West Burton Solar Project

Comparison of Archaeological Evaluation Investigations on Solar Schemes

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West Burton
SOLAR PROJECT

Contents

Issue Sheet

Report Prepared for: West Burton Solar Project Ltd.

Comparison of Archaeological Evaluation Investigations on Solar Schemes

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1 Introduction

1.1.1 The Overarching National Policy Statement for Energy (EN-1), National Policy Statement for Renewable Energy (EN3) and National Planning Policy Framework (NPPF 2023) state that *"where a site on which development is proposed includes, or the available evidence suggests it has the potential to include, heritage assets with archaeological interest, the applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest,, a field evaluation"*[1]. They also state that *"The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on their significance"*[2] and *"the extent of investigative work should be proportionate to the sensitivity of, and extent of proposed ground disturbance in, the associated study area."*[3]

1.1.2 There is no nationally recognised professional guidance that details the level of field evaluation required to support a solar application within Nottinghamshire or Lincolnshire, or nationally, or at what stage of a planning process such work should be undertaken (e.g. pre- or post-determination of the application).

1.1.3 In 2022 an analysis of the range of archaeological works undertaken to support Development Consent Orders (DCO) for Nationally Significant Infrastructure Projects (NSIPs) was undertaken[4]. As part of this analysis, all DCO applications between 2016 and 2020 were reviewed, totalling 83 schemes, including projects of a leisure, waste, energy, transport and combined nature. The study identified that *"almost a third of projects had no requirement for pre-determination fieldwork with archaeological information being provided from purely desk-based assessment."*[5] While the analysis identified that there was variability in the approach undertaken to archaeological evaluation works, it was highlighted that there was a marked difference in approach between schemes with a high ground impact (i.e. transport schemes) to those with a lower ground impact (i.e. solar/wind energy schemes), with a larger number of schemes with a high ground impact requiring pre-determination archaeological evaluation trenching at full scheme coverage. The report on this analysis is provided in Appendix A.

1.1.4 At the time of the 2022 analysis[6] four solar NSIPs were recorded as either being granted a DCOs (Little Crow and Cleve Hill Solar Parks), or were at the examination

[1] Overarching National Policy Statement for Energy (EN1) 2023 Paragraph 5.9.11 (November version). National Policy Statement for Renewable Energy Infrastructure (EN3) 2023 Paragraph 2.10.113 (November version) and National Planning Policy Framework (NPPF) Paragraph 194.
[2] Overarching National Policy Statement for Energy (EN1) 2023 Paragraph 5.9.10 (November version) and National Planning Policy Framework (NPPF) Paragraph 194.
[3] National Policy Statement for Renewable Energy Infrastructure (EN3) 2023 Paragraph 2.10.115 (November version)
[4] GHC Archaeology & Heritage ltd 2022
[5] GHC Archaeology & Heritage ltd 2022 Paragraph 4.2

(Longfield Solar Farm) or pre-examination (Sunnica Energy Farm) phase. Since 2020, Longfield Solar Farm has been granted a DCO and Sunnica is awaiting decision (recommendation was given by the Planning Inspectorate on the 28th June 2023). A further five NSIPs have been accepted for examination by the Planning Inspectorate.

1.1.5 Section 2 of this document outlines the extent of archaeological evaluation works undertaken to support applications for these solar-based DCOs and, as evidenced by Table 1.1, demonstrates the low sample of evaluation trenching that has been undertaken by schemes where a DCO has been granted that have been accepted for examination by the Planning Inspectorate.

1.1.6 An analysis of Town and Country Planning Act 1990 (TCPA) Projects across the UK was undertaken in 2022 to understand to scope and extent of archaeological evaluation works required by local planning authorities to support solar-based applications. This analysis identified that 300 applications of 10mw of electricity generation or greater had been submitted between 2018 and 2020. Of these, 26% were subject to pre-determination evaluation trenching.

1.1.7 Section 3 details planning applications submitted under the TCPA in Lincolnshire and Nottinghamshire, which are recorded as being active on the Government's Renewable Energy Planning Database between 2018 and 2023. Thirty TCPA schemes were identified where an application had been submitted or received planning permission (those that were refused or withdrawn were omitted from the study) and adequate information relating to archaeological works could be obtained from online sources. Of the thirty schemes, 20% were subject to pretermination evaluation trenching and 63% undertook evaluation trenching post-determination. There was no consistency in the sample of evaluation trenching undertaken, with sample of evaluation trenching ranging from between 0.13% to 4%.

1.1.8 Both the 2022 analysis and this more recent study, focusing on NSIP and TCPA schemes within Lincolnshire and Nottinghamshire, demonstrate the lack of a standard approach to archaeological evaluation works taken both at national and regional levels. They also highlight the need for a flexible approach to evaluation trenching with consideration to baseline information and, where available, the results of non-intrusive evaluation.

2 Nationally Significant Solar Infrastructure Projects

2.1.1 There are currently nine NSIPs relating to solar development that have been accepted for examination or granted consent by the Secretary of State. Table 1.1 outlines the type and extent of archaeological evaluation works undertaken to support the DCO applications for these schemes, based on information collated from the National Infrastructure Planning website.

2.1.2 The sample of evaluation trenching provided in Table 1.1 below has been calculated from evaluation trenching reports submitted as supporting information to the relevant DCO applications. The sample is calculated from the total number of trenches undertaken across the whole scheme. It should be noted that only the Scheme, West Burton Solar Project, Gate Burton Energy Park and Heckington Fen Solar Park have undertaken trenching within the cable route which joins the scheme to the grid connection and, of these, only Gate Burton Energy Park and Heckington Fen Solar Park have completed a programme of evaluation trenching across the entire cable corridor linking the scheme to the grid connection.

2.1.3 A further fifteen schemes are detailed as being at scoping stage on the National Infrastructure Planning website. No information regarding proposed evaluation works for these schemes is currently available on the National Infrastructure Planning website and so these schemes have not been included in the table below.

Table 1.1: Archaeological evaluation undertaken for nationally significant solar schemes

Scheme	Status	County	Non-intrusive evaluation	Pre-determination evaluation trenching
Sunnica Energy Farm (East and West)	Awaiting Decision	Cambridgeshire / Suffolk	Full coverage by geophysical survey	1.32%
Longfield Solar Farm	DCO made	Essex	Full coverage by geophysical survey	0.08%
Cleve Hill Solar Project	DCO made	Kent	None	None
Little Crow Solar Park	DCO made	North Lincolnshire	Full coverage by geophysical survey	0.47%

Scheme	Status	County	Non-intrusive evaluation	Pre-determination evaluation trenching
Cottam Solar Project	Examination	Lincolnshire	Full coverage by geophysical survey	0.39%
Gate Burton - Solar & Energy Storage Park	Examination	Lincolnshire	Full coverage by geophysical survey	1.09% (excluding exclusion zones)
Heckington Fen Solar Park	Examination	Lincolnshire	Full coverage by geophysical survey	Main sites - 1.63% Cable route - 2% (+2)
West Burton Solar Project	Examination	Lincolnshire	Full coverage by geophysical survey	0.45%
Mallard Pass Solar Farm	Recommendation	Lincolnshire	Full coverage by geophysical survey	0.30%

3 Town and Country Planning Act (TCPA) Solar Projects

3.1.1 Table 1.2 outlines the type and extent of archaeological evaluation works undertaken for solar schemes submitted under the Town and County Planning Act (TCPA) in Lincolnshire and Nottinghamshire.

3.1.2 The information has been collated from the Government's Renewable Energy Planning Database (last update October 2023) and information available on planning authority online portals. Schemes where no information pertaining to archaeological assessment works could be identified have not been included in the table below.

3.1.3 The table below focuses on schemes that have received permission or have submitted an application for planning permission and have been active since 2018 as detailed on the Government's Renewable Energy Planning Database.

3.1.4 The sample of evaluation trenching has been provided where sufficient information was available.

3.1.5 For schemes that have received planning permission, it has been assumed that no evaluation trenching was undertaken where no evaluation trenching report is available, or where no evaluation trenching is mentioned in other associated documents.

Table 1.2: Archaeological evaluation undertaken for TCPA solar schemes

Scheme	Status	County	Non-intrusive evaluation	Pre-determination Evaluation trenching	Post-determination Evaluation trenching
Belle Eau Park	Planning Permission Expired	Nottinghamshire	Full coverage by geophysical survey	No	No
Bluestone Heath Road	Planning Permission Expired	Lincolnshire	Full coverage by geophysical survey	No	Yes
Bypass Solar Farm	Awaiting Construction	Lincolnshire	Geophysical survey post-determination	No	0.90%

Scheme	Status	County	Non-intrusive evaluation	Pre-determination Evaluation trenching	Post-determination Evaluation trenching
Church Farm, Kingston On Soar - Solar Photovoltaic Farm	Awaiting Construction	Nottinghamshire	Full coverage by geophysical survey	No	Yes (only in 'blank' areas)
Cotmoor Lane	Awaiting Construction	Nottinghamshire	Full coverage by geophysical survey	0.13%	0.66%
Cowbridge Road, Bicker Fen - Solar Array	Application Submitted	Lincolnshire	Full coverage by geophysical survey	No	1.32%
Fair Oaks Renewable Energy Park - Solar farm & Battery energy storage	Application Submitted	Nottinghamshire	Full coverage by geophysical survey	Yes (unknown sample)	unknown
Frithwood Farm, Frithwood Lane - Solar Farm	Application Submitted	Nottinghamshire	Full coverage by geophysical survey	unknown	unknown
Gainsborough Road, Saundby - Solar Farm	Awaiting Construction	Nottinghamshire	Full coverage by geophysical survey	No	2.11%

Scheme	Status	County	Non-intrusive evaluation	Pre-determination Evaluation trenching	Post-determination Evaluation trenching
Gonerby Moor, Great Gonerby - Solar Farm	Awaiting Construction	Lincolnshire	Geophysical survey post-determination?	No	1.05%
Gorse Lane	Under Construction	Lincolnshire	Geophysical survey post-determination	No	0.53%
Hatton Solar Farm	Application Submitted	Lincolnshire	Geophysical survey post-determination	No	Yes
Inkersall Grange Farm	Awaiting Construction	Nottinghamshire	Full coverage by geophysical survey	No	2.12%
Knapthorpe Grange, Caunton - Solar Farm	Application Submitted	Nottinghamshire	Full coverage by geophysical survey	3.22%*	unknown
Little Hale Fen - Solar Farm	Application Submitted	Lincolnshire	Full coverage by geophysical survey	unknown	unknown
Low Farm Solar Farm	Under Construction	Lincolnshire	No	No	0.20%
Manor Farm	Awaiting Construction	Lincolnshire	Full coverage by geophysical survey	0.59%	No
Stud Solar Farm	Planning Permission Expired	Nottinghamshire	No	No	2%

Scheme	Status	County	Non-intrusive evaluation	Pre-determination Evaluation trenching	Post-determination Evaluation trenching
					(1% contingency)
Sweet Briar Farm - Solar Farm	Application Submitted	North Lincolnshire	Full coverage by geophysical survey	1.29%**	unknown
The Hollies Solar Park - Skegness - extension	Awaiting Construction	Lincolnshire	Full coverage by geophysical survey	No	No
The Old Airfield Solar Photovoltaic Farm	Awaiting Construction	Lincolnshire	Targeted geophysical survey?	No	Yes
Tiln Farm Solar Farm	Under Construction	Nottinghamshire	Full coverage by geophysical survey	No	2 – 4% (dependant on archaeological potential)
Tuxford Road Solar Farm	Awaiting Construction	Nottinghamshire	Full coverage by geophysical survey	No	0.70%
Vicarage Drove - Solar farm & Battery storage	Awaiting Construction	Lincolnshire	Full coverage by geophysical survey	No	Yes
White Cross Lane	Under Construction	Lincolnshire	Full coverage by geophysical survey	No	0.32%

Scheme	Status	County	Non-intrusive evaluation	Pre-determination Evaluation trenching	Post-determination Evaluation trenching
Winkburn Estate Solar Farm	Awaiting Construction	Nottinghamshire	Full coverage by geophysical survey	0.99%	0.45%
Wood Lane Solar Farm	Awaiting Construction	Nottinghamshire	Full coverage by geophysical survey	No	2.60%
Yarburgh Grove Farm	Operational	Lincolnshire	No	No	No

* No clear justification could be identified within the available documents for the high sample of pre-determination evaluation trenching required to support the Knapthorpe Grange, Caunton, Nottinghamshire Solar Farm Application. Geophysical Survey was considered to respond well to the environment of the survey area identifying anomalies of a possible archaeological origin, as well as those of an agricultural, modern and occasional geological nature[6]. The interim report for the evaluation trenching stated "*the findings of the evaluation to date have been in keeping with the geophysical survey which did not identify many archaeological remains. In the main, field boundaries were noted, [including] projected ridge and furrow, field drains and uncertain origin trends. Where trenches have targeted geophysical anomalies, no archaeological features have been uncovered*"[7]. Although one linear feature of archaeological origin was identified by the evaluation trenching, the interim report concluded "*a site visit took place on 21st September 2023 with AOC Archaeology, Richard Goddard of Pegasus Group and Jan Allen, the Archaeological Advisor for the Local Planning Authority. It was agreed on site that once the trenches*

[6] Magnitude Surveys 2022
[7] AOC Archaeology 2023, Paragraph 2.7

were fully investigated and recorded; they could be backfilled. It was also agreed that the archaeology recorded to date is not significant enough to warrant further mitigation works."[8]

** Geophysical Survey was undertaken in 2021, and concluded that the results were largely of an agricultural, modern or geological origin and that there was a low archaeological potential within the site[9]. Detailed advice provided by North Lincolnshire Council in response to Sweet Briar Farm - Solar Farm in 2022 stated *"Geophysical survey is the preliminary stage of an archaeological field evaluation generally followed by the excavation of trial trenches to confirm the results of the survey. Without the results from both stages of field evaluation there is inadequate information to assess archaeological significance and the impact of the proposed development."*[10] Archaeological evaluation undertaken in 2023 also encountered few archaeological features; the evaluation report concluded "*given the scarcity and sparsity of archaeological features as highlighted above, the proposed development is unlikely to have a material impact on the archaeological record."*[11].

[8] AOC Archaeology 2023, Paragraph 4.4
[9] NAA 2021

[10] North Lincolnshire Council 2022
[11] Wessex Archaeology 2023, Paragraph 8.2.6

4 References

Ref.1 DESNZ 2023, Overarching National Policy Statement for Energy (EN-1)

Ref.2 DESNZ 2023, National Policy Statement for Renewable Energy Infrastructure (EN3)

Ref.3 DLUHC 2023, National Planning Policy Framework (NPPF)

Ref.4 GHC Archaeology & Heritage ltd 2022a, Analysis of Archaeological Works Undertaken to Support Development Consent Orders

Ref.5 Magnitude Surveys 2022, Geophysical Survey Report: Land Adjoining Knapthorpe Grange, Caunton

Ref.6 AOC Archaeology 2023, Land Adjoining Knapthorpe Grange, Caunton, Nottinghamshire: Archaeological Evaluation Interim Report.

Ref.7 North Lincolnshire Council 2022 Planning permission for the installation of a solar photovoltaic array/solar farm & associated infrastructure, Sweet Briar Farm, Carr Road, Ulceby

Ref.8 NAA 2021 Sweetbriar Solar Farm, Ulceby, Lincolnshire: Geophysical Survey

Ref.9 Wessex Archaeology 2023 Sweetbriar Solar Farm, North Lincolnshire: Archaeological Evaluation

Appendix A: Analysis of Archaeological Works Undertaken to Support Development Consent Orders

ANALYSIS OF ARCHAEOLOGICAL WORKS UNDERTAKEN TO SUPPORT DEVELOPMENT CONSENT ORDERS

PREPARED ON BEHALF OF
ISLAND GREEN POWER

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Contents

1 INTRODUCTION

1.1 This report presents an assessment of the range of archaeological works that have been undertaken to support Development Consent Orders (DCO) for Nationally Significant Infrastructure Projects (NSIP).

1.2 Nationally significant infrastructure projects were initially controlled by the Infrastructure Planning Commission (IPC) which was established by the Planning Act 2008, which began operating on 1 October 2009 on an advice and guidance basis. Full powers of the IPC to receive, examine and approve applications for development consent came into force on 1 March 2010.

1.3 The IPC was abolished by the Localism Act 2011 which transferred decision-making powers created by the 2008 Act to the relevant Secretary of State. Since 1 April 2012, acceptance and examination of applications for development consent is dealt with by a new Infrastructure Planning Unit within the Planning Inspectorate

1.4 The process was intended to replace the traditional planning system and to reduce uncertainty around NSIPS by introducing Development Consent Orders which were aimed towards increasing efficiency by reducing the amount of consent regimes required to meet development consent as the old system required approval over several pieces of legislation.

1.5 Under The Planning Act 2008, nationally significant infrastructure projects (NSIPs) are large scale projects falling into five general categories (Energy; Transport; Water; Waste Water and Waste). They include projects as diverse as electricity generating projects, rail freight interchanges, reservoirs and hazardous waste facilities.

1.6 Thresholds for Infrastructure developments considered to be nationally significant and requiring development consent are set out in the Planning Act 2008 Regime. As well as amendments under the Localism Act 2011, there have been some further small changes via the Growth and Infrastructure Act 2013 which has also enabled a further category of business or commercial projects to use the regime. The Infrastructure Act 2015 speeds up further the planning process for nationally significant infrastructure projects and The Housing and Planning Act 2016 allows 'an element of housing' in an application.

2 METHODOLOGY

2.1 The planning inspectorate maintains a register of applications for Nationally significant Infrastructure Projects which has provided the source of data for this study (https://infrastructure.planninginspectorate.gov.uk/projects/register-of-applications/). The register currently lists 149 projects dating back to October 2010, however, those which were determined prior to April 2016, have been archived and three further applications

have been withdrawn. The accompanying application documents for those withdrawn and archived projects is not available online and they are, therefore, not included in this study.

2.2 The register contains full application details for 83 NSIP schemes and this study assess the archaeological information submitted with the developers application to inform the respective Environmental Statements (ES). A number of the NSIP projects involve both offshore and onshore elements. For the purposes of this study only onshore archaeological works have been included.

3 DATA

3.1 A full list of projects and the full range of archaeological works undertaken is presented in Appendix 1 and the following section breaks that information down into more specific areas.

3.2 As discussed above NSIP schemes fall into a number of categories, however, in the case of the 83 schemes assed they were found to fall into one of four categories: Leisure (BC)(1 project), Waste (WS)(1 project), Energy (EN)(47 projects) and Transport (TR)(34 projects).

3.3 All of the projects identified have been subject to desk-based assessment (including both archaeology and built heritage). The level of information contained in the desk-based assessment complies with the minimum requirements as outlined by CIfA, although the level of additional information (e.g. LiDAR, aerial photographic assessment etc.) does vary on a project specific basis. Whilst many of the ES chapters list walkover surveys as 'fieldwork/field survey/field evaluation' walkover surveys are an integral part of desk-based assessment and, as such, are not regarded as fieldwork for the purposes of this study.

Table 1. Breakdown of number of stages of archaeological works undertaken to support application

	Desk-based assessment	No. of fieldwork elements					
		0	1	2	3	4	5
Number of Projects	83	26	26	26	4	1	0
Percentage of 83 projects assessed	100%	31%	31%	31%	5%	<1%	0%

3.4 It is clear from the above table that a significant number of NSIP projects (almost a third) have not been supported by any archaeological fieldwork and desk-based assessment alone has been sufficient to make a recommendation on the application.

3.5 In terms of predetermination fieldwork there are five techniques that have been employed in the projects assessed: Geophysical Survey (GS), Trial Trench Evaluation (TT), Geoarchaeological Assessment (GA), Archaeological Watching Brief on ground investigation (WB), and Artefact Recovery (AR) (fieldwalking/metal detecting).

Table 2. Fieldwork techniques employed

*some projects use more than 1 technique, see Table 3 for details

	Geophysical Survey (GS)	Trial Trench Evaluation (TT)	Geoarchaeological Assessment (GA)	Watching Brief on GI works (WB)	Artefact Recovery (AR)
Leisure (1 project)	1 (100%)	1 (100%)	0	0	0
Waste (1project)	1 (100%)	1 (100%)	0	0	0
Energy (47 projects)	24 (51%)	7 (14%)	6 (13%)	4 (8%)	2 (4%)
Transport (34 projects)	21 (61%)	13 (38%)	9 (26%)	2 (6%)	2 (6%)
Combined (83 projects)	47 (57%)	22 (26%)	15 (18%)	6 (7%)	4 (5%)

Table 3.The combination of fieldwork techniques

Geophysical Survey (GS), Trial Trench Evaluation (TT), Geoarchaeological Assessment (GA), Archaeological Watching Brief on ground investigation (WB), and Artefact Recovery (AR) (fieldwalking/metal detecting)

	GS	GS+TT	GS+GA	TT	GA	GS+AR	GS+WB	GS,GA+WB	GS,WB,AR,TT	GS,AR+TT	GS,WB+TT
Leisure (1 project)		1 100%									
Waste (1 project)		1 100%									
Energy (47 projects)	11 23%	6 13%	2 4%	1 2%	3 6%	1 2%	2 4%	1 2%	1 2%		
Transport	4	9	3	1	6		1			2	1

(34 projects)	12%	26%	9%	3%	18%		3%			6%	3%
Combined (83 projects)	15 18%	17 20%	5 6%	2 2%	9 11%	1 <1%	3 4%	1 <1%	1 <1%	2 2%	1 <1%

3.6 In the cases of both geophysical survey and trial trenching the above figures just note which techniques were employed, however, in many cases the extent of such works is also a consideration. The below table is slightly simplified in that full coverage does not necessarily cover the entire application area but all areas where ground conditions were suitable and access available. Where targeted works have been used the reasoning for the targeting can include a number of factors but are principally concerned with either areas of known or perceived high archaeological potential/sensitivity and areas of most impact.

Table 4. Breakdown of projects showing full or targeted Geophysical Survey (GS) and Trial Trenching (TT)

	GS full coverage	GS targeted	TT full coverage	TT targeted
Leisure (1 project)	0	1 (100%)	0	1 (100%)
Waste (1 project)	1 (100%)	0	1 (100%)	0
Energy (47 projects)	14 (30%)	10 (21%)	0	7 (15%)
Transport (34 projects)	20 (59%)	1 (3%)	12 (35%)	1 (3%)
Combined (83 projects)	35 (42%)	12 (14%)	13 (15%)	9 (11%)

3.7 An element of the NSIP schemes that is unique to the energy projects is the linear elements comprising cable connections and/or pipelines. Of the 47 energy projects 29 included underground connections of varying lengths. Of those 29 the cable connection of one was not included in the DCO, five had lengths of less than 1km and three were proposed either within, or directly adjacent to roads. The approach to archaeological assessment of the connection routes on the remaining 20 projects varied greatly.

Table 5. Techniques employed on energy schemes with underground cable connection routes greater than 1km in potentially archaeologically sensitive areas

	DBA only	GS full coverage	GS targeted	TT targeted	TT full coverage
More than 1km connection (20 projects)	5 25%	7 35%	6 30%	2 10%	0 0

3.8 The 83 NSIP projects assessed have been located across both England and Wales including 43 counties or unitary authorities with their own archaeological advisors (see Appendix 1 for details). The number of projects involved are too small to identify any differing approach to archaeological assessment across county boundaries with only five counties having advised on more than four NSIP projects (Suffolk, Norfolk, North Lincolnshire, Greater London and Kent).

Table 6. Archaeological techniques employed in counties with five or more NSIP schemes

	DBA only	GS	GA	GS+GA	GS+TT	GS+AR	GS,AR +TT
Suffolk (5 projects)	1	2			2		
Norfolk (5 projects)		2	1		3	1	
North Lincolnshire (7 projects)	2	1		2	1		1
Greater London (5 projects)		2	3				
Kent (7 projects)	6		1				

3.9 Whilst this sample is very small, with the exception of Kent, it is clear that there is not a standardised approach to archaeological assessment across NSIP schemes even within counties receiving their archaeological advice from a single source. Factors such as the impact of the scheme and the perceived archaeological potential may well come into play in arriving at a decision over appropriate techniques which is not accounted for in the above table.

4 DISCUSSION

4.1 From the data collated above and included in Appendix 1 it is clear that there is great variability in the approach taken to archaeological assessment within the DCO process. With the leisure (BC) and waste (WS) projects aside (being just one of each somewhat skews the data) it is also clear that there is a marked difference in approach to transport schemes than energy, where transport sees a much higher proportion of schemes subject to full archaeological evaluation. This is likely due to a combination of factors, but likely primarily because the impact of transport schemes (particularly road schemes that make up the bulk of the applications) are well understood and there is an established framework for their assessment. Energy schemes, conversely, cover a wide array of projects of varying scale and impact.

4.2 Given the scale of NSIP schemes it is interesting to note that almost a third of projects had no requirement for pre-determination fieldwork with archaeological information being provided from purely desk-based assessment. Whilst it has not been possible to fully assess the archaeological potential of each individual scheme within this study, it is clear that not all projects with no pre-determination fieldwork have no archaeological potential, indeed many propose archaeological fieldwork to be undertaken post-consent.

4.3 The approach to pre-determination archaeological trenching within the DCO process is also worthy of note. As previously mentioned, the transport schemes see a relatively high proportion subject to archaeological trial trenching at full scheme coverage, however, with energy projects only 14% had any pre-determination trial trenching and, in all cases, that trenching was targeted rather than providing a blanket coverage of all areas of impact. When cable/pipeline connections are considered that proportion drops to 10%.

Appendix 1: Gazetteer of NSIP schemes assessed

NIP Reference	Project Name	Status	County	Desk Based Assessment	Geophysical Survey	Geoarchaeology Survey	Watching Brief on GI works	Artefact recovery (Fieldwalking and/or metal detecting)	Trenching	Includes cable/pipeline connection
BC080001	The London Resort	Withdrawn	Greater London	✓	✓				✓ (Targeted)	
EN010012	The Sizewell C Project	Granted	Suffolk	✓	✓ (Targeted)				✓	
EN010048	White Rose Carbon Capture and Storage Project	Refused	North Yorkshire	✓	✓				✓ (Targeted, previous application)	
EN010053	Hornsea Offshore Wind Farm (Zone 4) - Project Two	Granted	North Lincolnshire and North East Lincolnshire	✓	✓				✓	✓ (40km) DBA, Geophysical and targeted trenching
EN010055	Wrexham Energy Centre	Granted	Wrexham	✓						✓ (4km) DBA only
EN010056	East Anglia THREE Offshore Wind Farm	Granted	Suffolk	✓	✓ (Targeted)				✓ (Targeted, converter stations only)	✓ (37km) DBA, Fieldwork on converter stations only
EN010064	Meaford Energy Centre	Granted	Staffordshire	✓						
EN010068	Millbrook Power	Granted	Bedfordshire	✓					✓ (Targeted, previous application)	✓ (1km) Half in disturbed ground, no fieldwork on other half
EN010069	Abergelli Power	Granted	Swansea	✓						✓ (2.5km) DBA only
EN010071	North London Heat and Power Project	Granted	Greater London	✓		✓				
EN010072	Glyn Rhonwy Pumped Storage	Granted	Gwynedd	✓						Connection not included in DCO
EN010077	East Anglia ONE North Offshore Windfarm	Granted	Suffolk	✓	✓					✓ (7km) DBA, Geophs
EN010078	East Anglia TWO Offshore Windfarm	Granted	Suffolk	✓	✓					✓ (7km) DBA, Geophs
EN010079	Norfolk Vanguard	Granted	Norfolk	✓	✓ (Targeted)					✓ (60km) DBA, Geophs (targeted)
EN010080	Hornsea Project Three Offshore Wind Farm	Granted	Norfolk	✓	✓ (Targeted)			✓		✓ (60km) DBA, Geophs (targeted)
EN010081	Eggborough CCGT	Granted	North Yorkshire	✓	✓					✓ (5km) DBA and geophys
EN010082	Tees CCPP	Granted	Redcar and Cleaveland	✓						
EN010083	Wheelabrator Kemsley Generating Station (K3) and Wheelabrator Kemsley North (WKN) Waste to Energy Facility	Granted	Kent	✓						✓ (negligible)
EN010085	Cleve Hill Solar Park	Granted	Kent	✓		✓				✓ (negligible)

EN010087	Norfolk Boreas	Granted	Norfolk	✓	✓ (Targeted)		✓			✓ (60km same route as EN010079)
EN010088	West Burton C power station	Granted	Nottinghamshire	✓						
EN010090	Kemsley Paper Mill (K4) CHP Plant	Granted	Kent	✓						
EN010091	Drax Re-power	Granted	North Yorkshire	✓						
EN010092	Thurrock Flexible Generation Plant	Granted	Essex	✓	✓ (Targeted)	✓	✓			✓ (2km) DBA only
EN010093	Riverside Energy Park	Granted	Greater London	✓		✓				✓ (mostly in roads)
EN010095	Boston Alternative Energy Facility (BAEF)	Decision	Lincolnshire	✓	✓					
EN010097	VPI Immingham OCGT	Granted	North east Lincolnshire	✓						
EN010098	Hornsea Project Four Offshore Wind Farm	Examination	East Riding	✓	✓ (Targeted)					✓ (39km) Geophys targeted on 'priority areas'
EN010101	Little Crow Solar park	Granted	North Lincolnshire	✓	✓		✓	✓	✓ (Targeted, nothing on cable route)	✓ (very short c. 400m)
EN010106	Sunnica Energy Farm	Pre-examination	Cambridgeshire and Suffolk	✓	✓				✓ (Nothing on cable route)	✓ (15km) DBA and geophys
EN010107	South Humber Bank Energy Centre	Granted	North Lincolnshire	✓						
EN010112	Awel y Môr Offshore Wind Farm	Pre-examination	Denbigshire	✓	✓					✓ (12km) DBA and geophys
EN010114	Keadby 3 Carbon Capture Power Station	Recommendation	North Lincolnshire	✓	✓	✓				✓ (c.500m) DBA only
EN010116	North Lincolnshire Green Energy Park	Pre-examination	North Lincolnshire	✓	✓	✓				✓ (15km) DBA and geophys
EN010118	Longfield Solar Farm	Examination	Essex	✓	✓ (Not cable route)					✓ (6km) DBA only
EN020014	North Wales Wind Farms Connection	Granted	Denbigshire and Conwy	✓						✓ (overhead)
EN020016	Brechfa Forest Connection	Granted	Camarthenshire	✓						✓ (overhead)
EN020017	Richborough Connection Project	Granted	Kent	✓						✓ (overhead)
EN020019	Triton Knoll Electrical System	Granted	Lincolnshire	✓	✓ (Targetded)					✓(60km) DBA for full route, geophys on electrical compounds only
EN020021	Reinforcement to North Shropshire Electricity Distribution Network	Granted	Shropshire	✓						✓(predominantly overhead)
EN020022	AQUIND Interconnector	Refused	Hampshire	✓	✓		✓			✓ (16km mostly in roads)
EN030002	Keuper Gas Storage Project	Granted	Cheshire	✓						

EN060004	River Humber Gas Pipeline Replacement Project	Granted	East Riding and North Lincolnshire	✓	✓					
EN070001	Yorkshire and Humber CCS Cross Country Pipeline	Refused	East Riding and North Yorkshire	✓	✓					✓ (67km) DBA and geophys
EN070005	Southampton to London Pipeline Project	Granted	Hampshire Surrey Greater London	✓	✓ (Targeted)					✓ (90km) (Targeted on known potential)
EN10084	Thanet Extension Offshore Wind Farm	Refused	Kent	✓						✓ (2km) DBA only
ENO10110	Medworth Energy from Waste	Pre-examination	Cambridgeshire	✓						✓ (mostly in roads)
EN010103	The Net Zero Teesside Project	Examination	Redcar and Cleveland	✓						
TR010006	M20 Junction 10A	Granted	Kent	✓						
TR010016	A63 Castle Street Improvement-Hull	Granted	East Riding	✓					✓ (Targeted)	
TR010018	A14 Cambridge to Huntingdon Improvement Scheme	Granted	Cambridgeshire	✓	✓			✓		
TR010019	M4 Junctions 3 to 12 Smart Motorway	Granted	Berkshire	✓						
TR010020	A19 / A184 Testos Junction Improvement	Granted	Tyneside	✓	✓					
TR010021	Silvertown Tunnel	Granted	Greater London	✓		✓				
TR010022	A38 Derby Junctions	Decision	Derbyshire	✓						
TR010023	Lake Lothing Third Crossing	Granted	Suffolk	✓		✓				
TR010024	A19 Downhill Lane Junction Improvement	Granted	Tyneside	✓	✓					
TR010025	A303 Stonehenge	Decision	Wiltshire	✓	✓	✓				
TR010026	A30 Chiverton to Carland Cross Scheme	Granted	Cornwall	✓	✓				✓	
TR010027	M42 Junction 6 Improvement	Granted	Solihull	✓	✓				✓	
TR010029	M25 junction 28 improvements	Granted	Greater London Essex	✓						
TR010031	A1 Birtley to Coal House Improvement Scheme	Granted	Gateshead	✓	✓					
TR010034	A57 link road	Recommendation	Tameside	✓	✓	✓				

TR010035	A585 Windy Harbour to Skippool Improvement Scheme	Granted	Lancashire	✓	✓	✓				
TR010036	A303 Sparkford to Ilchester Dualling	Granted	Somerset	✓	✓				✓	
TR010037	A47 - A11 Thickthorn Junction	Decision	Norfolk	✓	✓				✓	
TR010038	A47 North Tuddenham to Easton	Decision	Norfolk	✓	✓				✓	
TR010040	A47 Blofield to North Burlingham	Granted	Norfolk	✓	✓			✓	✓	
TR010041	A1 in Northumberland - Morpeth to Ellingham	Decision	Northumberland	✓	✓				✓	
TR010043	Great Yarmouth Third River Crossing	Granted	Norfolk	✓		✓				
TR010044	A428 Black Cat to Caxton Gibbet Road Improvement scheme	Decision	Bedfordshire Cambridgeshire	✓	✓				✓	
TR010054	M54 to M6 Link Road	Granted	Staffordshire	✓	✓		✓			
TR010056	A417 Missing Link	Recommendation	Gloucestershire	✓	✓				✓	
TR020002	Manston Airport	Decision	Kent	✓						
TR030002	York Potash Harbour Facilities Order	Granted	Redcar and Cleveland	✓		✓				
TR030006	Able Marine Energy Park Material Change 2	Granted	North Lincolnshire	✓						
TR03003	Tilbury2	Granted	Essex	✓		✓				
TR040011	Portishead Branch Line - MetroWest Phase 1	Decision	North Somerset Bristol	✓						
TR050005	West Midlands Interchange	Granted	Staffordshire	✓	✓ (Targetded)					
TR050006	Northampton Gateway Rail Freight Interchange	Granted	Northamptonshire	✓	✓				✓	
TRO10062	A66 Northern Trans-Pennine Project	Pre-examination	Cumbria County Durham	✓	✓	✓			✓	
TR010039	A47 Wansford to Sutton	Recommendation	Peterborough	✓	✓		✓		✓	
WS010005	East Northants Resource Management Facility Western Extension	Recommendation	Northamptonshire	✓	✓				✓	


GHC