

# Cottam Solar Project

## Environmental Statement Addendum: Chapter 10: Hydrology, Flood Risk and Drainage Appendix C8.4.10.2: FRA Sequential and Exception Test

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## Issue Sheet

Report Prepared for: Cottam Solar Project Ltd.

### **Environmental Statement Addendum: Chapter 10: Hydrology, Flood Risk and Drainage Appendix C8.4.10.2: Sequential and Exception Test**

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## 1 Introduction

- 1.1.1 This Sequential Test Report has been prepared on behalf of Cottam Solar Project Limited (“the Applicant”) for the Cottam Solar Project (hereafter referred to as ‘the Scheme’). The report accompanies an application for a Development Consent Order (DCO) to be submitted under Section 37 of the Planning Act 2008 (the “Act”) to the Secretary of State for the Department of Energy Security and Net Zero (ESNZ).
- 1.1.2 With a total capacity exceeding 50 megawatts (MW), the Scheme is defined as a NSIP under Sections 14(1)(a) and 15(2) of the Planning Act 2008 (Ref.4), as it is an onshore generation station in England with a capacity of more than 50 MW.
- 1.1.3 The Scheme comprises a number of land parcels (the ‘Site’ or ‘Sites’) described as Cottam 1, 2, 3a and 3b for the solar arrays, grid connection infrastructure and Energy Storage; and the Cable Route Corridors. The Scheme’s Order limits, which include all land falling within the DCO application, cover an area of 1,451.32 hectares (ha).
- 1.1.4 The vast majority of the Order Limits are located within Flood Zone 1, with small sections of the Sites located within Flood Zones 2 and 3. These include small parts of Cottam 1 which are in Flood Zones 2 and 3 and a small part of Cottam 2 along the north and eastern boundaries of the Site which are encroached upon by Flood Zone 3. The majority of the Cable Route Corridor is in Flood Zone 1. The southern extent of the cable within the vicinity of the river Trent and the central extent in the vicinity of the River Till is situated within Flood Zones 2 and 3. See Appendix 10.1 [APP-091 to APP-097] of Environmental Statement Chapter 10: Hydrology, Flood Risk and Drainage [APP-045] and Environmental Statement Addendum Chapter 10: Hydrology, Flood Risk and Drainage [REP-076], for the detailed extent of Flood Zone 2 and 3 coverage across each of the Sites and the Cable Route Corridor.
- 1.1.5 Figure 10.2.1 which forms part of this report, indicates areas of Flood Zone 1 within a 20km radius of the Point of Connection (POC) at Cottam Power Station. Figure 10.2.2 details areas of Flood Zones 2 and 3 within a 20km radius of the POC.
- 1.1.6 Under Annex 3 of the National Planning Policy Framework (NPPF) (Ref.1) the Proposed Development of a solar farm is classified as ‘essential infrastructure’. The National Policy Statement for Energy (NPS) – EN1 states that *‘where new energy infrastructure is, exceptionally, necessary in such areas [of highest flood risk], policy aims to make it safe without increasing flood risk elsewhere and, where possible, by reducing flood risk overall’* (Para. 5.7.3) (Ref.2).
- 1.1.7 Similarly, the Draft NPS – EN1 (November 2023) states that *‘Where new energy infrastructure is, exceptionally, necessary in flood risk areas (for example where there are no reasonably available sites in areas at lower risk), policy aims to make it safe for its lifetime without increasing flood risk elsewhere and, where possible, by reducing flood risk overall’* (Para 5.8.7) (Ref.3).

1.1.8 The Scheme is therefore subject to the 'Sequential Test' and the 'Exception Test'; as outlined in NPS EN-1, Draft NPS EN-1 and the NPPF as it is partially located within Flood Zone 2 and 3 areas.

## 2 Policy and Guidance

### 2.1 Overview

2.1.1 The NPSs were designated on 19 July 2011 with draft NPSs published in September 2021. Following the governments consultation and review of the Draft NPSs, the NPSs are now in a final form as of 22 November 2023 and have been laid before parliament. The NPSs are therefore considered to be an important material consideration in the determination of the DCO application.

2.1.2 The NPS EN-1 (2011), and the draft NPS-EN1 (published 22 November 2023) (Ref.3), relate specifically to NSIPs, and in respect of flood risk, signpost the reader to the NPPF and the Planning Policy Guidance (PPG). The updated NPPF (2023) provides a more up to date perspective on the sequential approach than the 2011 EN-1.

### 2.2 NPS-EN1

2.2.1 For the Sequential Test, NPS EN-1 paragraph 5.7.13 confirms that if there is no 'reasonably available site' in Flood Zone 1 then projects can be located in Flood Zone 2. If there is no reasonably available site in Flood Zones 1 or 2, then nationally significant energy infrastructure projects can be located in Flood Zone 3 subject to the Exception Test.

2.2.2 NPS-EN1 sets out the following in respect of Exception Test:

- *'If, following application of the sequential test, it is not possible, consistent with wider sustainability objectives, for the project to be located in zones of lower probability of flooding than Flood Zone 3 or Zone C, the Exception Test can be applied. The test provides a method of managing flood risk while still allowing necessary development to occur'* (paragraph 5.7.14).
- *The Exception Test is only appropriate for use where the sequential test alone cannot deliver an acceptable site, taking into account the need for energy infrastructure to remain operational during floods. It may also be appropriate to use it where as a result of the alternative site(s) at lower risk of flooding being subject to national designations such as landscape, heritage and nature conservation designations, for example Areas of Outstanding Natural Beauty (AONBs), Sites of Special Scientific Interest (SSSIs) and World Heritage Sites (WHS) it would not be appropriate to require the development to be located on the alternative site(s)* (paragraph 5.7.15).
- *All three elements of the test will have to be passed for development to be consented. For the Exception Test to be passed:*
  - *it must be demonstrated that the project provides wider sustainability benefits to the community that outweigh flood risk;*

- *the project should be on developable, previously developed land or, if it is not on previously developed land, that there are no reasonable alternative sites on developable previously developed land subject to any exceptions set out in the technology-specific NPSs; and*
- *a FRA must demonstrate that the project will be safe, without increasing flood risk elsewhere subject to the exception below and, where possible, will reduce flood risk overall.’ (paragraph 5.7.16).*

*‘Exceptionally, where an increase in flood risk elsewhere cannot be avoided or wholly mitigated, the IPC [now Secretary of State] may grant consent if it is satisfied that the increase in present and future flood risk can be mitigated to an acceptable level and taking account of the benefits of, including the need for, nationally significant energy infrastructure (...). In any such case the IPC [now Secretary of State] should make clear how, in reaching its decision, it has weighed up the increased flood risk against the benefits of the project, taking account of the nature and degree of the risk, the future impacts on climate change, and advice provided by the EA and other relevant bodies’ (paragraph 5.7.17).*

2.2.3 As captured within Paragraph 5.7.23 of NPS EN-1, a sequential approach ought to be applied to the layout and design of the project, with more vulnerable uses to be located on parts of the site at lower probability and residual risk of flooding.

## 2.3 Draft NPS-EN1

2.3.1 For the Sequential Test, draft NPS EN-1 paragraph 5.8.21 states that *‘where it is not possible to locate development in low-risk areas, the Sequential Test should go on to compare reasonably available sites with medium risk areas and then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas’.*

2.3.2 If there is no reasonably available site in Flood Zones 1 or 2, then NSIPs can be located in Flood Zone 3 subject to the Exception Test.

2.3.3 Draft NPS-EN1 sets out the following in respect of the Exception Test:

*‘If, following application of the Sequential Test, it is not possible, (taking into account wider sustainable development objectives), for the project to be located in areas of lower flood risk the Exception Test can be applied as defined in <https://www.gov.uk/guidance/flood-risk-and-coastal-change#table2>. The test provides a method of allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.’ (paragraph 5.8.9)*

*‘The Exception Test is only appropriate for use where the Sequential Test alone cannot deliver an acceptable site. It would only be appropriate to move onto the Exception Test when the Sequential Test has identified reasonably available, lower risk sites appropriate for the proposed development where, accounting for wider sustainable development objectives, application of relevant policies would provide a clear reason for refusing development in any alternative locations identified. Examples could include alternative site(s) that are subject to national designations such as landscape, heritage*

*and nature conservation designations, for example Areas of Outstanding Natural Beauty (AONBs), SSSIs and World Heritage Sites (WHS) which would not usually be considered appropriate.'* (paragraph 5.8.10)

*'Both elements of the Exception Test will have to be satisfied for development to be consented. To pass the Exception Test it should be demonstrated that:*

- the project would provide wider sustainability benefits to the community that outweigh flood risk; and*
- the project 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.'* (paragraph 5.8.11)

## 2.4 NPPF

2.4.1 The NPPF is clear that the *'aim of the Sequential Test is to steer new development to areas with the lowest risk of flooding from any source'* (paragraph 162), whilst for a site to pass the Exception Test, *'it should be demonstrated that:*

*a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and*

*b) 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.'* (paragraph 164).

2.4.2 Both of the above elements of the Exception Test should be satisfied for development to pass the test (paragraph 165).

2.4.3 Paragraph 167 of the NPPF states that *'Applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated 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) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*

*d) any residual risk can be safely managed; and*

*e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.*

## 2.5 NPPF Planning Policy Guidance

[The Sequential Approach to the location of development](#)

2.5.1 Para. 024 Reference ID: 7-024-20220825 of the PPG states the following in relation to the Sequential Test:

*The Sequential Test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of flooding, taking all sources of flood risk and climate change into account. Where it is not possible to locate development in low-risk areas, the Sequential Test should go on to compare reasonably available sites:*

- *Within medium risk areas; and*
- *Then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas.*

*Initially, the presence of existing flood risk management infrastructure should be ignored, as the long-term funding, maintenance and renewal of this infrastructure is uncertain. Climate change will also impact upon the level of protection infrastructure will offer throughout the lifetime of development. The Sequential Test should then consider the spatial variation of risk within medium and then high flood risk areas to identify the lowest risk sites in these areas, ignoring the presence of flood risk management infrastructure.*

*It may then be appropriate to consider the role of flood risk management infrastructure in the variation of risk within high and medium flood risk areas. In doing so, information such as flood depth, velocity, hazard and speed-of-onset in the event of flood risk management infrastructure exceedance and/or failure, should be considered as appropriate. Information on the probability of flood defence failure is unsuitable for planning purposes given the substantial uncertainties involved in such long-term predictions.'*

2.5.2 Para. 079 Reference ID: 7-079-20220825 demonstrates Table 2: Flood risk vulnerability and flood zone 'incompatibility' which summarised the position of Para. 024 reference ID: 7-24-20220825, as follows:



**Table 2: Flood risk vulnerability and flood zone ‘incompatibility’**

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓ *

Key:

✓ Exception test is not required

X Development should not be permitted

**Notes to table 2:**

- This table does not show the application of the [Sequential Test](#) which should be applied first to guide development to the lowest flood risk areas; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and [Exception Tests](#) do not need to be applied to those developments set out in [National Planning Policy Framework footnote 56](#). The Sequential and Exception Tests should be applied to ‘major’ and ‘non major’ development;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

“†” In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

“\*” In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

2.5.3

Para. 023 Reference ID: 7-023-20220825 states that ‘*even where a flood risk assessment shows the development can be made safe throughout its lifetime without increasing risk elsewhere, the sequential test still needs to be satisfied. Application of the sequential approach in the plan-making and decision-making process will help to ensure that development is steered to the lowest risk areas, where it is compatible with sustainable development objectives to do so, and developers do not waste resources promoting proposals which would fail to satisfy the test.*’

2.5.4 Para. 028 Reference ID: 7-028-20220825 described that “Reasonably Available Sites” *‘are those in a suitable location for the type of development with a reasonable prospect that the site is available to be developed at the point in time envisaged for the development.’*

#### The Exception Test

2.5.5 Para. 031 Reference ID: 7-031-20220825 largely reflects paragraph 164 of the NPPF (see above) with regards to a demonstration of wider sustainability benefits and a reduction in overall flood risk.

2.5.6 Para. 035 Reference ID: 7-035-20220825 states that *‘the Exception Test should only be applied when following application of the Sequential Test, it has been demonstrated that it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives). The applicant will need to provide the local planning authority with evidence to demonstrate how both elements of the Exception Test will be satisfied.’*

2.5.7 Para. 036 Reference ID: 7-036-20220825 provides guidance and exemplary avenues in which Applicants can look to incorporate and ultimately demonstrate that wider sustainability benefits to the community would outweigh flood risk. The paragraph states in full that:

*‘Local planning authorities need to set their own criteria for this assessment, having regard to the objectives of their Plan’s Sustainability Appraisal framework, and provide advice which will enable applicants to provide relevant and proportionate evidence.*

*Examples of wider sustainability benefits to the community could include:*

- *The re-use of suitable brownfield land as part of a local regeneration scheme,;*
- *An overall reduction in flood risk to the wider community through the provision of, or financial contribution to, flood risk management infrastructure;*
- *The provision of multifunctional Sustainable Drainage Systems that integrate with green infrastructure, significantly exceeding National Planning Policy Framework policy requirements for Sustainable Drainage Systems;*

*Identified sustainability benefits need to be balanced against any associated flood risks, informed by the site-specific flood risk assessment. The impacts of flood risk on social, economic and environmental factors should be considered. Where wider sustainability benefits are absent or where they are outweighed by flood risk, the Exception Test has not been satisfied and the site allocation in the plan should not be made or planning permission should be refused.’*

2.5.8 Para. 037 Reference ID: 7-037-20220825 provides guidance on how it can be demonstrated that the proposed Scheme will reduce flood risk overall. The paragraph states:

*‘Developers should refer to the Strategic Flood Risk Assessments and site-specific Flood Risk Assessments to identify opportunities to reduce flood risk overall and to*

*demonstrate that the measures go beyond just managing the flood risk resulting from the development. Reductions could be achieved, for example by:*

- *Incorporating green infrastructure within the layout and form of development to make additional space for the flow and storage of flood water;*
- *Providing Sustainable Drainage Systems, that manage flood risk beyond the proposed site and above the usual standard, such as by removing surface water from existing combined sewers;*
- *Providing or making contributions to flood risk management infrastructure that will provide additional benefits to existing communities and/or by safeguarding the land that would be needed to deliver it.'*

## 2.6 Local Planning Policy

2.6.1 Cottam 1, Cottam 2, Cottam 3a and Cottam 3b are located within the Lincolnshire County Council and West Lindsey District Council administrative boundaries.

2.6.2 The Central Lincolnshire Local Plan was adopted in April 2023. The Local Plan contains the following policies relating to flood risk and drainage:

Policy S21: Flood Risk and Water Resources

*Flood Risk*

*All development proposals will be considered against the NPPF, including application of the sequential and, if necessary, the exception test.*

*Through appropriate consultation and option appraisal, development proposals should demonstrate:*

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

- f) *that they have incorporated Sustainable Drainage Systems (SuDS)/ Integrated Water Management into the proposals unless they can be shown to be inappropriate.*

#### *Protecting the Water Environment*

*Development proposals that are likely to impact on surface or ground water should consider the requirements of the Water Framework Directive.*

*Development proposals should demonstrate:*

- g) *that water is available to support the development proposed;*
- h) *that adequate mains foul water treatment and disposal already exists or can be provided in time to serve the development. Non mains foul sewage disposal solutions should only be considered where it can be shown to the satisfaction of the local planning authority that connection to a public sewer is not feasible;*
- i) *that they meet the Building Regulation water efficiency standard of 110 litres per occupier per day or the highest water efficiency standard that applies at the time of the planning application (see also Policy S12);*
- j) *that water reuse and recycling and rainwater harvesting measures have been incorporated wherever possible in order to reduce demand on mains water supply as part of an integrated approach to water management (see also Policy S11);*
- k) *that they have followed the surface water hierarchy for all proposals:*
- i. surface water runoff is collected for use;*
  - ii. discharge into the ground via infiltration;*
  - iii. discharge to a watercourse or other surface water body;*
  - iv. discharge to a surface water sewer, highway drain or other drainage system, discharging to a watercourse or other surface water body;*
  - v. discharge to a combined sewer;*
- l) *that no surface water connections are made to the foul system;*
- m) *that surface water connections to the combined or surface water system are only made in exceptional circumstances where it can be demonstrated that there are no feasible alternatives (this applies to new developments and redevelopments) and where there is no detriment to existing users;*
- n) *that no combined sewer overflows are created in areas served by combined sewers, and that foul and surface water flows are separated;*
- o) *that development contributes positively to the water environment and its ecology where possible and does not adversely affect surface and ground water quality in line with the requirements of the Water Framework Directive;*
- p) *that development with the potential to pose a risk to groundwater resources is not located in sensitive locations to meet the requirements of the Water Framework Directive;*

- q) *how Sustainable Drainage Systems (SuDS)/ Integrated Water Management to deliver improvements to water quality, the water environment and to improve amenity and biodiversity net gain wherever possible have been incorporated into the proposal unless they can be shown to be impractical;*
- r) *that relevant site investigations, risk assessments and necessary mitigation measures for source protection zones around boreholes, wells, springs and water courses have been agreed with the relevant bodies (e.g. the Environment Agency and relevant water companies);*
- s) *that suitable access is safeguarded for the maintenance of watercourses, water resources, flood defences and drainage infrastructure; and*
- t) *that adequate provision is made to safeguard the future maintenance of water bodies to which surface water and foul water treated on the site of the development is discharged, preferably by an appropriate authority (e.g. Environment Agency, Internal Drainage Board, Water Company, the Canal and River Trust or local Council).*

*In order to allow access for the maintenance of watercourses, development proposals that include or abut a watercourse should ensure no building, structure or immovable landscaping feature is included that will impede access within 8m of a watercourse, or within 16m of a tidal watercourse. Conditions may be included where relevant to ensure this access is maintained in perpetuity and may seek to ensure responsibility for maintenance of the watercourse including land ownership details up to and of the watercourse is clear and included in maintenance arrangements for future occupants.*

2.6.3 The cable route is located across the Lincolnshire County Council, West Lindsey District Council, Nottinghamshire County Council and Bassetlaw District Council administrative boundaries.

2.6.4 Nottinghamshire County Council does not have any relevant policies relating to flood risk and/or drainage.

2.6.5 The Bassetlaw Local Plan (2020-2038) (Publication Version, Publication Version Addendum and Publication Version Second Addendum – Regulation 22, August 2023) is currently undergoing examination and is therefore not yet adopted, however it contains the following policies relating to flood risk and drainage:

Policy ST52: Flood Risk and Drainage

1. *Proposals are required to consider and, where necessary, mitigate the impacts of the proposed development on flood risk, on-site and off-site, commensurate with the scale and impact of the development. Proposals, including change of use applications, must be accompanied by a Flood Risk Assessment (where appropriate), which demonstrates that the development, including the access and egress, will be safe for its lifetime, without increasing or exacerbating flood risk elsewhere and where possible will reduce flood risk overall.*

2. *Where relevant, proposals must demonstrate that they pass the Sequential Test and if necessary the Exceptions Test in Flood Zones 2 and 3 and ensure that where land is required to manage flood risk, it is safeguarded from development.*

*River Ryton Flood Management Impact Zone*

3. *All development within the River Ryton Flood Management Impact Zone, as identified on the Policies Map, will need to demonstrate through a Design and Access Statement that they will not prejudice the delivery of a future flood management scheme for the River Ryton catchment through prior agreement with the Environment Agency.*

*Surface Water Flood Risk*

4. *All development where practicable should incorporate sustainable drainage systems (SuDS) in line with national standards. These should:*
  - a) *be informed by the Lead Local Flood Authority, sewerage company and relevant drainage board;*
  - b) *have maintenance arrangements in place to ensure an acceptable standard of operation and management for the development's lifetime;*
  - c) *prevent surface water discharge into the sewerage system;*
  - d) *maximise environmental gain through: enhancing the green/blue infrastructure network, including urban greening measures,; contributing to biodiversity net gain where possible,; and, securing amenity benefits along with flood storage volumes;*
  - e) *seek to reduce runoff rates in areas at risk from surface water flooding, and that any surface water is directed to sustainable outfalls.*

*Policy ST53: Protecting Water Quality and Management*

1. *In line with the objectives of the Water Framework Directive, the quantity and quality of surface and groundwater bodies will be protected and where possible enhanced. Development adjacent to, over or in, a main river or ordinary watercourse will be supported where proposals consider opportunities to improve the river environment and water quality where possible by:*
  - a) *actively contributing to enhancing the status of the waterbody through positive actions or ongoing projects;*
  - b) *naturalising watercourse channels;*
  - c) *improving the biodiversity and ecological connectivity of watercourses;*
  - d) *safeguarding and enlarging river buffers with appropriate habitat in accordance with Policy ST39; and*
  - e) *mitigating diffuse agricultural and urban pollution.*

2. *Proposals within a Source Protection Zone will need to demonstrate that the Sherwood Sandstone Principal Aquifer and its groundwater resources and groundwater quality will be protected throughout the construction and operational phase of development, by demonstrating the satisfactory resolution of all relevant identified impacts.*
3. *All proposals must ensure that appropriate infrastructure for water supply, sewerage and sewage treatment, is available or can be made available at the right time to meet the needs of the development. Proposals should:*
  - a) *utilise the following drainage hierarchy:*
    - into the ground (infiltration);*
    - to a surface water body;*
    - to a surface water sewer, highway drain, or another drainage system;*
    - to a combined sewer.**ensure that foul and surface water flows are separated with foul water being disposed to a public sewer or to a private self-treatment plant and that the design of the waste disposal system will be safe over the lifetime of the development.*
  - b) *ensure that development that discharges water into a watercourse incorporates appropriate water pollution control measures;*
  - c) *ensure that drainage design take into account an appropriate climate change allowance as agreed with the relevant authority(s);*
  - d) *ensure that infiltration based SuDS incorporate appropriate water pollution control measures;*
  - e) *consider use of water recycling, rainwater and storm water harvesting, wherever feasible, to reduce demand on mains water supply.*

### **3 The Sequential Test**

#### **3.1 Introduction**

3.1.1 The methodology for the Sequential test has sought to identify whether there are any alternative ‘reasonably available sites’ within a 20km radius of the POC at Cottam Power Station. A 20km radius from the POC was considered to be suitable by the Applicant as a viable cable connection distance for a solar project of this scale.

3.1.2 Sites were required to meet the following criteria in order to be considered a ‘reasonably available site’:

- A location within a search area based on a 20km radius from the Cottam Power Station Substation. The Applicant has secured a Grid Connection for a development, of the scale proposed at the Cottam Power Station Substation;
- National Grid have advised that the grid connection at the Cottam Power Station would be available in 2029. Site availability must therefore be compatible with the timings of the construction phase in order to meet the grid export date;
- A geographical extent similar in scale to Cottam Solar Project (circa 1300 hectares in total);
- Potential suitability for large-scale ground mounted solar development when considered against other constraints (excluding sites that are allocated or safeguarded within the Development Plan);
- A location which would reflect a lesser extent of development within areas of Flood Zone 2 and 3; and
- Land holdings being ‘reasonably available’ for such development subject to land agreements.

#### **3.2 Process**

3.2.1 Given that the Sites contain some land that is identified as Flood Zone 2 and 3, Figure 10.2.2 (provided at the end of this document) has been produced in order to identify all other sites within a 20km radius of the POC at Cottam Power Station that are located within Flood Zone 1. These identified sites, subject to other constraints and reasonable availability, would result in the preferable location of the Scheme within areas exposed to the lowest risks from flooding (being in Flood Zone 1).

3.2.2 Having identified all sites within a 20km radius of the POC that lie upon preferable Flood Zone 1 land, the other main constraints have been overlaid within the 20km search area to reflect whether or not these Flood Zone 1 sites are reasonable alternatives to the Sites selected. Figure 10.2.2 consolidates these other constraints. The other constraints which have been mapped include:



- Land identified as other cumulative development in the search area (and thus not available);
- Conservation Areas;
- Listed Buildings;
- Scheduled Monuments;
- Registered Parks and Gardens;
- Ancient Woodland;
- Historic Landfill Sites;
- Authorised Landfill Sites;
- Sites of Special Scientific Interest (SSSI), Local Nature Reserves (LNR) and Local Wildlife Sites (LWS);
- Water Bodies and Flood Zone 2 and 3 areas;
- Areas of Great Landscape Value;
- Sites of Importance in Nature Conservation;
- Grade 3 Agricultural Land;
- Adverse Gradients (topography) (over or equal to 3%);
- National Cycle Network; and
- Main and Minor Green Corridors.

3.2.3 The criteria-based approach aligns with the PPG which states that sites should be compared in relation to flood risk as well as Local Plan status; capacity; constraints to delivery including availability, policy restrictions, physical problems or limitations, potential impacts of the development and future environmental conditions that would be experienced by the inhabitants of the development (Paragraph: 024 Reference ID: 7-024-20220825; Paragraph: 027 Reference ID: 7-027-20220825 and Paragraph: 028 Reference ID: 7-028-20220825).

3.2.4 Sites marked as 'Land Identified by Land Agent Enquiry' on Figure 10.2.2 highlight land held by willing landowners. The availability of willing landowners is an important consideration because the use of compulsory acquisition powers should be a last resort. It is desirable to assemble a solar site in as few land ownerships as possible to minimise legal complexities and project costs.

3.2.5 All identified 'Land Identified by land agent enquiry' has been considered through the Site Selection Assessment [APP-067]. The Site Selection Assessment has considered the Site's flood risk vulnerability, other constraints as detailed within paragraph 3.2.2 above, distance from grid connection, construction traffic access and solar array shading. From this assessment, nine Potential Development Areas (PDAs) were considered to be reasonably available sites. These are shown on

Figure 10.2.3 accompanying this report. Table 1.1 below consolidates these nine alternative sites and identifies their location.

Table 1.1: List of resulting PDA Sites

Potential Development Area (PDA)	PDA Location
PDA1	Gainsborough/Laughton
PDA2	RAF Scampton
PDA3	West Lincoln/Thorpe on the Hill
PDA4	Besthorpe
PDA5	Bothamsall
PDA 6	Wiseton/CLayworth
PDA 7	Springthorpe
PDA 8	Sturton Le Steeple
PDA 9	Dunham, High Marnham

- 3.2.6 A Brownfield Land and Rooftop Assessment was also undertaken as set out within the Site Selection Assessment [APP-067]. The Brownfield Land and Rooftop Assessment concluded that there were no further reasonably available sites present to accommodate the Scheme given its nature and scale. Resultingly, no further PDAs were identified beyond those listed in Table 1.1.
- 3.2.7 Of the nine PDAs which were considered as potentially viable alternatives and reasonably available, 3 of the PDAs (being PDA1, PDA3 and PDA4) were discontinued in the first instance as they were located primarily within Flood Zones 2 and 3. These sites were not considered to result in the development being better steered towards areas of lowest flood risk as per the requirements of the sequential test.
- 3.2.8 Resultingly, this left six PDAs (PDA 2, PDA 5, PDA 6, PDA 7, PDA 8 and PDA 9) which were considered large enough to accommodate the Scheme. As evident on Figure 10.2.2 (when cross referenced against Figure 10.2.3) all of these PDAs include elements of land falling within Flood Zone 2 and 3.
- 3.2.9 A RAG Assessment of the PDAs was undertaken as set out in the Site Selection Assessment [APP-067]. The RAG assessment concluded that the Sites for the Scheme, holistically, performed better than PDA2, PDA5, PDA6, PDA7 and PDA8 and was equal to PDA9 when taking into account other factors set out in Paragraph 3.2.2.
- 3.2.10 PDA9 was primarily considered for a separate grid connection into High Marnham Power Station before National Grid advised that although there was capacity

available at High Marnham, their preference was for a connection at the Cottam POC because fewer upgrade works to National Grid's transmission assets would be required at the Cottam POC and it would therefore be more straightforward, quicker to deliver and more economical. A connection into Cottam could be provided from this site, but given its location immediately adjacent to High Marnham POC a connection here would prove more sensible in the longer term because a shorter cable connection could be provided, reducing cost and electricity losses along the length of the cable.

- 3.2.11 PDA9 is adjacent to draft allocation, Policy ST51: Area of Best Fit for Renewable Energy Development' Bassetlaw Local Plan 2020-2037 Publication Version Addendum. The Bassetlaw Local Plan is currently undergoing examination. Policy ST51 offers in principle support to development that generates, shares, transmits and/or stores zero carbon and/or low carbon renewable energy within the area of Best Fit but does not preclude solar development in other parts of the District. The Area of Best Fit would not be large enough to accommodate the Scheme.
- 3.2.12 The majority of the northern land parcel in PDA9 is flood zone 3 with pockets of zone 1 and 2. Approximately a third of the largest central land parcel adjacent to High Marnham POC is zone 3 with the remainder primarily in zone 1 with pockets of zone 2. The southern land parcel is primarily zone 1. Flooding is associated with the River Trent which is adjacent to the central and northern land parcels. This site has a larger proportion of land within Flood Zones 2 and 3 than the Sites for the Scheme and is not sequentially preferable.
- 3.2.13 It is also considered that PDA9's proximity to the High Marnham Substation would see it better suited for an energy generation scheme with a connection at the High Marnham Substation.
- 3.2.14 Based on the above, it was considered that the proposed Sites for the Scheme were the most suitable locations within the area of search.

### 3.3 Limitations of the Sequential Test

- 3.3.1 It is accepted that any ranking and scoring methodology based on the high-level strategic assessment must take into account a number of assumptions, given that:
- It is not always possible to secure a complete and comprehensive understanding of the land ownership position; without which, full technical surveys and detailed design and mitigation assessments cannot be undertaken in the that timeframe (or at all); and
  - As a consequence, this necessitates a high reliance on professional judgement, for example, with regard to views, screening and the impact of site design constraints and potential mitigation measures, which in turn impact on site capacity and viability (and therefore on what may constitute a 'reasonably available site').

- 3.3.2 Nonetheless, it is considered that this Sequential Test and its conclusions represent a sound and transparent approach to the assessment of potentially 'reasonably available sites' within the identified area of search.
- 3.3.3 It has not been possible to wholly steer the development towards an area of lower flood risk given that there are no reasonably available alternate sites which can be developed to facilitate a 2029 grid connection date at Cottam Power Station.

## 4 The Exception Test

4.1.1 This section applies the relevant test under NPS EN-1 and the NPPF, as outlined above.

4.1.2 In terms of the first limb of the test under paragraph 5.7.16 of the NPS EN-1 and paragraph 164 (a) of the NPPF, the Scheme would provide wider sustainability benefits to the community that outweigh the flood risk. These benefits have been identified and consolidated within Section 4 of the Planning Statement [REP2-028] and the Statement of Need [APP-350] submitted with the DCO application. A number of technical assessments supporting the DCO submission and the Environmental Statement as a whole [APP-036 to APP-058] also demonstrate the following benefits which can be summarised as follows:

- The primary function of the Cottam Solar Project is to generate and export energy from renewable solar sources to the National Grid via Cottam Power Station. The Scheme is a substantial infrastructure asset, capable of delivering large amounts of low-carbon electricity to help meet the UK's urgent need to decarbonise. Over a 60-year operational lifetime, the Scheme would produce 50,938,603 MWh of electricity with an average operational greenhouse gas intensity of 20.58CO<sub>2</sub>e/kWh, which demonstrates low carbon attributes compared to other non-renewable forms of electricity generation;
- The Scheme will bring in tangible economic benefits. The construction phase will result in a Gross Value Added (GVA) of £50,700,000 whilst the overall change to net economic GVA per annum in the Local Impact Area during operation is £2,200,000;
- Temporary employment generated by the Scheme's construction of approximately 972 FTE jobs per annum and a gross of 51 FTE employees per annum during operational phase of the Scheme;
- The application has included a Skills, Supply Chain and Employment Plan [APP-349] which will be prepared prior to construction. This plan will set out measures that the Applicant will implement to advertise and promote employment and training opportunities associated with the Scheme in construction and operation locally resulting in upskilling of the labour force;
- The Scheme will deliver significant environmental gains in the form of biodiversity enhancement. It has been calculated that the Scheme will result in a biodiversity net gain of 96.09% provided in habitat units, 70.22% provided in hedgerow units and 10.69% provided in river units;
- A new permissive path from Stow village to Stow Pastures that will be in place during the operational phase of the Scheme.

4.1.3 In terms of flood risk, the Scheme has been subject to a detailed and sensitive iterative design and mitigation process which has resulted in the following

embedded mitigation measures. This has taken account of the context and features of the land within the Order limits, nearby sensitive receptors and assets, information emerging from environmental surveys, feedback from stakeholders, and opportunities and constraints in order to develop a good design that balances the need to maximise the energy generation capacity of the Scheme, with the avoidance and mitigation of impacts, and provision of environmental and other enhancements, where practicable. Some of these measures include but are not limited to:

- 8m easements have been established around all watercourses, including Main Rivers and Ordinary Watercourses and 9 m from IDB assets.
- Either fixed or tracker panels will be utilised throughout the Sites.
- The minimum height of the lowest part of the fixed solar panel units will be 0.6 m above ground level.
- The tracker solar panel units will be mounted on raised frames (usually raised a minimum of 0.4 m) when on maximum rotation angle) and will therefore be raised above surrounding ground levels and fitted with a tracking system. During times of flooding, solar panels may be stowed by the tracking system algorithm onto a horizontal plane, to the minimum post height of 2.3 m above ground level. This ensures that all sensitive and electrical equipment on the solar panel is raised to a minimum of 2.3 m above ground level in the horizontal position.
- Fixed panels should be located within areas of the Site which are located in Flood Zone 1 whereas tracker panels can be located in areas that are within Flood Zones 2 and 3 on the basis of the additional flood protection offered by their potential to be stowed horizontally.
- Electrical infrastructure associated with the panels can be adequately waterproofed to withstand the effect of flooding. Where possible the sensitive electrical equipment has been located in parts of the Site that are within Flood Zone 1. Where this hasn't been possible, equipment will be raised 0.6 m above the 0.1% Annual Exceedance Probability (AEP) flood level or where this is not possible as high as practicable.

4.1.4 The effect of the above measures is that there is a negligible flood risk as a result of the Scheme. Consequently, the wider sustainability benefits to the community, including those summarised above, outweigh the flood risk. This aspect of the exception test is therefore satisfied.

4.1.5 The second element of paragraph 5.7.16 of NPS EN-1 is considered to be satisfied as the Scheme is to be located on developable land. A search of previously developed land has been undertaken, as outlined in the Site Selection Assessment [APP-067], in which it is concluded that there are no suitable previously developed sites available to accommodate the Scheme.

- 4.1.6 Finally, it is important to note that the third element of paragraph 5.7.16 of NPS EN-1 (and also paragraph 164(b) of the NPPF) is considered to be satisfied through the Flood Risk Assessment which forms part of the submission. The Flood Risk Assessment and Drainage Strategy [APP-090] considers flood risk (from all sources) and sets out mitigation measures to ensure that the Scheme will be safe over its lifetime. It is concluded that the Scheme demonstrates that it will not increase flood risk elsewhere and the ground beneath the panels will remain entirely permeable, draining as existing. The Scheme may reduce existing greenfield run-off rates by replacing intensive agricultural surfaces with a landcover comprising a mixture of wildflowers and grassland.
- 4.1.7 Resultingly, the Scheme is considered to pass the requirements of the Exception Test.
- 4.1.8 Both the Sequential and Exception Tests are considered to be satisfied through the findings of this report. It is therefore concluded that Scheme is permissible within Flood Zones 2 and 3 as all relevant policy requirements have been met.

## **5**      **References**

- Ref.1      Ministry of Housing, Communities & Local Government (2023). National Planning Policy Framework. London: The Stationery Office.
- Ref.2      Department of Energy and Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). London: The Stationery Office.
- Ref.3      Department of Energy and Climate Change (November 2023). Overarching National Policy Statement for Energy (EN-1). London: The Stationery Office.
- Ref.4      The Planning Act 2008.



## 6 Figures

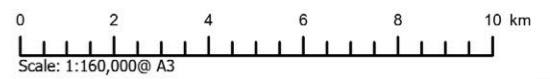
Figure 10.2.1 Flood Zone 1 Area



**Key**

- Cottam Power Station
- Area of Search
- Flood Zone 1
- Order Limits

Layers: National Grid, 2023; Lanpro, 2023  
Base map: Contains OS data © Crown copyright and database right 2023

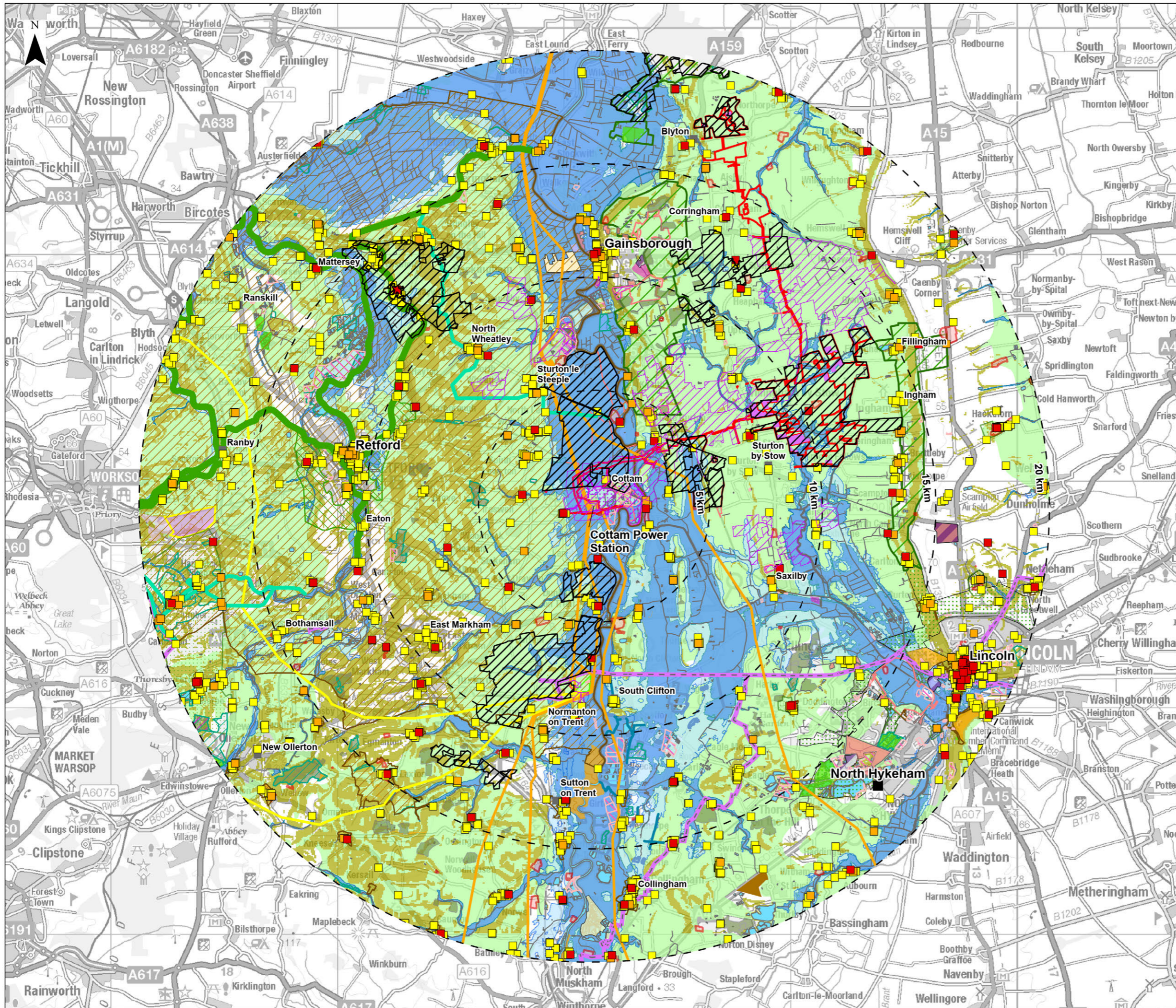


APFP Regulation: 5(2)(a)	Application Doc No. C8.4.10.2.1
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









































**Figure 10.2.1**  
Cottam  
Flood Zone 1 Area

**COTTAM SOLAR PROJECT**  
Flood Risk Assessment Sequential Test  
Environmental Statement (ES)




Figure 10.2.2 Overall Constraints



**Key**

-  Cottom Power Station
-  Area of Search
-  Order Limits
-  Land identified by land agent enquiry
-  Excluded from scheme as a result of stakeholder engagement and Best and Most Versatile (BMV) land assessment
-  Excluded from the scheme as identified as a cumulative development
-  Grade I
-  Grade II\*
-  Grade II
-  Conservation Area
-  Scheduled Monument
-  Registered Park and Garden
-  Ancient Woodland
-  Historic Landfill Site
-  Authorised Landfill Site
-  Allocated Minerals Site
-  Site of Special Scientific Interest (SSSI)
-  Special Area of Conservation (SAC)
-  Local Wildlife Site (LWS)
-  Local Nature Reserve (LNR)
-  RSPB Boundary
-  CRoW Conclusive Registered Common Land
-  Water body
-  Flood Zone 3
-  Flood Zone 2
-  Unconstrained Grade 3 Land
-  National Cycle Network
-  Main Green Corridor
-  Minor Green Corridor
-  Site of Interest in Nature Conservation
-  Allocated Sustainable Urban Extension
-  Allocated Residential Site
-  Apleyhead Junction
-  Area of Great Landscape Value
-  Existing Employment
-  Green Gaps
-  Green Wedge
-  Important Established Employment Area
-  Local Wildlife Site
-  New Employment
-  Strategic Employment Site
-  Site of Importance for Nature Conservation
-  Lincolnshire Showground
-  Area best of fit for renewable energy generation
-  Cottom Power Station Priority Regeneration Area
-  OS Terrain 50 Slope
-  >=3% Gradient
-  National Grid
-  400kV Overhead Line
-  275kV Overhead Line

**Listed Building**

-  Grade I
-  Grade II\*
-  Grade II

**Layers:** Natural England, 2023; Historic England, 2023; Environment Agency, 2023; Sustrans, 2023; National Grid, 2023; Lanpro, 2023  
**Base map:** Contains OS data © Crown copyright and database right 2023

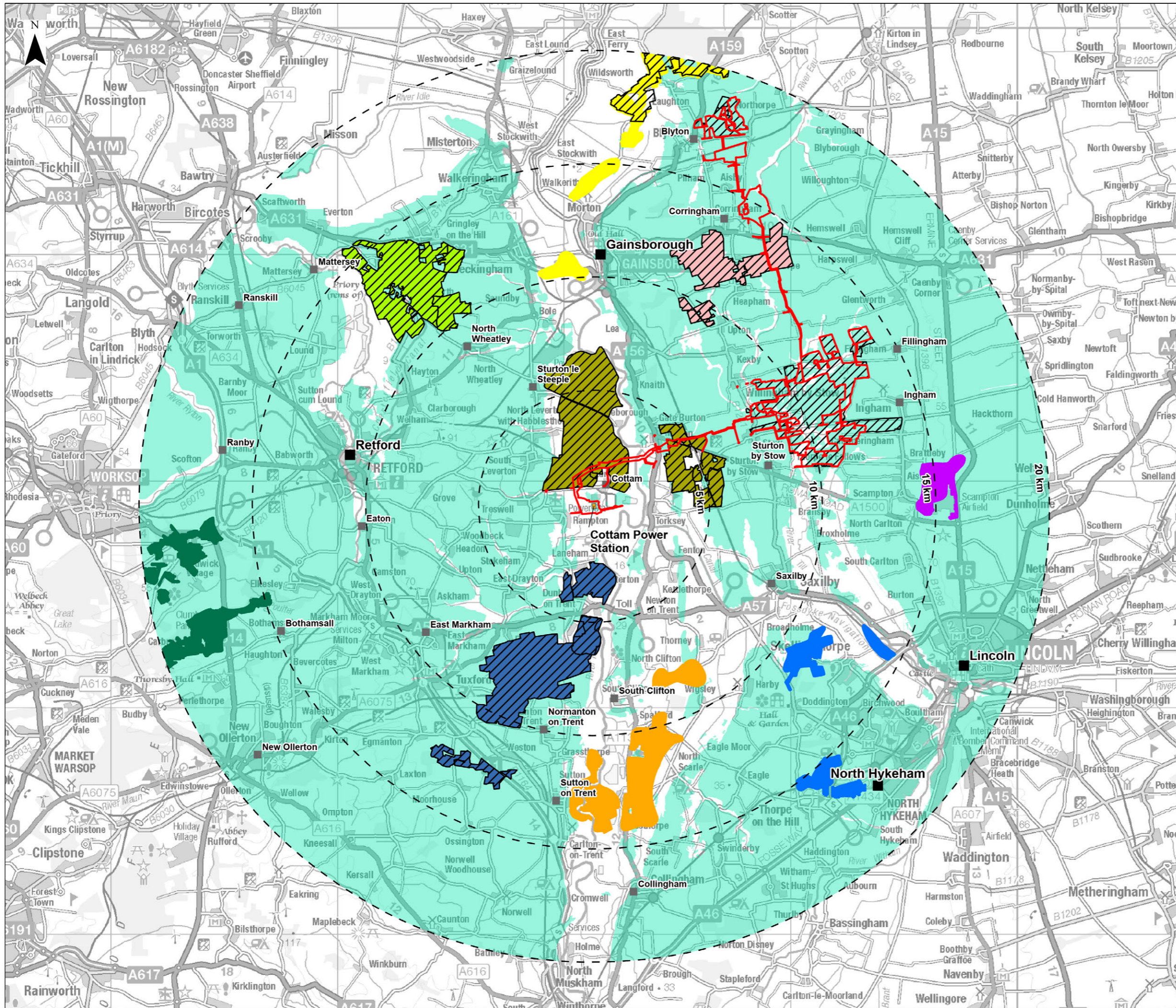


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**Figure 10.2.2**  
**Cottom**  
**Overall Constraints**

**COTTAM SOLAR PROJECT**  
**Flood Risk Assessment Sequential Test**  
**Environmental Statement (ES)**






Figure 10.2.3 Potential Development Areas







**Key**

-  Cottam Power Station
-  Area of Search
-  Order Limits
-  Flood Zone 1
-  Land identified by land agent enquiry

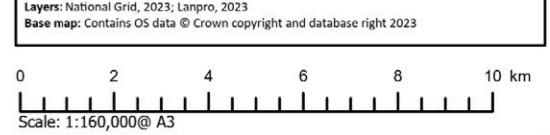
**Potential Development Area**

-  PDA 1 Gainsborough/Laughton
-  PDA 2 RAF Scampton
-  PDA 3 West Lincoln
-  PDA 4 Besthorpe
-  PDA 5 Bothamsall

**Grade 3 Potential Development Areas**

-  PDA 6 - Wiseton and Clayworth
-  PDA 7 - Springthorpe
-  PDA 8 - Sturton Le Steeple
-  PDA 9 - Durnham High Marnham

Layers: National Grid, 2023; Lanpro, 2023  
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**Figure 10.2.3**  
Cottam  
Potential Development Area

**COTTAM SOLAR PROJECT**  
Flood Risk Assessment Sequential Test  
Environmental Statement (ES)