



Lincolnshire
-IN PARTNERSHIP-
Babtie



Lincolnshire County Council

Lincoln Spa Road Extension

Archaeological Desk-Based Assessment

DRAFT REPORT - July 2004

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 Babtie is an



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Babtie Group, 1 City Walk, Leeds, LS11 9DX
Tel 0113 242 6771 Fax 0113 389 1389

Lincolnshire County Council
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Introduction

- 1.1 Babtie Group has been commissioned by Lincolnshire County Council to prepare a planning application for the proposed Lincoln Spa Road Extension scheme (LSRE). This entails a system of on-line improvements to, and rerouting of Spa Road, serving the proposed Lincoln Eastern Growth Corridor and providing links to the proposed Lincoln Eastern Bypass (see Figure 2).
- 1.2 Babtie's commission includes the production of an archaeological desk-based assessment and the procurement and management of intrusive and non-intrusive archaeological evaluation works, to obtain further information about known or potential archaeological sites that may be affected by the advancement of the scheme. The results of these works will be used to inform an Environmental Impact Assessment and in the preparation of an Environmental Statement.
- 1.3 The study area comprises a parcel of land sandwiched between a railway line to the north and the River Witham to the south, with its west end defined by the point where the railway crosses the river and its east end by the Bifranghi metal works. The proposed scheme comprises the following elements:
- Spa Road Improvement
This section comprises an on-line road improvement to the existing Spa Road, tying into the proposed Spa Road Link as detailed in NEQDA package 1 (Babtie 2004).
 - Spa Road Extension
The route follows on from where Spa Road currently turns south to curve around the power station site, running along an undetermined path through the area, and tying back into Spa Road at the southern limit of the site. The range of route options through the former power station means that the whole of the site must be considered within this study.
 - Other works
The study area is not to include any further infrastructure or buildings in its scope.
- 1.4 This report sets out the methodology and sources used and the results of a desk-based assessment of the proposed route. It also takes into account prior archaeological evaluations in the area of Spa Road power station. This work has been undertaken at the request of the Senior Built Environment Officer of Lincolnshire County Council and conforms to the *Standards and Guidance for Archaeological Desk-Based Assessments* (IFA 1999) and the *Lincolnshire Archaeological Handbook: a manual of archaeological practice* (LCC 1998). Copies of this report will be deposited with the Lincolnshire County Sites and Monuments Record within six months of the submission of a planning application for the scheme.

1.5 Aims and objectives

- 1.5.1 A desk-based assessment is defined as "a programme of assessment of the known or potential archaeological resource within a specified area or site on land, inter-tidal zone or underwater. It consists of a collation of existing written, graphic, photographic and electronic information in order to identify the likely character, extent, quality and worth of the known or potential archaeological resource in a local, regional, national or international context as appropriate" (IFA 1999).
- 1.5.2 The purpose of this desk-based assessment is to collate and assess available information regarding the known and potential archaeological resource of the Lincoln Spa Road Extension study corridor, including, where possible, "the presence or absence, character and extent, date, integrity, state of preservation and relative quality of the archaeological resource, in order to make an assessment of merit in an appropriate context" (IFA 1999).
- 1.5.3 Furthermore, the objectives of this assessment are to assist in the formulation of a strategy for further archaeological investigation where the character and significance of the archaeological resource is not sufficiently defined or understood to permit a detailed mitigation strategy or other response to be designed. Where the character of the resource is well defined, the assessment will assist in the development of an appropriate mitigation strategy to ensure the recording, preservation or management of the archaeological resource (IFA 1999).

Methodology

2.1 Sources of Information

2.1.1 This report is based primarily on a desk-based study undertaken in the winter of 2003-2004, with detailed information obtained for a study area as shown in figure 2. Some additional background information was also gathered from a wider area, particularly with reference to the regional and national archaeological/ historical background.

2.1.2 Data was obtained from a number of sources, including:

- Lincolnshire County Sites and Monuments Record;
- Lincoln Urban Archaeological Database;
- Lincolnshire archives;
- English Heritage, National Monuments Record (Air Photos);
- English Heritage, Scheduled Ancient Monuments Section;
- English Heritage, East Midlands Regional Office;
- Historic maps and plans held in the Lincolnshire County Archive;
- Ordnance Survey maps;
- Lidar Survey data for the Lower Witham;
- Published and unpublished archaeological books and journals;
- Site Inspections.

2.1.3 The study also drew on work undertaken in connection with the Lower Witham Flood Defense Improvement Scheme (PCA 2001, Babbie 2002) and the Lincoln Eastern Bypass (Babbie 2003, PCA 2004). Informal discussions with local archaeological contractors have also assisted the preparation of this report. The study was undertaken as part of a wider scheme, which has subsequently been broken down into smaller parts. A desk-based assessment has been undertaken for the North East Quadrant Development Access (NEQDA) scheme, directly to the east of the Spa Road Extension study area (Babbie, forthcoming). The data in the NEQDA report has been drawn upon for this study.

2.1.4 Individual sites of Cultural Heritage interest identified from any of the above sources are listed in the gazetteer (Appendix A), key sources are given in the bibliography at the end of this report. Figure 3 shows the extent of the study area and the distribution of cultural heritage sites.

2.2 Consultation

2.2.1 In addition to the above data gathering, qualitative comment was invited from English Heritage, the County Archaeological Section at Lincolnshire County Council (CAS) and the City Archaeologist, City of Lincoln Council (CA). A detailed response was received from the Senior Built Environment Officer at the CAS outlining the archaeological potential of the study area, including significant archaeological deposits in the Lower Witham Valley. A similar response was received from English Heritage and the City Archaeologist, amplifying the comments made by the County

Archaeological Section regarding the significance of the Lower Witham Valley. Although, all parties concede the degraded nature of the valley bottom deposits in the immediate study area.

2.2 Assessment of Cultural Heritage Value

- 2.2.1 A provisional assessment of the grade of importance of each archaeological site within the study area was made on a three-point scale of National, Regional or Local significance.
- 2.2.2 Limited information was available for most sites in the study area, with relatively few having been archaeologically tested or subject to detailed survey or recording. This initial assessment was therefore based partly on professional experience and discussions with the County Archaeological Service and English Heritage. However, it also took into account the Secretary of State's non-statutory criteria for the designation of Scheduled Ancient Monuments. These criteria are period, rarity, documentation, group value, survival/condition, fragility/vulnerability, diversity and potential.
- 2.2.3 Buildings of cultural heritage significance were assessed against criteria used for considering designation of Listed Buildings, outlined in Planning Policy Guidance Note 15: Planning and the Historic Environment (PPG15). The criteria used are Age, Rarity, Architectural Interest, Historic Interest, Close Historical Association and Group Value.
- 2.2.4 Existing statutory designations were taken into account in the grading process. All Scheduled Ancient Monuments are assumed to be of National importance. Although Listed Buildings are also technically all of National importance, however, they are divided into three grades (I, II* and II), which in itself recognizes that the buildings do vary significantly in importance. Around 94% of Listed Buildings are Grade II, the lowest grade, and it is acknowledged that there is significant variation of importance within this category. For the purposes of this Environmental Impact Assessment, therefore, all Grade I and II* buildings have been assumed to be of National importance, while Grade II buildings may be graded as either Nationally or Regionally important, based on a site-by-site assessment that uses criteria set out in PPG15.

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2.3 Assessment of the significance of impact

- 2.3.1 A three-stage process has been applied to assess the significance of potential impacts. The first stage is a purely quantitative assessment, based on the proportion of a site that would be affected. A qualitative element is introduced by taking into account the grade of importance of a site, and this is adjusted by consideration of additional qualitative factors. The final assessment is on a three point scale of Major, Moderate or Minor significance.

Policy Background

- 3.1 Scheduled Ancient Monuments (SAM) are protected by law under the Ancient Monuments and Archaeological Areas Act 1979, and are by definition of National importance. Any works that would affect a SAM or its setting require Scheduled Monument Consent, obtained from the Department for Culture, Media and Sport (DCMS), who are advised by English Heritage.
- 3.2 Listed Buildings also benefit from statutory protection under the Planning (Listed Buildings and Conservation Areas) Act 1990, and any works that would affect a Listed Building or its setting require Listed Building Consent, obtained through the Local Planning Authority. Central government guidance to planning authorities on dealing with the built historic environment is expressed in *Planning Policy Guidance 15, Planning and the Historic Environment* (PPG15) and expanded in Policies 24 – 27 of the *City of Lincoln Local Plan – Adopted August 1998*. Similar guidance is also contained in the *West Lindsey Local Plan 1993 – 2001*, Policies SA4 – SA6.
- 3.3 Central government guidance on archaeological remains is given in PPG16, “Archaeology and Planning”. The key policy statements in PPG16 are that **“where nationally important archaeological remains, whether Scheduled or not, and their settings, are affected by proposed development there should be a presumption in favour of their physical preservation”**. In relation to less important sites, PPG16 states that **“the desirability of preserving an ancient monument and its setting is a material consideration in determining planning applications whether that monument is scheduled or unscheduled”**.
- 3.4 Guidance given in PPG15 and PPG16 is expanded in the Lincolnshire County Structure Plan (Policies Proposed for Adoption, November 2000), Policies 62 to 65. Similar policies are contained in the earlier Deposit Draft (1998). Policy 63 (Archaeological Heritage) states:

“Development adversely affecting an archaeological site of National importance (whether Scheduled or not) or its setting will not be permitted.

Development proposals which would affect known or suspected archaeological sites will be the subject of an archaeological assessment, and should be considered within this context having regard to other material considerations.

Where development is permitted, satisfactory arrangements for the preservation in situ of archaeology within the development or, as appropriate, the excavation and recording of the archaeological remains will be required. The information recorded should be archived and the results published as appropriate”.

- 3.5 The study area lies in the administrative district of the City of Lincoln Archaeology and the Built Heritage are covered by Policies 21 to 22, contained in the City of Lincoln Local Plan – Adopted August 1998. Policy 21 states, "**Where it is considered that development proposals may affect known or suspected archaeological remains, the local planning authority will require the results of an archaeological assessment to be submitted with any planning application. This will take the form of an initial desk-top assessment followed where appropriate by more detailed evaluation, depending on the interest of the site**".
- 3.6 Policy 22 also states, "**The local planning authority will seek the preservation of important archaeological remains and their settings when considering development proposals. Where the preferred option of preservation in situ is not warranted, taking into account the merit of the remains and other material considerations, planning permission may be granted subject to satisfactory provision being made for excavation, recording and appropriate publication of results**".
- 3.7 It is important to note at this early stage in the development of the scheme that the Witham Valley has been identified as an archaeological landscape of national significance, with the potential for extremely well preserved archaeological deposits of prehistoric date to survive sealed below surface peat and alluvial deposits. As shown below, these deposits are degraded within the study area, and are not likely to affect the scheme.

Baseline Conditions

4.1 Site Description

- 4.1.1 The study area lies within the Lincoln Gap, a natural break where the River Witham flows through the long north-south ridge known as Lincoln Edge, which causes the landform to fall quickly from the higher limestone plateau to the north and south to the river flood plain, dropping to a low point of approximately 4.5 meters AOD at the river edge. These topographic conditions have made Lincoln a strategic location at least since Roman times, influencing the foundation of a city here in the mid-first century AD.
- 4.1.2 Spa Road is a minor road serving the Bifrangi works and the site of the former St Swithin's power station. It runs westwards from the eastern end of the Bifrangi works site, parallel to the Lincoln to Market Rasen railway line, before turning south to run around the power station site and from there, west between the site and the River Witham. Most of the land has been artificially leveled.

4.2 Geology

- 4.2.1 The sequence of strata beneath the scheme consists of Upper and Lower Lincolnshire Limestones, separated by the Crossi Beds, overlying Northampton Sand and Ironstone, which in turn overlie Upper Lias Clays. The Lincolnshire Limestone and the Northampton Sand and Ironstone are present beneath the higher ground to the north and east, respectively, of the study area. Lias Clay is present beneath the lower-lying parts of the area, beneath drift deposits in the valley floor. This is indicative only, as detailed geological information is not available specifically for this small area.
- 4.2.2 There are historical records of mine working in the Ironstones, with the whole outcrop of ironstone beneath the western section of nearby Greetwell Road having been mined by opencast methods and backfilled. Additionally, underground workings are understood to be present and air shafts are marked on historical maps within the vicinity of the scheme. Nearby boreholes for the Lincoln Eastern Bypass encountered the top of the Ironstone at about 8 to 10m depth. No mining activity has been recorded in this study area.

4.3 Archaeological Background

- 4.3.1 Fourteen sites or extended areas of cultural heritage interest have been identified to date within the LSRE study area. Four were identified from the County Sites and Monuments Record and five from the Lincoln Urban Archaeological Database (LUAD). Sites of archaeological interest falling within the study area and to a 100m buffer zone are shown in figure 3.

- 4.3.2 The distribution of previously known archaeological sites within the study area is centered on the former power station area. No archaeological sites were identified on the eastern stretch of Spa Road
- 4.3.3 The River Witham valley bottom was a major focus of prehistoric and later ritual activity and is famous for numerous finds of high-status metal artifacts deposited as "votive offerings". At Fiskerton, approximately 9km downstream of the study area, a major prehistoric timber causeway dated to c. 456 – 317 BC has recently been excavated, whilst another possible causeway site may be present at the western end of the study area at Stamp End. Overall, it has been suggested that at least ten such sites may exist in the lower Witham valley, between Stamp End and Dogdyke.
- 4.3.4 Previous archaeological studies including a palaeoenvironmental assessment of the cores from a series of geotechnical boreholes across the valley bottom suggested that there is a high potential for the presence of well-preserved prehistoric deposits underlying surface peat and alluvial deposits just downstream of the study area, around the proposed Lincoln Eastern Bypass (CLAU 1999). However, geotechnical investigations have shown that the surface peat deposits are actively degrading as a result of continuing agricultural activity and land drainage. On the north side of the river in particular these deposits are thought to survive only in patches, with the best-preserved areas likely to be immediately adjacent to the river. Nevertheless, significant prehistoric remains are present on the underlying old land surface.
- 4.3.5 Iron Age Lincolnshire formed part of the tribal territory of the Corieltavi, stretching from the Humber to the River Nene. Following the Roman invasion of Britain in AD 43, the region was included in the early stages of the conquest of Britain. Within perhaps a decade of the invasion a legionary fortress was established on the Cliff to the north of the Witham, overlooking the existing native settlement situated on the banks of the Brayford Pool. Following the army's advance north in c.77 or 78 AD, the legionary fortress passed out of use and the site was designated a *colonia*, or veterans settlement, probably at a date sometime in the early 90's AD (Whitwell 1970). Lincoln (*Lindum Colonia*) went on to become one of the key towns of Roman Britain, becoming the provincial capital of the province of *Flavia Caesariensis* following administrative reforms in the late 3rd or early 4th century (Frere 1967, Millet 1990). Linked with other major Roman centers by a strategic road network and two artificial waterways or navigable rivers, the town exerted an influence over a substantial rural hinterland containing a number of important villas, rural settlements, farmsteads and field systems (Millet 1990).
- 4.3.6 Although Lincoln ceased to be the centre of a large urban population in the post-Roman and early Anglo-Saxon period, some form of occupation continued with the walled enclosure possibly in use as a royal or ecclesiastical centre (Jones 2001). Lincoln was once again a town of national importance by the mid-10th century with the Roman roads and the River Witham continuing to function as key strategic routes (Jones, 2001). The Witham remained navigable during the medieval period, forming an important conduit for the transportation of goods, principally grain, cloth and wool, from Lincoln and various monastic holdings along the river to the port at Boston.

During the medieval and post-medieval periods, the study area remained part of the immediate rural hinterland of the city.

4.3.7 In 1731 the report of a survey of the River Witham between Lincoln and Boston noted that the river was only navigable by vessels of very shallow draft, the existing channel being described as very crooked and winding (CLAU 1992, Pawley 2001). In 1762 the Witham Drainage Act resulted in some improvements to the watercourse, particularly downstream of Chapel Hill (Robinson 2001). However, works proceeded slowly and work on straightening and embanking the Witham immediately downstream of Lincoln was not carried out until the late 1790's (Wright 2001), with further work undertaken later under the Lincoln & County Drainage Act of 1804 (CLAU 1992).

4.3.8 During the 19th century, Lincoln grew rapidly, with industrial works flanking the river upstream of the railway/river crossing and dense terraced housing to the north of the railway. By about 1890 the study area had not yet been developed, but was on the immediate fringe of the built-up area. However, the whole study area was subject to heavy industrial development by the early 20th century.

4.4 Hydrology

4.4.1 The archaeological significance of the Witham Valley is directly linked to the waterlogged anaerobic conditions that prevail in the valley bottom, with previous work highlighting the potential for important paleoenvironmental deposits and waterlogged remains (CLAU 1999, English Heritage 2001). Maintenance of the existing hydrology of the valley bottom is a key objective in ensuring the continuing survival of these deposits. However, auger survey for the Lincoln Eastern Bypass has shown that the deposits are already dried out and degraded at that location due to the topography and as a result of existing development or agricultural activity. Archaeological evaluations on the power station site have also established that the potential for paleoenvironmental information is limited to a 5m strip along the northern boundary of the site, due to land reclamation in the Victorian period (CLAU 1994)

4.5 Aerial Photographs

4.5.1 The collections of the National Monuments Record Air Photos Library (including CUCAP collection) were searched as part of the evaluation process for the Lincoln Eastern Bypass, at which time coverage of the LSRE study area was also examined. Vertical images were sampled, omitting poor quality runs (NMR Quality code C), while there were no specialist oblique images in the NMR collection that were relevant. A list of the aerial photographs (AP's) viewed is included in the bibliography.

4.5.2 The APs do not reveal any archaeological information, as the study area has been under development since well before WW2

4.6 Lidar Coverage

4.6.1 The Environment Agency, as part of their flood risk management programme, have commissioned a programme of Lidar (Light Detection and Ranging) survey, producing a highly accurate three-dimensional topographic model of the ground

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surface. However, the Lidar data examined for this study revealed no archaeological information, due to the industrial development of the area.

4.9 Site list

4.9.1 As described above, 14 sites of cultural heritage interest were found within or near the study area. A full descriptive listing of these sites can be found in the gazetteer (Appendix A). The importance of the sites was determined on a three-point scale of Local, Regional and National importance according to the methodology set out above. The results of this assessment are summarized in the table below:

Table 1: Sites of Cultural Heritage Interest – Assessment of Importance

*see p 5/21
 Dlg*

Site No.	SMR No. or LUAD No.	Type	Period	Importance
1	70305	Stamp End Bridge	Post Medieval	Listed Grade 2 Regional/National
2	70287	Stamp End Causeway	Prehistoric/Medieval	Destroyed?
3	70045	Spa Road Electricity Works	Modern	Destroyed
4	Ind Mon 5228	Clayton and Shuttleworths power station	Post-Medieval/Modern	Destroyed
5	RENO 1114	Archaeological investigations	Modern	not applicable
6	SK 9871 SE:A	Findspot – Anglo-Saxon and Medieval swords	Post-Roman/Medieval	?
7	1382	Chalybeate Well	Medieval – post Medieval	?
8	5108	Level Crossing	Post - Medieval	Local
9	70137	Monks Abbey	Medieval	SAM 24 National
10	N/A	Ruins of Nave at Monks Abbey	Medieval	Listed Grade 2 National
11	N/A	Ruins of Chancel at Monks Abbey	Medieval	Listed Grade 2 National
12	N/A	Masonry fragments at Monks Abbey	Medieval	Listed Grade 2 National
13	3430	Mill Dam	Medieval	?
14	N/A	Witham Valley – Paleoenvironmental deposits	Prehistoric	National

Assessment of Impacts

- 5.1 A detailed assessment of the impact of the scheme upon individual sites will be given in the Environmental Statement. However, an outline discussion of impacts is given below.
- 5.2 The LSRE scheme affects or is in close proximity to a series of archaeological sites identified from numerous sources, including the County Sites and Monuments Record and historic mapping. Elements of these sites may be damaged or destroyed by construction. However, as the layout of the scheme is not yet final, it is likely that a route option could be chosen that would avoid impacting on most of the sites.
- 5.3 **Potential Impacts**
- 5.3.1 Any impacts are likely to occur primarily during construction of the road, within its immediate footprint and the adjacent working easement to a total width of disturbance of 15m. If any archaeological remains are present within the footprint of the road, they may be severely affected, while the potential also exists for damage to other features falling within the easement, or as a result of the creation of haul routes, site compounds and borrow-pits. This would include general compaction and tracking damage. Notwithstanding the above, few specific impacts have been identified. The potential effects on the 14 known sites in the study area are described below.
- 5.3.2 Site 1, "Stamp End Bridge" lies outside the area to be developed, and is not to be altered in any way. However, works would have to be undertaken with care to avoid damaging the appearance of the structure.
- 5.3.3 Site 2, "Stamp End Causeway" will be crossed by all of the route options, and would be severed. However, Archaeological investigations in this area have revealed no trace of the causeway (CLAU 1998). Further investigation is unlikely to reveal any new information, but a watching brief may be a reasonable precaution during construction.
- 5.3.4 Site 3, "Spa Road Electricity Works" has been demolished completely, and would not be affected by the scheme.
- 5.3.5 Site 4, "Clayton and Shuttleworths Power Station" has been demolished and overbuilt by Site 3, and so would not be affected by the scheme.
- 5.3.6 Site 5, "Archaeological Investigations" is a recorded event, and would not be affected by any activity.
- 5.3.7 Although its SMR grid reference lies within the study area, it appears that Site 6, "Findspot – Anglo-Saxon and Medieval swords" in fact lies well off any proposed road layout. However, the possibility of further finds in the area should be taken into consideration.

- 5.3.8 Site 7, "Chalybeate Well" lies just off the path of the proposed Spa Road improvements. As the site is not well located, further survey work or a watching brief in this area may be required.
- 5.3.9 Site 8, "Level Crossing" lies outside the route options, and is a part of the functioning railway. No plans exist to alter this structure, so the site should not be affected.
- 5.3.10 Site 9, "Monks Abbey" does not lie in an area for development. Potential for buried remains in the area is likely to have been reduced by the construction of the railway line, the power stations and the Biffrangi Works. Previous trial excavations at the power station site did not uncover monastic remains, but this should not be viewed as conclusive proof that they do not exist because the area near Monks Abbey has not been as heavily developed (CLAU 1998). Due to the importance of the site, further work in this area should be subject to further discussion with the County Archaeologist on the basis of this report.
- 5.3.11 Site 10, "Ruins of Nave at Monks Abbey" lies outside the area to be developed. The road scheme will have no physical impact on the site, but increased traffic levels may lead to damage through air pollution. The road will be separated from the site by a functioning railway and well established vegetation, so this effect is not likely to be significant.
- 5.3.12 Site 11, "Ruins of Chancel at Monks Abbey" lies outside the area to be developed. The road scheme will have no physical impact on the site, but increased traffic levels may lead to damage through air pollution. The road will be separated from the site by a functioning railway and well established vegetation, so this effect is not likely to be significant.
- 5.3.13 Site 12, "Masonry Fragments at Monks Abbey", lies outside the area to be developed. The road scheme will have no physical impact on the site, but increased traffic levels may lead to damage through air pollution. The road will be separated from the site by a functioning railway and well established vegetation, so this effect is not likely to be significant.
- 5.3.14 Site 13, "Mill Dam" lies outside the area to be developed. Associated features, such as a mill race, have not been thus far detected. However, the watching brief suggested above may provide information as to the existence of such features.
- 5.3.15 The survival of Site 14, "River Witham – Paleoenvironmental Deposits" has been shown to be impaired in this area. The potential for buried landscapes is also limited within the study area. Trial trenching in 1998 by the City of Lincoln Archaeological Unit (CLAU 1998) provides a good picture of the deposits in this area.
- 5.4 Future Work**
- 5.5.1 The importance of some of the sites that would potentially be affected, and therefore the significance of any impact upon them, has yet to be confirmed. Furthermore, it is not possible to state with any certainty whether any additional, as yet unknown,

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archaeological deposits would be affected by the development and further information is required in order to finalize these assessments. This information could be obtained through a staged programme of archaeological evaluation works agreed with the County Archaeologist's office. The combined results of the desk-top assessment and any evaluation work would enable proper consideration of the planning applications and enable the finalisation of proposals for mitigation works which may be required in advance of, or during, construction.

to the alignment and/or proposed access points.

At this stage it is not possible to provide a definitive assessment of the archaeological significance of any of the following areas:

- the former railway
- the area between the railway and the road
- the area between the road and the railway
- the area between the road and the railway

Further information is required in order to provide a definitive assessment of the archaeological significance of any of the following areas:

- the area between the railway and the road
- the area between the road and the railway
- the area between the road and the railway
- the area between the road and the railway

The above areas are considered to be of potential archaeological significance and it is recommended that further investigation be carried out in order to provide a definitive assessment of the archaeological significance of any of the following areas:

Mitigation

- 7.1 It is likely that if planning consent is granted it will be subject to a planning condition requiring the implementation of a programme of archaeological recording works in advance of and during construction. It is often possible to minimize or reduce the impact of the scheme and therefore the scope of archaeological mitigation works. This may be done through sensitive design, including localized reroutes and changes to the alignment and/or informed drainage, structures and embankment design.
- 7.3 At this stage it is not possible to define the requirements for mitigation works on a site by site basis, however, the possible range of options may include (without limitation) any of the following, or a combination of them:
- no further action
 - design solutions to avoid or minimize any impact (the preferred option under PPG16);
 - investigation and recording of archaeological remains in advance of development (including where necessary detailed archaeological excavation);
 - controlled monitoring to ensure identification, investigation and recording of archaeological remains during the course of construction (archaeological watching brief).
- 7.4 While sites listed in the Gazetteer as destroyed should not be viewed as a constraint on scheme design, they may highlight the potential for other archaeological deposits to survive in the area, particularly where the original record refers only to localized intrusions. Other sites may constrain scheme design in order to avoid or reduce the significance of any impact, or the need for potentially costly mitigation works.
- 7.5 Where preservation in situ is not feasible, then the appropriate mitigation strategy would be preservation by record, principally, detailed archaeological excavation in advance of construction. Where significant archaeological deposits are discovered during construction, principally as a result of the archaeological watching brief, time and resources will need to be made available for the excavation and recording of any such deposits prior to their removal/truncation.
- 7.6 The desk-based assessment has not identified any significant impacts, but a risk remains that elements of some of the known sites, or other unknown remains, may be affected. No further investigation in advance of development is recommended, but potential impacts can be limited through consultation with the CAS and CA to reach agreement over construction methods. Any impacts that do occur could be adequately mitigated through controlled archaeological monitoring during construction.

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Lincoln – St Swithins Tithe Map 1851

Lincoln – Enclosure Award 1811

Aerial Photographs: Verticals

Sortie No.	Library No.	Cam Pos	Frame
OS/66/128	9270	V	351
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3G/TUD/UK.197	396	V	5430
3G/TUD/UK.197	396	V	5431
3G/TUD/UK.197	396	V	5432
106G/UK/510		V	3034

Appendix A: Gazetteer of Identified Sites of Cultural Heritage Interest

Site No	1	Site Name	Stamp End Railway Bridge		
NGR	SK 98464 71029	SMR/LUAD NO	70305/5027		
Period	Post-Medieval	Form	Existing bridge	Significance	LB II-National/Regional
<p>Description</p> <p>Shown on 1st and 2nd edition Ordnance Survey mapping crossing the River Witham [1], [2]. "Cast iron girder bridge carrying two railway tracks over River Witham and roads on both sides. The ends rest on abutments of blue engineering bricks with two intermediate piers of cut stone blocks surmounted by courses of blue engineering bricks. Bridge was opened in Dec 1848... The first bridge was of tubular cast iron or wooden construction... In 1903 a centre girder added to suspend it's cross girders in the middle... It is probably the oldest surviving example of the Patent Girder Bridge designed and patented by William Fairbairn." [3]</p> <p>"Designed by John Fowler... The bridge is thought to be the oldest surviving wrought iron box girder bridge in Britain and possibly the world." [4]</p> <p>The bridge is as described above. [5]</p>					
<p>Sources</p> <p>[1] Ordnance Survey 6" Map First Edition 1889-1890</p> <p>[2] Ordnance Survey 6" Map Second Edition 1911 sheet 70</p> <p>[3] Lincoln Urban Archaeological Database site entry</p> <p>[4] Lincolnshire SMR site entry</p> <p>[5] Paul Bennett (Babtie Group) site visit July 2004</p>					

Handwritten note:] Much of national importance

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Site No	2	Site Name	Stamp End Causeway		
NGR	SK 98840 71270		SMR or LUAD NO	70287	
Period	Prehistoric?/Medieval	Form	Earthwork	Significance	Destroyed?
<p>Description "The [causeway] has recently been identified through work undertaken on the topography of the early Medieval city. The research has shown that in the 10th century, a substantial barrier was created across the narrow valley floor between the 5m contours 500m east of the walled city...there have been what are thought to be votive finds recovered from the vicinity. These number more than 24 and date from the Bronze Age to the Medieval period. Therefore it is suggested that a causeway existed long before the 10th Century reconstruction... The location of the monastic establishments and early church sites close to the Witham Valley causeways are thought to represent the "conversion" and guardianship of the important ritual and spiritual significance of the area to the Christian tradition. A monastic cell was founded on the Monks Leys estate (now known as Monks Abbey), and it is suggested that its obscure origins may indicate an early church site. Further more, it seems that the monastery owned a causeway called "le Stampcause" [1] Armstrong's map of 1779 shows this area as marshland. [2] Archaeological recording in conjunction with Geotechnical investigations in this area revealed no direct evidence of the causeway. [3]</p>					
<p>Sources [1] Lincolnshire SMR site entry [2] 1779 Armstrong, Andrew Plan of Lincoln, an inset from a map of Lincolnshire [3] R. Trimble - City of Lincoln Archaeological Field Unit 1994 <i>Archaeological Recording in conjunction with Geotechnical investigations at the former spa road power station.</i> (unpublished report)</p>					

Site No	3	Site Name	Spa Road Electricity Works		
NGR	SK 98700 71100		SMR or LUAD NO	70045	
Period	Modern	Form	Generating Station	Significance	Local
<p>Description The modern electricity generating station at Lincoln, originally built with 1 chimney and 4 cooling towers, expanded after 1950 to have 2 chimneys and 6 cooling towers. [1] Built in 1945 by Mouchel and Partners. Demolished June – August 2003. [2] The site is now devoid of structures and covered by demolition material. [3]</p>					
<p>Sources [1] Lincolnshire SMR site entry [2] Lincolnshire Urban Archaeological Database site entry [3] Paul Bennett (Babtie Group) site visit July 2004</p>					

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Site No	4	Site Name	Clayton and Shuttleworths Power Station		
NGR	SK 98619 71083		SMR or LUAD NO	5228	
Period	Modern	Form	Generating Station	Significance	Local
<p>Description Built 1914 by Wm. Wright and Son, rebuilt 1919 by Lincoln Corporation. Demolished in 1948 after the construction of St Swithins Power station (site 3). [1]. The 1930s OS map shows a cooling pond to the east and railway sidings connecting to Pelham street junction [2] The site is now devoid of buildings save for several small businesses outside the southern boundary [3] The layout of the power station, with 6 cooling towers and a bowling green, is shown on the 1938 OS mapping [4]</p>					
<p>Sources [1] Lincolnshire Urban Archaeological Database site entry [2] Ordnance Survey 6" map 1930 [3] Paul Bennett (Babtie Group) site visit July 2004 [4] Ordnance Survey 1938 Edition 10" map</p>					

Site No	5	Site Name	Archaeological recording, former Spa Road power station site		
NGR	SK 98754 71150		SMR or LUAD NO	RENO 1114	
Period	Modern	Form	Archaeological investigations	Significance	Local
<p>Description Archaeological recording in conjunction with geotechnical investigations ahead of the redevelopment of the site. The investigation concluded that: "Late Eighteenth century/ Victorian reclamation material extends over the majority of the survey area, with depths generally exceeding the 2.5m excavations attained during the test pitting operation. The exceptions to this occur on the northern fringe of the area; in test pit 1, where alluvial sediments were encountered at 1.3m below ground level; and in test pit 13 where an orangey-yellow sand, at a point which appears to be outside of the alluviated area, was present from 1m below ground level... This pattern correlates closely with the topography as depicted on the 1779 Armstrong map." [1]</p>					
<p>Sources [1] R. Trimble - City of Lincoln Archaeological Field Unit 1994 <i>Archaeological Recording in conjunction with Geotechnical investigations at the former spa road power station.</i> (unpublished report)</p>					

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Site No	6	Site Name	Anglo-Saxon and Medieval Sword Findspot		
NGR	TF 98898 71107		SMR or LUAD NO	SK 9871 SE:A	
Period	Post-Roman/Medieval	Form	Findspot	Significance	?
<p>Description</p> <p>"This site entry may refer to a 19th century discovery in the area. There could also be a link to a reference relating to Late Bronze Age swords from nearby Stamp End, outside of the study area (SK9843071020). "The swords were found in early 19th century", a description found in 'The City by the Pool- Assessing the archaeology of the city of Lincoln' (Jones, M., Stocker, D. and Vince, A. p.24)." [1]</p> <p>In further conversation with the county SMR officer, it may be that, this find was located much further downstream. [2]</p>					
<p>Sources</p> <p>[1] Edward Lewis - Built Environment Assistant Lincolnshire County Council. (Edward.Lewis@lincolnshire.gov.uk) 08/07/2004. Re: SK9871 SE:A Email to: Paul Bennett (paul.a.bennett@babtie.com)</p> <p>[2] Edward Lewis - Built Environment Assistant Lincolnshire County Council. Pers Comm. 08/07/2004</p>					

Site No	7	Site Name	Chalybeate Well		
NGR	SK 98948 71265		SMR or LUAD NO	1382	
Period	Medieval?/ Post Medieval	Form	Building	Significance	Local
<p>Description</p> <p>"A spring in the "Black Monk's fields" given a granite well-head in 1833 by Charles Mainwaring... It is referred to in Whites 1826 County Directory in relation to a watermill, the Mill Dam. According to Williamsons Guide to Lincoln, 1901, stone steps to it were visible in 1901. [1] Labeled "The Spa (chalybeate)" in antiquity type on the Ordnance Survey 1st Edition map [2] Nothing was visible during the site visit, but the site is now overgrown, and could not be closely inspected. [3]</p>					
<p>Sources</p> <p>[1] Lincolnshire Urban Archaeological Database site entry</p> <p>[2] Ordnance Survey 6" Map First Edition 1889-1890</p> <p>[3] Paul Bennett (Babtie Group) site visit July 2004</p>					

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Site No	8	Site Name	Level Crossing
NGR	SK 9893 271285	SMR or LUAD NO	5108
Period	Post-Medieval	Form	Level crossing
		Significance	Local
Description "Level crossing over the M S and L Railway / LNER from Spa Road to Spa Street/Winn Street south of Monks Abbey. Manually operated road gates with separate pedestrian gates. The road gates are modern and of metal but are locked with chains. Pedestrian gates are wooden and in use. Road surface has timber beams between rails." [1] Depicted on the OS 1 st Edition map [2] The site is currently exactly as described [3]			
Sources [1] Lincolnshire Urban Archaeological Database site entry [2] Ordnance Survey 6" Map First Edition 1889-1890 [3] Paul Bennett (Babtie Group) site visit July 2004			

Site No	9	Site Name	Monks Abbey
NGR	SK 98907 71346	SMR or LUAD NO	70137/3831
Period	Post-Medieval	Form	Building
		Significance	SAM 24 - National
Description Shown as ruins on 1st and 2nd edition Ordnance Survey maps [1], [2]. "A monastic cell of St Mary's of York. Early English walls with perpendicular windows inserted. Remains of a chancel and one wall of the nave standing to a considerable height. Respond of what appears to be the south transept (c.1200). Otherwise mostly C14 or C15. Some indeterminate foundations exist to the north east of the chancel." [3] A watching brief recorded an east/west wall to the northeast of the supposed site of the Priory church. The wall is thought to be a stone dam-lining wall to contain water in a pool or pond to the north. [4] "A small monastic cell of the Benedictine Abbey of St Mary at York. In the late 11 th century, the land forming the Monks estate was granted to the Abbey of St Mary York by Romfar, a citizen of Lincoln." [5] The site is partially occupied by a basketball court, children's play area and a bowls club. Landscaping for these features may have significantly damaged the archaeological potential of the area. [6]			
Sources [1] Ordnance Survey 6" Map First Edition 1889-1890 [2] Ordnance Survey 6" Map Second Edition 1911 sheet 70 [3] Lincolnshire SMR site entry [4] City of Lincoln Archaeology Unit, 2000, Intervention report: Monks Abbey, Monks Road, Lincoln-Play Area refurbishment scheme (unpublished report) [5] Lincolnshire Urban Archaeological Database site entry [6] Paul Bennett (Babtie Group) site visit July 2004			

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Site No	10	Site Name	Ruins of Nave at Monks Abbey		
NGR	SK 98874 71342		SMR or LUAD NO	N/A	
Period	Medieval	Form	Building	Significance	LB II-National
Description Ruins of nave of the church of Monks Abbey, a cell of St Mary's Abbey, York. C13. Repaired and consolidated 1985 and 1990. Coursed squared rubble with ashlar dressings. Chamfered plinth. To south-west, a blocked elliptical headed doorway. Nothing remains but a section of wall approx 10m long and 4m high. [1] Depicted on the OS 1 st Edition map [2] The site is currently exactly as described [3]					
Sources [1] English Heritage, Listed buildings entry. [2] Ordnance Survey 6" Map First Edition 1889-1890 [3] Paul Bennett (Babtie Group) site visit July 2004					

Site No	11	Site Name	Ruins of Chancel at Monks Abbey		
NGR	SK 98905 71340		SMR or LUAD NO	N/A	
Period	Medieval	Form	Building	Significance	LB II-National
Description Ruins of Chancel at Monks Abbey, a cell of St Mary's Abbey, York. Now a roofless ruin. C13 and late C14. Repaired and consolidated 1985 and 1990. coursed rubble and dressed stone, with ashlar dressings. Chamfered plinth and quoins. South side has central rectangular light flanked by two C14 2-light pointed arched windows with ogee heads and panel tracery. North side has a similar single lancet. All windows have splayed reveals and hood-moulds. South-west end has a filleted respond. [1] Depicted on the OS 1 st Edition map [2] The site is currently exactly as described [3]					
Sources [1] English Heritage, Listed buildings entry [2] Ordnance Survey 6" Map First Edition 1889-1890 [3] Paul Bennett (Babtie Group) site visit July 2004					

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Site No	12	Site Name	Masonry fragments 25m east of cancel at Monks Abbey		
NGR	SK 98931 71343		SMR or LUAD NO	N/A	
Period	Medieval	Form	Building	Significance	LB II-National
Description Masonry Fragments at Monks Abbey, a cell of St Mary's Abbey, York. C13. Ruble wall cores of irregular shape. Included for group value [1] Depicted on the OS 1 st Edition map [2] The site is currently exactly as described [3]					
Sources [1] English Heritage, Listed buildings entry [2] Ordnance Survey 6" Map First Edition 1889-1890 [3] Paul Bennett (Babtie Group) site visit July 2004					

Site No	13	Site Name	Mill Dam		
NGR	SK 98935 71369		SMR or LUAD NO	3430	
Period	Medieval	Form	Water mill	Significance	Regional/National
Description Whites 1826 County Directory refers to "On the east of [Monks Abbey] is the Mill Dam, which has long been used as pasture land; Camden says that the mill was turned by a spring of petrifying quality, and there is at present a spring of that description near to the ruins, but it does not yield sufficient water for the turning of a mill; yet on observing its former channel, which may be traced by the remaining walls of the dam flood-gate to the river Witham, it is evident that was formerly of sufficient depth for that purpose..." [1]. Excavations in 2000 recorded an east/west section of wall which may have formed the southern wall of a pool or pond. [2] The OS 1 st Edition shows a fish pond at this location labelled in antiquity type. [3] The site has been covered with a children's play area, but some earthworks remain. [4] The reference to "petrifying quality" may indicate that the Chalybeate well to the south may have been the source of water for the pond/dam, and that its location may have been altered by the construction of the railway. [5]					
Sources [1] White, 1826, Gazetteer and Directory of Lincolnshire. [2] City of Lincoln Archaeology Unit, 2000, Intervention report: Monks Abbey, Monks Road, Lincoln-Play Area refurbishment scheme (unpublished report) [3] Ordnance Survey 6" Map First Edition 1889-1890 [4] Paul Bennett (Babtie Group) site visit July 2004 [5] Dan Johnston (Babtie Group) pers comm. July 2004					

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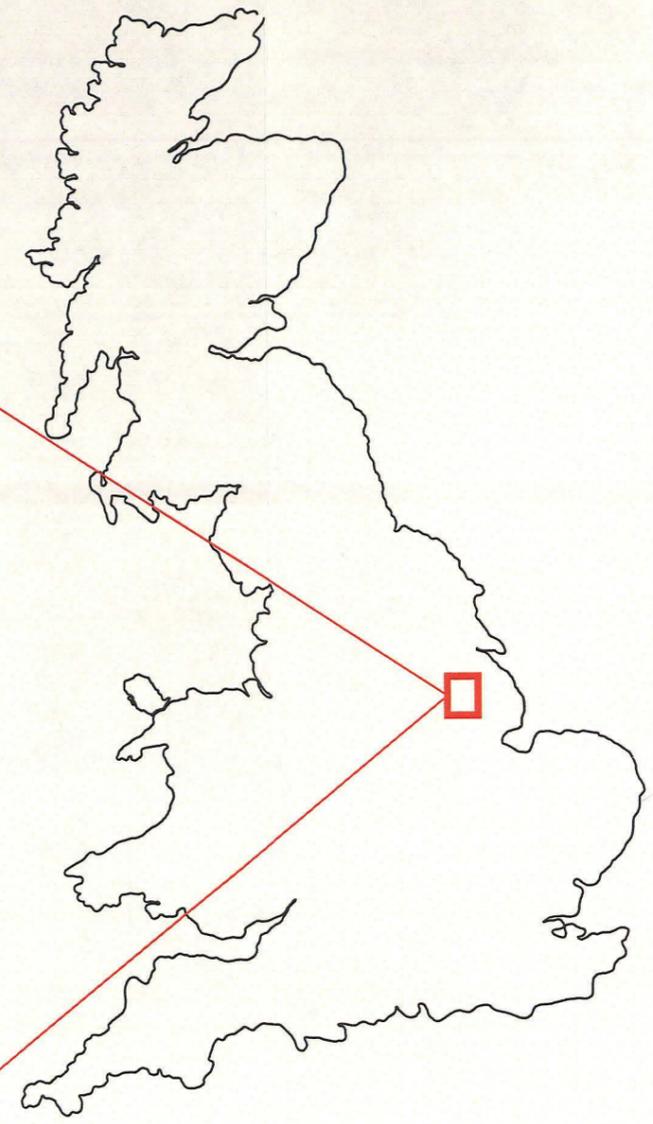
Site No	14	Site Name	Witham valley
NGR	TF 00000 71090	SMR or LUAD NO	N/A
Period		Form	Paleoenvironmental deposits
		Significance	National
<p>Description The Witham Valley is a source of great archaeological potential, with environmental and cultural deposits ranging from the Glacial period to the 18th century. Finds of high status across all the major periods of human activity, including the Witham shield and log boats, which appear to have had ritual significance [1]. The boundaries of this area are nominally drawn at the existing 5m contour within the study area. During the Roman military period, the actual boundary between the wetland and permanently dry land fell to around 3.5m OD and has been further reduced by modern land management [2]. Trial trenching for the Lincoln Eastern Bypass detected several peat deposits that had been desiccated and badly degraded by land drainage. The survival of peat deposits improves further towards the modern river location, and deposits which represent a buried ancient landscape survive intact along the entire area [3]. No peat deposits were found in the trial pitting of the power station site. However, several buried landscape features indicate that such evidence may lie undiscovered within the study area. [4]</p> <p>Sources [1] Catney, S 2003 "Setting the scene", in Catney, S and Start, D (eds) <i>Time and tide: the archaeology of the Witham Valley</i> [2] Lincoln Archaeological Research Assessment (LARA) 2003 [3] Pre - Construct Archaeology (Lincoln) (forthcoming) Report On A Programme Of Archaeological Trial Trenching: Lincoln Eastern Bypass [4] R. Trimble - City of Lincoln Archaeological Field Unit 1994 <i>Archaeological Recording in conjunction with Geotechnical investigations at the former spa road power station</i>. (unpublished report)</p>			



NEQDA (proposed)

Study Area, See Drg. No. 0013694 Figure 2

Lincoln Eastern Bypass (proposed)



Date: Description: AMENDMENT DETAILS Approved by:

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HIGHWAYS & PLANNING DIRECTORATE
 Y.H.KONG, B.Sc., C.Eng., M.I.C.E., M.I.H.T. Head of Design and Construction

Drawing No. 0013694 Figure 1

Structure No.

Rd No. Parish:

Scheme: Spa Rod Extension

Drg. Description: Desk Based Assessment
 Location Plan

Scale: NTS

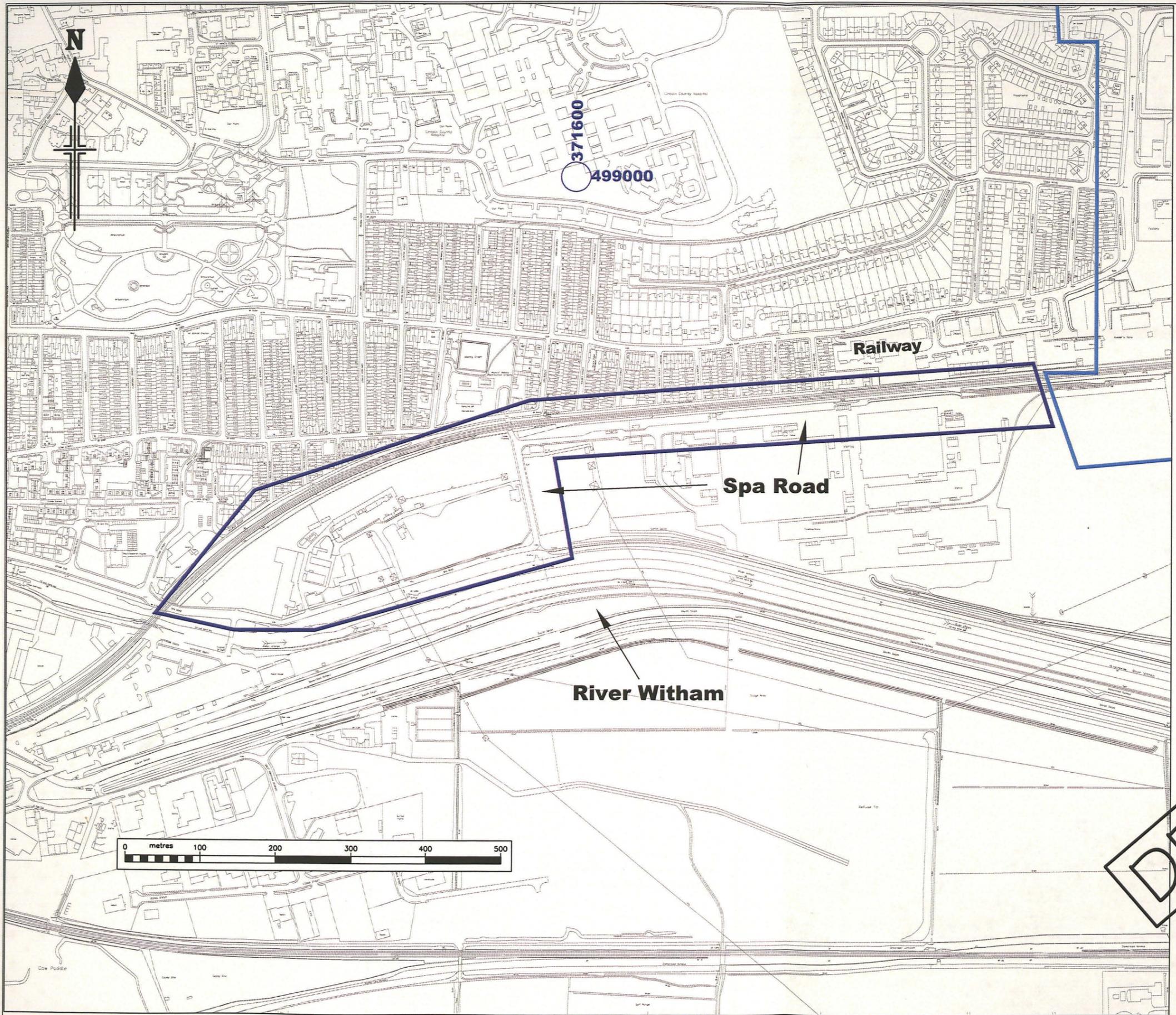
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 Draughted by: JAW
 Approved by: PAB
 Approval Date: May 04



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Archaeological Key

- Spa Road Extension study area
- NEQDA study area



Rev.	Date	Description	Approved by:
		AMENDMENT DETAILS	(Snr. Design Eng.)

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 Witham Park House, Witham Park, Waterside South, Lincoln LN5 7JN

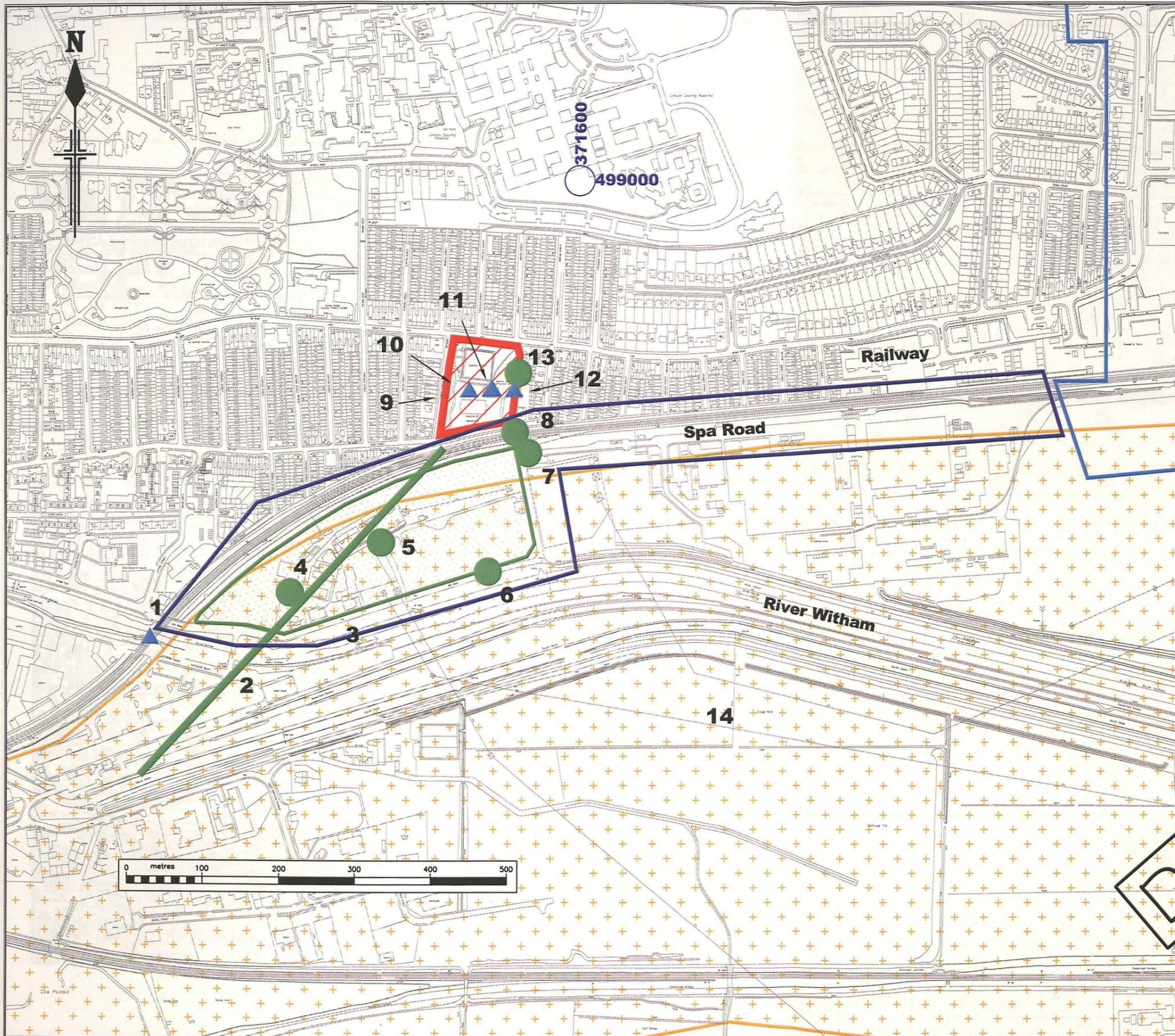
DRG.No. D/0013694 Figure 2
 Structure No. _____
 Rd No. _____ Parish: _____
 Scheme: Spa Road Extension
 Drg. Description Study Area

CONTRACT SHEET No: _____
 SCALE: 1: 5000 Approved by (Snr. Design Eng.): _____
 DATE: Mar 04
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Archaeological Key

-  Package 2 Study Area
-  Package 1 Study Area
-  Scheduled Ancient Monument
-  Site of Cultural Heritage Interest
-  Site of Cultural Heritage Interest
-  Listed Building
-  Witham Valley paleoenvironmental deposits



Rev.	Date	Description	Approved by:
1		AMENDMENT DETAILS	(Snr. Design Eng.)

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DRG.No. D/0013694 Figure 3

Structure No. _____

Rd No. _____ Parish: _____

Scheme: Spa Road Extension

Drg. Description Sites of Cultural Heritage Interest

CONTRACT SHEET No: _____

SCALE: 1: 5000 Approved by (Snr. Design Eng.): _____
 DATE: Mar 04

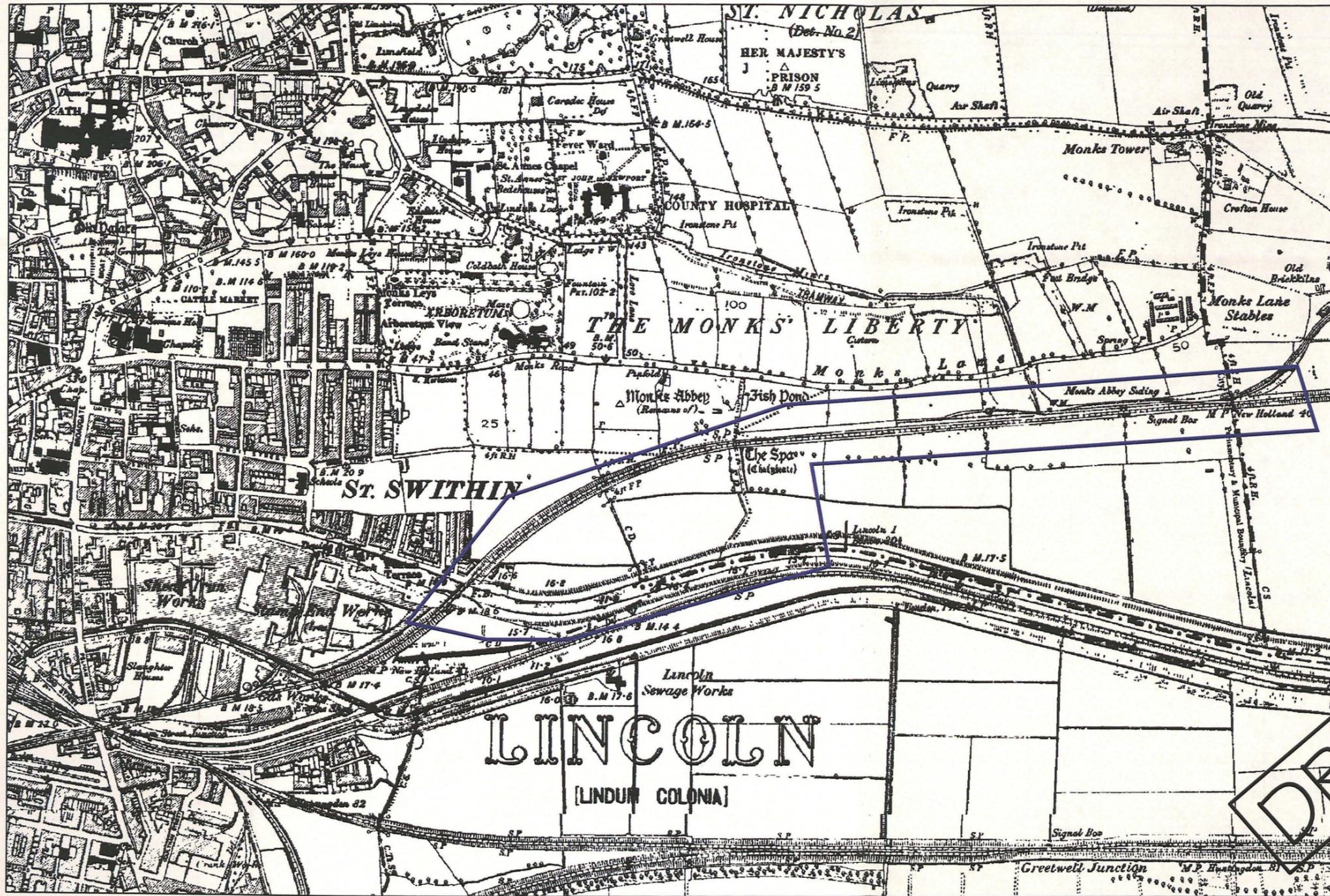
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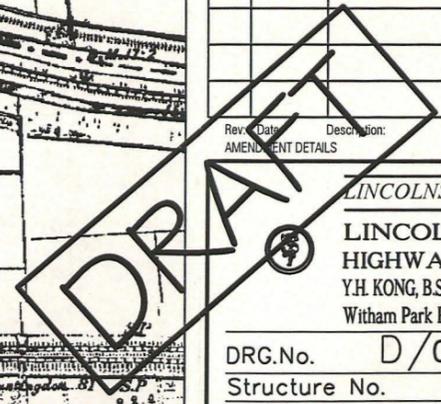
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		AMENDMENT DETAILS	(Snr. Design Eng.)



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 Witham Park House, Witham Park, Waterside South, Lincoln LN5 7JN

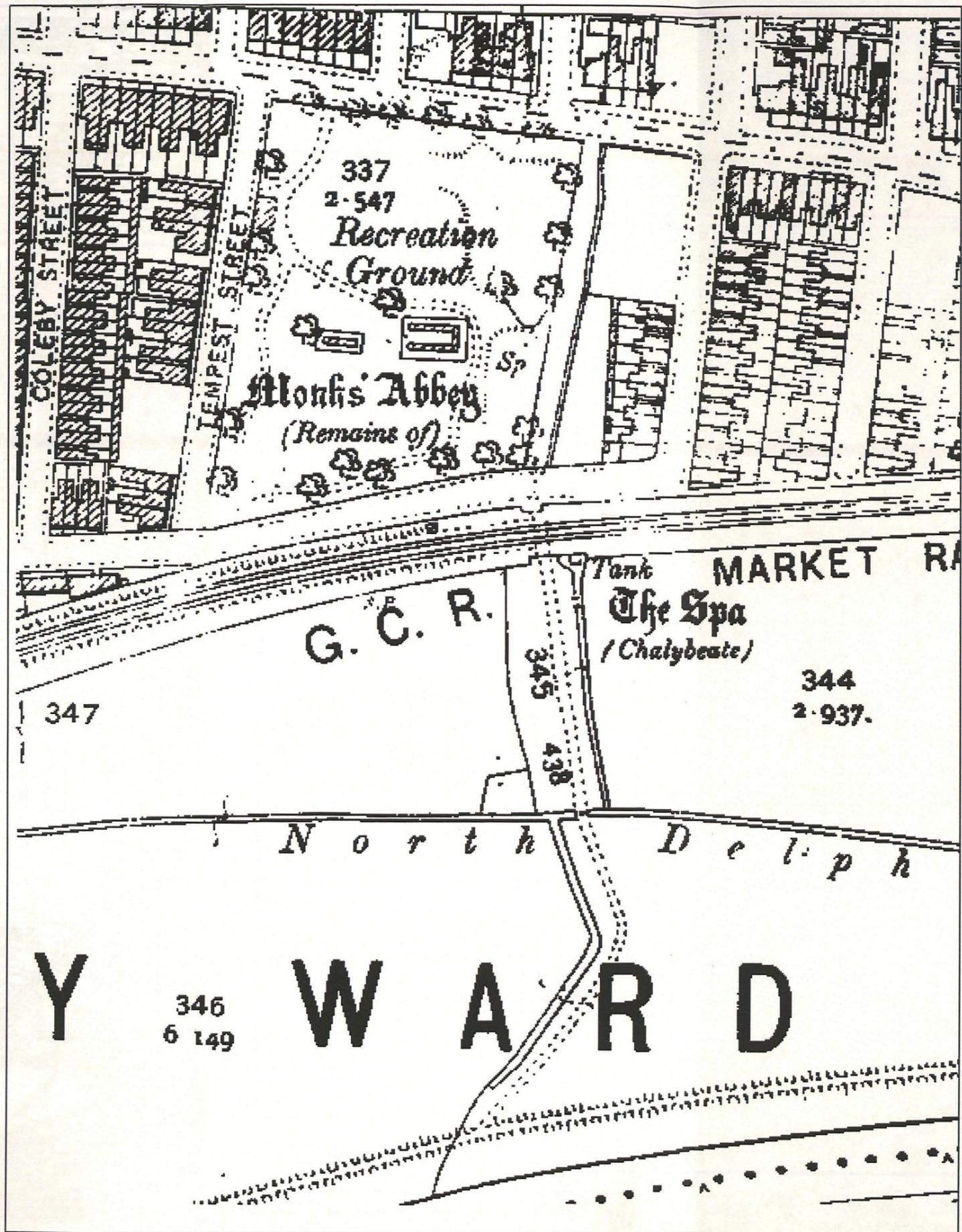
DRG.No. **D/0013694 Figure 4**
 Structure No. _____
 Rd No. _____ Parish: _____
 Scheme: **Spa Road Extension**
 Drg. Description **Ordnance survey 1st edition 6" map**

CONTRACT SHEET No: _____
 SCALE: **NTS** Approved by (Snr. Design Eng.): _____
 DATE: **Mar 04**
 Draughted By: **JAW** Checked by: **PAB** DATE: **Mar 04**



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 Witham Park House, Witham Park, Waterside South, Lincoln LN5 7JN

DRG.No. D/0013694 Figure 5
 Structure No. _____
 Rd No. _____ Parish: _____
 Scheme: Spa Road Extension
 Drg. Description Ordnance survey 2nd edition 25" map

CONTRACT SHEET No: _____
 SCALE: NTS Approved by (Snr. Design Eng.):
 DATE: Mar 04
 Draughted By: JAW Checked by: PAB DATE: Mar 04



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