

Leven Sewage Treatment Works, East Riding of Yorkshire

Heritage Desk-Based Assessment

16 March 2018

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Executive summary

This report provides a desk-based assessment for a proposed extension to the Leven sewage treatment works, located to the south of the village of Leven in the East Riding of Yorkshire. The proposal entails an extension to the south of the existing sewage treatment works within which will be constructed two 25m diameter trickling filters. During construction, an additional temporary work compound will be sited adjacent to the south of the proposed works.

The potential for archaeological remains before truncation for the site has been assessed as medium for the prehistoric, particularly for the Bronze Age, and low for all other periods. The extent of truncation within the proposed development area is considered to be low, consisting primarily of minor surface plough damage and dispersion from agricultural activity from the medieval period to the present day. The limited level of archaeological investigation within the study area presents a risk of undiscovered remains from all periods before the post medieval. Due to the potential for prehistoric remains and the lack of previous archaeological investigation, it is recommended that archaeological trial trenching is undertaken within the area of the proposed development to more fully assess the presence and extent of impacted archaeological remains. It is advised that the Humber Archaeology Partnership is consulted during the planning application process with regard to any requirements for further investigation.

Abbreviations

AOD	Above Ordnance Datum
BGL	Below Ground Level
GPA2	Good Practice Advice in Planning Note 2
GPA3	Good Practice Advice in Planning Note 3
Ha	Hectare
HER	Historic Environment Record
MMB	Mott MacDonald Bentley
NHLE	National Heritage List for England
NMR	National Monuments Record
NPPF	National Planning Policy Framework
OS	Ordnance Survey
YWS	Yorkshire Water Services

1 Introduction

1.1 Background

Mott MacDonald Bentley (MMB) have been commissioned by Yorkshire Water Services (YWS) to undertake an engineering design and environmental assessment for an extension to the existing sewage treatment works south of Leven in the East Riding of Yorkshire. This Desk-Based Assessment has been commissioned to inform the design process and form part of the submission documents in support of the planning application.

The proposed development is to the south of the existing sewage treatment works. The proposal involves a 2800m² extension to the south of the existing sewage treatment works, within which will be constructed two 25m diameter trickling filters and associated pipework and fittings. Due to ground conditions, the proposal will require excavation to a depth of 2.5m and infilling with engineering fill material to allow for the installation of the trickling filters. The finished installations will have a height of 4.5m AOD.

During construction work, an additional temporary work compound will be sited within an area measuring approximately 2800m² to the south of, and directly adjacent to, the proposed works.

1.2 Overview

The proposed development is located within a 2800m² area to the south of the existing sewage treatment works, within a previously cultivated field. The site is located c. 630m south of the village of Leven and c. 1.6km north east of Routh (centred on NGR TA103442). The site lies on the southern edge of the Leven parish boundary as it borders the parish of Routh.

The conservation area of Leven is located to the north of the site. There are eight listed buildings within 1km of the proposed development, comprising seven grade II and one grade II* (Holy Trinity Church, c. 1km north-east of the proposed development).

2 Methodology

2.1 Study Area

The study area is made up of a 1km buffer from and including the proposed development area for designated heritage assets, and a 500m buffer for undesignated heritage assets. This considers those heritage assets with potential to be directly affected by the proposed development, for example archaeological remains within the proposed development area and the setting of heritage assets which could be affected by the proposed development. Where appropriate, reference is made to heritage assets beyond the study area, but only where it is required to provide greater context and inform an understanding of heritage potential for the study area.

2.2 Desk Based Research

The following resources have been used to inform this assessment including;

- Relevant national and local planning policy documents;
- The online National Heritage List for England (NHLE);
- The Humber Historic Environment Record (HER);
- Local studies resources;
- Historic maps; and
- Online resources including the archaeological data service and local history websites

A full list of references can be found in Section 7.

2.3 Surveys

A site walkover was undertaken on 31 January 2018 by a member of the Mott MacDonald Archaeology and Heritage Team. This included an inspection of the proposed development site for identification of any potential archaeological remains and any areas of disturbance. The walkover included the wider area surrounding the site to establish whether any key views and setting of heritage assets would be affected by the proposed development. The walkover was also used to identify any additional unrecorded heritage assets which should be considered in the assessment which were not apparent in the documentary evidence. Results of the walkover are presented in section 4.6.

2.4 Assessment of Potential Impacts

This assessment is based on the guidance contained in Historic Environment Good Practice Advice in Planning Note 2 (GPA2) – Managing significance in decision taking in the historic environment (Historic England, 2015).

Paragraph six of the GPA2 guidance (Historic England, 2015) outlines the steps which should be taken to establish potential impact of the scheme on the significance of heritage assets and where appropriate justify any harmful impacts and identify mitigation and enhancements. These steps are to;

- *“Understand the significance of the affected assets;*
- *Understand the impact of the proposal on that significance;*

- *Avoid, minimise and mitigate the impact in a way that meets the objectives of the National Planning Policy Framework (NPPF);*
- *Look for opportunities to better reveal or enhance significance; and*
- *Justify any harmful impacts in terms of the sustainable development objective of conserving significance and the need for change;*
- *Offset negative impacts on aspects of significance by enhancing others through recording, disseminating and archiving archaeological and historical interest of the important elements of the heritage assets affected.”*

Assessment of setting is based upon the guidance contained in Historic Environment Good Practice in Planning Note 3 (GPA3) – The Setting of Heritage Assets (2nd Edition) (Historic England 2017).

Section 2 of the GPA3 guidance outlines the staged approach to decision making. This recommends a series of informed steps:

- Step 1: Identify which heritage assets and their settings are affected
- Step 2: Assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated
- Step 3: Assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it
- Step 4: Explore ways to maximise enhancement and avoid or minimise harm
- Step 5: Make and document the decision and monitor outcomes

Section 6 of this Heritage Impact Assessment addresses the significance and level of potential impact of the proposed development on affected assets. In accordance with the planning practice guidance the level of detail supplied is proportionate to the level of significance of the asset and the overall effect the proposed development will have.

2.5 Assumptions and Limitations

Information provided by the HER can be limited because it depends on random opportunities for research, fieldwork and discovery. Where nothing of historic interest is shown in a particular area, this can be due to a lack of research, or investigation rather than no assets being present.

Documentary sources are rare before the medieval period, and many historic documents are inherently biased. Older primary sources often fail to accurately locate sites and interpretation can be subjective.

3 Relevant Planning Policy

3.1 Legislation

3.1.1 Planning (Listed Building and Conservation Areas) Act 1990

This Act sets out the protection given to buildings of special architectural or historic interest through listing. It also sets out the process for designation of conservation areas which are recognised as areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance.

3.1.2 Ancient Monuments and Archaeological Areas Act 1979

This Act relates to the investigation, preservation and recording of matters of archaeological and historic interest.

3.2 Planning Policy

3.2.1 National Planning Policy Framework (NPPF) (March 2012)

The National Planning Policy Framework (NPPF), that was published on 27th March 2012, replaced all previous national planning policy documents. The NPPF outlines the policies put in place to conserve and enhance the historic environment, that included historic buildings, monuments, places or landscapes, and buried archaeology. Policies of relevance to the Scheme include:

Paragraph 128, which advises that the significance of heritage assets and their settings should be required as part of planning submissions.

Paragraph 129, which requires local planning authorities to identify and assess the significance of any heritage

3.3 Local Planning Policy

3.3.1 East Riding Local Plan 2012 – 20129 (adopted April 2016)

The East Riding Local Plan (adopted April 2016) recognises the significance of the historic environment. The plan outlines the council's historic environment policy in policy ENV3: Valuing our heritage.

Section B of the policy states that:

The significance, views, setting, character, appearance and context of heritage assets, both designated and non-designated, should be conserved, especially the key features that contribute to the East Riding's distinctive historic character including:

- 1. Those elements that contribute to the special interest of Conservation Areas, including the landscape setting, open spaces, key views and vistas, and important unlisted buildings identified as contributing to the significance of each Conservation Area in its appraisal;*

- 2. Listed Buildings and their settings;*
- 3. Historic Parks and Gardens and key views in and out of these landscapes;*
- 4. The dominance of the church towers and spires as one of the defining features of the landscape, such as those of Holderness and the Wolds;*
- 5. Heritage assets associated with the East Yorkshire coast and the foreshore of the Humber Estuary;*
- 6. The historic, archaeological and landscape interest of the Registered Battlefield at Stamford Bridge;*
- 7. The historic cores of medieval settlements, and, where they survive, former medieval open field systems with ridge and furrow cultivation patterns;*
- 8. The nationally important archaeology of the Yorkshire Wolds; and*
- 9. Those parts of the nationally important wetlands where waterlogged archaeological deposits survive.*

3.4 Guidance

- Chartered Institute for Archaeologists (CIfA) Standards and Guidance for historic desk based assessment (CIfA, 2014);
- Conservation Principles, Policies and Guidance (Historic England, 2008);
- Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision Taking (Historic England, 2015); and
- Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2nd Edition) (Historic England, 2017)

4 Baseline Assessment

All heritage assets discussed in the following baseline text are listed in Appendix A, and figures showing their locations are included in Appendix B. Each heritage asset is attributed a corresponding unique reference number, which is shown within the text (e.g. MM01).

4.1 Site context

The proposed development is within a patch of wild land, formerly a ploughed arable field, immediately adjacent to the south of an existing sewage treatment works to the south of the village of Leven in the East Riding of Yorkshire. Drainage channels border the field on the west and south sides. The wider setting is within a low lying arable farming landscape, crossed with drainage channels. The proposed development site is located c. 7km north-east of Beverley, c. 600m south of Leven and c. 1.7km north east of Routh. It is located at the edge of Leven parish, close to the border with the parish of Routh.

4.2 Topography and Geology

The proposed development is on low lying ground, with elevation ranging across the site from approximately 1.4m AOD in the north-west corner to c. 0.5m AOD in the south-east corner. The surrounding landscape is reasonably flat with minor undulations. The proposed development area is on the south edge of a patch of higher ground, rising to a maximum of 3.8m AOD c. 160m north-east of the site.

The low-lying nature of the landscape makes it prone to waterlogging and flooding and, as a result, a number of channels have been cut through the landscape to assist with drainage. The west and south edges of the field within which the development will be sited are bordered by drainage channels.

The geology across the proposed development comprises bedrock of Flamborough chalk formation, with superficial deposits of clay, silt, sand and gravel alluvium (British Geological Survey 2017).

No ground investigations have taken place within the footprint of the proposed development, but borehole investigations carried out in 1999, 2001 and 2017 at the location of the existing sewage treatment works showed no evidence of paleoenvironmental deposits. Based on the these investigations, the ground conditions within the proposed development are projected to consist of made ground to 0.5m bgl and alluvium to 3.6m bgl (Mott MacDonald Bentley 2017).

4.3 Heritage Assets

4.3.1 Designated Heritage Assets

There are no designated heritage assets within the proposed development area.

Within the surrounding 1km study area there is one conservation area, eight grade II listed buildings and one grade II* listed building. A summary of the heritage significance of these assets, and the contribution made by setting to that significance, is provided in Table 1.

Table 1: Designated heritage assets within the study area

Asset No.	Name	Summary
MM01	Holy Trinity Church, grade II* listed building	This listed building is located c. 1km north east of the proposed development area. This church by R D Chantrell was built in 1843-1844 in the Early English style. The building incorporates reused medieval elements comprising: the north transept arch and piscina, a fragment of pre-Conquest cross-shaft; and fabric from St Faith's Church Hall Garth. The heritage significance of the church derives from its historical connection to R D Chantrell aesthetic and communal values.
MM02	White Cross, grade II listed building	This wayside cross is located c. 680m south east of the proposed development area, just south of the A1035. The base of the cross is c. 15 th century, while the cross shaft is later. It is colour washed limestone with iron stays, a square base, an octagonal shaft and pyramid stops. The setting of the asset has been drastically altered by the construction of the A1035 that has enlarged, modernised and moved the road from where the cross stood at an intersection.
MM03	Leven House, grade II listed building	This listed building is located c. 480m east of the proposed development. The building is an early 19 th century house with late 19 th century extensions. The original block is of 2 storeys, 3 bays in symmetrical design. The extensions are not of special interest.
MM04	27 High Stile, grade II listed building	This listed building is located c. 1km north east of the proposed development and within the village of Leven. The building is mid-19 th century, of grey brick with stone dressings, timber eaves cornice and a slate roof. Formerly a police station, it now serves as a doctor's surgery.
MM05	Aqueduct at Sandholme Farm, grade II listed building	This building is a red brick aqueduct located c. 770m from the proposed development. It consists of 3 segmental-headed arches beneath parapet to tow-path. It was constructed in 1802 to carry the Leven canal over a major land drain.
MM06	Westfield, grade II listed building	This listed building is located c. 1km north of the proposed development site, within the village of Leven. It is early 19 th century and comprises 2 storeys with 3 bays in symmetrical elevation with an end stack and hipped roof.
MM07	White Cross Cottage, grade II listed building	This listed building is located c. 700m south east of the proposed development. This is a late 18 th century, 2 storey house in the gothic style. It is now a private residence but was originally a toll house. The setting of the house has been drastically changed by the construction of the A1035 that has enlarged, modernised and re-routed the road from where the house stood at an intersection.
MM08	The New Inn, grade II listed building	This listed building is located c. 820m north east of the proposed development, within the village of Leven. The building was constructed c. 1800 and comprises 2 storeys, 3 bays with flanking, lower, 2 storey single bay wings. It is colour-washed with timber eaves cornices and graduated slate roofs. Formerly 'The Beagle', the building has served continuously as a public house since its construction.
MM09	War Memorial in The Churchyard of Holy Trinity Church, grade II listed building	This listed war memorial is located c. 1km north east of the proposed development site, in the village of Leven. The war memorial is a limestone Latin cross, erected in c. 1920.
MM10	Leven Conservation Area	Leven conservation area comprises two sections of the modern village: the village centre and the smaller area of Little Leven on the western edge of the village. The Little Leven area represents Leven's historical, small scale and agricultural character. The village centre represents the more urban character resulting from commercial development resulting from the main road and creation of the canal. The village centre section includes the grade II* listed Holy Trinity Church.

4.3.2 Non-designated heritage assets

There are no identified non-designated heritage assets located within the proposed development boundary.

There are seven non-designated heritage asset records held by the local HER from within the 500m study area surrounding the proposed development site. These are summarised in table 2 below:

Table 2: Non-designated Heritage Assets within the Study Area

Asset No.	Name	Summary
MM11	Linear cropmarks & barrows	Aerial photographs show linear marks, a field or drainage system, several linear ditches with possible square barrows, and an area of ridge and furrow.
MM12	Fond bridge, carr lane	Post-medieval bridge crossing Bowlams dike.
MM13	Rectory farm	Late 18 th -early 19 th century farm house.
MM14	Samson bridge, monk dike	Post-medieval bridge crossing monk dike.
MM15	Southfield farm linear feature	A linear feature noted in the HER record, but for which no additional information is available.
MM16	BA flanged axe	Find spot of a middle Bronze-Age Flanged Axe from Rectory Farm, Leven. Found during the excavation of an artificial lake. Traditionally Bronze-age metalwork has been found in association with water-logged or previously wet areas where it may have been deposited as an offering to water deities. It may be another addition to the distribution of Bronze-Age metalwork in the area which seems to relate to the Carrs which once existed in Leven.
MM17	Cross fragment, rectory garden	Findspot of a fragment of the shaft of a cross recorded from the Rectory Garden in Leven in 1911. The cross shaft is decorated on all four sides.

Source: Humber HER (received November 2017)

It has been assessed that none of these assets or their settings are at risk of being impacted upon by the proposed development. Therefore, to ensure the assessment is proportionate, as required by paragraph 128 of the NPPF, these assets have not been assessed any further.

4.4 Previous Archaeological Assessment

The HER records for the site show that there have been no previous recorded investigations within the proposed development area or within the study area.

The lack of previous investigation should be taken into consideration when considering the potential archaeological impact as it introduces greater uncertainty into the assessment of potential.

4.5 Archaeology and Historic Development

The historic narrative of the baseline is provided chronologically as follows:

Table 3: Archaeological and historic periods used for the purpose of this assessment

Prehistoric Period	Dates	Historic Period	Dates
Palaeolithic	500,000 to 10,000 BC	Roman	AD 43 to 410
Late Glacial / Mesolithic	100,000 to 4,000 BC	Early Medieval	AD 410 to 1066
Neolithic / Early Bronze Age	4,000 to 1,600 BC	Medieval	AD 1066 to mid-C16 th
Middle Bronze Age	1,600 to 1,100 BC	Post-medieval	c. AD 1550 to C20 th

Prehistoric Period	Dates	Historic Period	Dates
Late Bronze Age	1,100 to 700 BC	Modern	c. AD 1901 to present
Early Iron Age	700 to 400 BC		
Middle Iron Age	400 to 100 BC		
Late Iron Age / Roman Transition	100 BC to AD43		

4.5.1 Prehistoric

The study area contains two HER entries (MM11 and MM16) dating to the prehistoric period.

A middle Bronze Age flanged axe (MM16) was found during the construction of an artificial lake in the late 20th century, c. 310m to the north east of the proposed development site. It is potentially significant that the elevation of the approximate find location is similar to that of the majority of the proposed development area, and may have had a similar water level and environmental conditions in the Bronze Age.

It is notable that Bronze Age artefacts have been recovered from the wider landscape beyond the study area. Historic England's PastScape records Bronze Age swords and a Bronze Age looped palstave recovered in the region of Leven (Historic England 2018a-d). The exact locations are not precise, but it is sufficient to indicate a significant Bronze Age presence in the region.

Within a field c. 360m to the south of the site, aerial photographs have shown an area of cropmarks that have been interpreted as an Iron Age field system, enclosures and possible square barrows (MM11).

4.5.2 Roman

There is no evidence positively dated to the Roman period recorded within the area of the proposed development or study area.

Within the wider landscape, beyond the study area, there are possible indicators of Roman activity. Cropmarks representing a possible Iron Age-Romano British settlement and trackways have been noted to the east of the study area (PastScape 2017a and 2017b). Although beyond the study area, the proximity of a possible settlement is notable due to potential interaction and exploitation within the surrounding landscape.

4.5.3 Early Medieval

The early medieval period is represented within the study area by a single findspot of a cross fragment (MM17) recovered from the rectory Garden c. 400m east of the proposed site.

By 1066, Leven is recorded within the Domesday Book as 17 householders made up of 15 villagers, one smallholder and one priest (OpenDomesday.org 2017). The manor of *Leuene* is believed to have been given to St. John of Beverley by Edward the Confessor. In the Domesday book, it is included as one of the possessions of the church (Bulmer & Co. 1892, 449).

Four ploughlands are recorded in association with the village. Although more detailed information on land use is available for this period, it seems reasonable to suppose that the cultivatable lands were within the areas that later became known as the North and South fields, within which the proposed development area is located.

It is not known what drainage efforts, if any, had been applied to the landscape in the early medieval period. The large drainage channel Monk Dike (MM19) (see 4.5.4) is believed to have

been constructed between the 12th or 13th Centuries. As such, given the low elevation, it is likely that the area of proposed development would have been marshy and probably used for pasture rather than arable cultivation.

4.5.4 Medieval

The lands around Leven, including the proposed development area, were owned by St John of Beverley and the provost of the church from 1281 until The Reformation in 1548.

Agriculture tillage took place on the high ground to the north and south of Leven in areas that were to be named the 'north' and 'south' fields by 1608. The low elevation of the proposed development area means that it is likely to have been waterlogged and prone to flooding, so may have been used for pasture rather than arable agriculture until the improvement to drainage afforded by Monk Dike (MM19), c. 50m to the south of the proposed Site. The dike follows the southern boundary of the field before turning south towards Meaux, and is believed to have been constructed or improved by Meaux Abbey in the 12th or 13th century (Allison et al. 2002).

There are no HER records relating to the Medieval period recorded within the study area.

4.5.5 Post-medieval

The proposed development is located on the western edge of the higher land to the south of Leven that was referred to since 1608 as 'South fields'. These fields were used for both meadow and pasture. To the west of the site was the 'Common Carr', which was probably used for rough grazing, and 'Bowlams', which was used as common meadow. Traces of medieval to post-medieval cultivation (MM18) are visible as ridge and furrow in the field adjacent to the east of Firth plantation, c.420m east of the proposed Site. Historic Ordnance Survey mapping shows that land use within the area of the proposed development area appears to have remained as farmland from at least the mid-19th century to the present day.

Commonable land was enclosed in 1796, the field divisions of which are shown in historic mapping to have remained largely unaltered into the mid-20th century. The Rector is recorded as receiving 433 acres, which would correspond with the construction between 1796 and 1828 of Leven House (MM03), c. 480m to the east of the proposed site, and Rectory Farm (MM13), c. 350m east of the proposed site, that were built on the newly enclosed land. Leven House is shown as 'The Rectory' on Ordnance Survey maps from 1855 to the mid-20th Century. The immediate surrounds of the house included landscaped gardens, but there was otherwise no alteration to the landscape. Rectory Farm is set within the fields to the west of the Rectory.

Efforts to maintain and improve drainage within the wider landscape continued from the late 18th century, although it is not clear how much was altered within the immediate landscape of the study area (Allison et al. 2002). Bowlams Dike, to the west of the proposed development area, is shown on the 1855 Ordnance Survey map, although it is not known when the dike was constructed. Leven canal was constructed between 1801-1805 on the order of Charlotte Bethel, Lady of the Manor. It connected the south of Leven to the river Hull, both improving drainage and providing a link for the transportation of goods to and from the river. The canal is carried over a pre-existing land drain by a grade II listed aqueduct at Sandholme farm (MM05), c. 770m north of the site.

Drainage channels are crossed by bridges of post-medieval construction, possibly at crossing points of earlier origin. Fond Bridge (MM12) crosses Bowlams Dike, c. 100m to the north of the site, along the route of Carr Road (now Carr lane). Samson Bridge (MM14) crosses Monk Dike,

c. 390m to the east of the site, and forms part of the route of access to Rectory farm and the north-west entrance to Leven House.

4.5.6 Modern

There are no HER records relating to the modern period within the study area.

The modern period saw the A165 opened in 1994. This included the construction of White Cross roundabout which rerouted the road to the north and east of the cross and toll house (MM02 and MM07).

Historical maps show that there do not appear to have been any significant changes within the vicinity of the proposed development between the mid-19th and mid-20th centuries. The enclosed field boundaries have remained largely intact, save for some agglomeration of fields to the west of the proposed development. The field boundary to the north of the proposed development is no longer present today, but otherwise the immediate agricultural landscape was unaltered until the construction of the sewage works related to this development in the 1960s. There are no indications of any alterations or impacts within the area of the proposed development in the modern period.

4.5.7 Unknown

Cropmarks in the vicinity of Southfield farm, located c. 450m north of the proposed development, are recorded in the HER as indicating a linear feature (MM15). No further dating evidence or information is available.

An investigation of online aerial imagery and Environment Agency lidar data has not provide any additional information, and a full aerial investigation is beyond the scope of the study.

Linear features may be associated with tracks, roads or ditches from any period. Without further information on the source of the record, it is therefore difficult to assess the period, nature or extent of the asset.

4.6 Walkover Findings

A site walkover was undertaken on 31 January 2018 to assess potential impacts to heritage assets and to identify any additional heritage assets that may be at risk from the development (Figure 1).

The setting of the proposed development is within an isolated field of scrubland, surrounded on the south and west sides by Bowlams Dike and Monk Dike. A large pond is located further to the south-east corner of the field, beyond the proposed development boundary. The hedgerows, trees and dikes segregate the field, creating an isolated and peaceful setting. Except for the pond, there was no indication of any previous development or ground alteration within the field.

All designated heritage assets were viewed, and their setting considered along with potential for impact from the proposed development. It was determined that no designated assets were at risk of impact from the proposed development.

No new sites were identified during the walkover.

Figure 1: Proposed Development Area. W Facing



Source: Mott MacDonald

5 Archaeological Potential

5.1 Prehistoric

There is evidence of prehistoric activity from the Bronze Age and Iron Age within the study area as represented by the Bronze Age flanged axe (MM16) north east of the site and the Iron age earthworks noted to the south of the site (MM11).

It is significant that in addition to the flanged axe MM16, Bronze Age swords and a palstave have been recovered from the wider landscape. Bronze age metalwork is often found as possible ritual deposition in association with wet and water-logged areas. The proposed site falls within a similar low-lying ground that is likely to have been permanently marshy and potentially below water before the more substantial drainage efforts of the middle ages, so may have the potential for similar depositions.

The potential for prehistoric remains is therefore considered to be **moderate**, before truncation.

5.2 Roman

There is no evidence of Roman activity within the proposed Site or within the study area. The potential for Roman remains is therefore considered to be **low**.

5.3 Early Medieval

There is no evidence of early medieval remains within the proposed development area or within the study area. It is possible that agricultural and drainage practices within the landscape that are known from the medieval period may date back to the early medieval period, but these would leave little impact or evidence within the proposed Site.

It is considered that there is **low** potential for early medieval remains within the proposed development area.

5.4 Medieval

No material remains of the medieval period are noted within the site or study area. The site falls within the area known as the south field which, given its location in the lower ground, would more likely have been used for pasture rather than for arable farming. The drainage channel of Monk Dike runs close to the south of the site, but is unlikely to have resulted in any material remains or alteration within the site boundary.

It is therefore considered that there is a **low** potential for medieval remains within the development area.

5.5 Post-medieval

The area of the proposed site appears to have remained as agricultural land throughout the post medieval period. None of the developments in the surrounding landscape are likely to have resulted in any impact or material evidence at the site.

The potential of post-medieval remains at this site is considered to be **low**.

5.6 Site Truncation

Land use within the landscape appears to have consisted of arable farming on the higher ground with pasture on the lower ground, which would likely have been unsuitable for planting due to waterlogging. The low elevation of the proposed development would therefore suggest that it was probably used for pasture at least until the drainage improvements of the medieval period. As a result, the ground is likely to have remained largely undisturbed until the late medieval period, after which it would have potentially been subject to plough disturbance.

Drainage channels constructed to the west (Bowlams Dike) and south of the site (Monk Dike) will have had minimal impact upon the area of the proposed site.

The construction of the sewage treatment works may have entailed some minor surface impact, particularly within the northern end of the proposed site.

5.7 Conclusion

The extent of truncation within the boundary of the proposed development is considered to be minor.

The potential for archaeological remains has been assessed as moderate for the prehistoric period and low for all other periods. However, the lack of previous recorded archaeological investigation within the study area makes a full assessment of archaeological potential difficult to fully assess, particularly before the medieval period.

It is recommended there that the area of the proposed development is further investigated before the development in order to more adequately identify the presence and extent of any potential archaeological remains. Due to the wet nature of the soil, geophysics would not be a suitable method of investigation. A recommended approach would therefore be trial trenching to more fully assess the nature and extent of any archaeological remains.

It is recommended that Humber Archaeology Partnership is consulted during the planning application process with regard to any requirements for further investigation.

6 Impact Assessment

The impact assessment looks at the impact of the proposed development on the significance of the historic environment. This includes the impact on key heritage assets with an assessment of archaeological potential.

6.1 Built Heritage Assets

Five listed buildings are present in Leven (MM01, MM04, MM06, MM08, MM09) to the north of the proposed development. These buildings are all set within the village and are at no risk of impact from the proposed development due to the enclosed urban environment.

The listed aqueduct (MM05) to the north east of the proposed development is at no risk of impact from the proposed development due to the distance, topography and intervening trees and hedgerows.

The listed White Cross (MM02) and White Cross Cottage (MM07) to the south east of the proposed development are at no risk of impact to their setting due to the distance, topography and intervening trees and hedgerows.

The listed Leven House (MM03) to the east of the proposed development may be at a minor risk of impact to views from the upper floors of the building. However, this impact will be limited by the dominant tree line that surrounds the house. The proposed development will also not represent a major alteration to the existing profile of the sewage treatment works, so it will not represent more than a minor change to the view.

The undesignated Rectory Farm (MM13) to the east of the proposed development may have a minor risk of impact to its setting. However, this impact will be largely mitigated by the distance and intervening hedgerows. The proposed development will also not represent a major alteration to the existing profile of the sewage treatment works, so it will not represent more than a minor change to the view.

6.2 Leven Conservation Area

There is no aspect of the proposed development that will have an impact upon the Leven conservation area. Almost the entirety of the conservation area is set within an enclosed urban environment. Those parts at the edge of the conservation area are at a substantial distance from the proposed development and screened from it by intervening topography, hedgerows and trees.

7 Conclusions

This report has provided a heritage impact assessment for an extension to the sewage treatment works at Leven in the East Riding of Yorkshire. The proposed development will result in a 2800m² extension into a previously arable field to the south of the existing sewage treatment works, within which will be constructed two 25m diameter trickling filters. During construction, an additional temporary work compound will be sited within an area of approximately 2800m² adjacent to the south of the proposed works.

The assessment has shown that there will be no significant impact from the development upon the setting of designated and undesignated heritage assets within the landscape. Nor will there be any impact upon the Leven conservation area.

The potential for archaeological remains before truncation has been assessed as moderate for the prehistoric period and low for all other periods. However, the lack of previous archaeological investigation makes the exact nature of potential archaeological deposits difficult to determine. The extent of truncation within the boundary of the proposed development is considered to be low.

Due to the potential for prehistoric remains, and the limited understanding of the location's archaeological potential, it is recommended that the site be investigated further through trial trenching.

It is recommended that Humber Archaeology Partnership is consulted during the planning application process regarding any requirements for further investigation.

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8.2 Map Sources

Leven Enclosure Map 1755

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Appendices

A.	Gazetteer of Heritage Assets	23
B.	Map of Heritage Assets	27

A. Gazetteer of Heritage Assets

Table 4: <Insert Table Caption>

MM No.	Source	Ref	Name	Asset Type	Period	Description
MM01	NHLE	1103456	HOLY TRINITY CHURCH	Listed Building Grade II*	Post Medieval	Church. 1843-44 by R D Chantrell. Parish room added 1998-99 by Ferrey & Menim. Early English style. R D Chantrell re-used much of the medieval fabric from St Faith's Church Hall Garth which was dismantled 1843-4.
MM02	NHLE	1103454	WHITE CROSS	Listed Building Grade II	Post Medieval	Wayside cross. Medieval, with later shaft. Limestone, colour-washed, with iron stays. Square base, octagonal shaft with pyramid stops.
MM03	NHLE	1103455	LEVEN HOUSE	Listed Building Grade II	Post Medieval	House. Early C19 with late C19 extensions to right. Light brown brick with stone dressings, slate roof. Original block of 2 storeys, 3 bays, in symmetrical elevation: 2-storey canted bays (with segmental sides) to ends. Central 6-panel double-leaf door under fanlight in Doric porch with entablature and blocking course flanked by sashes with sills and glazing bars under wedge lintels. First floor: 9-pane unequal sashes. Paired brackets to timber eaves cornice, end and axial stacks. Extensions to right are not of special interest.
MM04	NHLE	1103458	27, HIGH STILE	Listed Building Grade II	Post Medieval	Police station, now doctors' surgery. Mid C19. Grey brick with stone dressings, timber eaves cornice, slate roof. 2 storeys, 3 bays in symmetrical elevation with single-bay single-storey extension to right. Plinth, rusticated quoins. Central 4-panel bolection-moulded door under fanlight with broad vertical glazing bar in rusticated door surround with projecting plain impost and round arch with sunk moulded panel. Sashes with glazing bars and moulded sill band under cambered gauged brick arches to right and left. First floor: 3 similar, smaller sashes with moulded sill band. Oversailing eaves on bracketed timber eaves cornice. Axial stack, hipped roof. Extension to right has sash with glazing bars, sill, and iron bars .

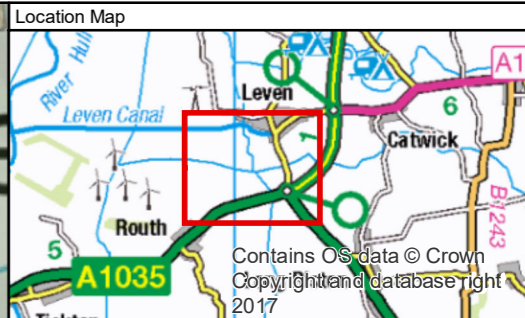
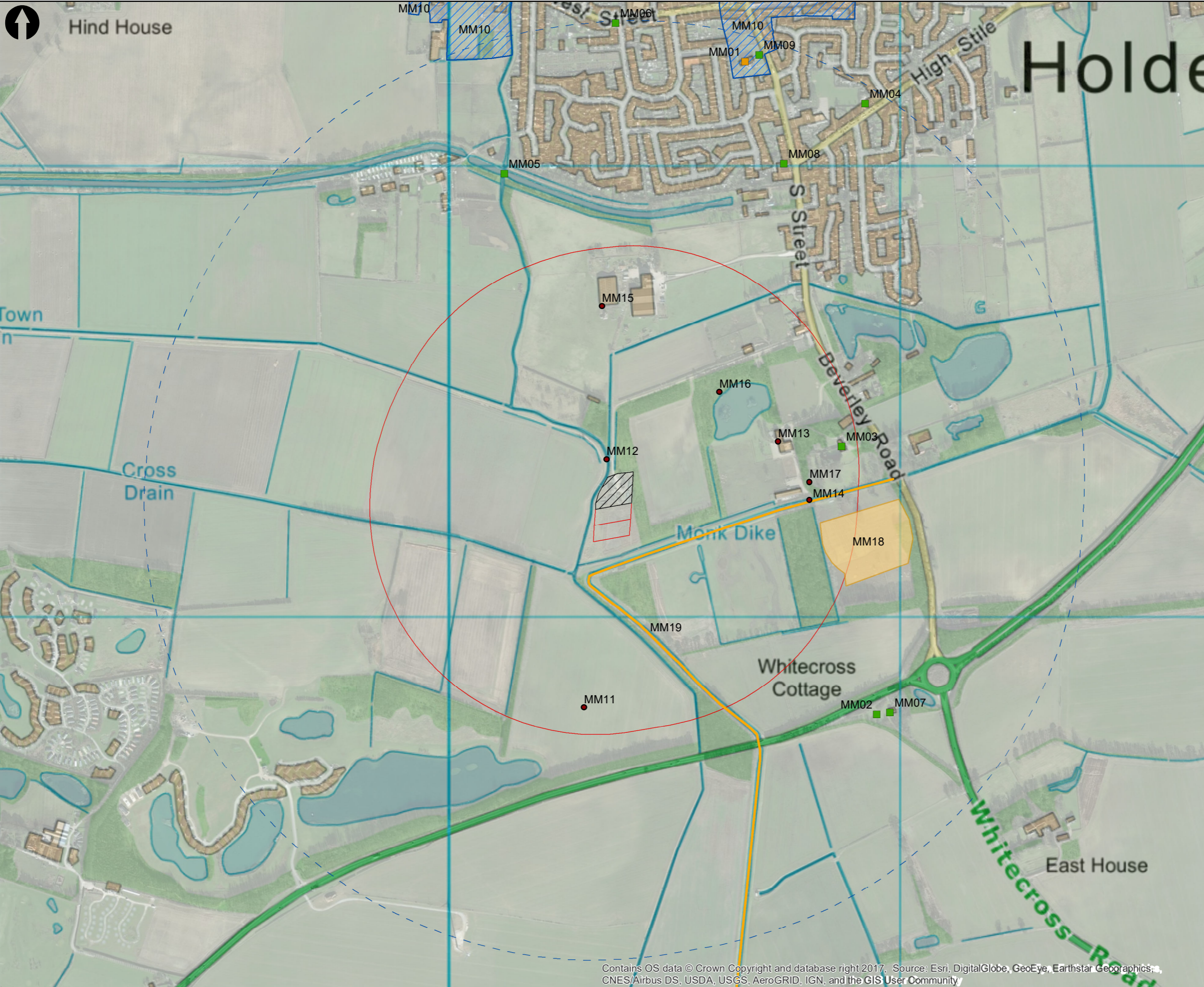
MM No.	Source	Ref	Name	Asset Type	Period	Description
MM05	NHLE	1160616	AQUEDUCT AT SANDHOLME FARM	Listed Building Grade II	Post Medieval	Aqueduct. 1802, for Mrs Bethell of Rise Park. Red brick. 3 segmental- headed arches beneath parapet to tow-path. This small aqueduct carries the Leven Canal over a major pre-existing land drain.
MM06	NHLE	1160638	WESTFIELD	Listed Building Grade II	Post Medieval	House. Early C19. Yellow-brown brick, slate roof. 2 storeys, 3 bays in symmetrical elevation. Continuous rear outshut. Door of 6 raised and fielded panels with overlight with glazing bars in panelled reveals and soffit. Pilastered doorcase with projecting cornice. 16-pane sashes with sills under slightly cambered gauged brick arches to right and to left. First floor: 3 similar sashes. End stack, hipped roof.
MM07	NHLE	1310527	WHITE CROSS COTTAGE	Listed Building Grade II	Post Medieval	Toll house, now a house, late C18. Gothick style. 2 storeys, 3 bays in symmetrical elevation. Centre bay breaks forward slightly. Boarded doors with blank trefoil headed panels with fanlights under ogee gauged brick arches to left and to right. Centre bay has 16-pane sash under ogee gauged brick arch. First floor: 16-pane sash flanked by sashes with intersecting glazing bars all under ogee gauged brick arches. Crenellated parapet, rear wall stacks.
MM08	NHLE	1310532	THE NEW INN	Listed Building Grade II	Post Medieval	Public house. c1800. Colour-washed, with timber eaves cornices and graduated slate roofs. 2 storeys, 3 bays with flanking, lower, 2 storey single bay wings. Central door of 6 raised and fielded panels under fanlight with radial glazing in Tuscan porch with entablature and blocking course. 16-pane sashes with sills under cambered channelled wedge lintels with raised key block to left and to right. First floor: similar sashes to left and right, 12-pane sash over door. Paired bracketed eaves cornice, end stacks, hipped roof. Flanking wings have 16-pane sashes to ground floor, 12-pane unequal sashes to first floor. Bracketed eaves cornices, hipped roof.
MM09	NHLE	1391919	WAR MEMORIAL IN THE CHURCHYARD OF HOLY TRINITY CHURCH	Listed Building Grade II	Post Medieval	Latin cross with raised initials IHS placed centrally and square, Tudor style, foliage bosses ornamenting the faces of the cross and forming the ends of its arms. The cross is supported on an octagonal pillar with a C14 style capital and a

MM No.	Source	Ref	Name	Asset Type	Period	Description
						square base. This in turn is supported by a square pedestal with a plinth set on a single step. Both the pedestal and the plinth are inscribed in black lettering. The east face of the pedestal is inscribed with the words: This cross was erected/ By the inhabitants of/ Leven/ To the Glory of God/ And in grateful memory/ of those who have fought/ and fallen in the Great War/ 1914 - 1918. On the plinth below is inscribed: World War/ 1939 - 1945 . The north and south faces each carry 9 names on the pedestal in the format of abbreviated rank, full name with middle initial, abbreviated regiment or ship. The names are listed alphabetically except for the first two. The north and south faces of the plinth below carry 2 names each in the format of full name and abbreviated regiment. The west face, facing the church, is uninscribed.
MM10	East Riding of Yorkshire Council	-	Leven Conservation Area	Conservation Area		
MM11	HER	MHU11229	LINEAR CROPMARKS & BARROWS	DITCH, ENCLOSURE, SQUARE BARROW, RIDGE AND FURROW	Iron Age	Aerial photograph show linear marks, a field or drainage system, several linear ditches with possible square barrows, and an area of ridge and furrow.
MM12	HER	MHU13090	FOND BRIDGE, CARR LANE	ROAD BRIDGE, SITE	Post Medieval	
MM13	HER	MHU13091	RECTORY FARM	FARM, SITE	Post Medieval	
MM14	HER	MHU13285	SAMSON BRIDGE, MONK DIKE	BRIDGE, SITE	Post Medieval	
MM15	HER	MHU19097	SOUTHFIELD FARM LINEAR FEATURE	LINEAR FEATURE	Undated	
MM16	HER	MHU19621	BA FLANGED AXE	FINDSPOT	Bronze Age	Find spot of a middle Bronze-Age Flanged Axe from Rectory Farm, Leven. Find brought into Hull City Museums by a member of the public. Traditionally Bronze-age metalwork has been found in association with water-logged or previously wet areas where it may have been deposited as an offering to water deities. The village of Leven is in a low-lying area. The flanged axe was found in an artificial lake excavated 'a year ago' but it may be another addition to the distribution of Bronze-Age metalwork in the area which seems to relate to the Carrs which once existed in Leven.

MM No.	Source	Ref	Name	Asset Type	Period	Description
MM17	HER	MHU3711	CROSS FRAGMENT, RECTORY GARDEN	FINDSPOT, SITE	Early Medieval	Findspot of a fragment of the shaft of a cross recorded from the Rectory Garden in Leven in 1911. The cross shaft is decorated on all four sides.
MM18	Map		Ridge and Furrow	ridge and furrow	Medieval/Post Medieval	Area of ridge and furrow identified from aerial imagery and lidar data.
MM19	Lidar/Aerial Imagery		Monk Dike	Water Channel	Medieval	

Source: Historic England, November 2017. Humber HER, November 2017. East Riding of Yorkshire Council, November 2017.

B. Map of Heritage Assets



Key to Symbols

- Existing Waste Water Treatment Works
- Proposed Development
- Study Areas**
- 500m Study Area
- 1km Study Area
- Designated Sites**
- Grade II* Listed Building
- Grade II Listed Building
- Conservation Areas
- Undesignated Assets**
- HER Record Points
- Additional Assets - Polygon
- Additional Assets - Line

Notes

1A	15/03/18	MR	Final for issue		
Rev	Date	Drawn	Description	Ch'k'd	App'd

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Title
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Heritage Assets

Designed		Eng Check	
Drawn	M Reynolds	Coordination	
GIS Check		Approved	

Scale at A3	Status	Rev	Security
1:8,000	PRE	P1	STD
Drawing Number Appendix B			

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