



**Borough Council of King's Lynn and
West Norfolk**

**Surface Water Offline Storage, Kings
Lynn**

**Archaeological and Cultural Heritage
Assessment**

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1.0 Introduction

This Archaeological and Cultural Heritage Assessment has been prepared by Kirsten Holland, Senior Archaeologist, WYG on behalf of Borough Council of King's Lynn and West Norfolk in support of a planning application for an area of surface water offline storage, adjacent to the River Nar, King's Lynn.

This report presents the approach and findings of the assessment on archaeological and cultural heritage features and resources of the proposal. The report presents the methodology followed, and provides a review of the baseline cultural heritage features and resources of the development site (red line boundary) and surrounding area ("study area"). The report then presents the results of the assessment of the impact of the proposal on the baseline cultural heritage features and resources in order to determine the magnitude of impact and significance of impact anticipated. Mitigation measures are presented and discussed to minimise the impacts of the proposal during construction and operation.

Within the context of this report cultural heritage should be taken to mean the above and below ground archaeological resource, built heritage and historic townscape.

2.0 Site Description

The development site is located to the south of King's Lynn town centre in Norfolk, centred on NGR TF 618 192 (561885, 319200) immediately west of the River Nar. The red line boundary of the development site is shown on Drawing A052964-2/51/C&S/800, Appendix A and extends to an area of 0.77 hectares. Urban areas lie to the north, east and south of the development area, while beyond King's Lynn the majority of the land comprises arable fields and areas of woodland interspersed with settlements.

The development site is located to the west of the existing line of the River Nar. It is located between the existing River Nar sluice to the north and Blubberhouse Creek to the south. The west of the development site is currently bounded by open space, however planning permission for the CIF2 public transport link has been granted and this will form the western boundary following construction. The land beyond the development site to the north, south and west is primarily open space and includes the Hardings' Pits Doorstep Green. The land to the east is mainly residential and includes housing and a school.



3.0 Development Description

The development is to provide an offline storage facility for surface water. The facility would have a maximum capacity of 4345m³ and is planned to serve residential plot R1 of the Nar-Ouse Residential Area (NORA) and potentially in the future the CIF2 public transport route and other development plots of NORA.

The works involve the excavation of material as detailed on the submitted drawings and, once completed the ground will be restored to grassland or simply landscaped to replicate the environment that surrounds the site at present.

Under normal flow conditions the area created would remain dry and would only be utilised to store surface water at times of exceptional flow and only for the duration when the River Nar is unable to discharge into the River Great Ouse at the sluice. Once the sluices re-open, the area will drain back into the River Nar.

This assessment has been based on development design drawings: A052964-2/51/C&S/800 to A052964-2/51/C&S/807.

4.0 Methodology

4.1 Assessment Methodology

Impact assessment has been carried out through the consideration of baseline conditions in relation to the elements of the scheme that could cause cultural heritage impacts. Baseline conditions are defined as the existing environmental conditions and in applicable cases, the conditions that would develop in the future without the scheme. In accordance with best practice this report assumes that the scheme will be constructed, although the use of the word 'will' in the text should not be taken to mean that implementation of the scheme is certain.

No standard method of evaluation and assessment is provided for the assessment of impact significance upon cultural heritage, therefore a set of evaluation and assessment criteria have been developed using a combination of the Secretary of State's criteria for Scheduling Monuments (PPG16, Annex 3), Design Manual for Roads and Bridges, Volume 11, Part 3, Section 2, HA 208/07 and Transport Analysis Guidance (TAG Unit 3.3.9, Heritage of Historic Resources Sub-Objective). Professional judgement is used in conjunction with these criteria to undertake the impact assessment. The full assessment methodology used is provided in Appendix B.



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The well established and applied principles of the impact assessment methodology rest upon independently evaluating the value of the cultural heritage resource and the predicted magnitude of impact (both positive and negative) upon the resource. By combining the value of the cultural heritage resource with the predicted magnitude of impact, the significance of the impact can be determined. The impact significance can be beneficial or adverse. The evaluation of magnitude of impact and impact significance is undertaken both before and after mitigation measures are specified.

4.2 Previous Studies

The Nar-Ouse Regeneration Area (NORA) has been subject to a number of cultural heritage assessments to date. The following reports have been considered when compiling the baseline conditions for this report:

- NORA An Archaeological Desk-Based Assessment (NAU, 2000);
- NORA Review of Cultural Heritage and Proposed Future Strategy (Scott Wilson, 2004);
- NORA Historical Research Report (Scott Wilson, 2005a);
- NORA Recommendations and Strategy for Future Works (Scott Wilson, 2005b);
- Briefs for Archaeological Evaluations at Nar Loop, Harding's Pits, Land North and East of Nar (NLA, 2009);
- Archaeological and Cultural Heritage Assessment of the CIF2 Public Transport Route (WYG, 2009);
- Archaeological Evaluation of Land at Hardings Pits and Blubberhouse Creek (APS, 2009).

4.3 Study Area

A study area of 250m around the development site has been considered for records of designated and non-designated cultural heritage sites to place the cultural heritage conditions of the site within their immediate context. The wider context of the surrounding area is considered within the baseline assessment.



5.0 Legislation and Planning Policy Context

5.1 Legislation

5.1.1 Ancient Monuments and Archaeological Areas Act 1979

Scheduled Monuments are designated by the Secretary of State for Culture, Media and Sport on the advice of English Heritage as selective examples of nationally important archaeological remains. Under the terms of Part 1 Section 2 of the Ancient Monuments and Archaeological Areas Act 1979 it is an offence to damage, disturb or alter a Scheduled Monument either above or below ground without first obtaining permission from the Secretary of State. This Act does not allow for the protection of the setting of Scheduled Monuments.

The proposal will not directly affect the Scheduled Monument of Whitefriars Gate which lies outside of the development boundary. The setting of Whitefriars Gate will not be affected by the development which is sufficiently distant from the proposals that they would result in a negligible alteration to the baseline setting of the monument.

5.1.2 Planning (Listed Buildings and Conservation Areas) Act, 1990

The Act outlines the provisions for designation, control of works and enforcement measures relating to Listed Buildings and Conservation Areas. Section 66 of the Act states that the planning authority must have special regard to the desirability of preserving the setting of any Listed Building that may be affected by the grant of planning permission. Section 72 of the Act states that special attention shall be paid to the desirability of preserving or enhancing the character or appearance of Conservation Areas.

No Listed Buildings or Conservation Areas will be directly affected by the proposal as they lie outside the development site boundary. The setting of the Listed Buildings and Conservation Areas will not be affected by the development which is sufficiently distant from the designated sites that the development would result in a negligible alteration to their baseline settings.



5.2 National Policy

5.2.1 Planning Policy Guidance 16: Planning and Archaeology, 1990

Where nationally important remains, whether scheduled or not, and their setting are adversely affected by proposed development there should be a presumption in favour of their preservation in situ. In cases involving archaeological remains of lesser importance the planning authority will need to weigh the relative importance of the archaeology against other factors, including the need for the proposed development. Where it is not feasible to preserve remains, an acceptable alternative may be to arrange preservation by record.

The proposal has been subject to archaeological assessment in advance of this planning application. This has included extensive desk-based assessment and evaluation excavations. This has demonstrated limited archaeological remains are present on the site, however a potential for previously unrecorded archaeological remains persists at levels which could not be archaeologically evaluated. These remains are not considered to be of national importance therefore preservation by record rather than preservation in situ is considered appropriate. A modified strip, map and sample methodology is proposed to mitigate the potential impact on archaeological remains.

5.2.2 Planning Policy Guidance 15: Planning and the Historic Environment, 1994

PPG15 emphasises the importance that the Government gives to preserving and enhancing Conservation Areas, Listed Buildings and their settings and other aspects of the historic environment including Registered Parks and Gardens, World Heritage Sites and the wider historic landscape. Guidance on Listed Building and Conservation Area controls are outlined within the document.

No Listed Buildings, Registered Parks and Gardens or Conservation Areas will be directly affected by the proposal as they lie outside of the development site boundary. The setting of the Listed Buildings, Registered Parks and Gardens and Conservation Areas will not be affected by the development which is sufficiently distant from the designated sites that the development would result in a negligible alteration to their baseline settings.



5.3 Regional Policy

5.3.1 East of England Plan, 2008

There is one policy relevant to cultural heritage within the East of England plan. This policy ENV 7 The Historic Environment:

'In their plans, policies, programmes and proposals local planning authorities and other agencies should identify, protect, conserve and, where appropriate, enhance the historic environment of the region, its archaeology, historic buildings, places and landscapes, including historic parks and gardens and those features and sites (and their settings) especially significant in the East of England:

- an exceptional network of historic market towns;...
- ... the highly distinctive historic environment of the coastal zone including extensive submerged prehistoric landscapes, ancient salt manufacturing and fishing facilities, relict sea walls, grazing marshes, coastal fortifications, ancient ports and traditional seaside resorts; ...
- ... conservation areas and listed buildings, including domestic, industrial and religious buildings, and their settings, and significant designed landscapes;...
- ... the wide variety of archaeological monuments, sites and buried deposits which include many scheduled ancient monuments and other nationally important archaeological assets.'

East of England Plan, 2008

The proposal has been subject to archaeological assessment in advance of this planning application. This has included extensive desk-based assessment and evaluation excavations. A modified strip, map and sample methodology is proposed to mitigate the potential impact on archaeological remains. The setting of Conservation Areas and Listed Buildings will not be affected.



5.4 Local Policy

5.4.1 King's Lynn and West Norfolk Local Plan, 1998

There is only one policy relevant to cultural heritage that has been 'saved' under the provisions of the Planning and Compulsory Purchase Act 2004. Decisions in relation to heritage issues, that would have been undertaken according to policies which have not been saved, will be made with reference to national planning policy guidance. The saved policy is 4/14:

'Policy 4/14 Development proposals in the vicinity of Conservation Areas should have regard to their impact on the settings of and views into and out of the areas, which will be taken into account by the Council in assessing any consequential effect for the preservation or enhancement of the character or appearance of the Conservation Area.'

King's Lynn and West Norfolk Local Plan, 1998

The setting of the Conservation Areas will not be affected by the development which is sufficiently distant that it would result in a negligible alteration to the baseline settings of the Conservation Area.

6.0 Consultation

Consultation has been undertaken with Norfolk Landscape Archaeology (Ken Hamilton, 26/01/10), in their role as archaeological advisors to the local planning authority, regarding the cultural heritage implications of the proposed development. The results of this consultation are incorporated into this report.

7.0 Baseline Data

7.1 Designated Sites

Information on designated cultural heritage sites has been collected for a study area of 250m around the development site boundary. Details of the designated cultural heritage sites can be seen in Appendix C and on Figure 01.

Within the development site there are no World Heritage Sites, Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens, Registered Battlefields or Protected Wreck Sites.



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Within the study area are two Scheduled Monuments. Whitefriars Gate was constructed as the northern gateway to the Carmelite friary in the 15th century and is the only surviving monastic structure. It is also a Grade II* Listed Building. South Gate was the main entrance into the south of the town and the main road still passes through it. It is also a Grade I Listed Building.

There are seventeen Listed Buildings within the study area. These include one Grade I Listed Building (South Gate Site 384203), one Grade II* Listed Building (Whitefriars Gateway, Site 384330) with the remainder Grade II Listed. The buildings are predominantly residential and are largely screened from the development site by the intervening built environment.

The King's Lynn Conservation Area abuts the development site boundary to the north and east. The Conservation Area is sub-divided into five areas of which the Friars Conservation Area (Area 1) is located within the east and north of the study area. The Friars Conservation Area is composed predominantly of residential housing dating from the medieval period onwards. The quality of the area is enhanced by the uniformity of scale and materials.

7.2 Geoarchaeological Conditions

King's Lynn lies close to the eastern edge of the Norfolk silt fens or 'Marshland' immediately to the north of the confluence between the River Ouse and its tributary the Nar. King's Lynn and the study area are underlain by a complex sequence of marine clays, sands and peats. The general sequence of deposits within the region are summarised in the table below.

Table 1 Deposits of the Fenland sedimentary sequence (NAU, 2000; Scott Wilson, 2004)

Deposit Type	Description	Approx date
Lower peat	Overlies floor of the majority of the Fen Basin. Formed after last glaciation over long period. Some as early as Late Upper Palaeolithic period and some in the Mesolithic to early Neolithic periods	9000 – 3000BC
Fen Clay	Representing major sea incursions in the late Neolithic/Bronze Age	3000 – 1500BC
Upper or Nordelph Peat	Renewed peat growth	1000-200BC
Silts/clays	Extensive silt layers caused by marine incursion in the late Iron Age	200BC – 50AD
Silts/clays	Post-Roman silt deposits have been recorded in some areas as a	450AD+



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	result of marine incursions	
Reclaimed deposits	Soft red brown clays containing laminated silts over laying peat from the middle to late Saxon periods.	

Geotechnical site investigations were undertaken within the development site in 2009. The locations and section profiles of the window samples can be seen on Figure A052694/51/C7S/803, Appendix A. The samples were not archaeologically monitored and therefore interpretations from the sample logs should be treated with caution. The descriptions of made ground from the site investigation logs refer to sands, flint and chalk gravels, concrete and glass. No descriptions of other artefacts of potential heritage interest are included.

Comparison of the window sample descriptions, with the description of deposits from the archaeological evaluations within the area (APS, 2009) highlight a number of minor discrepancies between the two investigations, however it is unclear whether this is due to differing interpretations of individuals undertaking the investigations or localised variations. The archaeological investigations are generally characterised to a greater level of detail with for example minor variations in colour assigned to different contexts.

The archaeological trenches and auger samples did not penetrate to the proposed final construction depth, however the levels of silts and sands are in broad correlation with the window samples.

7.3 Archaeological and Historical Background

There is a dearth of archaeological evidence from the study area and the surrounding region dating to the prehistoric and Roman periods. This is not surprising as geological and sedimentary research within the area has indicated that the study area would have formed part of the Norfolk silt fens or Marshland bisected by the Rivers Ouse and Nar and numerous smaller channels and creeks during this period (NAU, 2000). It is anticipated that the course of the Nar would have moved during these periods and evidence of former courses have been identified to the south of King's Lynn (Silvester, 1988 cited in NAU 2000).

The alterations to the River Ouse throughout the Roman, medieval and post-medieval period have largely occurred outside of the study area, however they have had a subsequent impact upon the development of King's Lynn. The course of the River Ouse was altered in the Roman period to divert it from its original course to the sea via Wisbech, to join the Little Ouse and follow an approximation of its modern course.



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The link between the Great and Little Ouse was no longer active by the early medieval period, but by the end of the 13th century a direct link had been restored resulting in an increase in river traffic and water flow to the area of Lynn. In 1821 century the Ouse was straightened along the Eaubrink Cut between an area just south of the development site and Wiggshall.

The study area is located at the northern edge of a large and persistent wetland known as 'the Lenn'. There is evidence that during the later early medieval and medieval period that attempts were made to reclaim and control this land through the construction of sea banks. It is considered highly likely however that the area would have remained marshy and subject to coverage by surface water for much of the year (NAU 2000).

The eastern edge of the Lenn is anticipated to have been contained by a significant earthwork known as the 'Greendike' which eventually turned at its northern end to become the Hardwick Dam. The Dam followed the line of the modern Hardwick Road until it met the River Nar beside South Gate. The date of construction of the sea defences are unknown, however they are likely to predate the founding of Lynn in the 12th century (NAU, 2000). The Domesday Book records a small settlement in the area and numerous salt pans. The Lenn may have provided ideal conditions for the salt panning.

King's Lynn is likely to have been founded to take advantage of its good location for transport. The Ouse was sufficiently deep at this point for large vessels, but also narrow enough to be traversed by a ferry. The intersection for road, river and sea transport was therefore a good location for trade. In the late 11th century the Bishop of Norwich founded the Priory of St Margaret to the north of the development site and obtained the rights to a fair and market. The initial urban development for the town was focussed around the priory between the inlets of Purfleet and Millfleet. It is possible that there was a pre-existing settlement at South Lynn however as the foundation charter refers to a church of the other side of Millfleet which may refer to the church of All Saint's to the north-east of the study area.

Trade flourished along the coast and across the North Sea. It took only fifty years for the town to outgrow the northern limit of Purfleet and in the mid 12th century the 'Newland' was laid out to the north of Purfleet. This included a further market place and the chapel of St Nicholas. Trade continued to grow throughout the late 12th and 13th centuries and a boost to the economy occurred in the 13th century when the river silted up at Wisbech which meant that more trade came through King's Lynn. One of the effects of this expansion was that staites and quays were built out into the water to facilitate the trade. This had a side effect that



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consolidation and incremental reclamation of the waterfront occurred due to natural silting and disposal of rubbish along the waterline.

The development and the relationship of the town to the waterfront is described within the NAU desk-based assessment (2000). The majority of evidence however is identified from the area to the north of the study area closer to the town centre. The waterfront is anticipated to have been located close to the alignment of Bridge Street and All Saints Street in the 11th century (Clark and Carter, 1977, cited in Scott Wilson, 2004).

The establishment of the Carmelite Friary (Whitefriars) to the north of the study area in the mid 13th century indicates that the land had been reclaimed by this date. Although it was considered marginal, documentary references of the 13th and 14th centuries to roads and dwellings indicate that it was not devoid of occupation (NAU, 2000).

The medieval fortifications of the town in the 12th and 13th century terminated at the River Nar which formed a natural barrier. The defences were originally aligned along a pre-existing sandbank. A 12th century 'bretask' or timber fortified tower is expected to have been located just to the south of the present South Gate. South Gate was known to have been built by the 13th century, with the present South Gate dating 1437 with rebuilding in the 1520s. The gate was one of the main entrances to the town.

In the 16th century the Ouse waterfront became more important than the fleets which may reflect an increased use of deep draughted ships which had to use the main river for docking. The continuing increase in trade led to significant rebuilding of staithe and wharves on the edge of the town, however these were located largely to the north of the study area. The dissolution of the monasteries in the 1530s led to changes in the town. The conventual buildings around the priory of St Margaret were cleared and the land redeveloped, however the Black, White and Greyfriars precincts remained open land taken into civic ownership. The Greyfriars and Whitefriars towers were retained as sea marks, although the Whitefriars tower collapsed in 1621. Although there was also 16th and 17th century rebuilding and modernisation of street frontages the layout of the medieval town remained largely unchanged leading to the fossilisation of the historic layout.

The towns defences were extended to the north and south in the early 17th century and extended across the River Nar into the study area at the same time. They remained prominent features into the early 19th century although aspects such as the bastion at South Gate went out of use.



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King's Lynn continued to be an important location for trade, shipbuilding and associated industries throughout the 18th and 19th centuries. The commercial centre of the town remained focussed to the north of the study area, whilst the development site and study area to the south of the main town became a focus for other industries such as whaling and blubberhouses, shipyards, timber yards and mills. The population of the town grew rapidly in the early 19th century and the town was revitalised by the railways which reached the area in 1847.

The town saw a large expansion in the post Second World War era when the town was designated as an expansion town for London and there was a large influx of population generating redevelopment and new building.

7.4 Development Site and Immediate Surroundings

A study area of 250m around the proposal has been considered for non-designated cultural heritage sites. Details of these sites can be seen in Appendix C and Figure 02. A reproduction of a constraints plan identified from historic mapping is reproduced in Appendix D (Scott Wilson, 2005a).

Evaluation excavations have been commissioned within the development site and the locations of evaluation trenches can be seen in Appendix E (APS, 2009). The results of these evaluations have been incorporated into this baseline assessment.

There are no recorded archaeological remains within the development site or study area from the prehistoric, Roman or early medieval periods. The development site is anticipated to have formed part of the northern extent of the Lenn during these periods. Although the reclamation of the Lenn is anticipated to have commenced during the middle and later early medieval period, the dykes and sea defences constructed to aid this are all located to the south of the development site. There is considered to be negligible potential to find previously unrecorded archaeological remains from these periods.

The medieval period is the first period where substantial archaeological evidence has been recovered from the study area. To the north of the study area at the junction of Bridge Street and All Saints Street (Site 1246) identified what has been interpreted as an early course of the River Nar running along the alignment of Bridge Street and All Saints Street in the 11th century. The waterfront is therefore likely to have been located to the east of the development site at this time as supported by evidence of occupation in the 12th century fronting All Saints Street (NAU, 2000).



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In the 13th century occupation at the junction of All Saints Street and Bridge Street was reorientated to face Bridge Street, supporting the assertion that the bank of the Nar had moved west by this date (NAU, 2000). Excavations at the former Corona depot (Site 39860) indicated that the watercourse along Bridge Street had become silted by the end of the medieval period.

Within evaluation excavations in the Boal Quay car park the back braces of a potential medieval quayside have been recorded with evidence for the dumping of medieval material to support land reclamation. The foundation of a medieval boundary wall was recorded in a further evaluation adjacent to the site of Whitefriars Gate (*pers. comm.* Paul Cope-Faulkner). This is interpreted as the boundary wall for the medieval friary and was located approximately 0.82m below ground level. There was no evidence of medieval occupation or utilisation of this area immediately adjacent to the wall supporting to assumption that the main focus of the friary was to the east of The Friars.

The River Nar formed part of the western edge of the towns defences until the 17th century. The land to the west of the River Nar would have been outside of the town defences and therefore is unlikely to have been used extensively. It is also likely to have remained liable to flooding. Documentary research has indicated that this area was utilised by fullers and dyers for drying cloth and fish drying and processing (Scott Wilson, 2005a).

The town defences (Site 5486) were extended across the study area in the mid 17th century. Clampe's map of 1645 provides the greatest detail about the defences (NAU, 2000 and Scott Wilson, 2005a). Within the area known as Harding's Pits in the southern part of the development site and study area the town defences were aligned east-west before turning north into the meander of the Nar loop in the west of the study area. The south-west corner of the defences included a large angle bastion to the south-west of the development site. The main defences were composed of a moat with a broad rampart and counterscarp bank and a covered way for defenders with the exception of the northern most part within the Nar loop (to the west of the development site) which was composed of a rampart only. Of the area that was enclosed Clampe described it as 'formerly marsh and at present little better', suggesting an alignment for a bank which may improve it.

Outside of the study area a fortification called 'World's End' was depicted on the Boal peninsular overlooking the mouth of the Nar on the 1645 map (Site 1395126). The building was enclosed within an irregular pentagonal enclosure and contained four cannons. The fortification was recorded on Bell's map of 1680, but had gone by Raistrick's map of 1725. The large bastion was also shown to the south of South



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Gate on the 1645 and 1680 maps. The bastion defences were shown as a shadow by 1725 which indicates that they may have been substantially reduced by this time.

There is debate over the exact line of the defences, and parts of the defences are considered likely to have been substantially disturbed or truncated due to clay extraction and the construction of the railway in the 19th century. Mapping indicates that the line of the defences lay just outside the development site boundary, however there was considered a potential that parts of the town defences may remain within the development site. Within the immediate vicinity of the development site the civil war defences were crossed by the alignment of the Harbour railway (Site 37297) and their associated sidings and therefore the defences are anticipated to have been largely truncated within the development site.

Evaluation excavations were undertaken within the development site and identified remains from the Harbour railway and siding. In addition although some dumped deposits were identified below these there was no dating evidence which could be recovered from these deposits and their lack of structural form meant that they could not be definitely assigned to the town wall. These deposits may therefore have been associated with raising the ground level or represent demolition layers from the ditches and banks of the town wall (APS, 2009).

Bell's (1680), Raistrick's (1725) and Faden's (1797) maps depicted the development site and study area as largely depicted as undeveloped. The main alteration by Faden's map was that the town defences were shown as no longer turning north into the Nar loop but continuing west to meet the seawall of the River Ouse. Blubberhouse Creek was also depicted and was at this time longer in length, continuing south-west beyond the line of the town defences and across the development site.

Subsequent mapping (1809, 1830, 1831, 1844, 1880) demonstrates a gradual increase in industrialisation along the eastern bank of the River Nar and within the south of the study area, including a number of shipyards. The north of the study area continued to contain numerous buildings within the north east corner facing the roads and backing into the development site. Boal Quay and the banks of the Ouse were reinforced and maintained several times over the 18th and 19th centuries after the area passed into civic ownership in 1703 (Scott Wilson, 2005a).

By the time of the 1884 first edition Ordnance Survey map significant alterations had been made to the development site and study area. The two greatest changes were the introduction of the Harbour Branch railway (which passed north through the development site and into the meander of the Nar Loop, Site 13593). The branch line was closed in the 1960s and the majority of the railway dismantled, although some



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buried remains of sub-base, ballast and waste cinders from the locomotives are present within the development site as demonstrated by evaluation excavations (APS, 2009).

The other major change was in the area of Harding's Pits in the south of the study area. Harding's Pits were a number of large clay extraction pits which largely covered the south of the study area. A brick kiln was associated with the pits. The southern pits were backfilled by 1929 and the northern pits were filled in the 1950s to 60s. It is believed that domestic waste formed the majority of the refuse material, although evidence of some industrial waste has also been recorded. The clay extraction pits are considered likely to have substantially truncated archaeological remains.

Within the rest of the development site and study area further industrial remains have been identified from historic mapping (Appendix D, Scott Wilson, 2005a). Within the study area to the south and west of the development, in the immediate vicinity of Blubberhouse Creek a blubberhouse, a shipyard and several public wharfs were depicted. Adjacent to the harbour railway and to the south of the development site, a coal yard and coke ovens were depicted. These buildings have all been subsequently demolished.

Evaluation excavations within the development site were partly aimed to determine whether any archaeological remains, such as quaysides, associated with the blubberhouse were present within the development site. No evidence of archaeological remains associated with the blubberhouse were recorded within the evaluation trenches. The earliest evidence of deposits in Trench 1 located adjacent to the creek was dated to the 19th century and therefore would be contemporary with the blubberhouse, however these were spread deposits and did not have a structural form (APS, 2009). The location of Trench 1 was however constrained by the existing bank and for health and safety reasons could not be placed within the area comprising the historic bank edge and therefore some features associated with the river may not have been identified. Furthermore the depth of excavation did not penetrate to archaeologically sterile layers and therefore further archaeological remains may be present at greater depth (Ken Hamilton *pers. comm.*).

8.0 Key Design Elements and Inherent Mitigation

The location and form of the offline storage area is largely dictated by the surrounding site constraints such as the River Nar, CIF 2 route and the requirements for surface water storage capacity. The evaluation excavations undertaken within the development site have confirmed that the development will not affect extensive remains of the town wall.



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9.0 Potential Effects

9.1 Construction

The line of the Harbour Branch railway and associated railway sidings lies within the development site. The railway was dismantled and the majority of its track taken up in the 1960s. Evaluation excavations have identified remnants of the sub-base, ballast of the rail tracks and waste cinders. The value of the railway is therefore considered to be negligible as there is virtually no surviving cultural heritage interest. The construction of the proposed scheme will therefore have a negligible negative, direct and permanent impact upon the archaeological remains. The unmitigated significance of effect will therefore be neutral.

The civil war defences of the town cross very close to the southern and northern boundaries of the development site. Evaluation across the line of the defences and adjacent to them did not identify deposits that could be assigned to the defences with certainty, however some dumped deposits may indicate that remnants of the defences survive. The majority of the defences are likely to have been largely removed by the construction of the Harbour Branch railway and sidings in the 19th century, however truncated remains or demolition layers can not be entirely ruled out. Any remaining archaeological evidence is therefore likely to be of low value. Any potential impact upon the remains would affect only a small proportion of the overall monument and therefore should the remains be encountered the impact would be slight negative, direct and permanent. The overall unmitigated significance of effect would be minor-neutral adverse.

There is a relatively low potential that previously unrecorded archaeological remains of pre post-medieval date may be discovered during the construction phase. Within the development site and southern study area the land is anticipated to have remained marginal and under utilised until at least the 17th century. From the 17th century onwards (after the extension of the towns defences across the site) the study area gradually became more built up, primarily with industrial uses. This gradual industrialisation is largely documented on historic mapping and therefore it is not anticipated that extensive previously unrecorded sites will be present.

There is a moderate potential that there may be previously unrecorded remains of medieval and post-medieval date immediately adjacent to the bank of Blubberhouse Creek. Archaeological remains on the bank of Blubberhouse Creek are anticipated to be associated with the utilisation of the bank and river. Typical remains may include timber revetments, foundations of quayside structures and palaeoenvironmental remains which may yield evidence for the former industries and uses of the creek and



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

river bank in this area. Any archaeological remains of this period are anticipated to be of significance within the local archaeological and historical context are anticipated to be of low heritage value. The construction may require the removal of these archaeological remains and therefore there is the potential that the unmitigated magnitude of impact would be substantial negative.

Within the remainder of the development site there is a low potential that previously unrecorded archaeological remains may be discovered as the majority of the development site was substantially disturbed in the 19th century during the construction of the Harbour Railway Any archaeological remains within the remainder of the development site are likely to have substantially truncated or disturbed and this is borne out by the results of the evaluation excavations which did not record any previously unrecorded archaeological remains.

The setting of the surrounding designated heritage features will not be affected by the construction of the proposed scheme due to their distance from the development site and intervening built environment.

9.2 Operation

There are not anticipated to be any operational impacts on cultural heritage features as a result of the proposed scheme.

10.0 Additional Mitigation Measures

A modified archaeological strip, map and sample methodology is proposed to mitigate the potential impacts on the potential for previously unrecorded archaeological remains on the northern bank of Blubberhouse Creek and the dumped deposits which may be associated with the town's defences.

The excavation and construction of the offline storage will be undertaken by a main works contractor. The detailed methodology for this construction will be determined by the main works contractor once they are appointed. The archaeological methodology adopted will be identified in conjunction with the main works contractor and Norfolk Landscape Archaeology to identify the most appropriate approach to meet the requirements for archaeological recording, maintain health and safety and achieve the required construction levels.

It is anticipated at this stage that the methodology will involve the excavation of material by 360° excavator and removal of excess fill to an off-site storage area. It is anticipated that the excavation and construction



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

will not require the installation of coffer dams or similar structures. The final construction level of the offline storage area is above the normal water level of the River Nar and is only designed to flood when the Nar sluice is closed and there are exceptional weather events. It is anticipated should this scenario occur during the construction period then construction will cease until the water levels have receded.

The strip, map and sample mitigation entails the controlled excavation of the site under archaeological supervision to either the top of archaeological horizons or to a point which is deemed to be archaeologically sterile and no further potential for archaeological remains persists. Should archaeological remains be identified a plan of identified remains would be undertaken and following consultation with the Norfolk Landscape Archaeology Development Control Archaeologist a strategy for the excavation and recording of the remains would be agreed. The level of excavation and recording would be adapted to enable the most effective strategy in relation to the remains nature and significance to be adopted. It is anticipated that through the adoption of an appropriate mitigation strategy the magnitude of impact upon archaeological remains may be reduced to slight negative or negligible negative.

A detailed Written Scheme of Investigation will be produced for the archaeological mitigation strategy. The precise areas for monitoring will be identified in consultation with the relevant stakeholders once the main contractor is appointed. It may be possible to remove areas of extensive modern overburden, that can be confidently identified and are considered to have a negligible potential for archaeological remains, without archaeological monitoring.

An indicative strategy is outlined in Appendix F, however it should be noted that this may be subject to change following detailed discussions between the stakeholders involved. All archaeological mitigation should be undertaken in accordance with the detailed Written Scheme of Investigation agreed in advance of construction with Norfolk Landscape Archaeology and according to the Code of Conduct and Standards and Guidance of the Institute for Archaeologists.

11.0 Residual Effects

Table 2 below provides an assessment summary of the potential cultural heritage effects and the anticipated residual effects, following the implementation of the proposed mitigation measures.



Table 2: Residual Cultural Heritage Effects

Environmental Effects	Sensitivity Of Receptor	Impact Magnitude	Nature of the Impact	Duration of the Impact	Significance	Additional Mitigation	Residual Impact Magnitude	Residual Significance of Effects	Confidence Level
CONSTRUCTION PHASE									
Harbour Branch railway (Site 13593)	Negligible	Negligible	Direct	Permanent	Neutral	None proposed	Negligible negative	Neutral	High
Town defences (Site 5486)	Low	Slight negative	Direct	Permanent	Minor adverse-Neutral	Modified strip, map and sample methodology	Negligible negative	Neutral	High
Potential to discover previously unrecorded archaeological remains (low for majority of site, moderate for Blubberhouse Creek bank)	Low	Substantial negative to Negligible	Direct	Permanent	Intermediate – minor adverse to neutral	Modified strip, map and sample methodology	Slight negative	Minor adverse-Neutral	Low
OPERATIONAL PHASE									
No impacts anticipated									



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

12.0 Conclusions

Archaeological desk-based assessment and evaluation excavations have previously been undertaken for the development site. This assessment has synthesised these studies and assessed the potential impact in relation to the offline water storage development. The assessment has identified the potential to impact upon archaeological deposits which may be associated with the town defences and represent demolition layers of the town walls. The assessment has also identified that there is the potential for previously unrecorded archaeological remains to be identified on the north bank of Blubberhouse Creek within the areas which could not be archaeologically evaluated.

A modified strip, map and sample methodology is proposed to mitigate the potential impact upon archaeological remains. This methodology will be identified in conjunction with the main works contractor (once appointed), BCKLWN and Norfolk Landscape Archaeology. It is anticipated that this mitigation strategy will enable the significance of effect on archaeological remains to be reduced to non-significant levels.



13.0 References

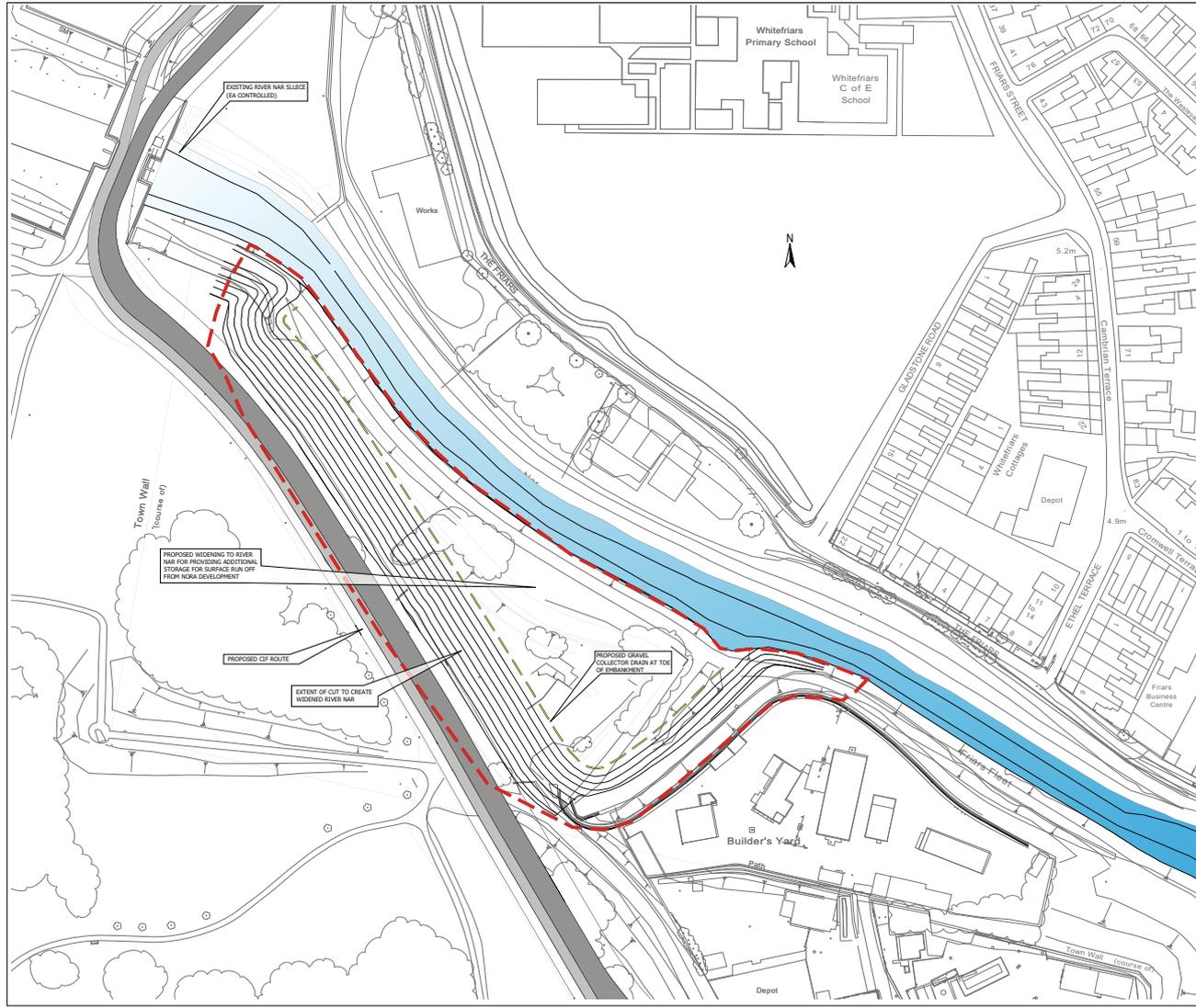
- Archaeological Project Services (2009) *Archaeological Evaluation of Land at Hardings Pits and Blubberhouse Creek, Kings Lynn*. Unpublished report.
- Borough Council for King's Lynn and West Norfolk (1998) *King's Lynn and West Norfolk Local Plan*.
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- Norfolk Archaeological Unit (2000) *NORA An Archaeological Desk-Based Assessment* Unpublished report.
- Norfolk Landscape Archaeology (2009) *Briefs for Archaeological Evaluations at Church Street, Nar Loop, Harding's Pits, Southgates Roundabout, Southgates Park, Land NE of Nar*. Unpublished reports.
- Scott Wilson (2004) *NORA Review of Cultural Heritage and Proposed Future Strategy* Unpublished report.
- Scott Wilson (2005a) *NORA Historical Research Report* Unpublished reports
- Scott Wilson (2005b) *NORA Recommendations and Strategy for Future Works* Unpublished reports
- Scott Wilson (2005c) *NORA King's Lynn Planning Application 2005 Environmental Statement*.
- WYG (2009) *Archaeological and Cultural Heritage Assessment of the CIF2 Public Transport Link*. Unpublished report.



Appendices



Appendix A – Red Line Boundary and Design Drawings



- GENERAL NOTES**
1. DO NOT SCALE. ALL DIMENSIONS ARE IN MILLIMETRES
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT CONTRACT DRAWINGS.
 3. THE CONTRACTOR SHOULD SITE CHECK ALL EXISTING DIMENSIONS SHOWN. ANY DISCREPANCIES ON THIS DRAWING IDENTIFIED BY THE CONTRACTOR SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER (SAB) TO CONSTRUCTION ON SITE.
 4. THE CONTRACTOR SHALL CONFORM TO ALL STATUTORY AUTHORITY REQUIREMENTS, CHECKING WITH THE SUPPLIER / CLIENT TO IDENTIFY BOTH BELOW GROUND AND OVERHEAD SERVICES. CONTRACTOR TO FULFILL DUTY WITH ALL CPA HAS AND PARTY WALL ACTS THAT ARE CURRENT. ALL BS REFERENCES ARE TO CURRENT EDITIONS.
 5. ALL TEMPORARY WORKS FOR FORMWORK, EXCAVATIONS ETC. TO BE THE DESIGN RESPONSIBILITY OF THE CONTRACTOR.
 6. ALL LEVELS ARE IN METRES (A.O.D.)

KEY

— HEALTH & SAFETY BOUNDARY

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No	Description	By	Chk	Rev	Date

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NEWSTED COURT, LITTLE OAK DRIVE
SHERWOOD BUSINESS PARK
ANNESLEY, NOTTINGHAMSHIRE
NG16 0JQ

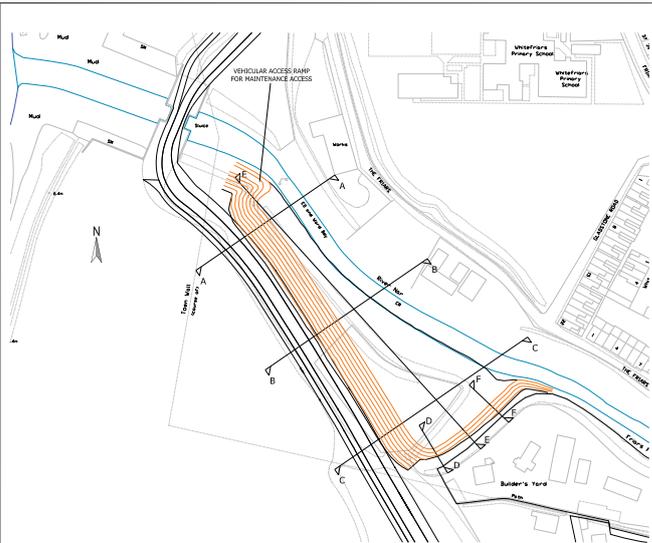
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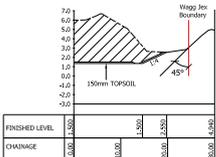
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H&S SAFETY SITE BOUNDARY PLAN

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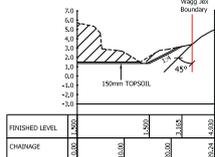
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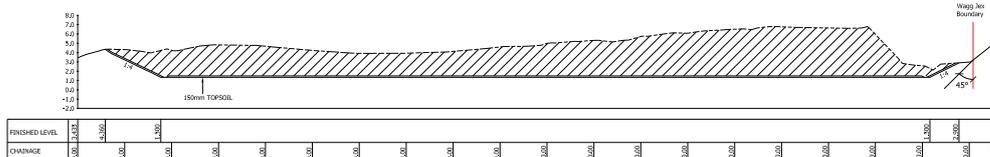
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SECTION LOCATIONS
(SCALE 1:1000)



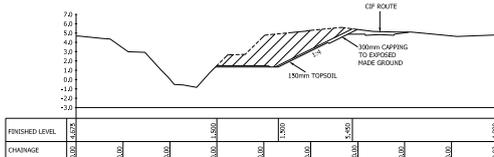
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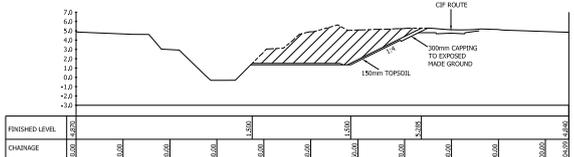
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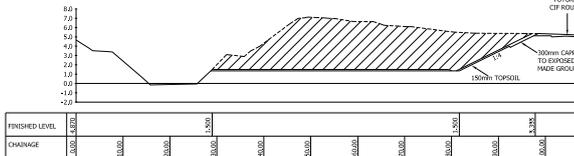
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SECTION A-A
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SECTION B-B
(SCALE: HORIZ 1:400, VERT 1:200)



SECTION C-C
(SCALE: HORIZ 1:400, VERT 1:200)

- GENERAL NOTES**
- DO NOT SCALE. ALL DIMENSIONS ARE IN MILLIMETRES.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT CONTRACT DRAWINGS.
 - THE CONTRACTOR SHOULD CHECK ALL EXISTING DIMENSIONS SHOWN. ANY DISCREPANCIES ON THIS DRAWING IDENTIFIED BY THE CONTRACTOR SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION ON SITE.
 - THE CONTRACTOR SHALL CONFORM TO ALL STATUTORY AUTHORITY REQUIREMENTS, CHECKING WITH THE ENGINEER, CLIMB TO IDENTIFY BOTH BELOW GROUND AND OVERHEAD SERVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL DIMENSIONS AND PARTY WALL ACTS THAT ARE CURRENT. ALL BS REFERENCES ARE TO CURRENT EDITIONS.
 - ALL TEMPORARY WORKS FOR FORMWORK, EXCAVATIONS ETC., TO BE THE DESIGN RESPONSIBILITY OF THE CONTRACTOR.
 - SITE INVESTIGATION CARRIED OUT BY WSP IN 09/12/09 HAS IDENTIFIED EXISTENCE OF SOFT TO VERY SOFT ORGANIC SILT AT THE DIFFERENT LOCATIONS. CONTRACTOR TO REPLACE THE SOFT MATERIAL WITH SUITABLE EXCAVATED MATERIAL AS PER ENGINEER'S INSTRUCTION.
 - ALL LEVELS ARE IN METRES (A.M.D.) THE LEVELS SHOWN IN SECTION DRAWINGS ARE FINISHED LEVELS FOR FORMATION LEVELS. CONTRACTOR SHOULD CONSIDER THE THICKNESS OF ANY CAPPING OR TOPSOIL LAYERS FOR PLANTING AS PER DRAWING ADDENDUMS.
- SURVEY NOTES**
- THE SURVEY INFORMATION USED IN THE PREPARATION OF THE DRAWING IS NOT WARRANTED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THIS SURVEY INFORMATION PROVIDED.
 - DRAWING BASED ON SURVEY DRAWING (SBC143) 001 PROVIDED BY SURVEY OPERATORS DATED 2009.
 - ALL SITE INVESTIGATION DATA IS PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY PRIOR TO COMMENCEMENT OF THE WORKS.
 - THE LOCATION AND VALUE OF THE ORDNANCE SURVEY BENCH MARKS (OSM) WHICH SHALL BE USED AS THE DATUM FOR THE THE PROJECT IS SHOWN ON THIS DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CORROBORATION OF THE ASSIGNED VALUE FROM THE ORDNANCE SURVEY.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING TEMPORARY BENCH MARKS FOR USE IN SETTING OUT THE WORKS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ON A REGULAR BASIS, THE VALUE OF THE TBM'S RELATIVE TO THE OSM.

- KEY**
- PROPOSED CONTOURS AT 0.5m INTERVALS
 - EXISTING GROUND PROFILE
 - PROPOSED GROUND PROFILE
 - MATERIALS TO BE EXCAVATED AND TRANSPORTED TO DEPOSITION AREA

EARTHWORKS
APPROX 20,200 m³ OF EXCAVATION REQUIRED TO WIDEN THE EXISTING NAR CHANNEL FOR OFFLINE SURFACE RUNOFF STORAGE

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CONTRACTOR TO MAKE APPROPRIATE MEASURE FOR POSSIBLE INUNDATION OF WORKING AREA DURING TIDE LOCK SITUATION

- IMPORTANT COMMENTS & NOTES**
- THE CONTRACTOR SHALL CHECK THE RECORDS ATTACHED TO THE DRAWING FOR ALL DIMENSIONS AND PARTY WALL ACTS.
 - THE CONTRACTOR SHALL CHECK ALL EXISTING DIMENSIONS SHOWN. ANY DISCREPANCIES ON THIS DRAWING IDENTIFIED BY THE CONTRACTOR SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION ON SITE.
 - THE CONTRACTOR SHALL CONFORM TO ALL STATUTORY AUTHORITY REQUIREMENTS, CHECKING WITH THE ENGINEER, CLIMB TO IDENTIFY BOTH BELOW GROUND AND OVERHEAD SERVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL DIMENSIONS AND PARTY WALL ACTS THAT ARE CURRENT. ALL BS REFERENCES ARE TO CURRENT EDITIONS.
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 - THE CONTRACTOR SHALL CONFORM TO ALL STATUTORY AUTHORITY REQUIREMENTS, CHECKING WITH THE ENGINEER, CLIMB TO IDENTIFY BOTH BELOW GROUND AND OVERHEAD SERVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL DIMENSIONS AND PARTY WALL ACTS THAT ARE CURRENT. ALL BS REFERENCES ARE TO CURRENT EDITIONS.

Borough Council of King's Lynn & West Norfolk

HERWOOD COURT, LITTLE OAK DRIVE
SHERWOOD BUSINESS PARK
ANNEX 1, NOTTINGHAM ROAD
KINGS LINN

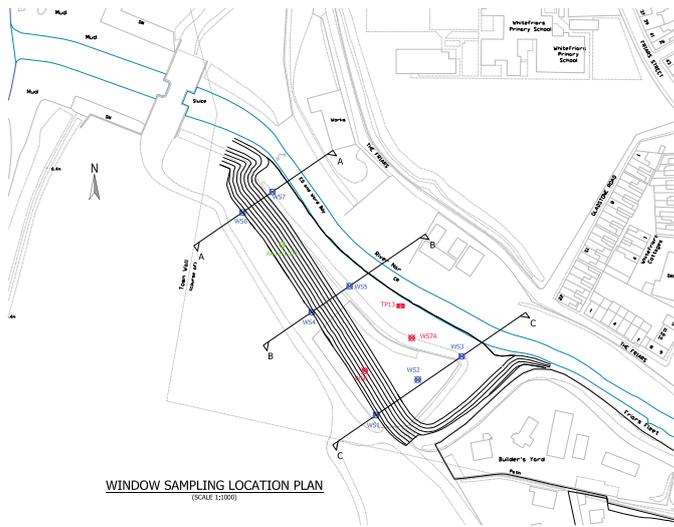
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FAX: +44 (0)1523 686 555
E-MAIL: info@kingsoflyn.gov.uk

PROJECT
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KINGS LYNN

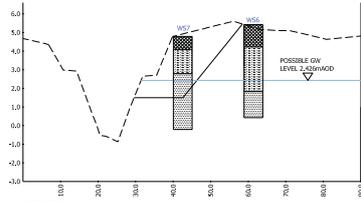
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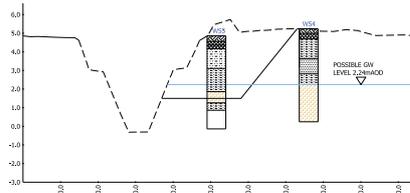
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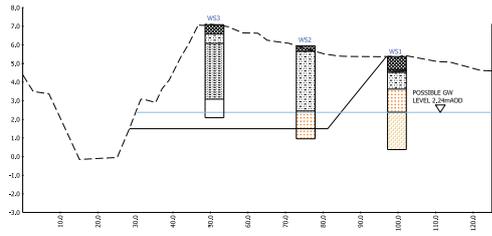
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SECTION B-B
(SCALE HORIZ (X) 1:500, VERT (Z) 1:500)



SECTION C-C
(SCALE HORIZ (X) 1:500, VERT (Z) 1:500)

- KEY**
- TOPSOIL
 - HARD GROUND/ BROWN SANDY SLIGHTLY GRAVELLY CLAY
 - COARSE ORANGE SAND
 - FINE LIGHT BROWN SANDY SILT
 - SOFT TO FIRM SANDY SILT
 - SOFT BROWN GREY ORGANIC SILT
 - STIFF ORANGE BROWN SANDY SILT
 - SILTY BROWN SAND
 - NO RECOVERY
 - WSP WINDOW SAMPLES (2009)
 - MOUCHEL PARKMAN BOREHOLES (2003)
 - MOUCHEL WINDOW SAMPLES (2008)
 - MOUCHEL WINDOW SAMPLES (2008)
 - EXISTING GROUND PROFILE
 - PROPOSED GROUND PROFILE

- GENERAL NOTES**
1. **DO NOT SCALE.** ALL DIMENSIONS ARE IN METRES
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT CONTRACT DRAWINGS.
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SHERWOOD BUSINESS PARK,
ANNULLEY, NOTTINGHAMSHIRE
NG15 0QR.
TEL: +44 (0)1523 684 550
FAX: +44 (0)1523 684 551
E-MAIL: info@kinglyn.gov.uk



PROJECT
SURFACE WATER OFFLINE STORAGE
KINGS LYNN

DATE:
EXISTING SITE INFORMATION
BASED ON WSP WINDOW SAMPLES DATED 09.12.09

Scale at A1	Drawn by	Date	Checked by	Date	Approved by	Date
AS2364-2	SL	CBS	803			



Appendix B – Assessment Methodology



Cultural Heritage Impact Assessment Methodology

No standard method of evaluation and assessment is provided for the assessment of significance of effects upon cultural heritage, therefore a set of evaluation and assessment criteria have been developed using a combination of the Secretary of State’s criteria for Scheduling Monuments (PPG16, Annex 3), Design Manual for Roads and Bridges, Volume 11, Part 3, Section 2, HA 208/07 and Transport Analysis Guidance (TAG Unit 3.3.9, Heritage of Historic Resources Sub-Objective). Professional judgement is used in conjunction with these criteria to undertake the impact assessment.

Value

The table below provides guidance on the assessment of cultural heritage value on all archaeological sites and monuments, historic buildings, historic landscapes and other types of historical site such as battlefields, parks and gardens, not just those that are statutorily designated.

Value	Examples
Very High	World Heritage Sites, Scheduled Monuments of exceptional quality, or assets of acknowledged international importance or can contribute to international research objectives Grade I Listed Buildings and built heritage of exceptional quality Grade I Registered Parks and Gardens and historic landscapes and townscapes of international sensitivity, or extremely well preserved historic landscapes and townscapes with exceptional coherence, integrity, time-depth, or other critical factor(s)
High	Scheduled Monuments, or assets of national quality and importance or than can contribute to national research objectives Grade II* and Grade II Listed Buildings, Conservation Areas with very strong character and integrity, other built heritage that can be shown to have exceptional qualities in their fabric or historical association. Grade II* and II Registered Parks and Gardens, Registered Battlefields and historic landscapes and townscapes of outstanding interest, quality and importance, or well preserved and exhibiting considerable coherence, integrity time-depth or other critical factor(s)
Medium	Designated or undesignated assets of regional quality and importance that contribute to regional research objectives Locally Listed Buildings, other Conservation Areas, historic buildings that can be shown to have good qualities in their fabric or historical association Designated or undesignated special historic landscapes and townscapes with reasonable coherence, integrity, time-depth or other critical factor(s) Assets that form an important resource within the community, for educational or



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

Value	Examples
	recreational purposes.
Low	<p>Undesignated assets of local importance</p> <p>Assets compromised by poor preservation and/or poor survival of contextual associations but with potential to contribute to local research objectives.</p> <p>Historic (unlisted) buildings of modest quality in their fabric or historical association</p> <p>Historic landscapes and townscapes with limited sensitivity or whose sensitivity is limited by poor preservation, historic integrity and/or poor survival of contextual associations.</p> <p>Assets that form a resource within the community with occasional utilisation for educational or recreational purposes.</p>
Negligible	<p>Assets with very little or no surviving cultural heritage interest.</p> <p>Buildings of no architectural or historical note.</p> <p>Landscapes and townscapes that are badly fragmented and the contextual associations are severely compromised or have little or no historical interest.</p>

Magnitude

The magnitude of the potential impact is assessed for each site or feature independently of its archaeological or historical value. Magnitude is determined by considering the predicted deviation from baseline conditions. The magnitude of impact categories are adapted from the Transport Assessment Guidance (TAG Unit 3.3.9) and Design Manual for Roads and Bridges, Volume 11, Part 3, Section 2, HA 208/07.

Magnitude of Impact	Typical Criteria Descriptors
Substantial	<p>Impacts will damage or destroy cultural heritage assets; result in the loss of the asset and/or quality and integrity; cause severe damage to key characteristic features or elements; almost complete loss of setting and/or context of the asset. The assets integrity or setting is almost wholly destroyed or is severely compromised, such that the resource can no longer be appreciated or understood. (Negative)</p> <p>The proposals would remove or successfully mitigate existing damaging and discordant impacts on assets; allow for the restoration or enhancement of characteristic features; allow the substantial re-establishment of the integrity, understanding and setting for an area or group of features; halt rapid degradation and/or erosion of the heritage resource, safeguarding substantial elements of the heritage resource. (Positive)</p>
Moderate	Substantial impact on the asset, but only partially affecting the integrity; partial loss of, or damage to, key characteristics, features or elements; substantially



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

Magnitude of Impact	Typical Criteria Descriptors
	<p>intrusive into the setting and/or would adversely impact upon the context of the asset; loss of the asset for community appreciation. The assets integrity or setting is damaged but not destroyed so understanding and appreciation is compromised. (Negative)</p> <p>Benefit to, or restoration of, key characteristics, features or elements; improvement of asset quality; degradation of the asset would be halted; the setting and/or context of the asset would be enhanced and understanding and appreciation is substantially improved; the asset would be bought into community use. (Positive)</p>
Slight	<p>Some measurable change in assets quality or vulnerability; minor loss of or alteration to, one (or maybe more) key characteristics, features or elements; change to the setting would not be overly intrusive or overly diminish the context; community use or understanding would be reduced. The assets integrity or setting is damaged but understanding and appreciation would only be diminished not compromised. (Negative)</p> <p>Minor benefit to, or partial restoration of, one (maybe more) key characteristics, features or elements; some beneficial impact on asset or a stabilisation of negative impacts; slight improvements to the context or setting of the site; community use or understanding and appreciation would be enhanced. (Positive)</p>
Negligible / No Change	<p>Very minor loss or detrimental alteration to one or more characteristics, features or elements. Minor changes to the setting or context of the site. No discernible change in baseline conditions (Negative).</p> <p>Very minor benefit to or positive addition of one or more characteristics, features or elements. Minor changes to the setting or context of the site No discernible change in baseline conditions. (Positive).</p>

Magnitude (scale of change) is determined by considering the predicted deviation from baseline conditions. Quantifiable assessment of magnitude has been undertaken where possible. In cases where only qualitative assessment is possible, magnitude has been defined as fully as possible.

During the assessment any embedded mitigation has been considered in the impact assessment and this is clearly described in this section (cross referring the development description). Therefore, the magnitude of the impacts described herein will be stated before and after additional mitigation has been taken into consideration.

Impacts may be of the following nature and will be identified as such where relevant:

- Negative or Positive.



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

- Direct or indirect.
- Temporary or permanent.
- Short, medium or long term.
- Reversible or irreversible.
- Cumulative.
- Significance

By combining the value of the cultural heritage resource with the predicted magnitude of impact, the significance of the effect can be determined. This is undertaken following the table below. The significance of effects can be beneficial or adverse.

Significance of Effects	Magnitude of Impact			
	Substantial	Moderate	Slight	Negligible / No Change
Very High	Major	Major – Intermediate	Intermediate	Minor or Neutral
High	Major – Intermediate	Intermediate	Intermediate – Minor	Neutral
Medium	Intermediate	Intermediate	Minor	Neutral
Low	Intermediate – Minor	Minor	Minor – Neutral	Neutral
Negligible	Minor	Minor – Neutral	Neutral	Neutral

Significance should always be qualified as in certain cases an effect of minor significance could be considered to be of great importance by local residents and deserves further consideration.

The significance of effect is considered both before and after additional mitigation measures proposed have been taken into account.



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage



Level of Confidence

Given that predictions can only be as accurate as the data they are based on it is important to attribute a level of confidence to which the significance of cultural heritage effects has been assessed. The table below defines the confidence levels referred to in this report.

Confidence Level	Description
High	The significance of the cultural heritage effect is an informed estimate likely to be based on reliable data or subjective judgement with reference to similar schemes. Further information would not result in any change to assessment of significance.
Low	The significance of the cultural heritage effect is a best estimate likely to be based on subjective judgement without reference to similar schemes. Further information would be needed to confirm assessment of significance.



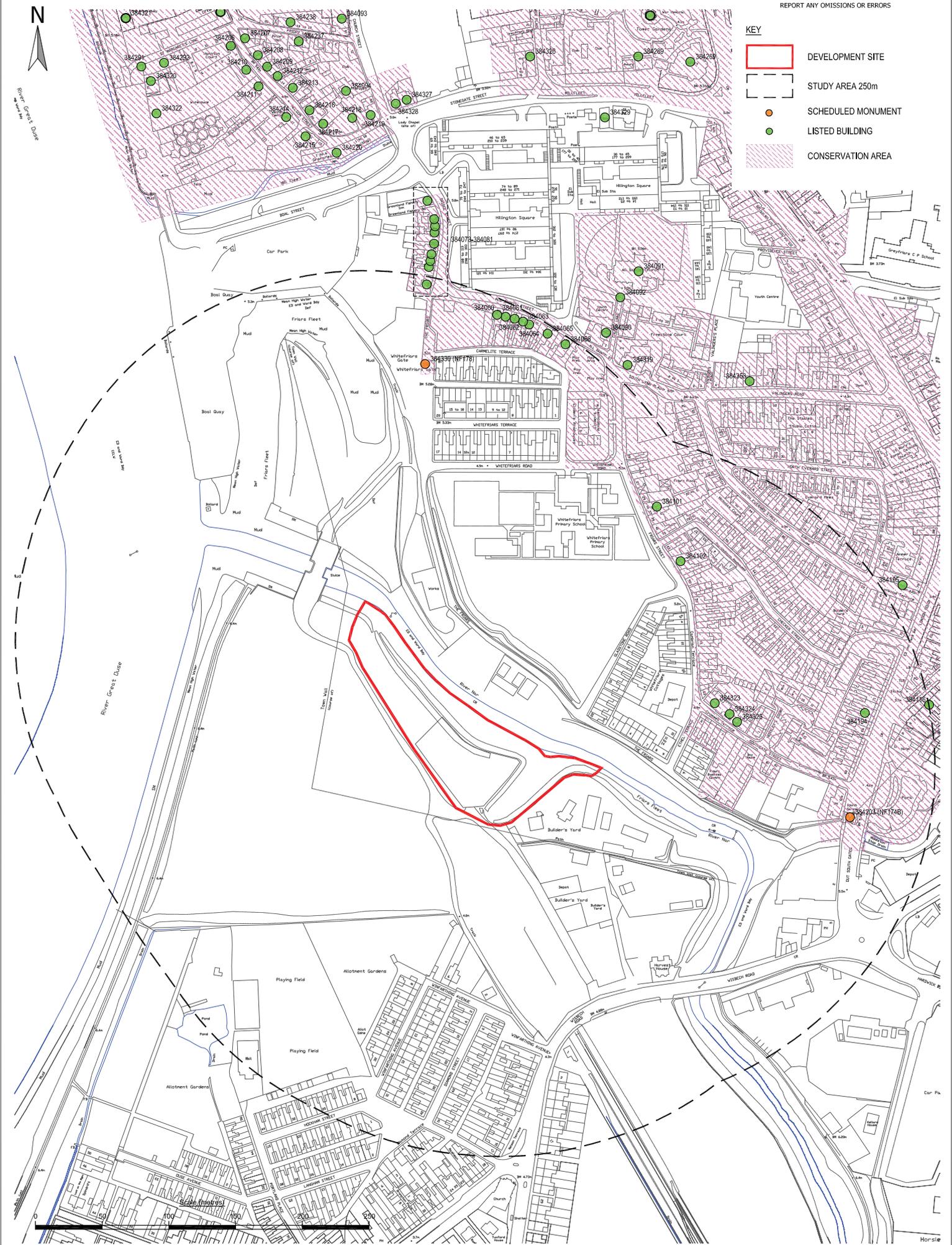
Appendix C – Recorded Cultural Heritage



Designated Cultural Heritage Sites (English Heritage) – 250m study area around the development site

Identifier	Easting	Northing	Description	Grade
384060	561934	319537	25 All Saints Street	II
384061	561941	319535	26 All Saints Street	II
384062	561947	319534	27, 28 All Saints Street	II
384063	561954	319532	29 All Saints Street	II
384064	561958	319530	30 All Saints Street	II
384065	561972	319523	31-35 All Saints Street	II
384066	561985	319515	36 All Saints Street	II
384080	561883	319573	37 Bridge Street	II
384101	562054	319392	33 Friars Street	II
384102	562072	319351	47, 49 Friars Street	II
384116	562252	319233	1-11 Guanock Place	II
384194	562210	319236	Buckingham Terrace, 60-77a London Road	II
384203	562199	319157	South Gate, London Road	I
384323	562097	319243	3, 4, 5 Southgate Street	II
384324	562109	319235	7, 8 Southgate Street	II
384325	562114	319229	9, 10, 11 Southgate Street	II
384330	561880	319500	Northern gateway to Carmelite precinct, The Friars	II*

- KEY**
- DEVELOPMENT SITE
 - STUDY AREA 250m
 - SCHEDULED MONUMENT
 - LISTED BUILDING
 - CONSERVATION AREA



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REV	DESCRIPTION	BY	CHK	APP	DATE
AS SHOWN	Drawn Date	PMc	18.01.10	Checked Date	KRH 18.01.10
Approved Date	CT	18.01.10			
Project No.	Office	Type	Drawing No.	Revision	
A052964-2	4104	597	Fig. 1		

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Client:
BOROUGH COUNCIL OF KING'S LYNN & WEST NORFOLK

Project: A052964-2
SURFACE WATER OFFLINE STORAGE KING'S LYNN

Drawing Title:
DESIGNATED CULTURAL HERITAGE SITES



Recorded Cultural Heritage Sites (HER, NMR) – approximately 250m study area around the development site

Identifier	Grid Reference	Period	Description
HER41067	TF 61724 19422	Modern	Site of World War Two pillbox visible on 1946 aerial photographs but since destroyed.
HER1247	TF 6191 1956	Medieval / Post-Medieval	Medieval and post-medieval pottery, All Saints' Street found during building works. The pottery are domestic storage jars, jugs and cooking pots.
HER37297	TF 616 190	Post-Medieval	Post-medieval railway embankment recorded during a watching brief within the Nar Ouse Regeneration Area. There was no evidence of the civil war fortifications.
HER48953	TF 61945 18896	Post-Medieval	Site of a gibbet.
HER13593; UID1366729	TF 6197 1892	Post-Medieval / Modern	Route of King's Lynn Harbour Railway. It was opened in 1849 and ran from the Harbour Junction to Friars Fleet and on to South Quay. It closed in 1968 and the majority of the rails were dismantled.
HER1246; UID640767	TF 6190 1957	Medieval	Site of medieval buildings and other features, All Saints' Street. The evidence indicated that a watercourse ran along Bridge Street but occupation of the east bank was sparse until the mid 12th century when tenement were constructed. There was evidence of metalworking during the 13th and 14th centuries. During the later medieval period the site was occupied by a substantial stone building.
HER39860; UID1401393	TF 61905 19529	Medieval	Former Corona Depot, All Saints' Street. Excavations revealed a medieval watercourse which had become silted up by the end of the medieval period. The earliest evidence of occupation dated to the 17th century. Masonry walls and floors may have represented tenements to the north of the site.
HER1248	TF 6195 1955	Medieval / Post-Medieval	16th to 19th century pottery scatter recovered from 8 to 9 All Saints' Street.
UID1401456	TF 618 191	Post-Medieval	Watching brief for excavation of geotechnical trial pits recorded 19th century railway embankment and truncation of features by 19th century quarrying.

Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

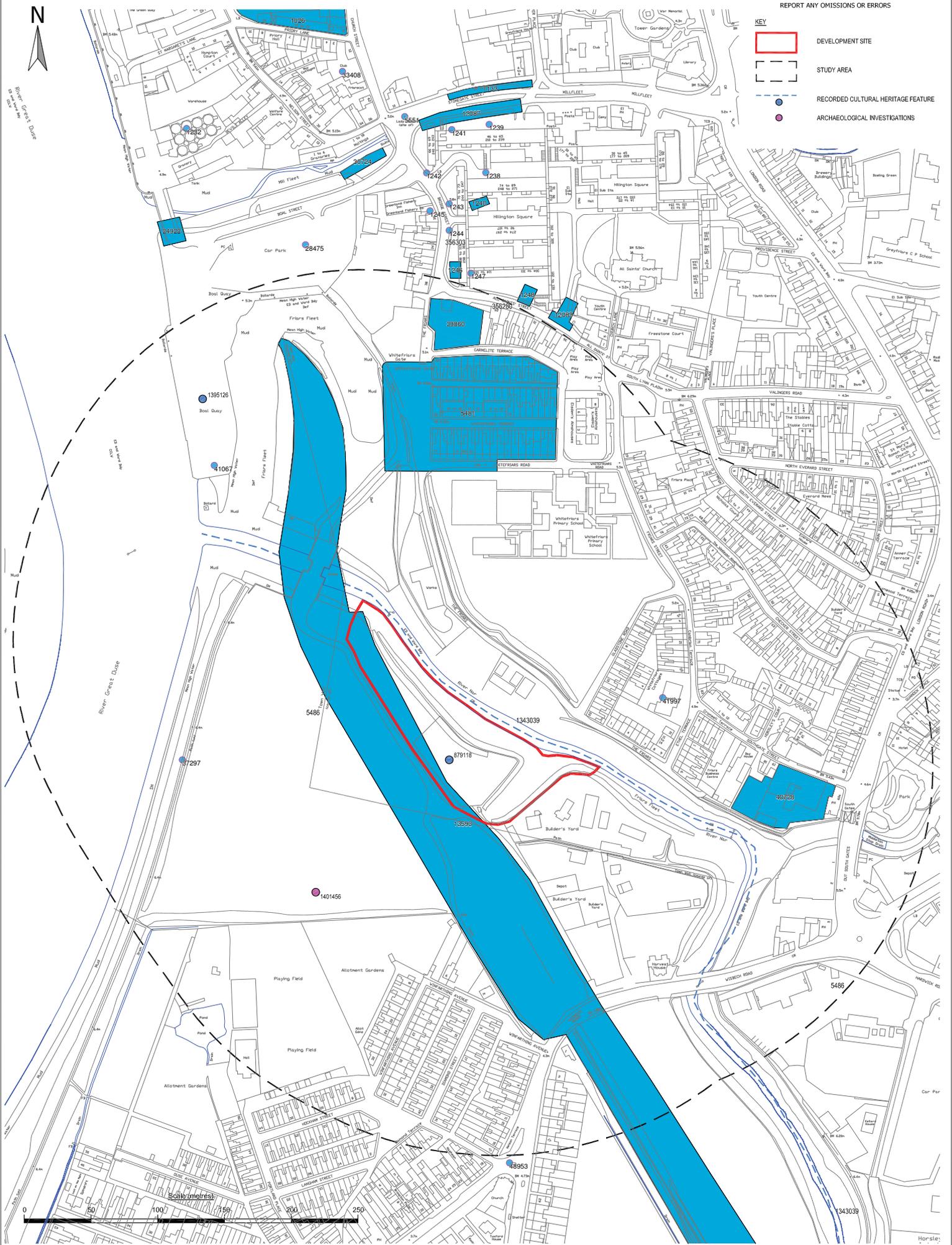


Identifier	Grid Reference	Period	Description
UID879118	TF 619 192	Post-Medieval	Possible river flood bank of the 17th/18th century.
HER5481; UID356280	TF 6191 1946	Medieval	Site of Carmelite Friary (Whitefriars). It was founded in the 13th century and dissolved in the mid 16th century. The only visible remains are the northern gateway (Scheduled Monument). The friary included a priory church, the tower of which remained until the 17th century when it collapsed. Stone from the friary was used to build almshouses nearby.
HER1395126		N/A	The River Nar was improved after an Act in 1751.
HER1395126	TF 6170 1950	Medieval / Post-Medieval	World's End fortification on the Boal peninsular. An earthwork battery with embrasures for seven guns erected in 1642 and left to decay after disarming in 1652.
HER12083	TF 6198 1963	Post-Medieval	Site of Welwick House formerly a school and then housing the town's museum. It was dated 1743 but may have been earlier. Now demolished.
HER40728	TF 62150 19173	Post-Medieval/Modern	Former John Grose Garage on Southgate Street.
HER41997	TF 62060 19247	Medieval/Post-Medieval	Medieval and post-medieval finds and features at the Former Central Tyres Depot, Friar's Street.

DO NOT SCALE. CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS



- KEY**
- DEVELOPMENT SITE
 - STUDY AREA
 - RECORDED CULTURAL HERITAGE FEATURE
 - ARCHAEOLOGICAL INVESTIGATIONS



REV	DESCRIPTION	BY	CHK	APP	DATE
Scale @ A3 AS SHOWN	Drawn Date PMC 18.01.10	Checked Date KRH 18.01.10	Approved Date CT 18.01.10		
Project No. A052964-2	Office Type 4104/597	Drawing No. Fig 2			

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Client:
**BOROUGH COUNCIL OF KING'S
LYNN & WEST NORFOLK**

Project: A052964-2
**SURFACE WATER OFFLINE
STORAGE
KING'S LYNN**

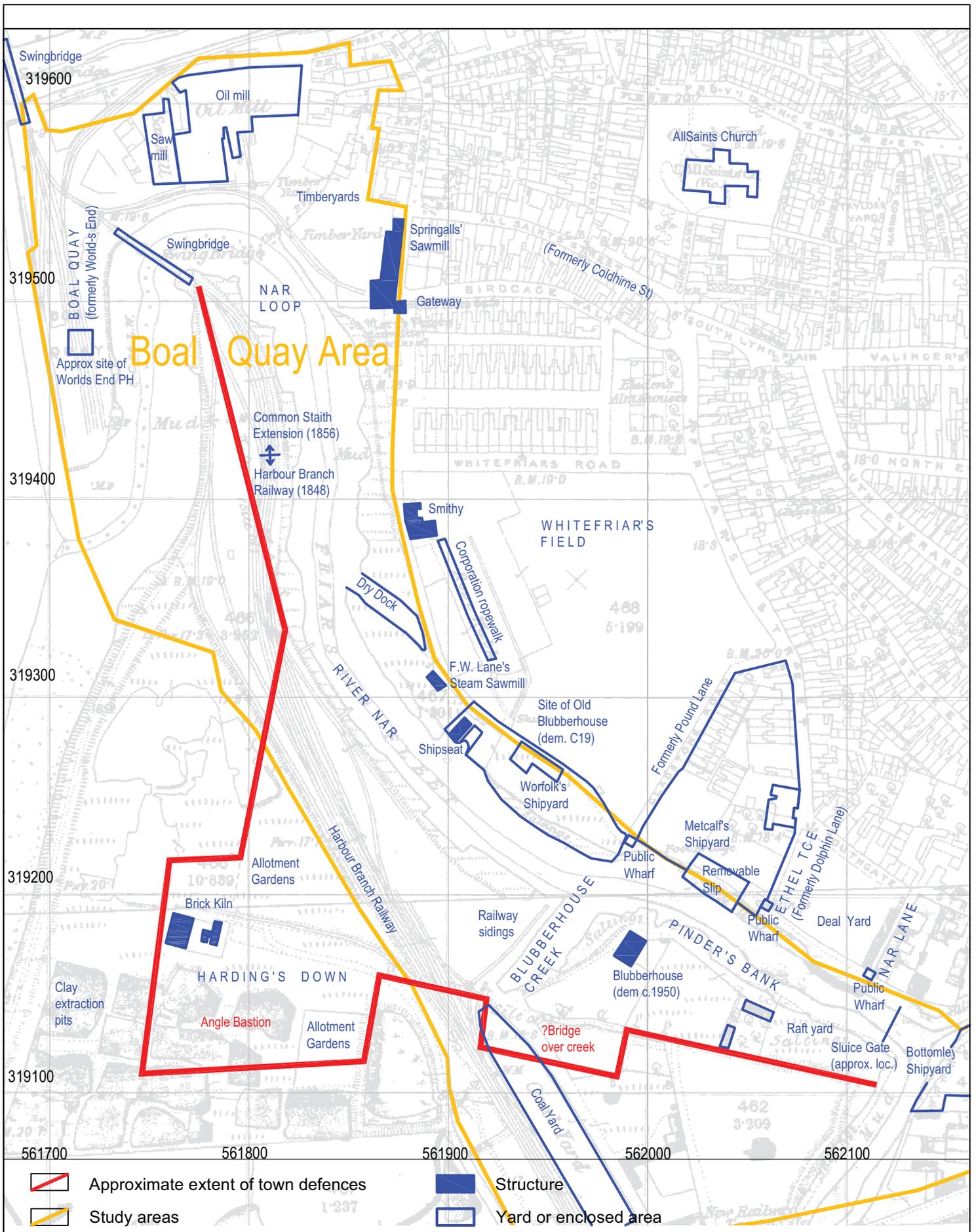
Drawing Title:
**RECORDED CULTURAL
HERITAGE SITES**



Appendix D – Constraints Identified From Historic Mapping

Reproduced from Scott Wilson, 2005a.





Based on the ordnance survey mapping with the permission of the Controller of Her Majesty's Stationery Office Crown copyright Scott Wilson Kirkpatrick Licence No AL100018181.

Drawing Title

NORA Historical Research Report

Figure 3.

Boal Quay Area:

Location of former sites, buildings, walls and enclosures.

D104633/GF/03/draft

SCALE AT A3

Drn	GF	Appd	SM	Revised
Chk	AR	Date	March 05	Date

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Appendix E – Evaluation Excavation Trench Locations

Reproduced from Archaeological Project Services



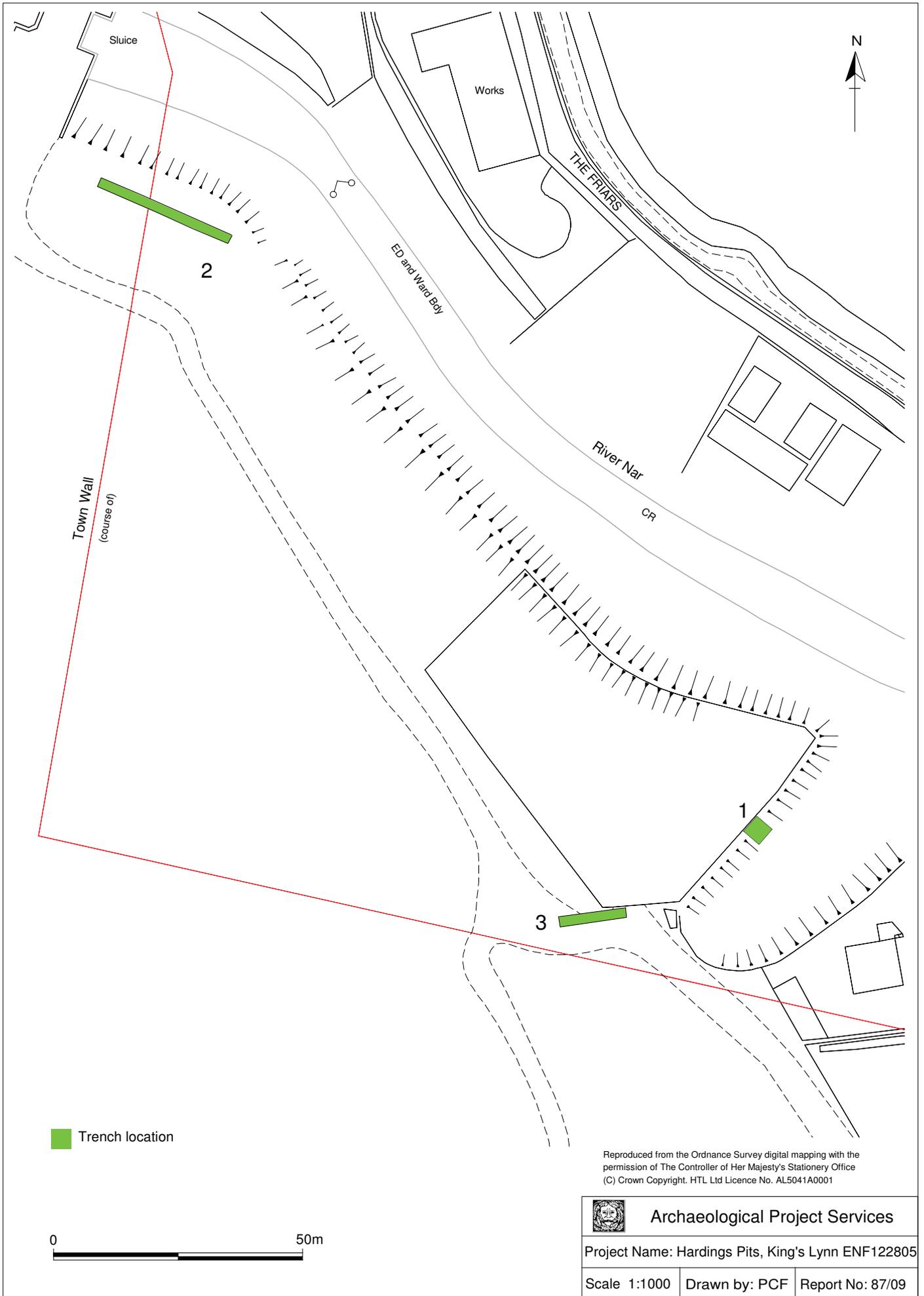


Figure 3 - Trench location plan



Appendix F – Indicative Approach to Mitigation



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

Indicative Approach to Modified Strip, Map and Sample Methodology

Strategy

The main site contractor will be responsible for site establishment and identifying the extent of topsoil and overburden stripping in accordance with the planning permission for the development and their approved construction methodology. The archaeological contractor will be responsible for determining in consultation with the main site contractor the extent of topsoil and overburden which is subject to the strip, map and sample exercise.

The main site contractor will be responsible for site security and fencing. The archaeological sub-contractor will be able to use the main site contractors welfare facilities and limited tool storage during the project.

The main site contractor shall be responsible, in advance of any ground works, for identifying services (both buried and overhead) and for taking all necessary precautions to avoid damage to these services.

The main site contractor shall be responsible for supplying suitable plant and personnel for the construction works and topsoil stripping. The plant is to operate under the supervision of the archaeological sub-contractor on site.

The removal of all topsoil and overburden will be monitored by the archaeological sub-contractor until archaeological horizons are identified, or to a point where the site deemed to be archaeologically sterile and no further potential for archaeological remains persists. Due to the potential proximity of excavating machines the ratio of archaeologists to mechanical excavators may be varied in agreement with the agreement of Norfolk Landscape Archaeology.

Topsoil and subsoils will be stripped mechanically across the site using a 360° mechanical excavator fitted with a toothless (flat bladed) grading bucket. The topsoil and subsoils will be stripped and stockpiled in accordance with the construction methodology.

Mechanical excavators and other construction plant should not track or drive over an area that has been stripped until an archaeologist has confirmed that no archaeological remains are present. If necessary areas of archaeological remains should be fenced off to prevent inadvertent damage.

Mechanical excavation equipment shall be used judiciously under archaeological supervision down to the first significant archaeological horizon. On completion of the stripping of the topsoil and overburden to the top of the first significant archaeological horizon mechanical excavation within the extent of the strip, map and sample exercise will cease. Where no archaeological remains have been identified the release of the site for general construction activities will be confirmed with Norfolk Landscape Archaeology by the archaeologist on site.

A complete plan of the strip, map and sample area is to be prepared at an appropriate scale if archaeological remains have been identified. The plan should be prepared using a total station theodolite or similar surveying equipment. All plans are to include co-ordinate data as is necessary for the accurate location of the area planned and spot-heights related to the Ordnance Survey Datum.

This plan will be used as the basis for consultation with the Development Control Archaeologist for Norfolk Landscape Archaeology (NLA) to determine the extent of the subsequent excavation, sampling and recording strategy required on the site. The archaeological contractors Project Design will be updated at this point to take account of the recording strategy determined at this point. The contents of the updated



Archaeology and Cultural Heritage Assessment of Surface Water Offline

Storage

Project Design will be agreed by BCKLWN (and their agent if applicable), the archaeological sub-contractor and the NLA Archaeologist.

A sufficient sample of any archaeological features and deposits revealed will be excavated in an archaeologically controlled and stratigraphic manner, in order to establish their extent, form, date, function and relationship to other features. A sufficient sample of features should be investigated to understand the full stratigraphic sequence of each feature, down to naturally occurring deposits.

The excavation and sampling policy will be decided in consultation with the NLA Archaeologist to reflect the extent and significance of the identified features. This policy will also encompass the appropriate sampling procedures for artefacts, palaeoenvironmental remains, waterlogged features, geoarchaeological samples and samples for scientific dating.

The completion of the on-site excavation, sampling and recording exercise will be confirmed with the NLA Archaeologist and the site released for general construction activities.

Method of Recording

The archaeological features will be recorded wherever possible according to the normal principles of stratigraphic excavation. The stratigraphy of each feature will be recorded by means of a written, drawn and photographic record. If no features are identified the stratigraphy of the site will be recorded in a written description. Features must be suitably investigated to establish their nature, extent and date.

All excavated deposits will be fully recorded by detailed written context records on pro-forma sheets giving details of their location, composition, dimensions, shape, any relationships, finds and samples. The records will be cross referenced to other elements of the record and any other relevant contexts.

All features will be recorded on at least one plan, normally at 1:20 scale and at least one section drawing of a feature, normally at 1:10 scale (1:20 if necessary due to size). A complete post excavation plan of the strip, map and record area is to be prepared at an appropriate scale if deemed necessary. All drawings are to include co-ordinate data as is necessary for the accurate location of the area planned or the section drawn and spot-heights related to the Ordnance Survey Datum.

All excavated features and deposits will be photographed using black and white 35mm format film and colour digital photographs with a minimum 10 megapixel resolution. Additional site photographs should be taken as appropriate to place excavated features within the wider context.

All finds recovered will be recorded by context. All retained artefacts shall be removed from site for specialist examination and analysis and, if deemed necessary, conservation. Cleaning of objects may take place on site or upon removal as is deemed appropriate. All recording, cleaning, storage and conservation of finds will be in accordance with the Institute for Archaeologists Standards and Guidance for the collection, documentation, conservation and research of archaeological materials (2001) and Watkinson and Neal (1997).

If human remains are encountered during the watching brief these should be left *in situ*, covered and protected, in the first instance. The removal of human remains will only take place under appropriate Department for Justice and environmental health regulations, and in compliance with the Burial Act 1857. A Department for Justice license will need to be obtained prior to the removal of the remains and provision shall be made for the specialist reports on the remains by a recognised osteoarchaeologist.





Archaeology and Cultural Heritage Assessment of Surface Water Offline

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The terms of the Treasure Act 1996 will be followed with regard to any finds that might fall within its purview. Any finds must be removed to a safe place and reported to the local coroner as required by the procedures as laid down in the Treasure Act Code of Practice 2002. Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the find(s) from theft. Objects defined as Treasure under the Act, must be reported to the local coroner.

Due consideration should be given to the potential for further information to be gained through specialist environmental analysis of deposits, or the application of scientific techniques to the study of artefacts. Detailed sampling strategies and procedures, including reasoned justification for selection of samples, processing, analysis and archiving will be identified by the successful archaeological sub-contractor for artefacts, environmental remains and scientific analysis following the consultation on excavation strategy. It is recommended that if appropriate the English Heritage Regional Science Advisor is contacted to confirm the appropriateness of the sampling strategy. These will be included in the updated project design.

Archive Consolidation and Post-Excavation Work

The site archive will contain all the data collected during the strip, map and sample exercise, including records, finds and environmental samples. It will be quantified, ordered, indexed and internally consistent. Adequate resources will be provided during fieldwork to ensure that all records are checked and internally consistent. Archive consolidation will be undertaken immediately following the conclusion of fieldwork:

- the site record will be checked, cross-referenced and indexed as necessary;
- all retained finds will be cleaned, conserved, marked and packaged in accordance with any requirements of the recipient museum;

All retained finds will be assessed and recorded using pro forma recording sheets, by suitably qualified and experienced staff. Initial artefact dating will be integrated with the site matrix (finds of 19th and 20th century date should be noted, quantified and summarily described, but can then be discarded if appropriate).

All retained environmental samples will be processed by suitably experienced and qualified staff and assessed in accordance with the updated project design.

The archive will be assembled in accordance with the Specification set out in English Heritage's "Management of Archaeological Projects 2" (English Heritage, 1991; Appendix 3). In addition to the site records, artefacts, ecofacts and other sample residues, the archive shall contain:

- site matrices where appropriate;
- a summary report synthesising the context record;
- a summary of the artefact record;
- a summary of the environment record.

The integrity of the primary field record will be preserved. Security copies will be maintained where appropriate.



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

Contingencies and Unexpectedly Significant or Complex Discoveries

Should there be unexpectedly significant or complex discoveries made that warrant, in the professional judgement of the archaeologist on site, more detailed recording than has been recommended within this Specification or their Project Design then a review of the methodology will be implemented using the resolution procedures.

In the event of a review of the Specification being required the archaeological sub-contractor will urgently contact BCKLWN, or their agent, with the relevant information to enable them to resolve the matter with NLA. This is likely to require an on-site meeting between the relevant stakeholders to review the archaeological remains on-site and identify a way forward.

Any variations to the Specification will be put in writing and agreed by the relevant stakeholders including BCKLWN, NLA, on-site archaeological sub-contractor and the main construction contractor.

Reporting

A full report on the strip, map and record shall be required after completion of the fieldwork. The programme for reporting will depend upon the nature of the recorded remains and requirements for specialist analysis, however it is anticipated that a draft report should be completed within six weeks of the completion of on-site works. The report shall be prepared in accordance with Institute for Archaeologists guidelines. As a minimum the report shall contain the following information:

- A title page, with the name of the project, the name of the contractor and author(s) of the report, the title of the report and date of the report;
- A non-technical summary of the findings;
- A description of and a background to the nature of the works;
- A brief description of the site location and any previously known archaeology in the survey area;
- The layout, total area and purpose of the survey area, supported by a location plan;
- The results of the strip, map and sample;
- A post-excavation analysis of the stratigraphic and other written, drawn and photographic records;
- A catalogue and brief post-excavation analysis of each category of artefact recovered during excavation;
- Specialist technical reports and post-excavation analysis of palaeoenvironmental samples, geoarchaeological results and dating evidence as appropriate to the project;
- Discussion of the strip, map and sample results including site phasing and interpretation and discussion of the results within the local and regional context;
- An appendix containing a list and summary descriptions of all contexts recorded;
- A summary of the contents of the project archive and its location.





Archaeology and Cultural Heritage Assessment of Surface Water Offline

Storage

The report will be supported by an overall plan of the site and individual plans of features or groups as excavated, indicating the location of archaeological features with supporting section drawings where appropriate; and photographs.

The post-excavation report will outline the archaeological significance of the deposits identified. The report will provide an interpretation of the results in relation to other sites in the region and make reference to other known archaeological sites in the close vicinity of the site.

The archaeological sub-contractor shall submit one copy of the draft report initially for review by their client and their agent, who may also consult NLA during this review period. The sub-contractor shall rectify any defects and make any amendments as identified by the client and shall subsequently submit the final report.

Copies of the report should be produced and submitted to:

- the commissioning body;
- Archaeologist for NLA;
- the museum accepting the archive; and
- Archaeological Data Service, OASIS.

Health and Safety

Health and safety will take priority over archaeological matters. All archaeologists undertaking fieldwork must comply with all Health and Safety Legislation. All archaeologists or archaeological organisations undertaking the fieldwork should ensure that they, or any proposed sub-contractors, are appropriately qualified and adequately insured to undertake such projects.

The archaeological contractor will be required to produce their own method statement for the archaeological works and site specific risk assessment. The archaeological contractor will abide by the site health and safety risk assessment and health and safety plan to be prepared by the main site contractor in conjunction with the CDMC and any specific requirements they may have regarding safe working practice. They will be expected to comply with the requirements of CDM Regulations as necessary.

Monitoring and Quality Control

Monitoring does not and should not take the place of proper self-regulation. The project will be monitored as necessary and practicable by BCKLWN, their agents and NLA, in its role as "curator" of the regions archaeology. NLA will receive as much notice as possible of the intention to start fieldwork confirmed in writing.

The representatives of NLA and the client will be afforded access to the site with reasonable notice. The representative will be provided with a site tour and an overview of the site by the senior archaeologist present and should be afforded the opportunity to view all open areas, any finds made that are still on site, and any records not in immediate use.





Archaeology and Cultural Heritage Assessment of Surface Water Offline

Storage

A draft of the strip, map and sample report will be submitted to the client for comments and consideration prior to the submission of a final report to the planning authority to enable discharge of any planning condition.

Archive

Provision will be made for the deposition of the archive, artefacts and environmental material, subject to the permission of the relevant landowner (and if no further archaeological work is to be initiated), in the appropriate recipient museum. The museum curator will be advised of the timetable of the proposed investigation prior to work commencing and the archaeological contractor will adhere to any reasonable requirements the museum may have regarding conservation and storage of the excavated material and the resulting archive.

The archive will be prepared in accordance with the guidelines published in Guidelines for the preparation of excavation archives for long-term storage (1990) and Standards in the museum care of archaeological collections (1994) and the IfA Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives (2009).

The archiving of any digital data arising from the project should be undertaken in a manner consistent with professional standards and guidance (Richards and Robinson, 2000). The archaeological contractor should liaise with an appropriate digital archive repository to establish their detailed requirements and discuss the transfer of the digital archive.

The archaeological contractor should also liaise with the HER Officer, NLA, to make arrangements for digital information arising from the project to be submitted to the Officer for HER enhancement purposes.

Resolution of Issues

In the event of issues arising regarding the implementation of this Specification or the scope of the strip, map and record and archaeological mitigation required to fulfil the planning condition these will be resolved in the first instance by contacting the client's representative who will facilitate a resolution through contact with the key stakeholders. Should the issue not be resolved remotely a meeting will be held between key stakeholders to facilitate discussion of the issues and identification of a suitable strategy to be agreed by all parties.

Project Design

Prior to the commencement of archaeological fieldwork and in response to this specification the archaeological sub-contractor will prepare a detailed project design. This project design will be agreed with the client, their agent, NLA Archaeologist and the Local Planning Authority. The project design will take account of the detailed design for the proposed development and construction methodology. The project design will be updated as necessary during the strip, map and sample exercise to take account of the emerging excavation and recording strategy.

The project design should cover the following aspects:

- Summary and introduction;
- Projects overall objectives and strategy;





Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

- Identification of the extent of the strip, map and record exercise;
- Detailed field methodology including recording techniques and procedures;
- Artefact retention, discard, analysis and archive policy;
- Environmental sampling and analysis policy;
- Conservation strategy;
- Post-excavation analysis methodology (including for artefacts and environmental remains);
- Report preparation and contents;
- Archiving arrangements following consultation with the receiving museum;
- Copyright, publicity, publication and dissemination proposals;
- Anticipated programme of works;
- Staffing and responsibilities including sub-contractors and specialists;
- Health and safety;
- Insurances;
- Monitoring arrangements and programme with the client (and/or their agents) and NLA Archaeologist.



Appendix G – Report Conditions



Archaeology and Cultural Heritage Assessment of Surface Water Offline Storage

Archaeology and Cultural Heritage Assessment, Surface Water Offline Storage

This report is produced solely for the benefit of Borough Council of King's Lynn and West Norfolk and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors

November 2008
WYG Environment Planning Transport Ltd

