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**A17 SUTTERTON TO
SUTTON BRIDGE IMPROVEMENT
ARCHAEOLOGY**

26 March 1992

RPS CONSULTANTS
THE ENVIRONMENTAL CONSULTANCY

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1.0 INTRODUCTION

- 1.1 This report has been produced by RPS Watson on instructions from Sir Owen Williams and Partners, Consulting Engineers to the Department of Transport for the A17 Sutterton to Sutton Bridge Improvement. It provides an initial appraisal for the archaeological implications of alternative routes.
- 1.2 The scope of the investigation is an initial study of the archaeology, comprising a survey of existing information available from national and local sources. The data has been sought from:
- o RCHM(E) National Aerial Photographic Library
 - o Cambridge University Aerial Photographic Committee
 - o English Heritage
 - o Lincolnshire County Council
 - o Lincolnshire Archaeological Trust

This data has been used to produce a desk-top study in accordance with the Department of Transport's 'Manual of Environmental Appraisal', Part B, Section 6.2.5.

- 1.3 On the basis of this study the following elements are reported on here:
- o identification of archaeological sites which may be affected by the alternative routes under consideration
 - o a brief on-site inspection of the area, using Public Rights of Way
 - o an assessment of the possible effects, direct and indirect, of alternative routes
 - o recommendations for further study

2.0 NATIONAL POLICIES

Scheduled Ancient Monuments

- 2.1 Statutory protection for archaeology is principally enshrined in the Ancient Monuments and Archaeological Areas Act of 1979, amended in 1983 by the National Heritage Act. Nationally important sites are listed in a Schedule of Ancient Monuments which is maintained by the Secretary of State for the Environment.
- 2.2 Proposals which will affect Scheduled Ancient Monuments (SAMs) or their settings must be approved by the Secretary of State prior to works commencing. English Heritage (The Historic Buildings and Monuments Commission for England) advises the Secretary of State on scheduling and other archaeological and historic building matters. There are currently some 12,750 SAMs, but a 10 year review (the Monuments Protection Programme) is in progress which will lead to a substantial increase - possibly 5 fold - in the number of SAMs.
- 2.3 The works which require the consent of the Secretary of State are any which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up the monument or its setting.
- 2.4 The nearest SAM to the route is the shrunken medieval village at Algarkirk, about 1km from the proposed route. It is not anticipated that there would be any impact.

English Heritage

- 2.5 The Historic Buildings and Monuments Commission, also known as English Heritage (E.H.) is the official body incorporated by the National Heritage Act 1983 with responsibility:
"so far as is practicable to secure the preservation of ancient monuments and historic buildings in England".
- 2.6 English Heritage advises the Secretary of State upon SAM consent applications, EH may also be called upon to advise on archaeological matters even if they do not affect SAMs, and it monitors the working of the 1979 Act and PPG 16. It would expect to be consulted on the impact of the present scheme.

- 2.7 English Heritage published 'Roads for Prosperity: The Archaeological Impact' in September 1990, in response to the Government's White Papers 'Roads for Prosperity' published in 1989 and 'Trunk Roads, England: Into the 1990's', published in February 1990.
- 2.8 Although it has no statutory or mandatory force 'Roads for Prosperity: the Archaeological Impact' is a succinct statement of English Heritage thinking in relation to road construction. The study summarises its conclusions as follows:
- a) *based on existing knowledge, the trunk road scheme is likely to impact on over 800 known archaeological sites.*
 - b) *the full extent of impact is likely to be significantly greater, by a large factor, when the potential for further discoveries prior to and during development is taken into account.*
 - c) *the potential costs for archaeological recording of such an impact would be in excess of £70 million at 1990 prices, and the true costs in the light of the potential for further discoveries would undoubtedly be much higher.*
 - d) *these conclusions indicate that the environmental impact must be fully assessed in advance of route selection to allow for the consideration of the possibilities for mitigation of impact and the reduction of possible recording costs.*
 - e) *it is, therefore, necessary to give greater weight to the archaeological implications of trunk road development and to integrate fully such considerations into the process of assessment required for all such Developments.*

The A17 Sutterton to Sutton Bridge programme of archaeological study can claim to meet the conditions in (d) above.

DoE Planning Policy Guidance (PPG 16)

- 2.9 The 'Planning Policy Guidance on Archaeology and Planning' (PPG 16) published by the DoE in November 1990 consolidates advice to local authorities on the treatment of archaeology in the planning process. PPG 16 emphasises the importance of archaeology (paras 3-14) particularly in terms of the irreplaceability of the archaeological resource and its variety.
- 2.10 PPG 16 also outlines the interaction of central government, English Heritage and local authorities and the importance of the latter is emphasised. Development plans are identified as providing the policy framework for the protection, enhancement and preservation of sites of archaeological interest and their settings. The County Sites and Monuments Record (SMR) is the primary source of data on such constraints. Applicants for planning permission are advised to consult the SMR and county archaeological officer at the earliest opportunity to make an assessment of the archaeological impact and put forward proposals for its mitigation prior to the determination of the application. This may require an evaluation of the site prior to determination to provide sufficient information to enable an informed decision to be made.
- 2.11 Conditions may be attached to the consent which require the applicant to "preserve by record" (excavate) sites which are not to be preserved in situ. These conditions should be fair, reasonable and practicable (DoE Circular 1/85).
- 2.12 The discovery of unsuspected archaeological remains in the course of development is considered to be a matter for informal agreement between the developers and archaeologists and attention is drawn to the British Archaeologists' and Developers' Liaison Group and English Heritage as possible sources of advice.
- 2.13 A recent Parliamentary Written Answer by the Minister of State, Department of Transport implied that the Department accepts the precepts of PPG 16 in that:

"The effect on archaeological sites is assessed before decisions on routes are taken"

(Hansard, 18th December, 1990; WA48).

- 2.14 The procedure adopted for the A17 Sutterton to Sutton Bridge Improvements are in accordance with the advice in PPG 16 and with the Minister's written answer. This report takes the form of a desk-top study of available information.

Department of Transport

- 2.15 The Government's policies for trunk roads were set out in 'Trunk Roads, England; into the 1990's' published in February 1990. Paragraph 1.8 emphasises that:

"the requirement for road travel are met in as environmentally friendly a way as possible".

The paper goes on to point out that:

"a great deal of effort already goes into assessing the environmental impact of potential schemes and designing them to fit as sympathetically as possible into the road programme the Government intends to do even more".

Paragraph 4.6 notes that it has been standard practice to undertake an environmental assessment of trunk road schemes since the Leitch report in 1977.

- 2.16 Paragraph 5.7 reports that new initiatives are to be taken on the funding of archaeological investigations in advance of works and paragraph 5.9 announces an increase in the amount the DTp pays to English Heritage to fund archaeological survey and excavation work in advance of schemes from £100,000 to £500,000 annually. At the end of 1991 the Department of Transport announced that pre-construction archaeological surveys were to be directly funded as part of the environmental assessments on all national trunk road and motorway schemes.

The DTp's 'Manual of Environmental Appraisal' (1983)

2.17 The DTp Manual includes a section (B6) on Heritage and Conservation Areas. This summarises the statutory protection given to SAMs and Listed Buildings and also accepts that other archaeological features, while not necessarily rare examples, are nonetheless part of the Nation's heritage, and that schemes should avoid them where practicable (paragraph 6.2.5).

2.18 The Manual advises that a summary of the heritage information (archaeology and buildings) should be included in the Consultation Framework. If further information is forthcoming at the public consultation stage, then it should be followed up:

"since it is preferable, for instance, to have a building or archaeological site added to the schedule at an early stage rather than to risk delaying a scheme in the final stages" (6.5.5).

It is also suggested that the preferred line be resurveyed before the public inquiry to ensure that all heritage sites have been identified (6.5.7). This would now, post-PPG 16, imply a field evaluation.

2.19 In the Department's Preliminary Report following the public consultation, the presence of heritage sites and the proposed response in the form of rescue archaeology, etc. should be noted. The Public Inquiry framework will have a more detailed summary of sites and the impact and mitigation proposed (6.7.3). This would include the results of the evaluation carried out before the Public Inquiry.

2.20 In the light of PPG 16, 'Trunk Roads, England: into the 1990's' and 'English Heritage's Roads to Prosperity, the archaeological Impact' the survey, identification, impact assessment and the preparation of mitigation proposals are now envisaged as taking place at an earlier stage and in more depth than previously. The Department of Transport's Manual of Environmental Appraisal is presently undergoing revision.

Summary of National Policies

- 2.21 The Department of Transport has a long history of concern for statutory protected heritage sites, with ES's being required, and archaeological and listed building surveys being carried out on proposed new road lines since 1977.
- 2.22 The DoE, in PPG 16, advises that an applicant for planning permission should furnish sufficient archaeological information before determination to enable a decision to be made. This may require an evaluation of a site where information is lacking. The Minister of State, Department of Transport, stated in a written answer on 18th December 1990, that:

"the effect on archaeological sites is assessed before decisions on routes are taken. The procedures are set out in the Department's Manual of Environmental Appraisal; the manual is being revised and English Heritage are being consulted".

Part of this revision is presumably intended to take PPG 16 into account, and the Minister's reply indicates that the Department intends to take note of its advice.

3.0 LOCAL POLICY CONTEXT

Lincolnshire County Council

- 3.1 The most recent approved county structure plan is dated 1982. Individual sections of the Plan are in the process of being revised. A revised countryside section of the structure plan is being prepared and may be produced by mid-April 1992, but no draft is yet available. The 1982 'Approved Structure Plan and Explanatory Memorandum' includes the following relevant policy:

Policy 95 The Local Planning Authorities will safeguard those currently identified archaeological and industrial archaeological sites and artefacts, and will continue to identify addition sites for safeguarding

- 3.2 The Explanatory Memorandum (p. 55) recommends the following action to carry out this policy:

Action. Scheduled Ancient Monuments and other sites of outstanding importance as may be decided by the local authorities following advice, including that from the Archaeological Units, will be preserved unless exceptional circumstances require otherwise by:

- a) *entering into voluntary agreements with owners under Section 52 of the Town and Country Planning Act 1971*
- b) *refusing planning permission for proposed development*
- c) *using powers under the Ancient Monuments Acts 1913, 1931, 1953) including powers of purchase and maintenance of monuments, whether scheduled or not*

In the case of other sites of particular importance, as defined by the local planning authorities, the authorities will seek through voluntary agreement to create opportunities for the recording of site detail before and during development.

Action. The local planning authorities will consult the Archaeological Units and the County Museums Service in their local planning activities and in dealing with relevant planning applications. Consultations will ensure that features of archaeological interest are taken into account in the preparation of detailed land use plans and in reaching development control decisions.

- 3.3 The 1992 revised countryside section is likely to include provision for evaluations prior to the determination of planning applications, in response to PPG 16.
- 3.4 There are no archaeological areas identified as constraints in the 1982 Plan, except Lincoln City itself. As far as we are aware there are none contemplated in the Study Area for inclusion in the revised section due later in 1992.

Local Plans

- 3.5 The local planning authorities are Boston Borough Council north of the River Welland and South Holland between the Welland and the Nene. The statutory plans for settlements in the Study Area are: Long Sutton and Sutton Bridge Local Plan.
- 3.6 Non-statutory local plans have been prepared for Sutterton, Algarkirk and Fosdyke by Boston Borough Council.

4.0 THE ARCHAEOLOGY OF THE STUDY AREA

- 4.1 The human settlement of the area has been related to the changing relationship between land and sea levels. For the last millennium and a half the shoreline has been moving east, but prior to this there have been periods of both marine transgression and land building. This has meant that some evidence of early periods of human activity are buried under later silt deposits, and that other periods may not be represented at all because of inundation.
- 4.2 **Palaeolithic (up to 10,000 BC).** The successive ice ages and interglacials of the palaeolithic period shaped the basic topography and geology of the area. The river Trent originally flowed virtually due east-west passing near Skegness on its way to a major European river in a valley which is now the North Sea. Its progress seems to have been blocked by a mass of stagnant ice, diverting it away from the coast and redistributing the drainage pattern. Human occupation in the warmer interglacial periods is attested by finds of tools transported by ice and rivers. The only such discovery near the study area is an Acheulian hand axe dating to the Hoxnian interglacial of about 200,000 ago, found near the River Nene.
- 4.3 **Mesolithic (10,000-4,000 BC).** The last ice age ended about 10,000 BC, leaving an extensive area of boulder clay with a tundra-like climate and vegetation. This stretched far to the east, over what is now the North Sea, as the sea level was as much as 30m lower. The ice age glaciers had pushed up morainic ridges of sands, clays and boulders in a line roughly from Norfolk to the Humber. There was probably a sparse population of hunter-gatherers in this period, although evidence for them is lacking in the Study Area. By about 6,000 BC a forest of birch, hazel and pine had become established on the boulder clay. As conditions became drier and warmer around 6,000 BC this was being replaced by a temperate "mixed oak forest" of oak, alder, elm and lime. This forest can be seen at low tide off parts of the Lincolnshire coast. Sea level had also risen, although the shore is still likely to have been a score or more kilometres east of the present coast.

- 4.4 **Neolithic (4,000 BC-2,000 BC).** In the neolithic period the warm conditions continued, but it became wetter and there was a rapid sinking of land relative to the sea. This led to deteriorating land drainage, and the formation of peat in the hummocky boulder clay (the Lower Peat, see Sir Owen Williams and Partners, 'Geotechnical Desk Study' 1991, p. 7). The peat smothered the forest and made conditions relatively unattractive for the first farmers of this period. A neolithic flint axe is reported from the Holbeach area (J. May 'Prehistoric Lincolnshire' 1976) although it is not listed in the county SMR.
- 4.5 **Bronze Age (2,000-600 BC).** The early bronze age climate was drier, but the land continued to sink, allowing the sea to break through the off-shore morainic banks to flood the fens. The banks remained as islands enclosing a shallow lagoon, and the peat beds of the fens were covered with up to 3 metres of marine clay (the Barroway Drove Beds). This was followed by a period of stability, and even a slight rise in the land relative to the sea converting the saltmarsh to fresh-water marsh. A layer of fresh water silt and clay was deposited over the marine clays in the inner Fen (the Terrington Beds). During this period of stable marsh conditions there is little evidence of human activity in the Study Area, but a dug-out canoe possibly from this time was found near the River Nene, and a bronze artefact has been recovered from near Gedney Drove End (P J Davey, 'Bronze Age Metalwork from Lincolnshire' 'Archaeologia' 104, 1973, Fig. 1).
- 4.6 **Iron Age (600 BC-AD 45).** At the end of the bronze age there was a sudden climatic deterioration, probably beginning around 900 BC. These cooler wetter conditions led to fresh-water flooding and new peat formation on top of the clays (the Nordelph Peat). By the iron age period the Wash was wider and extended further inland than today, with islands of higher ground in the marsh. The marsh itself gradually changed from freshwater to salt towards the east. The islands were in the Holbeach area, while the shore line proper was further west. The intertidal creeks were utilised for salt-making all along the Lincolnshire coastline, and this industry became concentrated among the shallow lagoons and inlets of the Wash towards the end of the iron age when climatic conditions again improved a little and the land rose in relation to the sea.

- 4.7 **The Romans (AD 45-400).** Ptolemy called the area "Salinae", and the Wash itself was named Metaris AEstuarium by the Romans. The gradual silting of the inner fens began to create islands, and the earlier, more solid islands became an area of concentrated Roman activity, particularly near the tidal limits of creeks in the Study Area. Salt making was a major industry, controlled by the Roman administration, possibly as part of an Imperial Estate in the Wash area. In the drier parts grain growing was practised with large pastures reached by drove roads from small settlements. It has been suggested that the farmers were 'planted' settlers occupying 110 acres each (J B Whitwell 'Roman Lincolnshire' 1970). In the 4th century the salt industry and agriculture collapsed as the area suffered another climatic deterioration and land subsidence, with up to 2 metres of marsh silts deposited over some Roman salt workings.
- 4.8 **Post-Roman (AD400-1066).** The marine transgression and associated silting of the late Roman-Saxon period narrowed the Wash and created a coastline of shallow marshes, tidal creeks and sand bars, very familiar to the post-Roman immigrants from north Germany. The "island" around Holbeach was occupied, and features named by the settlers in their own language - Holbeach - deep brook; Fleet - stream; Fen - marsh; Gedney - Gydda's island; Moulton - Muli's settlement, Lutton - settlement by a pool; Whaplode - eelpout stream; Spalding - the settlement of the 'Spaldes' (a 7th century AD tribe?); Hirn/Hurn - a corner, angle (in the coast or a river), etc. Some of these are settlement names, not merely topographical labels. In the 8th and 9th centuries AD there was another invasion, this time by Scandinavian settlers. They appear to have occupied areas between the established Saxon hamlets, such as Algarkirk (-Algar's Church). The sinking of the land had slowed to nearly its present rate of 150mm to 300mm per century. The salt industry was re-established before the Norman conquest, although using a different technique which produced large salterns - mounds of clean sand - which continued to grow into the medieval period.
- 4.9 **Medieval (1066-1500).** Because of the action of longshore drift, dune building and silting in the post-Roman period and a land level about 3m higher than at present there were areas which could be reclaimed and utilised for pasture by the medieval period. The salt industry coupled with sheep pasturing made the local communities relatively prosperous. The grand parish church at Gedney reflects this splendidly. There were communal land reclamations like the Sea

Dyke of 1286, built by Thomas de Holbeach in agreement with Holbeach and Whaplode villages in front of Holbeach Bank. The 13th century, however, was a stormy period, and floods and tidal surges inundated the piecemeal reclamations. In 1287 the new Holbeach bank was breached in a disastrous flood which overwhelmed Mablethorpe, Boston and much of the Wash. The Holbeach banks were not repaired for over a century, and the financial burden of continuous attention to the sea defenses impoverished the once wealthy parishes, to which Sutton church remains a witness. For three centuries the threat from the sea prevented any further reclamations and required continual vigilance. Salt making ended as the sea devastated the beaches, and, more importantly, flooded the turbaries where the peat fuel was obtained.

- 4.10 **Post-Medieval (1500-1800).** By the end of 16th century the salt-marsh had begun to expand again, encouraging new reclamations. In 1613 the men of Moulton and Long Sutton bought their areas of salt marsh from the King, together with rights for further reclamations. By the mid-17th century large scale reclamations were proceeding, assisted by Dutch engineers, and by 1660 a total of 17,374 acres in Holbeach, Gedney, Whaplode, and Moulton had been reclaimed. Because the gradually rising sea levels over centuries had been depositing material in these newly reclaimed areas, they are a metre higher than the land inside the medieval Common Sea Bank. Although there were occasional disasters the 18th century saw continuous progress in the gaining of new land, with a wide strip being enclosed in 1793.
- 4.11 **Modern (1800-present).** The 19th and 20th centuries have seen only patchy reclamations, but considerable work has been carried out to improve the drainage of the Nene and Welland rivers with training banks built out into the Wash, which deepened the river beds by up to 3 metres. The increase in traffic has led to the upgrading of the road system, which traditionally took advantage of the same islands of dry ground as that occupied by the early settlements. The increased efficiency of the drainage system has enable intensive bulb farming to be undertaken despite a continuing rise in sea level over the last few centuries.

5.0 THE KNOWN ARCHAEOLOGY ON THE ROUTE OPTION

- 5.1 **Option 10.** The western section of the on-line route from Sutterton (Junction A) to Three Bridges (Junction E) affects no SMR sites but does cross the 13th century sea bank at the Fosdyke river crossing and the 18th century sea bank at Moulton Marsh.
- 5.2 **Option 11.** The western section Option 11 from Sutterton (Junction a) to Bridgehouse (Junction B) affects no known sites.
- 5.3 **Option 12.** The western section Option 12 runs south of the present A17 from Sutterton (Junction A) to north of Fosdyke Bridge (Junction C) and affects no known archaeological sites.
- 5.4 **Option 20.** The central section of the on-line route crosses the 17th century sea bank at White House Farm, and then traverses an area of medieval salterns at Saracen's Head (20015) before crossing the medieval sea bank here. It may also affect medieval settlement and ecclesiastical evidence at Chapelgate (Junction H), if the location of these features is confirmed. No other known sites are affected on this route.
- 5.5 **Option 21** At Saracen's Head the route passes through an area of medieval salterns on both sides of the present A17 (20015). South of Holbeach the route is about 500m away from the medieval burial ground (22218) but may impinge on an area at Highfield Farm where Roman pottery has been located (22231) and on the site of a post-medieval mill (22204). One of 3 medieval manors in Fleet was near Fleet Lodge (22270), although its precise location is now lost. South of the Fleet the route is close (200m) to a medieval mound, possibly a motte excavated and levelled in 1913 (23005, 22265/6). The outer ditch may still survive. No other known sites are affected by this route.
- 5.6 **Option 22** takes the same line as Option 21 to Saracen's Head, where it would affect the saltern landscape in a similar way to Option 21. Near Penny Hill there are a number of features. A medieval coin hoard was dug up in 1840 near Penny Hill Hall (22240), and Penny Hill Hall and moat is reputedly on the line of this option (22241). A number of disused post-medieval mills (22210) and 22226) are known in the area north of the option. There are no other known sites which would be affected by this option.

- 5.7 **Option 23** is the same as Option 21 from Three Bridges in Moulton Marsh where it takes the on-line route to Junction P before passing north of Saracens Head, across an area of salterns (20015). It cuts the medieval Holbeach Bank but does not affect any other known sites along its length.
- 5.8 **Option 24** This option diverges from the on-line route at Junction E to pass north of Holbeach Bank, through an area of medieval salterns, before crossing two medieval sea banks. There are no other known archaeological sites on this route.
- 5.9 **Option 25** follows the line of Option 21 to the mid point between Holbeach and Whaplode (Junction I), where it diverges to the south. It affects no known sites except the salterns at Saracen's Head in this stretch. South west of Long Sutton it passes close to an area of Romano-British settlement excavated in 1962 (22323), part of a wider landscape of Roman period settlement and activity. The route then joins the Option 21 on-line route to Sutton Bridge at Junction M. There are no further known archaeological sites on this Route Option.
- 5.10 **Option 26** is the most northerly route, striking out from Three Bridges (Junction E) to north of Holbeach Hurn, where it crosses a wide area of salterns. It crosses the medieval sea bank west of Gedney Dyke where there are more salterns (22276/7/8). At Chapel Gate there is the alleged site of a chapel (22285) but its location is unclear, although stone coffins (22283) and medieval pottery (23017) have been found in the vicinity. The route joins the Option 21 route west of Long Sutton and there are no further known sites.
- 5.11 **Option 30** There are no known archaeological sites on the eastern section between Junctions M and O, although it crosses a medieval sea bank north of Sutton Crosses.

5.12 Table of Known Archaeological Sites on Route Options

Route Option	Site no.	Description	Comment
10	No SMR no. No SMR no.	Medieval sea bank 18th century sea bank	linear feature linear feature
11	none	-	-
12	none	-	-
20	No SMR no. 20015 No SMR no.	17th century sea bank Medieval salterns Medieval sea bank	linear feature extensive linear feature
21	20015 22231 22204 22270 22265/6} 23005 } No SMR no.	Medieval salterns Roman pottery and settlement? Post-medieval mill Medieval manor Medieval motte Medieval sea bank	extensive major constraint if confirmed no constraint major constraint if confirmed major constraint if confirmed linear feature
22	20015 22240 22241 22210 22226 No SMR no.	Medieval salterns Medieval coin hoard Penny Hill Hall, and moat Post medieval mill Post medieval mill Medieval bank	extensive no constraint no constraint if location correct no constraint no constraint linear feature
23	20015 No SMR no.	Medieval salterns Holbeach Bank (medieval)	extensive linear feature
24	No SMR no. No SMR no.	Medieval Salterns Medieval Sea Bank	extensive linear feature
25	No SMR no. 20015 22323	Medieval sea bank Medieval Salterns Roman settlement	Linear feature extensive major constraint if confirmed
26	22276/7/8 22285 22283 23017 No SMR no.	Medieval Salterns Alleged medieval chapel } Stone coffins } Medieval pottery, settlement } Medieval sea bank	extensive major constraint if confirmed linear feature
30	No SMR no No SMR no	Medieval sea bank 17th century sea bank	linear feature linea feature

6.0 DISCUSSION

6.1 **General.** This study has identified areas of known archaeology which may be affected by the route options. The level of the impact of any particular route cannot be assessed in detail at this stage, however, because the information presently available about these sites is too imprecise as to their quality, survival and sometimes even their locations. There may also be areas where archaeology is not known at present but where there is a potential which should be evaluated.

6.2 Evaluation to enhance the information about known and potential sites should be the next stage of study, as recommended by PPG 16 and the DTp's policies. This can be achieved using a number of techniques designed to evaluate the archaeology without actually carrying out expensive, large scale or destructive operations. The techniques commonly used are:

- o detailed documentary and map research, to locate lost settlements, field patterns, place names, etc.
- o geophysical survey, to locate buried features;
- o systematic field walking, to assess the artefact content of the topsoil, and the location of concentrations;
- o test-pitting through the hand digging of small (1m x 1m) pits to assess the artefact content in pasture/woodland areas;
- o sample trenching, commonly 2% of threatened area, to locate and assess buried features

6.3 The results of the evaluation should be sufficient to enable a reasonable impact assessment to be made, and appropriate mitigation measures prepared. Mitigation may take the form of:-

- o preservation of the remains in situ, by avoiding them, or by burying them (suitable protected) under embankments, etc;
- o detailed archaeological recording, through excavation, prior to construction;

- o salvage recording, during construction;
 - o no action.
- 6.4 The evaluations which are recommended here, in order to establish appropriate mitigation measures, depend upon the preferred route choice. The route options are considered in turn below with recommendations as to suitable evaluation procedures.
- 6.5 **Options 10-12**, western section. The evaluation should include a detailed documentary survey to locate lost field patterns, place names, etc. which would indicate earlier settlement patterns.
- 6.6 **Option 20** The evaluation should include a documentary survey as for Options 10-12. The 5 salterns zone (20015) should be surveyed using geophysical methods to locate areas of industrial activity. The extent of the medieval chapel/settlement at Chapelgate (22285, 22283, 23017) should be checked by field walking and geophysical survey.

Route Options

- 6.7 **Option 21**. The evaluation should include a detailed documentary survey to locate lost field patterns, place names, etc. which would indicate areas of salterns, settlements and communication. The salterns zone (20015) should be surveyed using geophysical methods to locate areas of industrial activity. The area of Roman pottery (22231) should be field walked and surveyed geophysically to establish location and status of any remains. The alleged medieval manor (22270) and motte (22265/6, 23005) sites should also be walked, with geophysical survey, to locate them more precisely. The sea bank should be recorded during construction.
- 6.8 **Option 22**. The documentary research should be undertaken, and the survey of the salterns should also be carried out as for Option 10. There are no other known sites which would require action at this stage except to ensure the recording of the medieval sea bank during construction.
- 6.9 **Option 23**. The documentary study and saltern survey should be carried out as for Option 10, with provisions for sea bank recording assured.
- 6.10 **Option 24**. The documentary study and saltern survey should be carried out as for Option 10, with provision for sea bank recording assured.

- 6.11 **Option 25.** The documentary study and saltern survey should be carried as for Option 10, with provision for sea bank recording assured. The Romano-British settlement evidence at site 22323 should be enhanced through field walking and geophysical survey.
- 6.12 **Option 26.** The documentary study and saltern survey should be carried out as for Option 1, with provision for sea bank recording assured. The extent of the medieval chapel/settlement at Chapelgate (22285, 22283, 23017) should be checked through fieldwalking and geophysical survey.
- 6.13 **Option 30** The documentary study should be carried out as for Option 10, with provision for sea bank recording assured.

7.0 CONCLUSIONS

- 7.1 National, Local and Departmental policies regarding archaeology, are concerned to protect important remains in situ if possible, and record them effectively if preservation is not possible.
- 7.2 The archaeology of the area has been shaped by the inter-relationship of land and sea. Early cultures (before the Roman period) are likely to be buried under several metres of marine and fresh-water silt deposits. The "islands" around Holbeach were occupied in the late iron age and Roman periods, and the area of reclaimed land has increased since then. The principal industry was salt-making until the late medieval period.
- 7.3 All the route options impinge on medieval salterns and sea banks. Options 21, 25 and 26 may also affect areas of settlement ranging from Romano-British to medieval. Option 21 potentially affects more sites than the other routes, and is therefore archaeologically the least favoured. Options 23 and 24 are to be preferred, as they are more likely to avoid the possibility of the impact of known higher ground settlements risked by Option 22.
- 7.4 Evaluation will be necessary to confirm the impression of the archaeology gained from this study, and to enable detailed mitigation proposals to be prepared.

APPENDIX 1

SUMMARY SITES AND MONUMENTS RECORD

ENTRIES FOR STUDY AREA

LINCOLNSHIRE COUNTY SITES AND MONUMENTS RECORD

SMR No Period	NGR	Description	
00326	TF29303530	Shrunken medieval village	LM
10025	TF29103530	Shrunken medieval village	LM
12499	TF29233553	Pottery and worked stone	LM
12500	TF293355	Worked stone and brick sewer	PM
12503	TF29123528	Church	LM
12507	TF30023428	Manor House	PM
12508	TF29003540	Brick clamp base	PM
12509	TF29043528	Icehouse	PM
12510	TF28203590	Site of house	PM
12511	TF28483555	Church	LM
12512	TF28603520	Pottery	RO
12513	TF28403600	Pottery	LM
12549	TF29233568	Dovecote	PM
12591	TF308347A	Mill	UD
13071	TF28603520A	Pottery	LM
13073	TF29203340	Moat	LM
13076	TF29933489	Workhouse	PM
20015	TF33742740	Saltern	UD
22104	TF41302604	Mill	PM
22106	TF40222604	Mill	PM
22107	TF40002000	Tramway	PM
22166	TF44042211	Mill	PM
22170	TF42512251	Almhouses	PM
22171	TF40472129	Mill	PM
22174	TF42202110	Dovecote	PM
22176	TF43342088	Almshouses	PM
22177	TF12792088	Manor house	UD
22201	TF36302450	Fishponds	UD
22204	TF36312395	Mill	PM
22210	TF35092629	Mill	PM
22218	TF35372432	Burial Ground	LM?
22219	TF35502490	Iron Spur	LM
22221	TF35902478	Church	LM
22222	TF35902480	Coin	LM
22226	TF35882672	Mills	PM
22227	TF35852485	Cross	LM
22231	TF36012392	Pottery	RO

SMR No Period	NGR	Descriptoin	
22232	TF35912484	Hospital	LM
22239	TF39272633	Chapel	LM
22240	TF35762669	Coin Hoard	LM
22241	TF35952660	Hall and Moat	LM
22242	TF39702670	Mound	UD
22245	TF39272633	Cross	LM?
22265	TF38572313	Motte	} See 23005
22266	TF38572313	Pottery and Mound	
22267	TF38752380	Stone Basin/Trough	UD
22270	TF37132381	Manor House	LM
22271	TF38882368	Church	LM
22272	TF39012380	Site of Manor	LM
22276	TF41102590	Pottery	LM
22277	TF41102590	Pottery	LM
22278	TF41102590A	Saltern Debris	UD
22279	TF41262606	Coin	LM
22280	TF39302610-	Bronze Sword	RO
	TF41502620A		
22280	TF39302610		
22281	TF40272422	Church	LM
22282	TF40272440	Manor House	LM
22283	TF41002400M	Stone coffins, coin and box	PM
22285	TF41142450	Chapel	LM?
22308	TF43182281	Cross	LM?
22324	TF42302250	Pottery	LM
22325	TF43022281	Coin	RO
22323	TF41202100	Settlement	RO
22326	TF43222287	Church	LM
22327	TF43202090A	Coin	RO
22328	TF43202090A	Coin Hoard	LM
22329	TF43302555	Church	LM
22339	TF43302555	Cross	LM?
22393	TF43612428	Windmill	PM
22473	TF43822288	Windmill	PM
23005	TF38502320	Pottery, mound	EM (see
22265 + 6)			
23006	TF32802380	Pottery	LM
23017	TF40902440	Pottery	LM
23045	TF43002290	Pottery	LM
23046	TF43002290	Pottery	LM
23047	TF43102290	Pottery	PM
23028	TF36502450	Pottery	LM
23029	TF39202640	Pottery	LM

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