Environment Agency

LBC5 - Listed Building Consent Application: Design, Access and Heritage Statement

Planning (Listed Building and Conservation Areas) Act 1990
Transport and Works Act 1992
Boston Barrier Order

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Quality Assurance

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Approvals

Name	*Title*	*Date*	*Version*
JW	*Heritage Team Leader*	*12/08/2016*	*1*
EL	*EIA Project Director*	*12/08/2016*	*1*

EIA Quality Mark

This Environmental Statement, and the Environmental Impact Assessment (EIA) carried out to identify the significant environmental effects of the proposed development, was undertaken in line with the EIA Quality Mark Commitments.

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Contents

Executive Summary

This design, access and heritage statement has been commissioned by the Environment Agency. It forms part of the supporting documents for an application seeking Listed Building Consent for proposed works to the Grade II listed Maud Foster Sluice in Boston, Lincolnshire.

The proposed works are to connect the new flood wall to the Maud Foster Sluice. These proposed works are part of wider proposals to construct a tidal barrier and new flood walls that link to existing flood management structures (known as the 'Project'). The Project is the subject of a separate application to the Secretary of State for the Environment, Food and Rural Affairs for an Order under the Transport and Works Act 1992 and an associated request for a direction that planning permission be deemed to be granted for the Project pursuant to section 90(2A) of the Town and Country Planning Act 1990.

Defences immediately downstream of the proposed new barrier, including the flood wall, would be improved to provide a level of flood protection equivalent to a 1 in 300 chance of tidal flooding happening in one year, over a one hundred year time period. This would result in a reduction in flood risk for much of the town of Boston, including the Boston Conservation Area and its associated historic buildings and spaces, including around 226 listed buildings, which are currently at risk.

The Maud Foster Sluice was constructed in 1807 at the outfall of the Maud Foster Drain and river Witham. It is a substantial gritstone structure which is still operational and maintained as part of the system to control water levels within the Fens. It now sits within an industrial and developed setting, different from its historic setting as an isolated structure within a rural landscape on the edge of the Haven.

The new flood wall would abut the parapet of the Maud Foster Sluice. The flood wall has been designed to taper down into the sluice parapet and its height would reduce from 2m to 0.63m over a length of 5m so that it would be the same height as the parapet where they meet. This would reduce the visual impact of the new flood wall on the sluice. This coupled with the already eroded character of the historic setting, means the proposed works are considered to result in 'less than substantial' harm to the heritage significance of the Maud Foster Sluice.

There are compelling reasons to allow the proposed works to Maud Foster Sluice. They are required to facilitate the construction of the proposed Project which would deliver

much improved (1 in 300) flood protection to the wider historic environment, including the protection of around 226 listed buildings and other historically important buildings and spaces from flooding. As such, the substantial public benefits that the works would give rise to are considered to outweigh the level of harm considered to arise to the listed building, in accordance with paragraph 134 of the NPPF.

1 Introduction

1.1 Background

This design, access and heritage statement has been commissioned by the Environment Agency in support of an application for Listed Building Consent for works to the Grade II listed Maud Foster Sluice in Boston, Lincolnshire (NGR TF 33536 43074; see Site Boundary and Project Plan IMAN001472-EVT-LBC-001).

The works are required as part of wider proposals to construct a flood wall in the Port of Boston, as it is necessary to physically connect the new flood wall to Maud Foster Sluice. The construction of the flood wall in turn forms part of a wider proposal to construct a new tidal barrier within the Haven in Boston (known as the **Project**). The Project is the subject of a separate application to the Secretary of State for the Environment, Food and Rural Affairs for an Order under the Transport and Works Act 1992 (known as a **TWAO**) and an associated request for a direction that planning permission be deemed to be granted for the Project pursuant to section 90(2A) of the Town and Country Planning Act 1990.

The Project works comprise the construction of a tidal barrier which can be raised when extreme high tides are predicted within the Haven, along with land-based flood risk management structures that tie into the barrier structure and existing flood management structures

The proposed barrier would be constructed south of the town of Boston across the area of the River Witham known as 'the Haven' (see Site Boundary and Project Plan IMAN001472-EVT-LBC-001). It would be situated approximately 100m downstream of Black Sluice, adjacent to the Starch Berth within the Port of Boston Estate on the left bank of the Haven and existing residential properties along Wyberton Low Road on the right bank. The flood defences extend from Black Sluice to the Western Power Distribution (WPD) site on the right bank, and from the barrier structure to Maud Foster Sluice on the left bank. These are to be constructed through a combination of sheet piling and concrete walls to a height of 7.55m above ordnance datum (**AOD**)

The Project would improve the current standard of protection from tidal flooding, and would not affect the existing standards of fluvial flood protection provided upstream within the River Witham and South Forty Foot Drain (SFFD). The level of protection is proposed to provide protection against a 0.33% (1 in 300) annual probability of flooding over the 100 year project life in this location. This would result in a reduction in flood risk for the town of Boston including the Boston Conservation Area and its associated historic buildings and spaces, including around 226 listed buildings which are currently at risk of flooding.

1.2 Overview

The Listed Building Consent application seeks consent for works to construct and 'tie in' the new flood wall to the Grade II listed Maud Foster Sluice (please see the Site Plan, drawing IMAN001472-EVT-LBC-001) only (hereinafter referred to as the **LB Works**). The LB Works are the only aspect of the proposed Project considered to potentially affect the Sluice's character as a building of special architectural or historic interest. The impact of the wider Project on cultural heritage more generally has been assessed separately and is reported within the Environmental Statement which accompanies the TWAO application.

The purpose of this Design, Access and Heritage Statement is to explain the methodology used to assess the impact of the LB Works on the Maud Foster Sluice, identify the significance of the Sluice, explain the proposed design of the flood protection wall, its construction and how the design principles have been applied to take account of the special architectural or historic importance of the building, the particular features of the building that justify its designation as a listed building and the building's setting. It also explains how issues relating to access to the building have been dealt with. This Statement also explains the impact that the proposed LB Works would have on the significance of the Sluice.

2 Methodology

2.1 Desk based research

A desk based study has been undertaken to identify and understand the heritage significance of the Grade II listed Maud Foster Sluice.

- Data sources used to carry out the assessment include: Heritage Environment Record (HER);
- National Heritage List for England;
- Local studies resources; and
- Historic mapping.

A full list of references can be found in section 8 of this Statement.

2.2 Surveys

An initial site walkover was carried out on 5th March 2015 which enabled an inspection of the Sluice from publicly accessible areas including the footpath adjacent to the Sluice. A second site walkover was carried out on 20th August 2015. This survey included an inspection of the Maud Foster Sluice from the Port of Boston estate.

2.3 Consultation

Consultation regarding the proposed LB Works to the Maud Foster Sluice has been carried out with Historic England, a Boston Borough Council planning officer and historic environment advisor, Lincolnshire County Council archaeologists, Heritage Lincolnshire and Environment Agency heritage and landscape specialists. Three meetings with these stakeholders have been held. An initial meeting was held at Boston Borough Council on 19th March 2015 to discuss the Project including the design principles regarding the 'tie in' works to the Maud Foster Sluice. In addition to the site walkovers noted in 2.2 a site meeting and walkover was held on 15th May 2015 to assess the site, this covered publicly accessible areas. A third meeting was held in Boston on 12th November 2015 where the design of the flood wall adjacent to the Maud Foster Sluice and the methods of attachment to the Sluice were discussed.

2.4 Assessment of potential impacts

The assessment contained within this Statement 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 (English Heritage, 2015). Paragraph six of the guidance outlines the steps which should be taken to establish the potential impact of the LB Works on the significance of heritage assets and where appropriate justify any harmful impacts and identify mitigation and enhancements. These steps are:

- Understand the significance of the affected assets;
- Understand the impact of the proposal on that significance;
- Avoid, minimise and mitigate impacts in a way that meets the objectives of the NPPF;
- Look for opportunities to better reveal or enhance significance;

- Justify any harmful impacts in terms of the sustainable development objective of conserving significance and the need for change; and
- 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.

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 down 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 framework for authorising works for demolition or the alteration or extension of listed buildings through the grant of Listed Building Consent.

3.2 National Planning Policy

3.2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) (2012) considers the importance of the historic environment in planning and development and sets out the government's policies with regard to development that affects the historic environment. It requires that proposals are fully evidenced and assessed to help informed decision making. Chapter 12 outlines these policies. The following paragraphs are relevant to this Listed Building Consent application:

- Paragraph 128: In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting;
- Paragraph 131: The following should be taken into account when determining applications;
  - The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
  - The positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and
  - The desirability of new development making a positive contribution to local character and distinctiveness.
- Paragraph 132: When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be;
- Paragraph 134: Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use;

3.3 Local Planning Policy

The Boston Borough Interim Plan (Non Statutory Development Control Policy) (February 2006) is a revised version of the local plan adopted for development control purposes. The following policy is relevant to the LB Works:

- Policy E4 - protects local distinctiveness by ensuring proposals will only be granted permission where the community benefit outweighs the harm done by the proposal;

3.4 Guidance

The following guidance has been used to inform the assessment:

- Conservation Principles, Policies and Guidance (English Heritage, 2008);
- Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision Taking (English Heritage, 2015); and
- Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (English Heritage, 2015).

4 Heritage significance

4.1 Site context

The Maud Foster Sluice sits at the junction of the Maud Foster Drain and the Haven (the tidal part of the River Witham), to the south of the town of Boston, Lincolnshire. It is a Grade II listed structure and sits within the Skirbeck Conservation Area. To the west of the Sluice is the Port of Boston, an operational port dating from the late 19th century with wet dock, modern warehouses, cranes, hoists and other ancillary structures. An access road to the port, which carries heavy goods vehicles, runs across the top of the Sluice (see **Photo 4.4**). To the east of the Sluice is a raised embankment which forms part of current flood defences. Behind this is modern residential development. To the south, within the Haven, tidal mud banks, a result of scouring of the river, frame the Sluice (see **Photo 4.1**). To the north of the Sluice the Maud Foster Drain is characterised by steep semi natural slopes covered in grass and scrub planting (see **Photo 4.3**).

4.2 Topography

The height of the area around the Sluice varies between 2m AOD south of the Haven, rising to 6m AOD north heading towards the centre of the historic core of the town of Boston and 2.6m AOD east at Skirbeck, on the out skirts of Boston. The higher ground lies along the banks of the Witham River due partly to the natural levees following the river course and partly to the gradual build-up of deposits within the town during the medieval period (Cope-Faulkner et al, 2013, 8). Visually the area appears flat with any buildings, structures or trees restricting long views to and from the Sluice.

4.3 Historic development

The Maud Foster Sluice was constructed in 1807 at the outfall of the Maud Foster Drain and river Witham. The Maud Foster Drain follows the line of the ancient Scire Beck and was originally cut in 1568 with an outfall sluice at the junction with the Witham (Darby, 1956). The corporation map of 1568 shows a Maud Foster was the owner of the land that the drain passes through; tradition has it that she made it a condition of the work that the drain should bear her name (Pastscape, 2015).

The drain was widened and a new Maud Foster outfall sluice was constructed in 1631 as part of a wider fen reclamation scheme by a group of men known as “The Adventurers”. This was done in return for some of the reclaimed land, previously common land. The transfer of the land led to protests from the commoners and the 1631 Maud Foster Sluice was torn down following protests. Following these protests, legal proceedings were taken against the “The Adventurers” by the commoners. Following these proceedings the Court of Sewers were put back in control of the district and in 1734 constructed a new Maud Foster Sluice and drain improvement. In the later eighteenth century the condition of the Fen drainage system declined and John Rennie, one of the pre-eminent engineers of his day, was commissioned to come up with a comprehensive scheme for management of the East and West Fens (WFDIDB, 2016).

The construction of the current Maud Foster Sluice formed part of this comprehensive scheme to drain and reclaim the East, West and Wildmore Fens. This Sluice was constructed “three chains east of the sluice

erected in 1734" (Wheeler, 1897). The drainage scheme involved installation of catch drains in the East, West and Wildmore Fens then creating a larger infrastructure of drains allowing them to drain into the Witham (at this point known as the Haven). The Maud Foster Drain and Sluice played a key part in the reclamation of the Wildmore and West Fen, allowing the water from these areas to be ultimately drained into the Witham through the Maud Foster drain (Grigg, 1966).

4.4 Heritage significance

Maud Foster Sluice

The first stone of the Maud Foster Sluice was laid on 21st May 1806, with the Sluice finished in 1807 (see **Photo 4.1**). It was designed by John Rennie, one of the leading civil engineers of the early nineteenth century (Thompson, 1820) and built by John Pinkerton. The Sluice is a fixed, non-navigable structure which acts as the outfall from the Maud Foster Drain into the river Witham. The Sluice is dual purpose, firstly as part of the system to control the water levels within the Fen drains, and secondly as a Sluice to help scour out the channel within the lower part of the river Witham to help keep the waterway navigable, removing silts which can block the navigation channels.

Photo 4.1: Maud Foster Sluice viewed from the Macmillan Way

Source: Mott MacDonald 2015

The Sluice has a gritstone parapet, with substantial shouldered grit stone coping (see **Photo 4.4**). The openings are three elliptical arches covered by Sluice gates upstream and downstream, which control water flow through a gantry mounted pulley system. The Sluice gates to the downstream elevation have timber hoods. There are two projecting gritstone piers upstream and downstream, now used to support steel balustrading and access walkways. The retaining walls are also gritstone and splayed both sides with returns. A modern tarmac road runs across the top of the Sluice.

The Sluice is still operational. As such it has been maintained and upgraded during its working life resulting in replacement of original and historic parts. The upstream gates were modernised and mechanised in 1985. The steel balustrading and walkways are later additions which, although necessary for safety and security, detract from its heritage value (Historic England, 1987).

Photo 4.2: Piers and walls on Haven side of Maud Foster Sluice

Source: Mott MacDonald 2015

Photo 4.3: Maud Foster Sluice viewed from the Maud Foster Drain

Source: Mott MacDonald 2015

Photo 4.4: Maud Foster Sluice parapet viewed the from the Port of Boston

Source: Mott MacDonald 2015

Setting

Much of the Maud Foster Sluice's heritage significance is derived from it being an integral part of the wider water management of the fens and its associated structures. Its primary historic functional and visual relationship is with the water, both the Maud Foster Drain and the Haven.

When it was constructed the Sluice would have been set within a relatively open landscape with town fields to the north and west of the Maud Foster drain and sluice, and fields and rural settlement at Skirbeck to the east. To the south were the intertidal mud banks, and these surroundings would have resulted in the Sluice having a relatively isolated setting (OS, 1815).

This historic setting of the Sluice has been eroded with the construction and ongoing development of the Port of Boston to the west and the modern developments within the conservation area to the east. The

green embankments either side of the Sluice and the trees on the Port of Boston side of the Maud Foster Drain provide a limited visual buffer between the Sluice and the modern developments however the overriding modern character of the Sluice is one of a functional, industrial structure within a modern industrial and developed setting (see Photo 4.5).

Photo 4.5: Setting of Maud Foster Sluice

Source: Mott MacDonald 2015

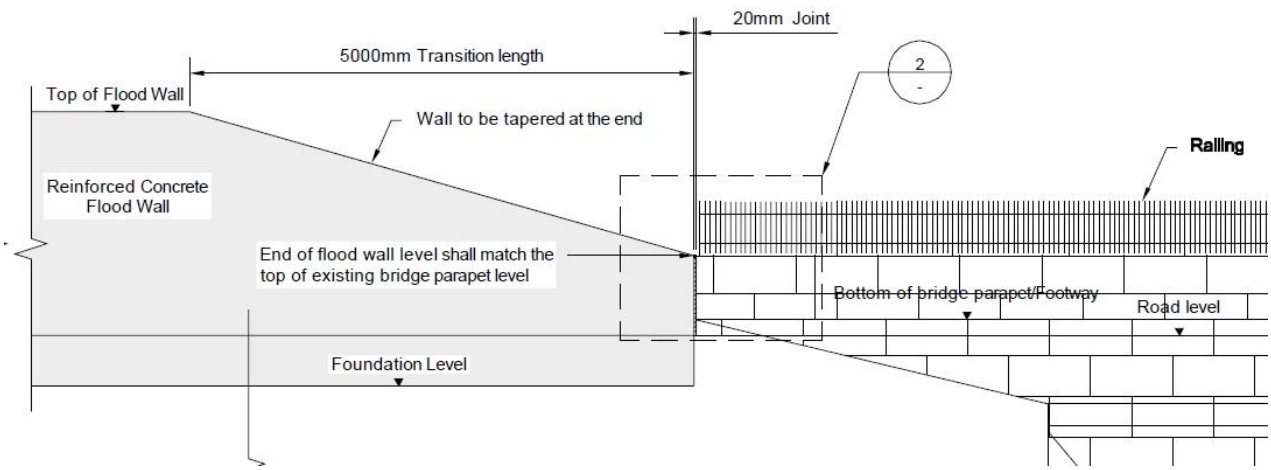
5 Design

5.1 Project description

As part of the Project a 2m high flood defence wall is proposed running through the Port of Boston (see site boundary and Project plan IMAN001472-EVT-LBC-001) along the left bank of the Haven. This would bring the height of the flood defences to 7.55m AOD, which is the required height to increase flood protection to a 0.33% (1 in 300) annual probability of flooding over the 100 year project life in this location.. The new flood wall would run from the proposed Barrier to the Maud Foster Sluice.

The proposed concrete flood wall has been designed to taper down into the sluice parapet. The height of the flood wall would be reduced by 1.4m over a length of 5m so that it would be the same height as the parapet, 0.63m, at the junction between the new wall and the parapet (see Figure 5.1). The red post which currently forms the last support of the security fencing and is not directly attached to the sluice parapet (see **Photo 5.1**) would be removed and the fencing would also be removed back to the next support (see existing structure drawing IMAN001472-EVT-LBC-003 and proposed works drawing IMAN001472-EVT-LBC-004).

Figure 5.1: Detail of new flood wall and Maud Foster Sluice (not to scale).



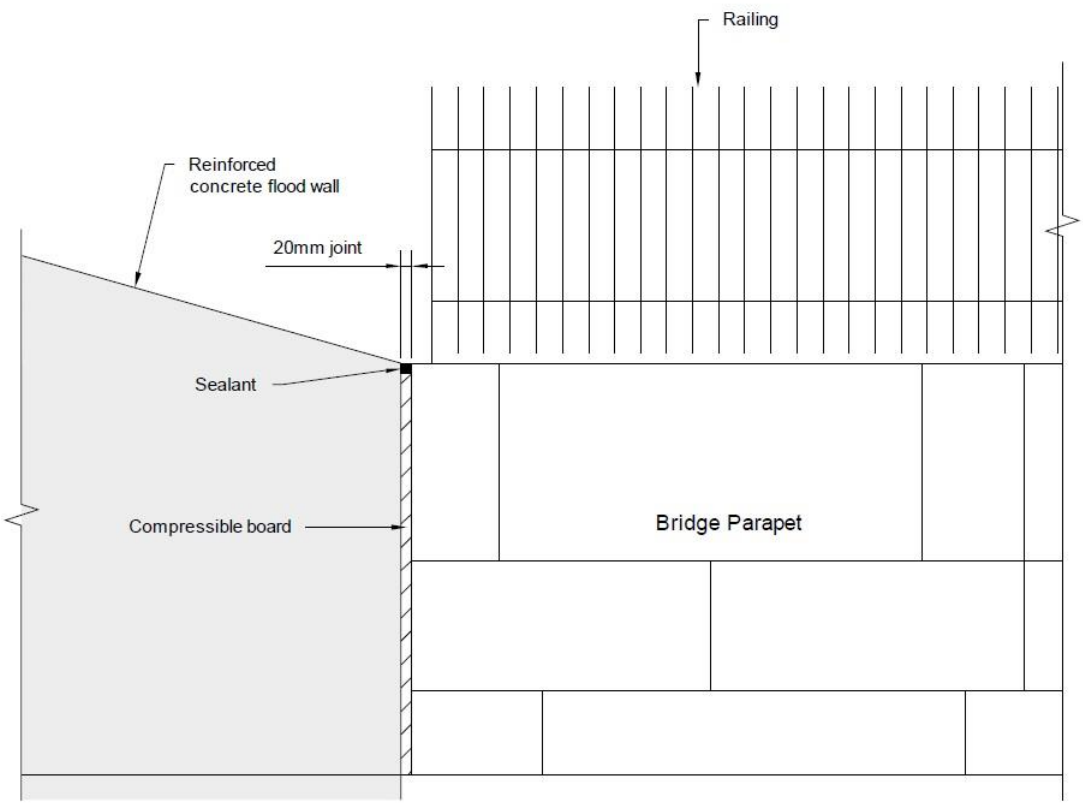
Source: Mott MacDonald 2015

Photo 5.1: Post forming end support of security fencing.

Source: Mott MacDonald 2015

The proposed concrete flood wall will abut the stonework parapet of the Sluice to form a watertight joint. No intrusive working including fixings or but joints into the structure of the Sluice would be required and a watertight joint would be formed between the proposed new concrete wall and the parapet using compressible board within the joint, with sealant on the face of the joint (see **Figure 5.2**).

Figure 5.2: Detail of junction between flood wall and Maud Foster Sluice (not to scale).



Source: Mott MacDonald 2015

5.2 Design development

The proposal initially considered was for the new 2m flood wall to extend to the Sluice at full height, resulting in the flood wall standing 1.37m higher than the sluice parapet where they met. This was to allow for future, , flood protection measures further downstream as part of the Boston combined strategy (2008). Following consultation with Historic England, Boston Borough Council's conservation advisor, Heritage Lincolnshire and Lincolnshire County Council's archaeologists the design was amended to reduce the height of the flood wall where it would sit adjacent to the Sluice. This tapering design was developed to allow a gentle transition between the height of the proposed flood wall and the Sluice parapet. This would not reduce the level of flood protection in this location.

The initial proposal also involved physical intervention into the Sluice parapet by way of a water tie bar. After further investigation it was determined that a physical tie was not required and the compressible

board joint with water tight sealant would prevent the need for any physical intervention into the listed structure.

5.3 Impact on heritage significance

The new flood wall has been designed to minimise impact on the Maud Foster Sluice, both visually and physically, whilst providing the required level of flood protection. No alterations or interventions to the historic fabric of the structure are proposed, in line with building conservation best practice of "minimum intervention" and the operation of the Sluice would remain unaffected. The joint between the proposed wall and the Sluice parapet has been designed with compressible board packing so that there is a limited amount of adhesion to the stone work, with only the 20mm water tight seal adhered to the stonework to create a watertight junction.

The new flood wall would have a slight adverse impact on the setting of the Maud Foster Sluice, but this would be less than substantial. The LB Works should be seen in the context of the already compromised historic setting of the Maud Foster Sluice through the construction of the Port of Boston and the development within the Skirbeck Conservation Area, which has removed the original more isolated setting of the Sluice. The tapering of the flood wall will allow the Maud Foster Sluice to continue to be viewed as a standalone structure. The use of concrete for the flood wall in this location is in keeping with the modern industrial character of the Port of Boston, and the difference in material between the parapet and the new flood wall ensures that the Maud Foster Sluice can be understood as part of the historic water management system rather than a structure associated with the Port of Boston.

It is considered that although there would be a limited impact on the heritage significance of the Maud Foster Sluice, resulting in less than substantial harm to the listed structure, from the change in setting that will result from the construction of the flood protection wall, this should be balanced with the improved flood protection that would be afforded to the wider historic environment from the Project. This will result in the protection of around 226 listed buildings and other historically important buildings and spaces within the Boston Town Conservation Area[1].

In conclusion, it is therefore considered that although the proposed LB Works would result in less than substantial harm to the significance of a designated heritage asset, the public benefits from the development outweigh this level of harm, as required by paragraph 134 of the NPPF.

[1] This is discussed in more detail within the Environmental Statement and Cultural Heritage Technical Report which accompanies the TWAO application.

6 Access

6.1 Access arrangements

Access arrangements to and from the Port of Boston over Maud Foster Sluice will remain unchanged. Access to the sluice is currently limited to maintenance personnel through secure gates and walkways over the sluice. There will be no change to these access arrangements on the northern or south eastern side of the sluice. Flood gates will be incorporated into the new flood wall to maintain access through the wall to the south western corner access onto the Maud Foster Sluice (see Maud Foster Sluice location plan, IMAN001472-EVT-LBC-002).

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7 Conclusion

The proposed new junction of the Maud Foster Sluice and the proposed concrete flood wall has been designed to reduce the impact on the historic fabric and setting of the Sluice whilst still providing the level of flood protection required as part of the wider Project.

No intrusive fixing into the Sluice structure is proposed and care has been taken to ensure that a watertight joint would be formed with as little adhesion as possible to the stonework. This would be achieved through using compressed board as joint packing, with a 20mm watertight joint on the face of the joint.

There would be a slight adverse impact on the setting to the Maud Foster Sluice arising from the construction of the proposed flood protection wall. However the wall has been designed to taper down to the height of the Sluice parapet to create a transition between the 2m height of the flood wall and the parapet. This will allow the Sluice to retain its primary historic relationship with the water and water management system of the fens, rather than being further incorporated into the modern industrial character of the Port of Boston.

The function and operation of the Sluice will remain unaffected by the proposed LB Works.

It is considered that although there would be a limited impact on the heritage significance of the Maud Foster Sluice, resulting in less than substantial harm, from the change in setting that would result from the construction of the flood protection wall, this should be seen in the context of the already compromised historic setting through the construction of the Port of Boston and the development within the Skirbeck Conservation Area, which has removed the original more isolated setting of the Sluice.

The less than substantial harm caused by the proposed LB Works should then be balanced with the public benefits from the increased flood protection of a 0.33% (1 in 300) annual probability of flooding over the 100 year project life which will be afforded to the town of Boston from the Project. This will result in the protection of around 226 listed buildings, including the Grade I St Botolph's Church, and other historically important buildings and spaces within the Boston Town Conservation Area.

It is therefore considered that although the proposed LB Works will result in less than substantial harm to the significance of a designated heritage asset, the public benefits from the works are judged to outweigh the level of harm, as required by paragraph 134 of the NPPF and accordingly that Listed Building Consent should be granted.

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Appendix A.

A.1 Maud Foster Sluice, List Description

Name: MAUD FOSTER SLUICE

List entry no: 1389072

Location: MAUD FOSTER SLUICE, WINDSOR BANK

Grade: II

Sluice on the Maud Foster Drain. 1807 by John Rennie with later minor C20 alterations. Gritstone ashlar iron and wood. Sluice with 3 elliptical archways, 2 projecting faceted piers to each side, coped parapet walls, with band. To both sides are sloping splayed retaining walls with returns. The iron bound timber sluice gates are retained and operational by a gantry-mounted pulley system. The piers are support to later access walkways and the parapet walls are surmounted by later steel balustrading. The sluice was constructed as part of a comprehensive scheme to reclaim the East, West, and Wildmore Fens, between 1803 and 1813. (Bagley GS: Boston, Its Storey and People: Boston: 1986).

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