest risk (whether existing or future), but where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere (NPPF para. 159).
- The policy of seeking to steer development to areas with the lowest risk of flooding, from any source, is implemented through the application of the flood risk sequential test. Development should not be allocated or permitted if there are reasonably available sites, appropriate for the proposed development in areas with a lower risk of flooding. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding (NPPF para. 162).
- If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives) the exception test may have to be applied. The need for the test will depend on the potential vulnerability of the site and of the vulnerability of the development proposed (as set out in Annex 3 of NPPF; also PPG Table 2 and Table 3) (NPPF para. 163). For example, the exception test need not be applied for less vulnerable development in any flood zone, or for more vulnerable development in flood zones 1 or 2.
- Where the exception test must be applied, application of the test for development proposals at the application stage should be informed by a site-specific flood risk assessment. For the test to be passed it should be demonstrated that: (a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; (b) and the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall (NPPF para. 164). Both elements of the test should be satisfied for the development to be permitted (NPPF para. 165).
- Development should not increase flood risk elsewhere (NPPF para. 167).
- Where appropriate, planning applications should be supported by a site-specific flood risk assessment, and development should only be allowed in areas at risk of flooding where the flood risk assessment (and the sequential and exception tests, as required), demonstrate that: a) within the site, the most vulnerable development is located in areas of lowest flood risk (unless there are overriding reasons to prefer a different location); b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment; c) the development incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate; d) any residual (flood) risk can be safely managed; and e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan (NPPF para.167).
- NPPF para. 167 references Footnote 55. The footnote states that a site-specific flood risk assessment should be provided for all development in flood zones 2 and 3 [whilst] in flood zone 1, an assessment should accompany all proposals involving: sites of 1 ha or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use (NPPF para. 167).
- Applications for some minor development and changes of use should not be subject to the sequential or exception tests (NPPF para. 168). The exceptions are stated in Footnote 56.

Guidance on application of the sequential and exception test is provided in the PPG. For example:

- This general approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. The aim should be to keep development out of medium and high flood risk areas (flood zones 2 and 3) and other areas affected by other sources of flooding where possible (PPG para. 18).
- Where there are no reasonably available sites in flood zone 1, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses and consider reasonably available sites in flood zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably available sites in flood zones 1 or 2 should the suitability of sites in flood zone 3 (areas with a high probability of river or sea flooding) be considered, taking into account the flood risk vulnerability of land uses and applying the exception test if required. Within each flood zone, surface water and other sources of flooding also need to be taken into account in applying the sequential approach to the location of development (PPG para. 19).
- The sequential test does not need to be applied for individual developments on sites which have been allocated in development plans through the sequential test, or for applications for minor development or change of use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site) (PPG para. 33)
- It should not normally be necessary to apply the sequential test to development proposals in flood zone 1, unless the Strategic Flood Risk Assessment for the area, or other more recent information, indicates there may be flooding issues now or in the future (for example, through the impact of climate change) (PPG para. 33).
- For individual planning applications where there has been no sequential testing of the allocations in the development plan, or where the use of the site being proposed is not in accordance with the development plan, the area to apply the sequential test across will be defined by local circumstances relating to the catchment area for the type of development proposed. For some developments this may be clear, for example, the catchment area for a school. In other cases it may be identified from other Local Plan policies, such as the need for affordable housing within a town centre, or a specific area identified for regeneration. For example, where there are large areas in flood zones 2 and 3 (medium to high probability of flooding) and development is needed in those areas to sustain the existing community, sites outside them are unlikely to provide reasonable alternatives (PPG para. 33).
- When applying the Sequential Test, a pragmatic approach on the availability of alternatives should be taken. For example, in considering planning applications for extensions to existing business premises it might be impractical to suggest that there are more suitable alternative locations for that development elsewhere. For nationally or regionally important infrastructure the area of search to which the Sequential Test could be applied will be wider than the local planning authority boundary.
- Any development proposal should take into account the likelihood of flooding from other sources, as well as from rivers and the sea. The sequential approach to locating development in areas at lower flood risk should be applied to all sources of flooding, including development in an area which has critical drainage problems, as notified to the local planning authority by the Environment Agency, and where the proposed location of the development would increase flood risk elsewhere (PPG para. 33).

Non-statutory technical standards for sustainable drainage published by DEFRA in March 2015 set out how surface water runoff generated during the present day 1 in 30 and 1 in 100 AEP rainfall events and for events exceeding the present day 1 in 100 AEP event should be managed, how peak runoff rates should be restricted and how runoff volumes should be controlled.

3.2 Local Planning Policy and Guidance

3.2.1 Local Plan, South East Lincolnshire, March 2019

The South East Lincolnshire Local Plan will guide development in Boston Borough and South Holland District for the period between April 2011 to March 2036.

The following policies are relevant in respect of flood risk and drainage:

Policy 4; Approach to Flood Risk

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:

1. *It can be demonstrated that there are no other sites available at a lower risk of flooding (i.e. that the sequential test is passed). The sequential test will be based on a Borough or District wide search area of alternative sites within the defined settlement boundaries, unless local circumstances relating to the catchment area for the development justify a reduced search area, i.e. there is a specific need for the development in that location. The sequential test is not required for sites allocated in the Local Plan, minor development¹ or change of use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site).*
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;*
 - d. *Include appropriate flood warning and evacuation procedures where necessary (referring to the County's evacuation routes plan), which have been undertaken in consultation with the authority's emergency planning staff;*
 - e. *Incorporates the use of Sustainable Drainage Systems (SuDS) (unless it is demonstrated that this is not technically feasible) and confirms how these will be maintained/managed for the lifetime of development (surface water connections to the public sewerage network will only be permitted in exceptional circumstances where it is demonstrated that there are no feasible alternatives);*
 - f. *Demonstrates that the proposal will not increase risk elsewhere and that opportunities through layout, form of development and green infrastructure have been considered as a way of providing flood betterment and reducing flood risk overall;*
 - g. *Demonstrates that adequate foul water treatment and disposal already exists or can be provided in time to serve the development;*
 - h. *Ensures suitable access is safeguarded for the maintenance of water resources, drainage and flood risk management infrastructure.*

Flood risk management infrastructure shall be provided at the strategic level, where development opportunities allow, to reduce the hazard and probability of flooding.

3.3 Water Framework Directive

The Water Framework Directive (WFD) provides a legal framework for the protection, improvement and sustainable use of inland surface waters, groundwater, transitional waters, and coastal waters across England, and seeks to:

- Prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters
- Achieve at least 'good' status for all waterbodies by 2015
- Promote the sustainable use of water as a natural resource
- Conserve habitats and species that depend directly on water
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Contribute to mitigating the effects of floods and droughts.

The WFD applies to any proposed development which has the potential to impact on a waterbody. Where this is the case, the Environment Agency may require evidence demonstrating that the proposed development does not compromise the aims of the WFD.

3.4 Environmental Permitting and Land Drainage Consent

Under the Environmental Permitting (England and Wales) Regulations 2016 an Environmental Permit for Flood Risk Activities⁴ is required from the Environment Agency for any permanent or temporary works, including works:

- In, over or under a designated main river
- Within 8 m of the top of bank of a designated main river or of the landward toe of a flood defence (16 m if it is a tidal main river or a sea defence).

In addition, any permanent or temporary works within the floodplain of a designated main river may also require an Environmental Permit for Flood Risk Activities. A permit is separate to and in addition to any planning permission granted.

Land drainage consent may be required from the lead local flood authority or drainage board for work to an ordinary watercourse.

Undertaking activities controlled by local byelaws also requires the relevant consent.

⁴ <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>

4 REVIEW OF FLOOD RISK

4.1 Historical Records of Flooding

The Environment Agency historic flood map⁵ indicates that the site has not been impacted by historic flood events.

4.2 Flood Risk from Rivers and Small Watercourses

The Environment Agency Flood Map for Planning (Rivers and Sea)⁶ (**Figure 4**) indicates that the majority of the site is located in flood zone 3, with areas to the south-east of the site located in flood zone 2 and flood zone 1. Table 1 of the PPG defines flood zones as follows⁷:

- Flood zone 1: Low Probability. Land having a less than 1 in 1,000 annual probability of river or sea flooding
- Flood zone 2: Medium Probability. Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding
- Flood zone 3a: High Probability. Land having a 1 in 100 or greater annual probability of river flooding or a 1 in 200 or greater annual probability of sea flooding
- Flood zone 3b: Functional Floodplain. Land where water has to flow or be stored in times of flood.

The flood zones shown on the flood map in the vicinity of the site are defined by the predicted extent of flooding during the present day 1 in 100 (non-tidal rivers) and 1 in 1,000 (rivers and sea) annual exceedance probability (AEP) events. The zones do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

Flood zone 3b (functional floodplain) is normally defined as land that would flood during the present day 1 in 20 AEP event. It is not separately distinguished on the Flood Map for Planning. The flood mapping presented in the 2017 Strategic Flood Risk Assessment (SFRA) does not identify functional floodplain areas within the district. It is therefore assumed that the site is located in flood zone 3a.

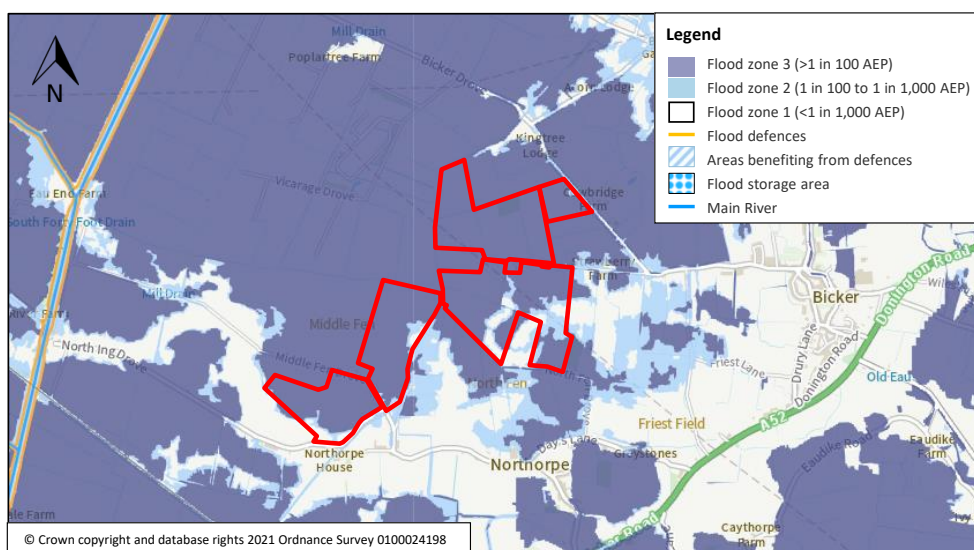


Figure 4: Flood Map for Planning
Source: gov.uk website; Accessed: May 2022

⁵ <https://data.gov.uk/dataset/76292bec-7d8b-43e8-9c98-02734fd89c81/historic-flood-map>

⁶ <https://flood-map-for-planning.service.gov.uk/>

⁷ <https://www.gov.uk/guidance/flood-risk-and-coastal-change#flood-zone-and-flood-risk-tables>

The Environment Agency Spatial Flood Defence database⁸ indicates that embankments are present along the bank of South Forty Foot Drain **Figure 5**. The crest level of the embankment ranges from 3.13 to 5.77 m AOD.

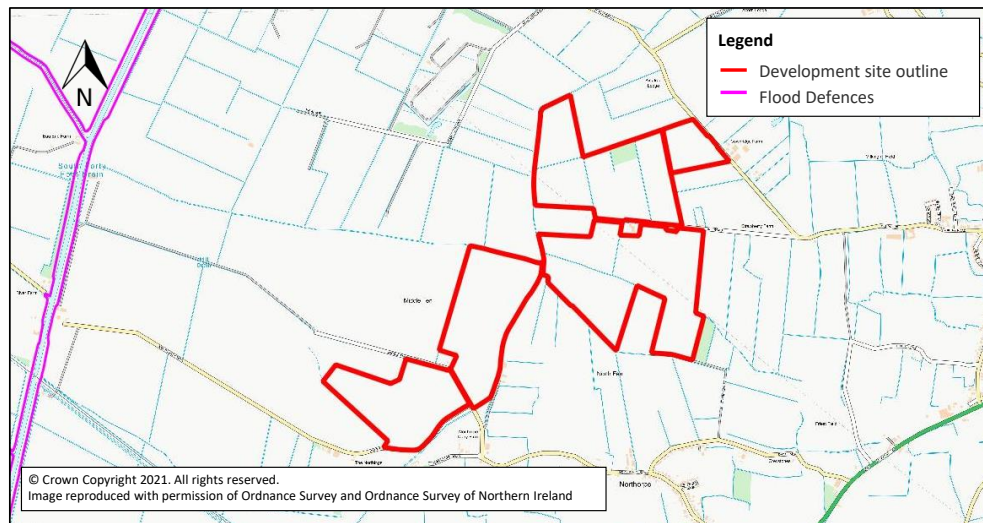


Figure 5: Existing Flood Defences

The Environment Agency has provided modelled peak in-channel water levels (**Table 1**) for the 2016 South Forty Foot mode for the model nodes illustrated in **Figure 6**.

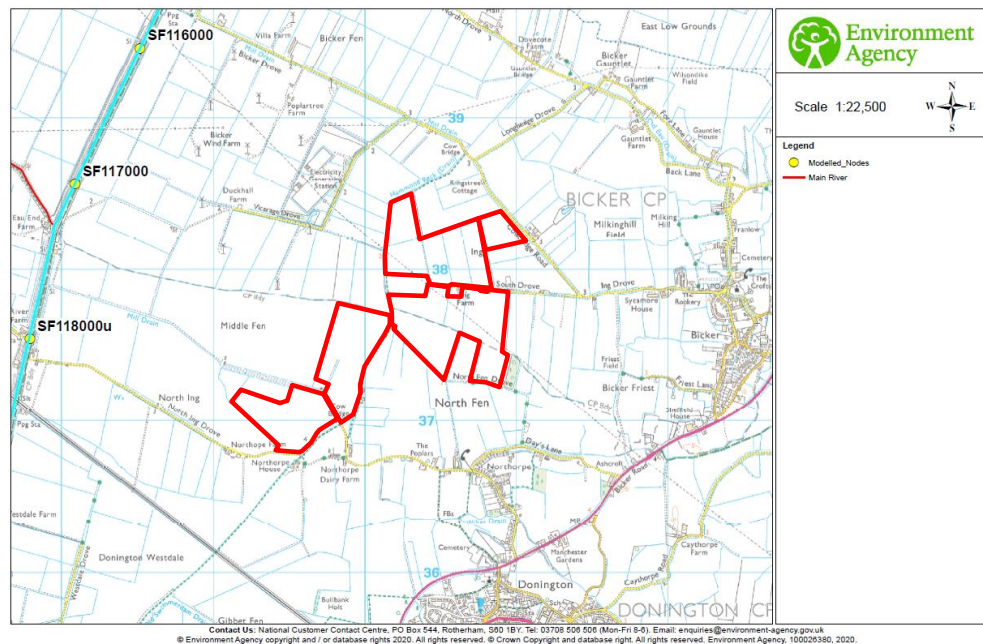


Figure 6: South Forty Foot Drain Modelled Node Locations

Source: South Forty Foot, 2016

⁸ <https://data.gov.uk/dataset/cc76738e-fc17-49f9-a216-977c61858dda/aims-spatial-flood-defences-inc-standardised-attributes>

Table 1: South Forty Foot Drain Modelled Peak In-Channel Water Levels

Source: South Forty Foot, 2016

Model Node	AEP Event Flood Level (m AOD)			
	Present day 1 in 100	1 in 100 plus climate change (20%)	1 in 100 plus climate change (21%) *	Present day 1 in 1,000
SF116000	3.02	3.04	3.04	3.07
SF117000	3.06	3.08	3.08	3.11
SF118000u	3.08	3.10	3.10	3.12

* A simple level-discharge relationship has been developed to estimate peak in-channel water levels for the 1 in 100 plus 21% climate change AEP event, the Central allowance for the Witham management catchment for the 2080s epoch.

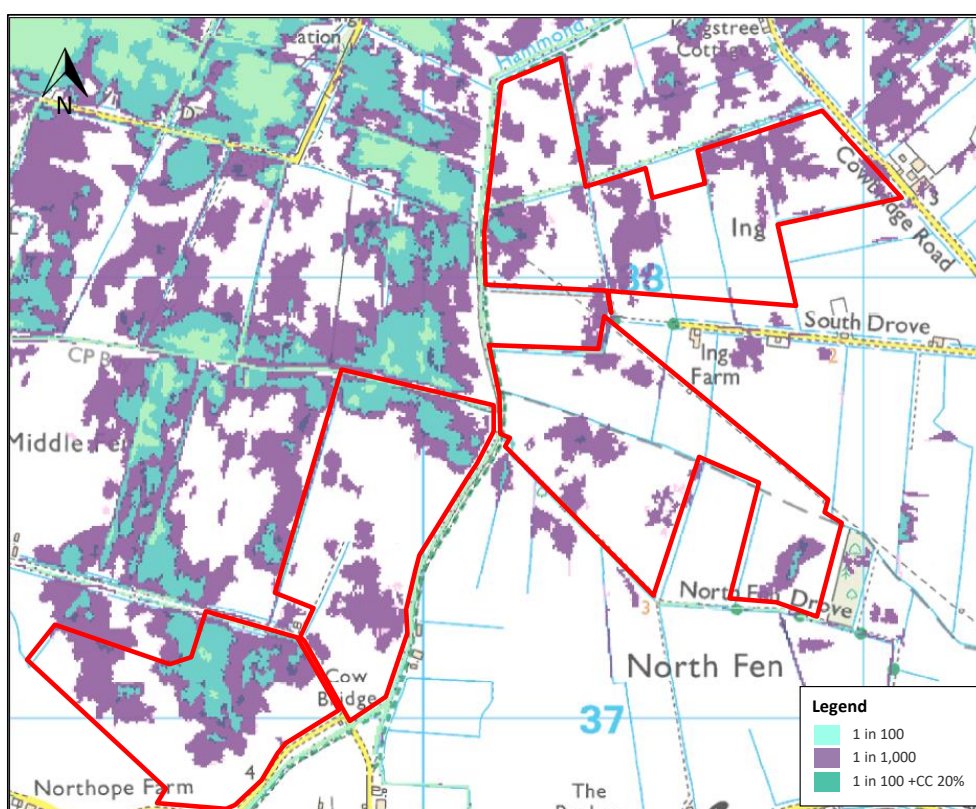


Figure 7: South Forty Foot Drain Modelled Flood Extents

Source: South Forty Foot, 2016

A comparison between the modelled peak river levels (**Table 1**) and the flood defence crest levels indicates that the South Forty Foot Drain would be expected to remain in channel for all of the modelled events including the present day 1 in 1000 APE event.

However, modelled flood extent mapping provided by the Environment Agency (**Figure 7**) indicates that some flooding may occur across the site during all modelled flood events although Cowbridge Road is largely shown to remain dry, albeit with some flooding during the 1 in 1,000 AEP event.

The Environment Agency has confirmed that no detailed hydraulic modelling information is available for Hammond Beck or the network of agricultural drains located within and in the vicinity of the site. The flooding is therefore attributed to localised low spots in the South Forty Foot drain embankment.

In the absence of detailed hydraulic modelling of the local network of drainage ditches, the Flood Risk from Surface Water map (**Figure 8**) provides a useful indication of risk of flooding from this source. The mapping (**Figure 8**) indicates that the site is not at risk of flooding from the drainage network.

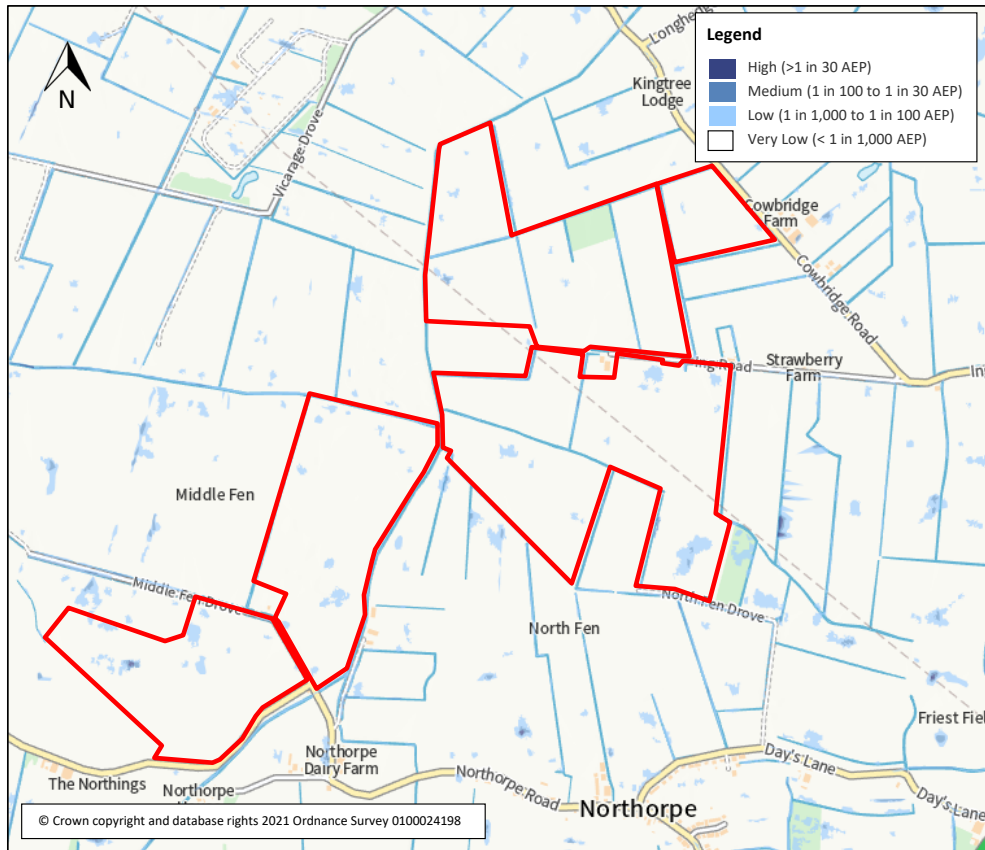


Figure 8: Flood Risk from Surface Water

Source: gov.uk website; Accessed: May 2022

According to the proposed layout, the inverter/transformer stations, storage buildings, control buildings, switchgear buildings and battery storage containers are located outside the modelled extent of flooding during the 1 in 100 plus climate change (21%) AEP event, except for three inverter/transformer station located in the western part of the site.

The site is at a residual risk of flooding from South Forty Foot Drain due to a structural failure of the embankment leading to a breach. The Environment Agency has advised that the site is not covered by any breach modelling.

4.3 Flood Risk from Surface Water

The Flood Risk from Surface Water map (**Figure 8**) indicates that there are no overland flow pathways across the site and that the majority of the site is located at a Very Low risk of surface water flooding. Isolated areas of surface water ponding are indicated. These are likely to correspond to localised depressions.

4.4 Flood Risk from Reservoirs, Canals and Other Artificial Sources

There are no canals or other impounded waterbodies located within the immediate vicinity of the site. The Flood Risk from Reservoirs map indicates that the site is not at risk of flooding from such sources. The site is therefore not assessed to be at risk of flooding from reservoirs, canals or other artificial sources.

4.5 Flood Risk from Groundwater

As detailed in **Section 2.4** ground conditions at the site are loamy and clayey soils of coastal flats with naturally high groundwater. There may therefore be the propensity for some groundwater flooding.

4.6 Sequential Test and Exception Test

The proposed development includes less vulnerable uses in flood zone 3a. According to Table 3 of the PPG Less Vulnerable uses in flood zones 1, 2 and 3a are appropriate development and the exception test does not need to be applied.

5 FLOOD RISK MITIGATION MEASURES

The risk of flooding to the proposed development from fluvial and surface water sources will be mitigated through the implementation of the measures proposed within the following section of this report.

5.1 Finished Floor Levels

The storage/control/switchgears buildings, battery storage containers and all but three inverter/transformer stations are located outside the 1 in 100 plus climate change (20% and 21%) AEP flood outline. As such, no specific flood risk mitigation measures are recommended.

The three inverter/transformer stations in the western portion of the site located in the 1 in 100 plus climate change (21%) AEP flood event should be raised to a minimum level of 3.10 m AOD - the maximum level expected in the South Forty Foot Drain during the 1 in 100 plus climate change (21%) AEP event.

5.2 Access and Egress

The majority of the access and egress via Cowbridge Road to the east of the site is expected to remain dry in up to the 1 in 1,000 AEP event, with the areas affected not shown to significantly impact the access point into the site itself.

5.3 Existing Watercourses

Crossings over existing watercourses/drainage ditches should be designed to ensure that the conveyance capacity of the channel is maintained. The design of new culverts should comply with Black Sluice IDB's standard culvert and headwall design details, unless otherwise agreed in writing with the drainage board.

6 OVERLAND FLOW MANAGEMENT AND SURFACE WATER DRAINAGE

The existing site comprises largely undeveloped greenfield land with no formal drainage system other than field drains and perimeter ditches.

According to published research into the impact of solar-farm panels on runoff rates and volumes (ref: 'Hydrologic Response of Solar Farms', by Cook LM and McCuen RH, American Society of Civil Engineers, 2013) solar panels do not have a significant impact on the hydrologic response of a site when the ground comprises of well managed vegetation such as good grass cover.

The research considered the effect of the downgradient ground slope of the solar farm and found that discharge rates from a panelled site would increase as ground slope increased due to a reduction in infiltration. However, the increase in runoff volume due to panelling of a site for slopes from 1% to 5% was less than 1%. The application site is essentially flat and no increase in runoff rates or volumes are expected as may be the case on a sloping site.

In addition, the land at the solar farm would be managed as permanent grassland. As such, the solar farm would not be expected to have a negative impact on the hydrologic response of the developed site.

The inverter stations, switch room, switchgear compound, solar array supports etc. will be located on a permeable aggregate base. The total area is estimated to be 0.22 ha (i.e. 0.21% of the development site). Approximately 1.88 ha of internal access/maintenance tracks are proposed. These are likely be constructed from permeable aggregates.

Based on the above, rainfall is expected to infiltrate through the base of the access tracks and bases of ancillary equipment with any excess runoff being conveyed slowly to the existing on-site drainage ditches through shallow interflow.

7 SUMMARY AND RECOMMENDATIONS

This report has been prepared on behalf of Axis PED and relates to the proposed development of a 106.3 ha site at Bicker near Boston, Lincolnshire for use as a solar farm.

According to the Flood Map for Planning the proposed development site is located within the 1 in 100 and 1 in 1,000 AEP flood outline and is therefore defined by the NPPF as being situated within flood zone 3.

According to information provided by the Environment Agency, flood defence crest levels are at or above the peak modelled flood level during the present day 1 in 1,000 AEP event. However, the model outputs indicate some flooding of the site does occur during the present day 1 in 100 AEP event and greater. It is concluded that this flooding is likely to be due to localised low spots in the flood defences.

The Flood Risk from Surface Water map indicates that the majority of the site is located at a Very Low risk of surface water flooding with isolated areas of surface water ponding are indicated in localised low spots of the site. There may be some susceptibility to groundwater flooding at the site due to the potential presence of shallow groundwater. The site is not at risk of flooding from reservoirs, canals or other artificial sources.

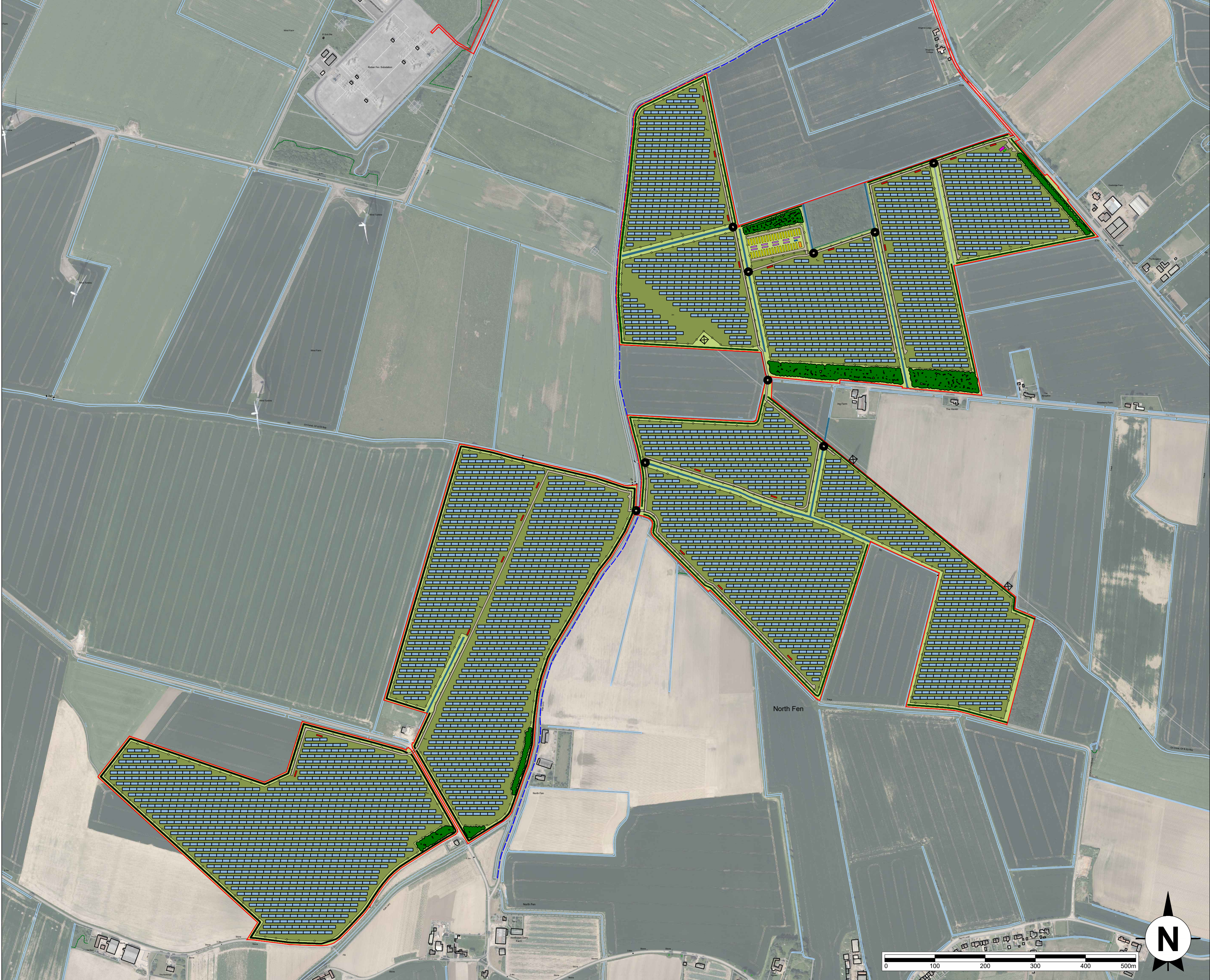
All inverter/transformer stations, storage buildings, control buildings, switchgear buildings and battery storage containers are located outside the 1 in 100 plus climate change (21%) AEP event, except for three inverter/transformer station located in the west of the site.

This report has demonstrated that the proposed development may be completed in accordance with the requirements of planning policy subject to the following:

- Inverter/transformer stations located within the 1 in 100 plus climate change (21%) AEP flood outline to be raised to at least 3.10 m AOD.
- The area under the dripline of the solar panel should be seeded with a suitable grass mix and managed as pastureland.
- Internal access tracks and bases of inverter/transformer stations, storage buildings, control buildings, switchgear buildings and battery storage containers to be formed of permeable aggregate material.

APPENDIX A

Proposed Layout



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Follow any figured dimensions - do not scale for construction purposes. IF IN DOUBT ASK.

Revision History		Date
D	Battery storage layout updated	26-07-22

- Application Boundary
- Photovoltaic Panels
- Deer / Stock Fence 2.1m
- Solar Inverter / Transformer Station
- Solar Storage Building
- Solar Control Building
- Solar Switchgears Building
- Battery Storage Container
- Inverter / Transformer Station
- Control Building
- Switchgears Building
- Access Track
- Low Maintenance Pasture
- Species Rich Grassland
- Hedgerow
- Woodland Shelterbelt
- Existing ditch retained and enhanced
- Existing public right of way
- Existing pylon
- Proposed ditch crossing

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