



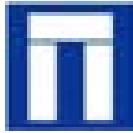
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Spillway at Butterley Reservoir Marsden, Huddersfield West Yorkshire

Historic Building Recording



Ref: 105441.04
October 2015



**Spillway at Butterley Reservoir
Marsden, Huddersfield
West Yorkshire**

Historic Building Recording

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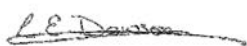
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Spillway at Butterley Reservoir Marsden, Huddersfield West Yorkshire

Historic Building Recording

Summary

Wessex Archaeology was commissioned by Yorkshire Water to undertake a Historic England Photographic Survey of the Grade II Listed 19th to 20th-century spillway at Butterley Reservoir, Marsden, Huddersfield, West Yorkshire, centred on National Grid Reference (NGR) 404812, 410672.

The site lies within the Wessenden Brook Valley, with Butterley Reservoir being the final in a chain of reservoirs along the valley which provide flood alleviation and supply water to Huddersfield and the surrounding area. The site comprises a 19th to 20th-century Grade II Listed spillway at the northeast of Butterley Reservoir.

In 2008 the spillway was subject to a statutory inspection by a member of the All Reservoirs Panel and was found to have a number of defects which result in “a real risk of failure...during floods of quite low return periods (12-100 years)”. Yorkshire Water are therefore required, under the Reservoirs Act 1975, to implement remedial works to remove any potential risk to public safety.

The remedial works will involve the removal of the stonework of the base of the channel and the construction of a reinforced concrete base, as well as alterations to parts of the walls and piers of the spillway.

In order to mitigate the impact of the remedial works, a Historic England Photographic Survey was carried out during September 2015 which shows the spillway within its current setting, and has recorded any details which will be lost following the alteration works. Archival and documentary research has also been undertaken to provide a historical context for the structure. A 3D laser scan of the spillway has previously been undertaken by Mott MacDonald Bentley and this data has been used by Wessex Archaeology to illustrate this report.

The historic building recording archive is currently held in the Wessex Archaeology Sheffield Office under the project code 105441. This archive will be deposited along with a copy of the final version of this report with West Yorkshire Archives Kirklees Office. The photographic negatives will be archived with West Yorkshire Archaeology Advisory Service.



Spillway at Butterley Reservoir Marsden, Huddersfield West Yorkshire

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Acknowledgements

The project was commissioned by Yorkshire Water and Wessex Archaeology is grateful to Lee Laherty and Stephanie Walden in this regard. Mott MacDonald Bentley are also thanked for providing 3D laser scan data.

The site survey was undertaken by Maria-Elena Calderón and Andrew Swann. Archive research, analysis and report compilation was by Lucy Dawson. Illustrations were prepared by Chris Breeden. The project was managed for Wessex Archaeology by Lucy Dawson.

Spillway at Butterley Reservoir Marsden, Huddersfield West Yorkshire

Historic Building Recording

1 INTRODUCTION

1.1 Project background

- 1.1.1 Wessex Archaeology was commissioned by Yorkshire Water (hereafter 'the Client') to undertake a Historic England Photographic Survey of the Grade II Listed 19th to 20th-century spillway at Butterley Reservoir, Marsden, Huddersfield, West Yorkshire, centred on National Grid Reference (NGR) 404812, 410672 (hereafter 'the Site', **Figure 1**).
- 1.1.2 The Spillway was subject to a statutory inspection by a member of the All Reservoirs Panel in October 2008 and assessed as having a number of defects which resulted in "a real risk of failure...during floods of quite low return periods (12-100 years)". Yorkshire Water are therefore required, under the Reservoirs Act 1975, to implement remedial works in order to remove any potential risk to public safety (Wessex Archaeology 2014).
- 1.1.3 The Spillway is listed in its own right as Grade II, and lies to the east of the outflow scour portal, which is also listed as Grade II. Applications for Planning and Listed Building consent for the necessary remedial works were made to Kirklees Council in June 2013 (refs. 2013/62/91775W and 2013/65/91776/W respectively). Several documents were prepared by Mott MacDonald Bentley in preparation of the application which included a Heritage Statement (2013a), a Spillway Option Appraisal (2013b) and a Spillway Option Appraisal Addendum Revision A (2013c). The Planning and Listed Building Consent applications were refused at Committee.
- 1.1.4 An appeal (ref. APP/Z4718/A/2222372) was submitted in August 2014 and was determined at Inquiry in January 2015. In preparation of this appeal, Wessex Archaeology produced a Heritage Assessment (Wessex Archaeology 2014), whereby a robust baseline assessment of the Listed Spillway, against which the potential heritage impact of the proposal for its alteration were judged.
- 1.1.5 The appeal decision granted both conditional planning and listed building consent for the reconstruction of a section of the masonry spillway and associated alterations (refs: 2013/62/91775/W and 2013/65/91776/W). Condition 13 of planning application 2013/65/91776/W related to the archaeology and stated:
- 1.1.6 *"No works, including any works of demolition/dismantling, shall take place until a permanent historical record of the exiting spillway has been undertaken in accordance with a written scheme of investigation (including a timetable for the submission of a final report) that shall previously have been submitted to and approved in writing by the local planning authority. The record shall include, but is not confined to, an archival study, a photographic survey of the spillway in its setting, a digital 3D model, and a final report. The final record shall be submitted to the local planning authority in accordance with the timetable set out in the written scheme of investigation. Once agreed in writing by the local*

planning authority, the report and archive shall be deposited in a publically accessible archive as shall be nominated by the local planning authority."

- 1.1.7 Wessex Archaeology (2015) produced a Written Scheme of Investigation (WSI) setting out the manner in which the programme of archaeological works would be carried out. This WSI was prepared in accordance with best practice, and submitted to and approved by West Yorkshire Archaeology Advisory Service (WYAAS), prior to the commencement of the recording programme.
- 1.1.8 A Historic England Photographic Survey (English Heritage 2006) was carried out at the Site, the results of which comprise this report.

2 THE SITE

2.1 Site location and description

- 2.1.1 The Site is located off Wessenden Road, less than 1km to the south of the Pennine village of Marsden, West Yorkshire, and approximately 11km southwest of the centre of Huddersfield (**Figure 1**). The Site comprises a 19th to 20th-century Grade II Listed spillway at the northeast of Butterley Reservoir.
- 2.1.2 The Site lies within the Wessenden Brook Valley, with the Reservoir being the final in a chain of reservoirs along the valley which provide flood alleviation and supply water to Huddersfield and the surrounding area. The Site is located on undulating land between approximately 240m to 230m above Ordnance Datum (aOD).
- 2.1.3 The Site is underlain by bedrock geology of the Upper Kinderscout Grit – sandstone, of the Carboniferous Period (British Geological Survey).

2.2 Proposed alterations

- 2.2.1 The main construction activities which will have a direct impact on the Listed Spillway are the:
- *removal of the stonework of the base of the channel and construction of reinforced concrete stepped channel base incorporating existing masonry kerbs/keystones;*
 - *partial dismantling of the east wall of upper part of the Spillway, raising of wall and existing square pier and recapping with retained copings;*
 - *dismantling and removal of two sets of stepped cascades and intervening shallow channel section;*
 - *partial dismantling and raising of rectangular piers at the top of the upper cascade using reclaimed stone from removed piers;*
 - *removal of rectangular capped piers at base of upper cascade and top of lower cascade;*
 - *dismantling of channel walls through former cascades and to lower end of channel;*
 - *cutting back of existing offset piers flush with side walls of channel;*
 - *construction of new concrete channel base for lower section of channel formed in shallow steps to match profile of upper channel;*

- *construction of new reinforced concrete walls to lower channel, faced internally with rusticated masonry to match that of upper channel as existing; and*
- *import of fill material to raise the level of the embankment to match height of raised walls.*

3 AIMS AND OBJECTIVES

3.1 Historic building recording

- 3.1.1 The principal aim of the archaeological recording is to provide a long term record of the identified structures of the Site which will be subject to demolition and/or alteration, so that they are ‘preserved by record’:
- 3.1.2 The objective of the works is to place the long-term record of the identified structures on the Site in the public domain by depositing it with West Yorkshire Archives.

4 METHODOLOGY

4.1 Scope of the historic building recording

- 4.1.1 The scope of the work takes the form of three elements: a Historic England Photographic Survey; an archival and documentary study; and use of 3D laser scan data in order to illustrate this report.

4.2 Documentary research

- 4.2.1 An existing Heritage Assessment (Wessex Archaeology 2014) has been utilised to provide a general documentary background history for the Site. In addition, a programme of documentary research has been carried out to obtain a historic map regression of the Site.
- 4.2.2 Further to this, a programme of documentary research has been carried out utilising and building on extensive research undertaken by Yorkshire Water, obtaining copies of any historic images and plans of the spillway, along with information on its origins and historic development. This will help inform a narrative which will set the structures within their historical context.
- 4.2.3 Relevant maps are reproduced to illustrate this report (**Figure 2**).

4.3 Photography

- 4.3.1 The photography of the spillway on the Site has been based on the requirements for a Historic England Photographic Survey (English Heritage 2006) and those for archaeological photographic recording specified by West Yorkshire Archaeology Advisory Service (WYAAS 2015: **Appendix III**) and comprises:
- *general view or views of the structures in their wider setting;*
 - *the structures’ external appearance. Typically a series of oblique views that show all external elevations of the buildings/structures, and give an overall impression of their size and shape. Where an individual elevation embodies complex historical*

information, views at right angles to the plane of the elevation have also been produced;

- any external or internal detail, structural or decorative, which are relevant to the structures' design, development or use and which do not show adequately on general photographs;*
- any machinery or other plant, or evidence for its former existence;*
- any dates or other inscriptions, any signage, makers' plates or graffiti which contribute to an understanding of the structures or their fixtures or machinery, if not adequately captured by transcription;*
- any contents or ephemera which have a significant bearing on the structures' history, where no sufficiently treated in general photographs; and*
- copies of maps, drawings, views and photographs, present at the Site and illustrating its development.*

4.3.2 The photographic record comprises black and white medium format film, 35mm film and high-quality digital format using a Canon EOS 5D MkII digital camera (with 21 megapixel capability). A photographic scale of appropriate size has been included in all detailed views and a 2m ranging-rod has been discretely positioned in all general shots. All digital photography follows the Historic England Guidance on Digital Image Capture and File Storage (2015) and the WYAAS specification. Digital images will be supplied in three formats: RAW, DNG and JPEG. Metadata will be embedded into the DNG files. Digital images will be supplied to WYAAS on gold cds.

4.3.3 The location and direction of each photographic viewpoint was recorded onto the corresponding Site plan. These have been complemented by photographic registers which, as a minimum, give the direction of the view and a brief description of the subject (**Appendix I**). Each viewpoint of the photographic record has been used to illustrate this report and can be found in **Plates 1-51**, whilst plate viewpoints can be found on **Figure 9**.

4.3.4 The full photographic record, together with copies of the marked up plans and photographic registers will be included in the Site archive.

4.4 Survey

4.4.1 A 3D digital laser scan of the spillway has previously been undertaken by Mott MacDonald Bentley. The point cloud data has been provided to Wessex Archaeology and has been used to produce illustrations to supplement this report. This 3D data forms part of the project archive and all metadata will be deposited with the project archive in the format stipulated by Historic England (English Heritage 2009 and 2011) and the Archaeological Data Service's Big Data Project (.LAS format).

4.5 On-site interpretation board

4.5.1 Wessex Archaeology will also work with Yorkshire Water to produce an on-site interpretation board which is to be installed at Butterley Reservoir, in relation to condition 14:

"No works, including any works of demolition/dismantling, shall take place until details of an on-site interpretation board have been submitted to and agreed in writing by the local planning authority. The details to be submitted shall include the proposed location for the board, the information to be provided on the board and a timetable for its erection. Works

shall be carried out in accordance with the approved details and timetable. Once provided, it shall be retained in perpetuity thereafter."

- 4.5.2 Wessex Archaeology will provide historical information and illustrative figures of the reservoir and spillway to be utilised for the interpretation board and does not form part of this report.

5 HISTORICAL BACKGROUND

5.1 Introduction

- 5.1.1 Large amounts of archival information has previously been gathered by Yorkshire Water from within their own archives, as well as others, including West Yorkshire Archives. This information, supplemented by additional research undertaken by Wessex Archaeology, is summarised below.

5.2 Marsden

- 5.2.1 Located to the north of Butterley Reservoir is the large village of Marsden. Marsden is set within the Metropolitan Borough of Kirklees, West Yorkshire, and is positioned at the confluence of the River Colne and the Wessenden Brook. The village is surrounded on three sides by high moors: Marsden Moor and Meltham Moor. The Marsden Moor Estate, is in the care of the National Trust; its boundary extending to the northern dam embankment of Butterley Reservoir.
- 5.2.2 Following the end of the last ice age, the area of Marsden was sparsely populated, becoming a seasonal hunting ground for early humans. There is little evidence in the area of Palaeolithic (650,000-9500BC) activity, however, the region was at the edge of, or under, glacial ice for much of the Palaeolithic period. Nonetheless, West Yorkshire was potentially suitable for occupation in earlier warm interglacials and occupation by previous species of human cannot be entirely discounted within the area (Spikins 2010).
- 5.2.3 By 7000BC (the Mesolithic period being 8500-4000BC), hunting settlements were located on high ground. Mesolithic sites have been found at Pule Hill, Warcock Hill, Standedge and March Hill, all within close proximity to Marsden (Marsden History Group).
- 5.2.4 West Yorkshire, in fact, boasts the highest integrity of recorded artefact distributions dating to the Mesolithic period in the world, one of the key sites at the Mesolithic-Neolithic transition, and the earliest known upland early Mesolithic site. The clusters of sites in the Central Pennine uplands also show the highest density of known upland Mesolithic sites in the world (Spikins 2002, 2010).
- 5.2.5 Prior to the Roman invasion of Britain, during the Iron Age (700BC – AD 43) the area of Marsden was controlled by the Celtic tribe the Brigantes, which governed much of what would later become Northern England, though the area was very sparsely populated. The Brigantes were a powerful tribe, ruled by Queen Cartimandua who became a Roman ally following their invasion in AD 43.
- 5.2.6 In 1881, a stone altar was found in Longwood, which read: *'To the Holy God of the Brigantes and to the Divinity of the Emperor, Titus Aurelius Quintus, by the decree of the Decunions has placed (this altar) and fulfilled his vow'.*

- 5.2.7 Following the Romano-British (AD 43 – 410) and the Anglo-Saxon (AD 410 – 1066) periods, Marsden is first mentioned in a document dated 1177 as '*Marchesdene*' meaning 'boundary valley'.
- 5.2.8 In 1067, William the Conqueror gave the land of the Colne Valley to Ilbert de Lacie (de Lacy), Lord of Pontefract. De Lacie was a Norman, whose principal castle was at Lassi in Normandy. William gave him 204 manors in Yorkshire. The history of the succession of the Manor of Marsden is complicated and involved much subinfeudation. A detailed history is given by D. F. E. Sykes in '*The History of the Colne Valley*' (Marsden History Group).
- 5.2.9 In the Domesday Book, the area of Marsden is described as 'Waste' (Williams & Martin 2003). The land was owned by Lewsin, a tenant of de Lacie. At the time of Edward III, the area was forested and used by the Lord for hunting. A condition on which tenants held land there being that they escorted their lord back to Pontefract after hunting. In 1232, de Lacie was made the Earl of Lincoln.
- 5.2.10 The Subsidy Roll of Richard II (1377-1399) lists no properties, suggestive of an impoverished Marsden, with only 20-30 inhabitants in the next village of Slaithwaite ('*Slaxthwaite*'). In 1424, rents were paid for farmsteads at Binn, Clough Lee, Wessenden, Wessenden Head, and Lingards (Marsden History Group).
- 5.2.11 In 1433, Henry VI leased Marsden to John of Nostell Priory, who cleared some of it for cultivation. In 1499, the King made Marsden a copyhold manor in the Honour of Pontefract.
- 5.2.12 In the 14th century Marsden was described as a forest 2½ miles long and 2 miles broad. As well as being a hunting ground for the Lord of Pontefract, the land provided pasturage for 6 bulls and 26 cows and pannage (acorns) for swine. A chapel was established in the 15th century when Marsden was in the parishes of Almondbury and Huddersfield.
- 5.2.13 In the Subsidy Roll of Henry VIII (1509-1547), two people are listed in Marsden: John Mellor and John Shaw. At this time, Holmfirth was the principal town within the area. By the time of the Hearth Tax of 1666, there were over 80 dwellings in Marsden (Marsden History Group).
- 5.2.14 Queen Elizabeth I (1558-1603) sold the manor of Marsden to Edward Jones, for £29. Later, the manor passed to the Greenwoods, and by the 18th century, it was owned by the Radcliffe family.
- 5.2.15 During this time the land would have been gradually enclosed, and until the onset of the Industrial Revolution, the area of Marsden remained that of a small hamlet/village with scattered farmsteads across the landscape whereby the population were dependent on two livelihoods to make a living: textiles and agriculture.
- 5.2.16 In 1710 Marsden's first fulling mill was established at Hey Green (<http://www.marsden.org.uk>), built by Robert France. Fulling is also known as tucking or walking, and is a step in woollen cloth making which involves the cleansing of, particularly, wool to eliminate oils, dirt, and other impurities, and to make it thicker. The spinning and weaving was done by families in their farmhouses, and only the finishing was done in the mill. By the early 19th century, mills in Marsden included cotton mills, silk mills and woollen mills. The population expanded to work in the many new textile mills, mainly living

in terraced housing in the village. The Colne valley became the heart of the country's woollen textile industry.

- 5.2.17 Until the mid-18th century transport was limited to packhorses, but the growth of industry was later encouraged by the installation of turnpike roads (built between 1759 and 1839), the canal (1811) and the railway (1849). The 19th century was a period of massive change, and with it brought new machinery which threatened the livelihoods of the workers. Marsden saw Luddite uprisings whereby machines were vandalised and destroyed and in 1812, William Horsfall, the owner of Ottiwells Mill in Marsden, was shot dead.
- 5.2.18 By 1830 there were seven water-powered woollen mills in Marsden, while later periods saw the growth of steam power and the expansion of the mills at Bank Bottom and Brougham Road which provided much of the employment in the village (<http://www.marsden.org.uk>). Bank Bottom Mill, later known as Marsden Mill, was home to John Edward Crowther Ltd, formerly one of the largest mills in Yorkshire. The Crowthers moved to Marsden in 1876, beginning a long and profitable association with cloth manufacturing in the town. Production of woollen cloth at Bank Bottom Mill ceased only in 2003.
- 5.2.19 Marsden is described by John Marius Wilson in 1870-1872 as:

“...a village and a township-chapelry in Almondbury and Huddersfield parishes, W. R. Yorkshire. The village stands on the river Colne, adjacent to the Manchester and Huddersfield canal and to the Manchester and Leeds railway, under the backbone of England, 4¾ miles E of the boundary with Lancashire, and 7¼ SW by S of Huddersfield; is a large place; and has a station on the railway, a post office under Huddersfield, and fairs on 25 April, 10 July, and 25 Sept. The chapelry comprises 5,016 acres in A. parish, and 2,050 in H. parish. Real property, £6,226; of which £319 are in quarries, and £150 in gas-works. Pop. of the A. portion in 1851, 2,153; in 1861, 2,027. Houses, 428. Pop. of the H. portion in 1851, 512; in 1861, 662. Houses, 138. The increase of pop. in this portion arose from the enlargement of a cotton mill, and from employment on the railway and in the woollen mills. The property is much subdivided. The manor belongs to Sir Joseph Radcliffe, Bart. Great part of the land is uncultivated moor and mountain. A tunnel of the railway, no less than 3 miles 61 yards long, begins a little W of the village; and a tunnel of the canal adjoins the railway one. A cotton factory, a silk factory, several woollen mills, an extensive iron foundry, and a large corn mill are in operation. The township adopted the local government act in 1860, and is now governed by a local board. A mechanics' hall, connected with a mechanics' institution dating from 1841, was erected in 1861, at a cost of £2,500; is in the Italian style; and has an apartment with capacity for 1,000 persons. Mr. W. Horsfall of Marsden, in consequence of having introduced improved machinery, was shot in 1812 by the Luddites. The living is a vicarage in the diocese of Ripon. Value, £174. Patron, the Vicar of Almondbury. The old church is a plain, ancient, stone building; comprises aisles and chancel, with a belfry; and was reported in 1859 as bad. The new church was built in 1867, at a cost of £7,235; and is in the geometric middle pointed style. There are chapels for Independents and Wesleyans, a national school, and a town school. The Independent chapel was rebuilt about 1860, and is in the pointed style. The national school was built in 1856, at a cost of £2,000.”*

- 5.2.20 During the late 19th to early 20th century, Marsden saw an increase in a different type of workforce, with the construction of the Butterley and Blakeley Reservoirs, details of which

can be found below in sections 5.3 and 5.4. The nearby town of Huddersfield was also expanding at this time, and its continued development was dependant on a secure source of fresh water to serve both the industries and growing population.

- 5.2.21 The population and industry of Marsden continued to grow, with a population peak in 1921 of 5,960 (Marsden History Group). In the 1960s, however, the textile industry went into decline, and the mills gradually closed, whilst the population of the village also declined. In recent years, new private housing estates have been constructed, predominately serving those commuting to the large cities of Manchester and Leeds.

5.3 Thomas and Charles Hawksley

- 5.3.1 Butterley Reservoir is one of four reservoirs constructed along the Wessenden Valley by the Huddersfield Corporation. The three other reservoirs, positioned higher within the valley, are Blakeley, Wessenden (also known as Wessenden Old Reservoir) and Wessenden Head. Wessenden Old Reservoir was completed in the 1830s, Wessenden Head in 1881, Blakeley in 1903 and Butterley in 1906.
- 5.3.2 The firm appointed by Huddersfield Corporation for the design of Butterley and Blakeley Reservoirs and their associated structures was T & C Hawksley of Westminster. The firm had been established in 1866 when the already eminent engineer, Thomas Hawksley (1807-1893) took into partnership his son, Charles (1839-1917), who had been working in his father's practice since graduation (Wessex Archaeology 2014).
- 5.3.3 Thomas Hawksley was a great English civil engineer of the 19th century, particularly in the field of water engineering, and highly respected. After receiving a basic education at the Nottingham Grammar School, Thomas began his professional career as an architect with Edward Staveley, architect and surveyor, who combined a role as Borough Surveyor to Nottingham with his private practice, and introduced Hawksley to what Woodcock calls 'Municipal Engineering' (Woodcock 2008). Subsequently the practice became 'Staveley, Hawksley and Jalland', and after Staveley's death in 1837, the remaining two partners continued the business under 'Hawksley and Jalland, Engineers, Nottingham' until 1850 after which it was carried on by Hawksley alone until he moved to London in 1852.
- 5.3.4 In 1830, whilst still with Staveley, Hawksley at the age of 23, was appointed as Engineer to the newly formed Trent Waterworks, designing and overseeing the construction of a waterworks near Trent Bridge, Nottingham. This scheme delivered Britain's first high pressure 'constant supply', preventing contamination entering the supply of clean water mains (Grace's Guide).
- 5.3.5 This achievement led him to be appointed to many major water supply projects across the country, including large schemes in Liverpool, Sheffield, Leicester, Leeds, Derby, Darlington, Oxford, Cambridge, Sunderland, Wakefield and Northampton – over 150 works in all. He also undertook large drainage schemes in Birmingham, Worcester and Windsor, as well as gas works for a large number of towns (Grace's Guide).
- 5.3.6 In 1852 Thomas Hawksley moved to London and initially began a partnership with Charles May before establishing his own business at No. 30 Great George Street, Westminster in 1853, where he continued his profession until his death. The practice became very large and by the late 1850s he had gained such a reputation that he was appointed by the Metropolitan Board of Works (along with the famous Joseph Bazalgette) to comment on the Main Drainage of the Metropolis. He gave evidence to Royal Commissions, and his opinion was sought in relation to many inquiries, arbitrations and valuations (Grace's Guide). He was one of the experts called upon in 1864 to report on

the collapse of the Dale Dyke Dam in Sheffield, which had killed 240 people. He remained an engineer to the Sheffield Water Company, later the Corporation of Sheffield, for the rest of his life (Woodcock 2008).

- 5.3.7 In 1866, Thomas took into partnership his son Charles, although Thomas continued to undertake a huge amount of work himself and received many professional honours. He joined the Institution of Civil Engineers in 1840; was elected their President in 1872; became President of the British Association of Gas managers in 1864-67; President of the Institution of Civil Engineers in 1872-73; and in 1876 he became President of the Institution of Mechanical Engineers. In 1878 he was elected a Fellow of the Royal Society. Outside of Britain he was a Commander of the Order of Francis Joseph of Austria, Commander of the Rose of Brazil, a Knight of the Danebrog, and of the Swedish order of the Polar Star.
- 5.3.8 A committee was formed in 1887 to raise a subscription in order to commission Thomas Hawksley's portrait from Sir Hubert Herkomer, to mark his 80th birthday. The committee's spokesperson was the Attorney General, Sir Richard Webster, 1st Viscount Alverstone, and the fund was so heavily oversubscribed that a second, duplicate, portrait was painted by Herkomer (Woodcock 2008).
- 5.3.9 Thomas continued to work until just a week before his death. Thomas Hawksley died on the 23rd September 1893, at age 86. His great achievements had been the first pressurised clean water supply system which had saved countless lives during the cholera epidemic of 1848-49, and the pioneering of the high-pressure cement grouting process to eliminate leaks from earth embankments – a process used at Butterley.
- 5.3.10 Charles Hawksley was born in 1839 and studied at the University College London. On graduating in 1854 he entered into an apprenticeship with his father and continued to work extensively in the water industry following being taken into partnership with his father. Following Thomas' death, in 1900 Charles took his son Kenneth Phipson Hawksley into partnership.
- 5.3.11 Charles' professional work was principally in connection with waterworks and gasworks, and during his career he was associated with the construction and development of many important public undertakings (Grace's Guide).
- 5.3.12 He was elected a Member of the Institution of Civil Engineers on the 21st May, 1867, and became President in 1901. He was also a Manager of the Royal Institution of Great Britain; President of the Polytechnic School of Engineering from 1900; Member of the Institution of Gas Engineers, and other societies.
- 5.3.13 Among the many water undertakings for which he acted in the capacity of consulting engineer, include Bristol, Barnsley, Cambridge, Coventry, Consett, Derby, Darlington, Devonport, Folkestone, Great Yarmouth, Lowestoft, Newcastle and Gateshead, Norwich, Rochdale, Sunderland, Southend, Weardale, Weymouth, Yeovil, and York.
- 5.3.14 The principal gasworks he was connected with were those put down at Derby, Darlington, Gosport, Oxford, and Sunderland. He had also a considerable practice in connection with sewerage works. In respect of all of these various undertakings he was responsible for the designing and carrying out of the work.
- 5.3.15 He took a prominent part in the inquiry of the Royal Commission on London Water Supply in 1898, and was a witness on behalf of the companies during the proceedings which led

to the transfer of their undertakings to the Metropolitan Water Board. He also assisted in the passing of the Derwent Valley Board's Bill through Parliament, and was largely interested in the formation and engineering of the South Yorkshire Navigation Co.

- 5.3.16 For at least fifty years he was a prominent figure in the Committee Rooms of Parliament, where he frequently gave evidence as a technical expert, and his services were often sought as arbitrator in civil engineering matters.
- 5.3.17 Charles died suddenly at his residence in Bayswater on the 27th November 1917, at the age of 78.

5.4 Butterley Reservoir

- 5.4.1 Butterley Reservoir is the last of four reservoirs within the Wessenden Valley. Higher up the valley, the Wessenden Old Reservoir was developed by the Wessenden Commissioners who were empowered to construct and maintain a reservoir under the Wessenden Act of 1836. This reservoir was constructed to supply water to the mills located lower down the valley.
- 5.4.2 By the mid- to late 19th century, Huddersfield had grown substantially and with it a demand for a stable water supply. In the Huddersfield Waterworks Act of 1871, the Corporation in consideration of appropriating the Wessenden Springs were authorised to pay off the mortgage debt of the Wessenden Commissioner, amounting to £10,000 and enlarge the reservoir. This was abandoned, however, in favour of an additional reservoir at Wessenden Head. The powers for construction were gained in the subsequent Huddersfield Waterworks and Improvement Act of 1876. The reservoir was completed at Wessenden Head in 1881. Blakeley reservoir was authorised by the Waterworks Act of 1871, but work was delayed several times. Construction finally commenced in 1896, but was not completed until 1903.
- 5.4.3 The Huddersfield Waterworks Act of 1890 empowered the Corporation to purchase the Wessenden Reservoir from the Wessenden Commissioners for the sum of £50,000, paid in 1891.
- 5.4.4 Butterley Reservoir was authorised by the Huddersfield Corporation Waterworks Act of 1890, and was constructed on the site of the former Upper Bank Bottom Mills within the Wessenden Brook Valley.
- 5.4.5 The first sod at Butterley was cut on the 27th August 1892 by Alderman James Crosland, Deputy Chairman of the Waterworks Committee (Woodhead 1939). An elaborately engraved silver spade was used for the ceremony, after which followed a dinner at the Huddersfield Town Hall.
- 5.4.6 The reservoir was constructed by forming an embankment across the Wessenden Brook, approximately 34m high and 229m in length. It was built of a puddle clay core with a cut-off trench. Boulder clay was brought in from Micklehurst near Greenfield, c. 5 miles away, for use as a puddle in the construction of the embankments. In 1894, the Waterworks Tramroad at Marsden Act enabled a tramway to be constructed which connected the reservoir site with the main rail line near the Tunnel End at Standedge to aid in the delivery of materials. Following the reservoirs completion, much boulder clay was left unused and still remains in the area, and the tramway was removed.
- 5.4.7 A historic photograph depicts the puddle trench during its construction (**Figure 8.**). The workforce was employed directly by the Corporation and formed a temporary community

within the area of the reservoir. Upper Bank Bottom Mill and Lower Bank Bottom Mill, along with associated structures were acquired by the Corporation and converted to dwellings during the construction works. Upper Bank Mill was eventually demolished, being positioned beneath the now reservoir embankment.

- 5.4.8 During the construction works there were two deaths from accidents, and a mason's strike in 1901 caused some delays in construction. In 1893 there were seven reported cases of smallpox at the Bank Bottom dwellings and twelve were isolated at Hole Top, a cottage on the western side of the Wessenden Valley owned by the Corporation, subsequently submerged by the reservoir water.
- 5.4.9 The reservoir was complete in July 1901 and filling commenced, although a drought during August delayed the filling. During the filling, however, it became apparent that at about half full, the reservoir was leaking due to the local rock strata. An extension of power was applied for and in the Huddersfield Corporation Act of July 1902, remediation works were undertaken.
- 5.4.10 In October 1902, an independent opinion was sought from G.H. Hill and Professor Boyd Dawkins with regards to the problems of leakage. The reports were highly critical of the original design of the embankments, and as a result T & C Hawksley and George Crowther (engineering superintendent) were dismissed by the Corporation.
- 5.4.11 In October 1903, G.H. Hill and Sons were commissioned to design remedial works which were undertaken by Mr John Scott of Bank Top Chambers, Darlington. The remedial works included the construction of wing trenches and cement grouting.
- 5.4.12 The works were completed in June 1906 and the reservoir filled to overflowing in December 1906.
- 5.4.13 A settling tank was built above Butterley, completed in 1904, to remove silt, sand and peat from the inflowing water.
- 5.4.14 A new bridge spanning the top of the spillway was constructed in 1907 to carry heavy traffic across the channel, although it wasn't until the overflow weir at the top of the spillway was modified in the late 1980s that the original curved cast iron framed structure with oak planked footbridge across the weir was removed. Remedial works to the spillway were also carried out to repair damage caused by floods in 2002.
- 5.4.15 Yorkshire Water succeeded the ownership of Butterley Reservoir from Huddersfield Corporation when the firm was established in 1974. The reservoir continues to be operational.

6 SPILLWAY DESCRIPTION

6.1 Introduction

- 6.1.1 The photographic survey of the Spillway was undertaken on the 3rd September 2015. The Site comprises a stone built stepped spillway (or byewash), located at the northeast of Butterley Reservoir, continuing down the valley in a north-westerly direction where it is joined by the scour outlet channel and continues until it joins the Wessenden Brook, just upstream of the Grade II Listed Bank Bottom Bridge. (**Figures 1, 9**). The Spillway is the

only overflow spillway listed in its own right. At the time of the survey the spillway was dry, with vegetation beginning to cover the lower end (**Plates 1-51**).

6.2 The Spillway

- 6.2.1 The Spillway is approximately 290m in length from weir to Bank Bottom Bridge (**Plates 27-30, Figures 9, 10**). At the southern, upper end of the Spillway, the reservoir joins a stone overflow weir and tumble bay which leads down onto the Spillway (**Plates 31, 32, 36, 39-51**). Adjacent to this, to the west, is the valve house (**Plates 31-37**), accessed via the crest bridge which spans the top of the Spillway (**Plates 32, 33, 36, 46, 47** and **Figures 9, 10**). The Spillway was constructed according to the designs by T & C Hawksley dating to 1892 (**Figures 3-6**) with some remedial works undertaken in 1904 designed by G.H. Hill and Sons (**Figure 7**).
- 6.2.2 The Spillway is constructed of local sandstone with ashlar dressings, with stepped base and encompasses two curved stepped cascades at its lower, northern, end. The side walls are constructed of rock-faced sandstone to the southern (upper) end and ashlar stone bounding the stepped cascades. All have chamfered interlocking copings and are divided by five projecting square ashlar stone piers which delineate the key changes in gradient that match the terracing of the dam embankment to the west (**Plates 1-6, 12-30**). Each pier is set on a small plinth and is finished with moulded pyramidal copings (**Plates 17-22, 24, 25, 48-50**). Where the scour outlet channel meets the Spillway, the Spillway walls outcurve terminating with a pier (**Plates 12, 13**). The walls vary in height from 3.0m at the upper, southern, end to 1.2m at the northern end.
- 6.2.3 To the west of the Spillway, adjacent with the lower cascade steps, is the Grade II Listed scour portal. This is contemporary with the Spillway and was constructed in the same architectural style (**Plates 6-11**).

7 DISCUSSION

7.1 Conclusions

- 7.1.1 The programme of recording has produced a photographic record of the Spillway and associated structures which form the long term record of the Site which will be subject to demolition and/or alteration, preserving it by record. This long-term record will be placed in the public domain by depositing it with West Yorkshire Archives, along with a copy of this report.
- 7.1.2 The history of the development of Butterley Reservoir and its Spillway is well documented and understood. While the Spillway was designed by T & C Hawksley, it is debatable how much first hand involvement Thomas Hawksley had with its design and construction – the original design drawings of which are dated to 1892, a year before his death – and must have employed a large team of draftsmen and engineers.
- 7.1.3 Although the Spillway at Butterley is the only one to be Listed in its own right, its design has elements in common with numerous examples elsewhere (Wessex Archaeology 2014), and the sweeping curve appears to have been a particular Hawksley style.
- 7.1.4 However, the Spillway does retain the vast majority of its original fabric and survives largely in its original form and architectural and engineering design. It is particularly architecturally ornate and elegant in the form of its curve and stepped cascade, clearly

designed with an aesthetic view, whilst also being robust in character set to perform a specific hydrological engineering task. Although the Spillway was recorded without water flowing, there is no doubt that its design would have also focussed on the particular acoustics and movements of the water flow down the Spillway and each cascade step.

7.2 Archive

- 7.2.1 The recording of the Spillway on the Site has produced a drawn, written and photographic archive. This is supplemented by 3D laser scan data of the Spillway. This is currently held in Wessex Archaeology's Sheffield Office and will be delivered to the West Yorkshire Archives Kirklees Office for deposition in due course. The photographic negatives will be deposited with WYAAS. If necessary, the paper records of the site archive will be security microfilmed prior to deposition. The 3D laser scan data will be deposited with the project archive in a .LAS format.
- 7.2.2 An OASIS form will be completed at <http://ads.ahds.ac.uk/projects/oasis> for inclusion in the ADS database. This will include an electronic copy of this report in PDF format which will be accessible six months after deposition.

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8.2 Consulted online sources

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- Grace's Guide: <http://www.gracesguide.co.uk>
- <http://www.marsden.org.uk>

8.3 Consulted cartographic sources

- 1854 OS
- 1895 OS
- 1906 OS
- 1930 OS



9 APPENDIX I: PHOTOGRAPHIC REGISTERS

| Film 01 | | | | | |
|---------|---|-----------|----------|----------------------------|----------|
| Format | Medium Format | Type | B&W | Photographer | A. Swann |
| Frame | Description | View from | Date | Report Plate (D=duplicate) | |
| 1 | General view from Bank Bottom Bridge towards the Spillway | NW | 03.09.15 | D1 | |
| 2 | General view from Bank Bottom Bridge towards the Spillway | NW | 03.09.15 | D1 | |
| 3 | General view of the Spillway and dam embankment | N | 03.09.15 | D2 | |
| 4 | General view of the Spillway and dam embankment | N | 03.09.15 | D2 | |
| 5 | General view of the scour portal, outlet channel and dam embankment | N | 03.09.15 | D3 | |
| 6 | General view of the scour portal, outlet channel and dam embankment | N | 03.09.15 | D3 | |
| 7 | General view looking up the stairway along the eastern embankment leading to Binn Road and Wessenden Road | NW | 03.09.15 | D4 | |
| 8 | General view looking up the stairway along the eastern embankment leading to Binn Road and Wessenden Road | NW | 03.09.15 | D4 | |
| 9 | General view of Site showing spillway, scour portal, outlet channel, dam embankment, crest bridge and valve house | N | 03.09.15 | D3 | |
| 10 | General view of Site showing spillway, scour portal, outlet channel, dam embankment, crest bridge and valve house | N | 03.09.15 | D3 | |

| Film 02 | | | | | |
|---------|---|-----------|----------|----------------------------|----------|
| Format | Medium Format | Type | B&W | Photographer | A. Swann |
| Frame | Description | View from | Date | Report Plate (D=duplicate) | |
| 1 | View of terminal of western wall of spillway and scour portal and embankment beyond | NE | 03.09.15 | D6 | |
| 2 | View of terminal of western wall of spillway and scour portal and embankment beyond | NE | 03.09.15 | D6 | |
| 3 | View of the scour portal | N | 03.09.15 | 7 | |
| 4 | View of the scour portal | N | 03.09.15 | D7 | |
| 5 | View of the scour portal | NW | 03.09.15 | D9 | |
| 6 | View of the scour portal | NW | 03.09.15 | 9 | |
| 7 | View of the outlet channel and Bottom Bank Bridge | SE | 03.09.15 | D5 | |
| 8 | View of the outlet channel and Bottom Bank Bridge | SE | 03.09.15 | D5 | |
| 9 | View looking up the Spillway | NW | 03.09.15 | D14 | |
| 10 | View looking up the Spillway | NW | 03.09.15 | D14 | |



Film 03

| Format | Medium Format | Type | B&W | Photographer | A. Swann | | |
|--------|---|------|-----|--------------|-----------|----------|-------------------------------|
| Frame | Description | | | | View from | Date | Report Plate (D=duplicate) |
| 1 | Detail of cascade steps | | | | NW | 03.09.15 | D15 |
| 2 | Detail of cascade steps | | | | NW | 03.09.15 | 15 |
| 3 | General view of the reservoir | | | | NE | 03.09.15 | D31 |
| 4 | General view of the reservoir | | | | NE | 03.09.15 | D31 |
| 5 | General view of the overflow weir, tumble bat, valve house and crest bridge | | | | E | 03.09.15 | D32 |
| 6 | General view of the overflow weir, tumble bat, valve house and crest bridge | | | | E | 03.09.15 | D32 |
| 7 | General view of the spillway with Marsden beyond | | | | S | 03.09.15 | D28 |
| 8 | General view of the spillway with Marsden beyond | | | | S | 03.09.15 | D28 |
| 9 | General view of the reservoir and valve house | | | | NW | 03.09.15 | D35 |
| 10 | General view of the reservoir and valve house | | | | NW | 03.09.15 | D35 |

Film 04

| Format | Medium Format | Type | B&W | Photographer | A. Swann | | |
|--------|--|------|-----|--------------|----------|-------------------------------|--|
| Frame | Description | | | View from | Date | Report Plate (D=duplicate) | |
| 1 | View of spillway and beyond from crest bridge | | | SE | 03.09.15 | D51 | |
| 2 | View of spillway and beyond from crest bridge | | | SE | 03.09.15 | 51 | |
| 3 | View of the overflow weir, crest bridge and valve house from reservoir | | | S | 03.09.15 | D36 | |
| 4 | View of the overflow weir, crest bridge and valve house from reservoir | | | S | 03.09.15 | D36 | |
| 5 | View of tumble bay and overflow weir | | | N | 03.09.15 | D44 | |
| 6 | View of tumble bay and overflow weir | | | N | 03.09.15 | D44 | |
| 7 | View down spillway | | | S | 03.09.15 | 29 | |
| 8 | View down spillway | | | S | 03.09.15 | D29 | |
| 9 | View from spillway across valley | | | SE | 03.09.15 | D30 | |
| 10 | View from spillway across valley | | | SE | 03.09.15 | D30 | |

Film 05

| Format | Medium Format | Type | B&W | Photographer | A. Swann | | |
|--------|---|------|-----|--------------|-----------|----------|-------------------------------|
| Frame | Description | | | | View from | Date | Report Plate (D=duplicate) |
| 1 | View of the west retaining wall of the tumble bay with valve house beyond | | | | E | 03.09.15 | D41 |
| 2 | View of the west retaining wall of the tumble bay with valve house beyond | | | | E | 03.09.15 | 41 |
| 3 | View of the east retaining wall of the tumble bay | | | | W | 03.09.15 | 43 |
| 4 | View of the east retaining wall of the tumble bay | | | | W | 03.09.15 | D43 |
| 5 | View of the tumble bay and crest bridge, spillway beyond | | | | S | 03.09.15 | 47 |
| 6 | View of the tumble bay and crest bridge, spillway beyond | | | | S | 03.09.15 | D47 |
| 7 | View of reservoir from overflow weir | | | | NE | 03.09.15 | D39 |
| 8 | View of reservoir from overflow weir | | | | NE | 03.09.15 | 39 |
| 9 | View of the reservoir and valley beyond | | | | NW | 03.09.15 | 38 |
| 10 | View of the reservoir and valley beyond | | | | NW | 03.09.15 | D38 |



Film 06 - VOID

| Film 07 | | | | | |
|--------------|---|-----------|----------|----------------------------|--|
| Format | 35mm | Type | | B&W | |
| Photographer | M. Calderon | | | | |
| Frame | Description | View from | Date | Report Plate (D=duplicate) | |
| 1-7 | VOID | - | - | - | |
| 8 | Detail of holes in stone step of spillway | NW | 03.09.15 | | |
| 9 | Detail of the west wall terminal of the spillway with pier | E | 03.09.15 | D12 | |
| 10 | Detail of the east wall terminal of the spillway with pier | W | 03.09.15 | 13 | |
| 11 | Detail of the western pier at the top of the lower flight of cascade steps of the spillway | E | 03.09.15 | 17 | |
| 12 | Detail of the eastern pier at the top of the lower flight of cascade steps of the spillway | W | 03.09.15 | 18 | |
| 13 | Detail of the western pier at the bottom of the upper flight of cascade steps of the spillway | E | 03.09.15 | 19 | |
| 14 | Detail of the eastern pier at the bottom of the upper flight of cascade steps of the spillway | W | 03.09.15 | 20 | |
| 15 | Detail of spillway steps | N | 03.09.15 | 23 | |
| 16 | Detail of the western pier at the top of the upper flight of cascade steps of the spillway | E | 03.09.15 | 21 | |
| 17 | Detail of the eastern pier at the top of the upper flight of cascade steps of the spillway | W | 03.09.15 | 22 | |
| 18 | Detail of the western pier positioned along the spillway steps | E | 03.09.15 | 24 | |
| 19 | Detail of the eastern pier positioned along the spillway steps | W | 03.09.15 | 25 | |
| 20 | Detail of spillway steps | N | 03.09.15 | 26 | |
| 21 | Detail of the eastern pier at the top of the spillway | W | 03.09.15 | 49 | |
| 22 | Detail of the west southern-most pier, between the tumble bay and spillway | E | 03.09.15 | 50 | |
| 23 | Detail of the western retaining wall and join with the tumble bay | NE | 03.09.15 | 42 | |
| 24 | General view down spillway with valley beyond | SE | 03.09.15 | 30 | |
| 25 | Detail of the east retaining wall with flanking piers and crest bridge overhead at join between tumble bay and spillway | W | 03.09.15 | 48 | |
| 26 | View of the join between the overflow weir and tumble bay, showing stone detailing | SE | 03.09.15 | 45 | |
| 27 | Detail of the join between the overflow weir and the western retaining wall | E | 03.09.15 | 40 | |
| 28 | View of the north elevation of the valve house | NE | 03.09.15 | 34 | |
| 29 | Shot of the modern marker stone for the Pennine bridleway | E | 03.09.15 | - | |
| 30 | View along the crest bridge with dam embankment beyond | E | 03.09.15 | 33 | |
| 31 | View of the west ashlar wall an junction with cascade steps of the spillway | N | 03.09.15 | 16 | |
| 32 | View of the terminal of the west wall of the spillway with stone pier | N | 03.09.15 | 12 | |
| 33 | Detail of the western pier at the top of the lower flight of cascade steps of the spillway | E | 03.09.15 | D17 | |
| 34 | ID Shot | - | 03.09.15 | - | |
| 35 | View of the rear/south side of the moulded cornice and pediment of the scour portal | SE | 03.09.15 | 11 | |
| 36 | Detail of cast iron access walkway to the scour portal | SW | 03.09.15 | 10 | |



| Digital | | | | | |
|---------|--|-----------|----------|----------------------------|-------------|
| Format | - | Type | - | Photographer | M. Calderon |
| Frame | Description | View from | Date | Report Plate (D=duplicate) | |
| 1 | General view of the spillway from Bank Bottom Bridge | NW | 03.09.15 | D1 | |
| 2 | General view of the spillway from Bank Bottom Bridge | NW | 03.09.15 | 1 | |
| 3 | General view of spillway, scour portal and outlet channel | N | 03.09.15 | D2 | |
| 4 | General view of spillway, scour portal and outlet channel | N | 03.09.15 | 2 | |
| 5 | View of steps leading up to Binn Rd and Wessenden Rd | NW | 03.09.15 | D4 | |
| 6 | View of steps leading up to Binn Rd and Wessenden Rd | NW | 03.09.15 | D4 | |
| 7 | View of steps leading up to Binn Rd and Wessenden Rd | NW | 03.09.15 | D4 | |
| 8 | View of steps leading up to Binn Rd and Wessenden Rd | NW | 03.09.15 | 4 | |
| 9 | General view of the outlet channel, scour portal and dam embankment | N | 03.09.15 | D3 | |
| 10 | General view of the outlet channel, scour portal and dam embankment | N | 03.09.15 | D3 | |
| 11 | General view of the spillway, outlet channel, scour portal and dam embankment | N | 03.09.15 | D3 | |
| 12 | General view of the spillway, outlet channel, scour portal and dam embankment | N | 03.09.15 | D3 | |
| 13 | General view of the spillway, outlet channel, scour portal and dam embankment | N | 03.09.15 | 3 | |
| 14 | General view of the spillway, outlet channel, scour portal and dam embankment | N | 03.09.15 | D3 | |
| 15 | View of the northwest wall terminal of the spillway with scour portal beyond | NE | 03.09.15 | 6 | |
| 16 | View of the northwest wall terminal of the spillway with scour portal beyond | NE | 03.09.15 | D6 | |
| 17 | View of the northwest wall terminal of the spillway with scour portal beyond | NE | 03.09.15 | D6 | |
| 18 | View of the scour portal | W | 03.09.15 | D9 | |
| 19 | View of the scour portal | NW | 03.09.15 | D8 | |
| 20 | View of the scour portal | NW | 03.09.15 | 8 | |
| 21 | View of the scour portal | NW | 03.09.15 | D8 | |
| 22 | General view of the north end of the spillway, outlet channel and Bank Bottom Bridge | SE | 03.09.15 | 5 | |
| 23 | General view of the north end of the spillway, outlet channel and Bank Bottom Bridge | SE | 03.09.15 | D5 | |
| 24 | General view looking up the spillway | NW | 03.09.15 | 14 | |
| 25 | General view across the reservoir showing tumble bay, overflow weir and valve house | NE | 03.09.15 | 31 | |
| 26 | View at the top of the spillway showing the overflow weir, tumble bay, crest bridge, valve house and reservoir | E | 03.09.15 | 32 | |
| 27 | View at the top of the spillway showing the overflow weir, tumble bay, crest bridge, valve house and reservoir | E | 03.09.15 | D32 | |
| 28 | General view looking down the spillway | SE | 03.09.15 | D27 | |
| 29 | General view looking down the spillway | SE | 03.09.15 | 27 | |
| 30 | General view of the spillway looking down to Bank Bottom Bridge | SW | 03.09.15 | 28 | |
| 31 | General view of the spillway looking down to Bank Bottom Bridge | SW | 03.09.15 | D28 | |
| 32 | General view from dam embankment across reservoir showing valve house | NW | 03.09.15 | D35 | |
| 33 | General view from dam embankment across reservoir showing valve house | NW | 03.09.15 | 35 | |
| 34 | View from reservoir showing overflow weir, valve house and crest bridge | S | 03.09.15 | D36 | |
| 35 | View from reservoir showing overflow weir, valve house and crest bridge | S | 03.09.15 | 36 | |
| 36 | General view from reservoir of overflow weir and valve house | SE | 03.09.15 | D37 | |
| 37 | General view from reservoir of overflow weir and valve house | SE | 03.09.15 | 37 | |
| 38 | General view of the tumble bay and overflow weir, reservoir beyond | N | 03.09.15 | D44 | |
| 39 | General view of the tumble bay and overflow weir, reservoir beyond | N | 03.09.15 | 44 | |
| 40 | General view of the tumble bay, crest bridge and top of the spillway | SW | 03.09.15 | D46 | |
| 41 | General view of the tumble bay, crest bridge and top of the spillway | SW | 03.09.15 | 46 | |



10 APPENDIX II: LISTING DESCRIPTIONS



Historic England

OVERFLOW AT BUTTERLEY RESERVOIR

List Entry Summary

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

Name: OVERFLOW AT BUTTERLEY RESERVOIR

List entry Number: 1231249

Location

OVERFLOW AT BUTTERLEY RESERVOIR, BUTTERLEY RESERVOIR

The building may lie within the boundary of more than one authority.

County:

District: Kirklees

District Type: Metropolitan Authority

Parish:

National Park: Not applicable to this List entry.

Grade: II

Date first listed: 11-Jul-1985

Date of most recent amendment: Not applicable to this List entry.

Legacy System Information

The contents of this record have been generated from a legacy data system.

Legacy System: LBS

UID: 406367

Asset Groupings

This list entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

List entry Description

Summary of Building

Legacy Record - This information may be included in the List Entry Details.

Reasons for Designation

Legacy Record - This information may be included in the List Entry Details.

History

Legacy Record - This information may be included in the List Entry Details.

Details

This list entry was subject to a Minor Amendment on 07/08/2014

SE 01 SW 4/64

BUTTERLEY RESERVOIR, Marsden Overflow at Butterley Reservoir

II

1891-1906 by T. & C. Hawksley and Co. Rock-faced coursed stone with ashlar dressings. Overflow with stone weirs and stepped stone cascades. Sidewalls are of rock-faced stone with squared ashlar piers with moulded pyramidal copings. Copings to walls are stepped.

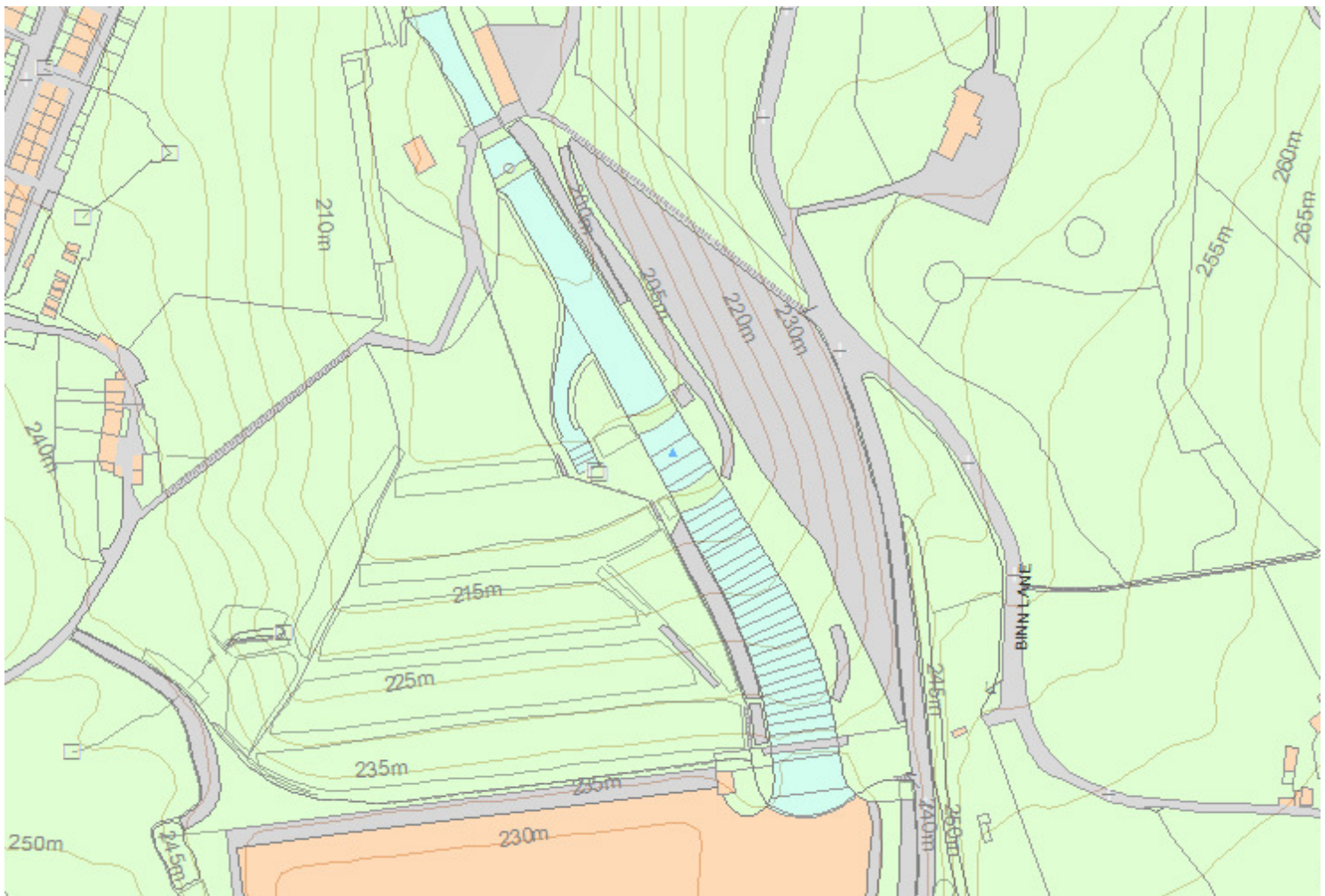
Listing NGR: SE0479810688

Selected Sources

Legacy Record - This information may be included in the List Entry Details

National Grid Reference: SE 04798 10688

Map



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The above map is for quick reference purposes only and may not be to scale.
For a copy of the full scale map, please see the attached PDF - [1231249 .pdf](#)
(http://gisservices.english-heritage.org.uk/printwebservicehle/StatutoryPrint.svc/212796/HLE_A4L_Grade|HLE_A3L_Grade.pdf)

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Historic England

OVERFLOW PORTAL AT BUTTERLEY RESERVOIR

List Entry Summary

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

Name: OVERFLOW PORTAL AT BUTTERLEY RESERVOIR

List entry Number: 1231250

Location

OVERFLOW PORTAL AT BUTTERLEY RESERVOIR, BUTTERLEY RESERVOIR

The building may lie within the boundary of more than one authority.

County:

District: Kirklees

District Type: Metropolitan Authority

Parish: Non Civil Parish

National Park: Not applicable to this List entry.

Grade: II

Date first listed: 11-Jul-1985

Date of most recent amendment: Not applicable to this List entry.

Legacy System Information

The contents of this record have been generated from a legacy data system.

Legacy System: LBS

UID: 406369

Asset Groupings

This list entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

List entry Description

Summary of Building

Legacy Record - This information may be included in the List Entry Details.

Reasons for Designation

Legacy Record - This information may be included in the List Entry Details.

History

Legacy Record - This information may be included in the List Entry Details.

Details

This list entry was subject to a Minor Amendment on 07/08/2014

SE 01 SW 4/65

BUTTERLEY RESERVOIR, Marsden Overflow Portal at Butterley Reservoir

II

1891-1906 by T. & C. Hawksley & Co. Ashlar. Portal has semicircular arched head and moulded reveals. Surround is in ashlar with moulded cornice and blocking course. Wings to each side curve forward (to north-west) and rake downwards to form ashlar walls, which turn inward and terminate in squared ashlar posts with moulded pyramidal copings. Wings have bevelled stone steps along top. Iron sluices in front of portal.

Listing NGR: SE0476710683

Selected Sources

Legacy Record - This information may be included in the List Entry Details

National Grid Reference: SE0476710683

Map



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For a copy of the full scale map, please see the attached PDF - [1231250 .pdf](#)
(http://gisservices.english-heritage.org.uk/printwebservicehle/StatutoryPrint.svc/387992/HLE_A4L_Grade|HLE_A3L_Grade.pdf)

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Historic England

BRIDGE

List Entry Summary

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

Name: BRIDGE

List entry Number: 1230993

Location

BRIDGE, BANK BOTTOM BRIDGE

The building may lie within the boundary of more than one authority.

County:

District: Kirklees

District Type: Metropolitan Authority

Parish:

National Park: Not applicable to this List entry.

Grade: II

Date first listed: 11-Jul-1985

Date of most recent amendment: Not applicable to this List entry.

Legacy System Information

The contents of this record have been generated from a legacy data system.

Legacy System: LBS

UID: 405960

Asset Groupings

This list entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

List entry Description

Help us improve the NLE by completing this survey (<https://www.surveymonkey.com/r/32W22YW>)

Summary of Building

Legacy Record - This information may be included in the List Entry Details.

Reasons for Designation

Legacy Record - This information may be included in the List Entry Details.

History

Legacy Record - This information may be included in the List Entry Details.

Details

SE OI SW BANK BOTTOM BRIDGE Marsden 4/14 Bridge - - II

Early to mid C19. Bridge. Single span segmental arched bridge over overflow from Butterly Reservoir. Hammer dressed stone with slightly rusticated dressings. Pronounced string course forms base to parapet which has flagstone copings. More recent arched culverts to either side of bridge.

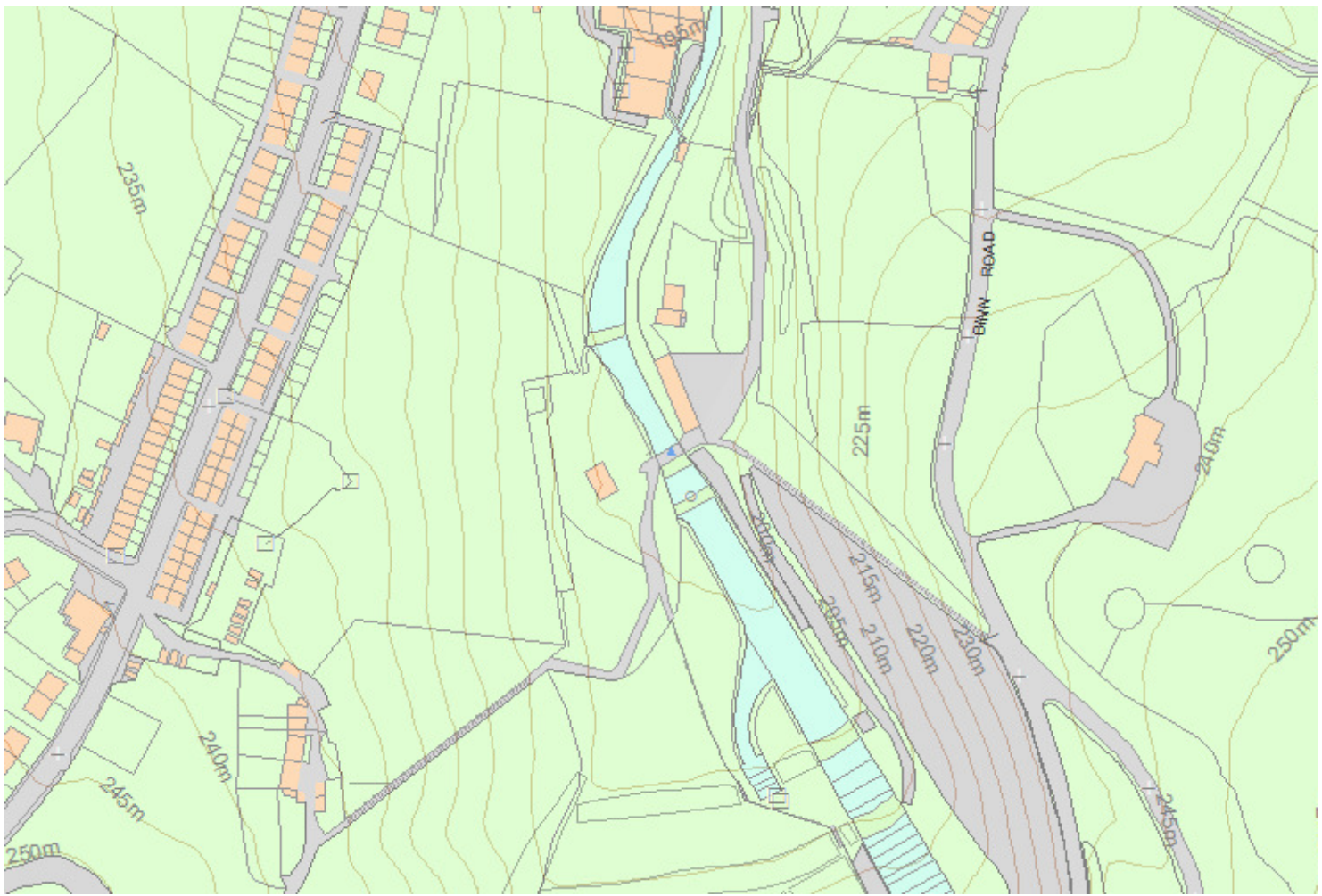
Listing NGR: SE0473010810

Selected Sources

Legacy Record - This information may be included in the List Entry Details

National Grid Reference: SE 04730 10810

Map



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For a copy of the full scale map, please see the attached PDF - [1230993.pdf](#)
(http://gisservices.english-heritage.org.uk/printwebservicehle/StatutoryPrint.svc/212564/HLE_A4L_Grade|HLE_A3L_Grade.pdf)

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**11 APPENDIX III: WYAAS SPECIFICATION FOR ARCHAEOLOGICAL PHOTOGRAPHIC
RECORDING**

GENERIC SPECIFICATION FOR ARCHAEOLOGICAL PHOTOGRAPHIC RECORDING

This specification details the general requirements for an archaeological or architectural photographic record of a building or structure when this level of recording is required, generally as a condition to a planning permission issued by the local planning Authority.

1. Summary

1.1 This specification covers the requirements for a general archaeological or / and architectural photographic record of a building or standing structure & is generally used when a West Yorkshire District Conservation officer believes that this is required in advance of demolition / conversion to identify and document items of archaeological and architectural interest prior to alteration / conversion or demolition.

This specification has been written by the West Yorkshire Archaeology Advisory Service (WYAAS), the holders of the West Yorkshire Historic Environment Record.

2. Archaeological / Architectural Interest

For an understanding of relevant archaeological research priorities for school buildings in West Yorkshire please see the historic buildings research agenda available as a PDF document to download from the WYAAS website:

<http://www.archaeology.wyjs.org.uk/wyjs-archaeology-research.asp>

3. Aims of the Project

5.1 The aim of the proposed work is to identify and objectively record by means of photographs any significant architectural features and evidence for the original and subsequent historical form and functions of the building / structure to be developed, and to place this record in the public domain by depositing it with the West Yorkshire Historic Environment Record (the Registry of Deeds, Newstead Road, Wakefield WF1 2DE; tel. 01924 306797; email wyher@wyjs.org.uk). The building recorder on site should give particular attention to recording as far as possible the functional arrangements and division of the building(s) / structure.

4. General Instructions

4.1 Health and Safety

4.1.1 The building recorder on site will naturally operate with due regard for Health and Safety regulations. Prior to the commencement of any work on site the building recorder may wish to carry out a Risk Assessment on the building / structure in accordance with the Health and Safety at Work Regulations. The building recorder should identify any contaminants which constitute potential Health and Safety hazards (e.g. chemical drums) and make arrangements with the owner / developer for decontamination/making safe as necessary and appropriate. The WY Archaeology Advisory Service and its officers cannot be held responsible for any

accidents or injuries which may occur to outside contractors engaged to undertake this survey while attempting to conform to this specification.

4.2 Confirmation of Adherence to Specification

4.2.1. Unauthorised variations are made at the sole risk of the building recorder. Proposed modifications presented in the form of a re-written specification/project design **will not** be considered. For technical queries see para. 8.1.

4.3 Confirmation of Timetable and Contractors' Qualifications

4.3.1 Prior to the commencement of *any work*, the building recorder **must** provide the local planning authority and WYAAS **in writing** with:

- a projected timetable for the site work
- details of the staff structure and numbers
- names and CVs of key project members (the project manager, site supervisor, any proposed specialists, sub-contractors *etc.*)

4.3.2 All project staff provided by the building recorder must be suitably qualified and experienced for their roles. In particular, staff involved in building recording should have proven expertise in the recording and analysis of buildings. The timetable should be adequate to allow the work to be undertaken to the appropriate professional standard.

4.4 Notification and Monitoring

The Local Authority and WYAAS should receive at least one week's notice in writing of the intention to start fieldwork.

5 Recording Methodology

5.1 Site preparation

Prior to the commencement of work on site the building recorder should identify all removable modern material (including 20th century partitions, dry-boarding, suspended ceilings, modern machinery *etc.*) which may significantly obscure material requiring a photographic record, and should contact the developer in order to make arrangements for its removal. It is not the intention of this specification that large-scale removal of material of this type should take place with the building recorder's manpower or at that contractor's expense.

5.2 Documentary research

If no detailed heritage statement has been submitted for the building / structure, then prior to the commencement of work on site, the building recorder should undertake a rapid map-regression exercise based on the readily-available map and photographic evidence held by the relevant Local History Library and the West Yorkshire Archive Service, and a rapid examination of the available 19th- and 20th-century Trades and Postal directories, the appropriate census returns and all other available primary and relevant secondary sources. This work is intended to inform the building recording by providing background information with regard to function and phasing. Please note

that this exercise is not intended to be a formal desk-based assessment, and should not represent a disproportionate percentage of the time allowed for the project overall.

5.3 Site/building plans

If as “existing plans” of the building/ structure have been produced then, if appropriate, these plans may be used for any annotation relative to the photographic record (permission of the copyright holder must be sought).

Failing this, an accurate sketch plan of the site/building layout, marked with a north pointer, should be derived from the most appropriate large-scale historic mapping and reproduced at an appropriate scale (not smaller than 1:100). This plan should then be used for any annotation relative to the photographic record.

6. Photographic Record

6.1 External photographs

An external photographic record should be made of all elevations of the building/ structure, from vantage points as nearly parallel to the elevation being photographed as is possible within the constraints of the site. The contractor should ensure that all visible elements of each elevation are recorded photographically; this may require photographs from a number of vantage points. A general external photographic record should also be made which includes a number of oblique general views of the building(s) from all sides, showing it/them and the complex as a whole in its/their setting. In addition, a 35mm general colour-slide survey of the building(s) should also be provided (using a variety of wide-angle, medium and long-distance lenses). While it is not necessary to duplicate every black-and-white shot, the colour record should be sufficiently comprehensive to provide a good picture of the form and general appearance of the building(s) / structure. The colour slide record should also include some internal shots. (See para. 6.5 below for possible use of digital photography.)

6.2 Internal photographs

A general internal photographic record should be made of the building/structure. General views should be taken of *each room* or discrete internal space from a sufficient number of vantage points to adequately record the form, general appearance and manner of construction of each area photographed. In areas which are wholly modern in appearance, character and materials, a single shot to record current appearance will suffice.

6.3 Detail photographs

In addition, detailed record shots should be made of all features of archaeological and architectural interest identified during the process of appraisal. Typically, items of interest would include:

- All original structural elements, roof structures / trusses
- Original doors and window frames and any associated shutters or other fittings
- Original staircases and other access arrangements

But this list should not be treated as exhaustive. The building recorder on site should also identify and note:

- any significant changes in construction material – this is intended to include significant changes in stone/brick type and size
- any blocked, altered or introduced openings
- evidence for phasing, and for historical additions or alterations to the building.

Elements for which multiple examples exist (e.g. each type of roof truss, column or window frame) may be recorded by means of a single representative illustration. **N.B.** Detail photographs must be taken at medium-to-close range and be framed in such a way as to ensure that the element being photographed clearly constitutes the principal feature of the photograph.

6.4 Equipment

General photographs should be taken with a Large Format monorail camera (5" x 4" or 10" x 8"), or with a Medium Format camera that has perspective control, using a tripod. The contractor must have proven expertise in this type of work. Any detail photographs of structural elements should if possible be taken with a camera with perspective control. Other detail photographs may be taken with either a Medium Format or a 35mm camera. All detail photographs must contain a graduated photographic scale of appropriate dimensions (measuring tapes and surveying staffs are not considered to be acceptable scales in this context). A 2-metre ranging-rod, discretely positioned, should be included in a selection of general shots, sufficient to independently establish the scale of all elements of the structure.

6.5 Digital photography

As an alternative to our requirement for colour slide photography, good quality digital photography may be supplied as an alternative, using cameras with a minimum resolution of 8 megapixels. Note that conventional black and white print photography is still required and constitutes the permanent record. Digital images will only be acceptable as an alternative to colour slide photography if each image is supplied in three file formats (as a RAW data file, a DNG file and as a JPEG file). The contractor must include metadata embedded in the DNG file. The metadata must include the following: the commonly used name for the site being photographed, the relevant centred OS grid coordinates for the site to at least six figures, the date of photograph, the subject of the photograph, the direction of shot and the name of the organisation taking the photograph. Images are to be supplied to WYAAS as the holders of the West Yorkshire Historic Environment Record (HER) on gold CDs by the building recorder accompanying the hard copy of the report.

6.6 Film stock

All record photographs to be black and white, using conventional (not chromogenic) silver-based film only, such as Ilford FP4 or HP5, or Delta 400 Pro that is replacing HP5 in certain film sizes (such as 220). Dye-based films such as Ilford XP2 and Kodak T40CN are unacceptable due to poor archiving qualities.

6.7 Printing

6.7.1 Record photographs should be printed at a minimum of 5" x 7". In addition a small selection of photographs (the best of the exterior setting shots and interior

shots with important detail) should be printed at 10" x 8". Bracketed shots of identical viewpoints need not be reproduced, but all viewpoints must be represented within the report.

6.7.2 Prints may be executed digitally from scanned versions of the film negatives, and may be manipulated to improve print quality (but **not** in a manner which alters detail or perspective). All digital prints must be made on paper and with inks which are certified against fading or other deterioration for a period of 75 years or more when used in combination. If digital printing is employed, the contractor must supply details of the paper/inks used in writing to the local authority with supporting documentation indicating their archival stability/durability.

6.8 Documentation

A photographic register and photo location plan are required. The photographic register should (as a minimum) include location, direction and subject of shot must accompany the photographic record; a separate photographic register should be supplied for any colour slides and digital photographs. Position and direction of each photograph and slide should be noted on a scaled copy of the building plan (minimum acceptable scale 1:100), which should also be marked with a north pointer. Separate plans should be annotated for each floor of the building/ structure. (See also para. 5.3 above.)

7. Post-Recording Work and Report Preparation

7.1 Report Preparation

7.1.1 Report format and content

A written report should be produced. This should include:

- an executive summary including dates of fieldwork, name of commissioning body, planning application reference and condition number and a brief summary of the results including details of any significant findings
- an introduction outlining the reasons for the survey
- a brief architectural description of the building(s) presented in a logical manner (as a walk around and through the building(s), starting with setting, then progressing to all sides of the structure in sequence, and finally to the interior from the ground floor up)
- a discussion placing the building/complex in its local and historical contexts, describing and analysing the development of individual structures and of the complex as a whole. This analysis should consider the site type as an integrated system intended to perform a specialised function, with particular attention being given to historical plan form, technical layout and process flow.

Both architectural description and historical/analytical discussion should be fully cross-referenced to the photographic record, sufficient to illustrate the major features of the site and the major points raised.

7.1.2 Report Illustrations

Illustrations should include:

- a location map at a scale sufficient to allow clear identification of the building(s)/structure in relation to other buildings in the immediate area

- a complete set of site drawings at a legible scale, on which position and direction of each photograph has been noted
- any relevant historic map editions, with the position and extent of the site clearly indicated
- any additional illustrations pertinent to the site
- a complete set of good-quality laser copies of all photographs. All photographs should be accompanied by detailed captions clearly locating and identifying any pertinent features.

The latter should be bound into the report, appropriately labelled (numbered, and captioned in full) and fully referenced within the report. When captioning, contractors should identify the individual photographs by means of a running sequence of numbers (e.g. Plate no. 1; Plate no. 2), and it is this numbering system which should be used in cross-referencing throughout the report and on the photographic plans. However, the relevant original film and frame number should be included in brackets at the end of each caption.

7.2 Report deposition

7.2.1 The report should be supplied to the client and to the local planning authority and an identical copy (but also including the photographic prints and any colour slides) supplied to the West Yorkshire HER – see para.7.3 below for details). The finished report should be supplied within twelve weeks of completion of all fieldwork unless otherwise agreed with the local authority. The report will become publicly accessible once deposited with the West Yorkshire Historic Environment Record, unless confidentiality is explicitly requested, in which case it will become publicly accessible six months after deposit.

7.2.2 The West Yorkshire HER supports the Online Access to Index of Archaeological Investigations (OASIS) project. The overall aim of the OASIS project is to provide an online index to the mass of archaeological grey literature that has been produced as a result of the advent of large-scale developer funded fieldwork. The building recorder must therefore complete the online OASIS form at <http://ads.ahds.ac.uk/project/oasis/>. Contractors are advised to contact the West Yorkshire HER officer prior to completing the form. Once a report has become a public document by submission to or incorporation into the HER, the West Yorkshire HER may place the information on a web-site. Please ensure that you and your client agree to this procedure in writing as part of the process of submitting the report to the case officer at the West Yorkshire HER.

7.2.3 With the permission of the client, the building recorder is encouraged to consider the deposition of a copy of the report for this site with the appropriate Local History Library.

7.3 Deposition with WYAAS (as holders of the West Yorkshire Historic Environment Record)

The report copy supplied to the WY Archaeology Advisory Service (see address at the base of this document) should also be accompanied by both the photographic negatives and a complete set of labelled photographic prints (mounted in KENRO

display pockets or similar, and arranged in such a way that labelling is readily visible) bound in a form which will fit readily into a standard filing cabinet suspension file (not using hard-backed ring-binders). Labelling should be on the *back* of the print in pencil giving film and frame number only (taking care not to damage the print) and on applied printed labels stuck on the front of the relevant photographic sleeve and which should include:

- film and frame number
- date recorded and photographer's name
- name and address of building
- national grid reference
- specific subject of photograph.

Negatives should be supplied in archivally stable mounts (KENRO display pockets or similar), and each page of negatives should be clearly labelled with the following:

- national grid reference
- Site name and address
- Date of photographs (month/year)
- Name of archaeological contractor
- Film number

Colour slides should be mounted, and the mounts suitably marked with the 'site name' at the top of the slide; grid reference at the bottom; date of photograph at the right hand side of the mount; subject of photograph at the left hand side of the mount. Subject labelling may take the form of a numbered reference to the relevant photographic register. The slides should be supplied to the WY Archaeology Advisory Service in an appropriate, archivally stable slide hanger (for storage in a filing cabinet). In all other respects, standards for archive compilation and transfer should conform to those outlined in *Archaeological Archives – a guide to best practice in creation, compilation, transfer and curation* (Archaeological Archives Forum, 2007).

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8. Technical Queries

8.1 Any technical queries arising from the specification detailed above, should be addressed to WYAAS without delay.

9. Valid Period of Specification

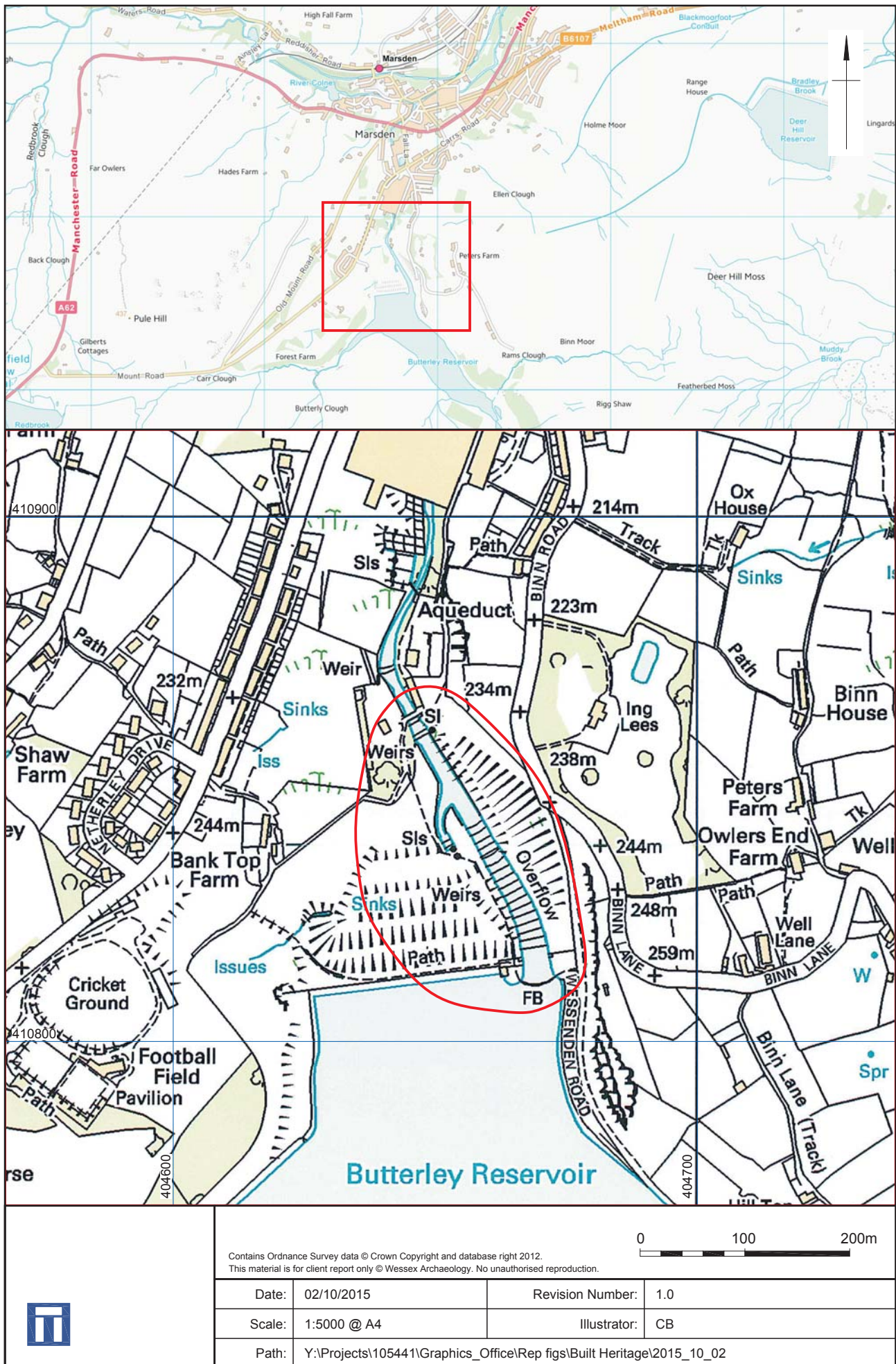
9.1 This specification is valid unless superseded by a later version.

David Hunter

**West Yorkshire Archaeology Advisory Service
West Yorkshire Historic Environment Record**

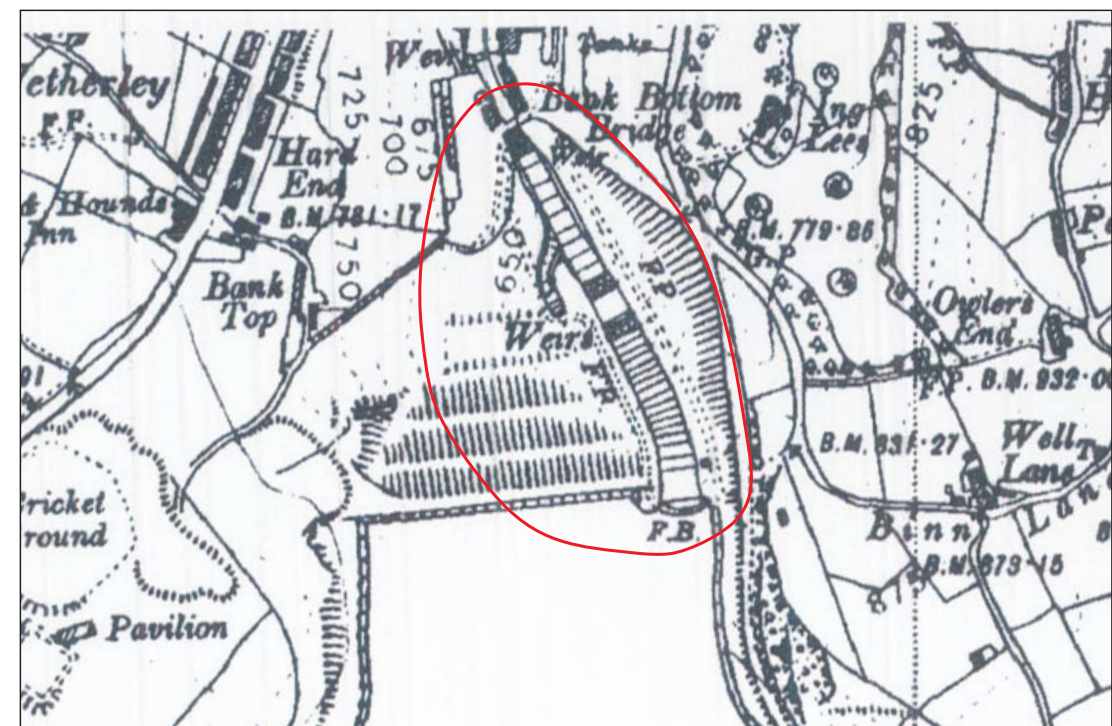
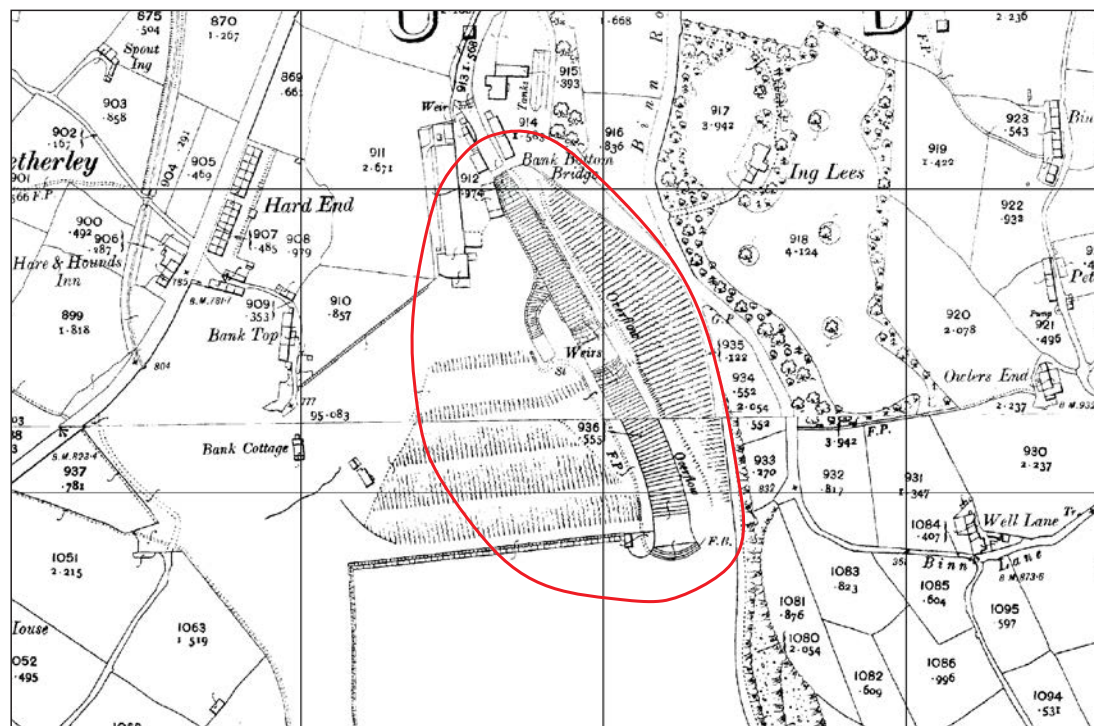
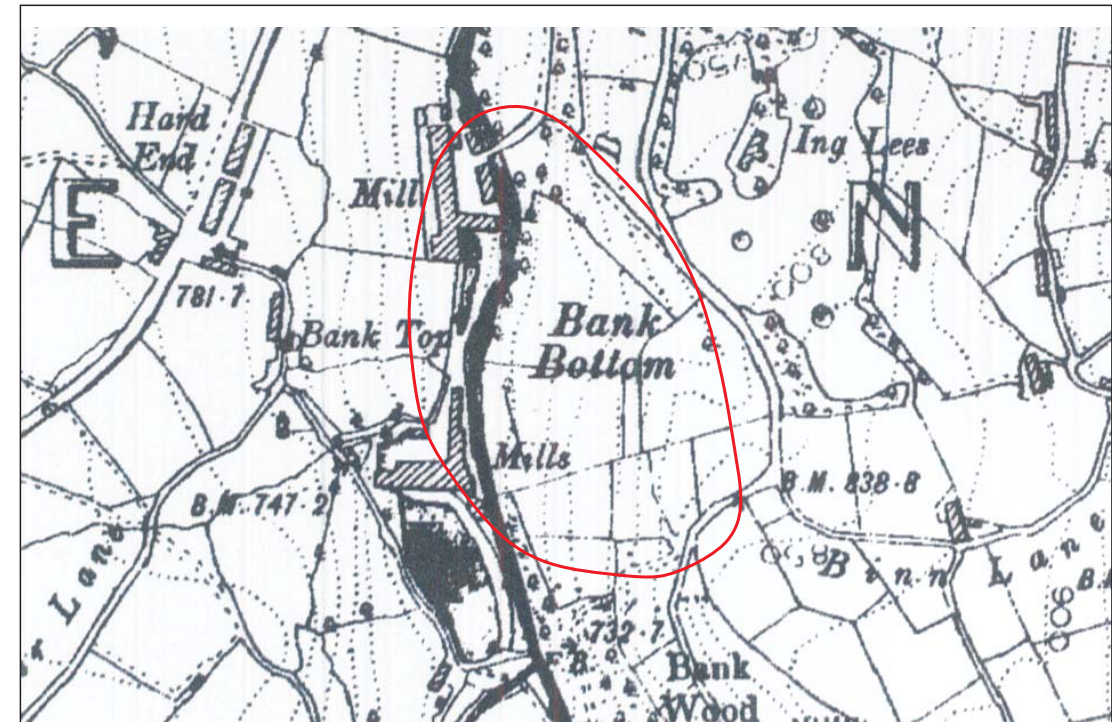
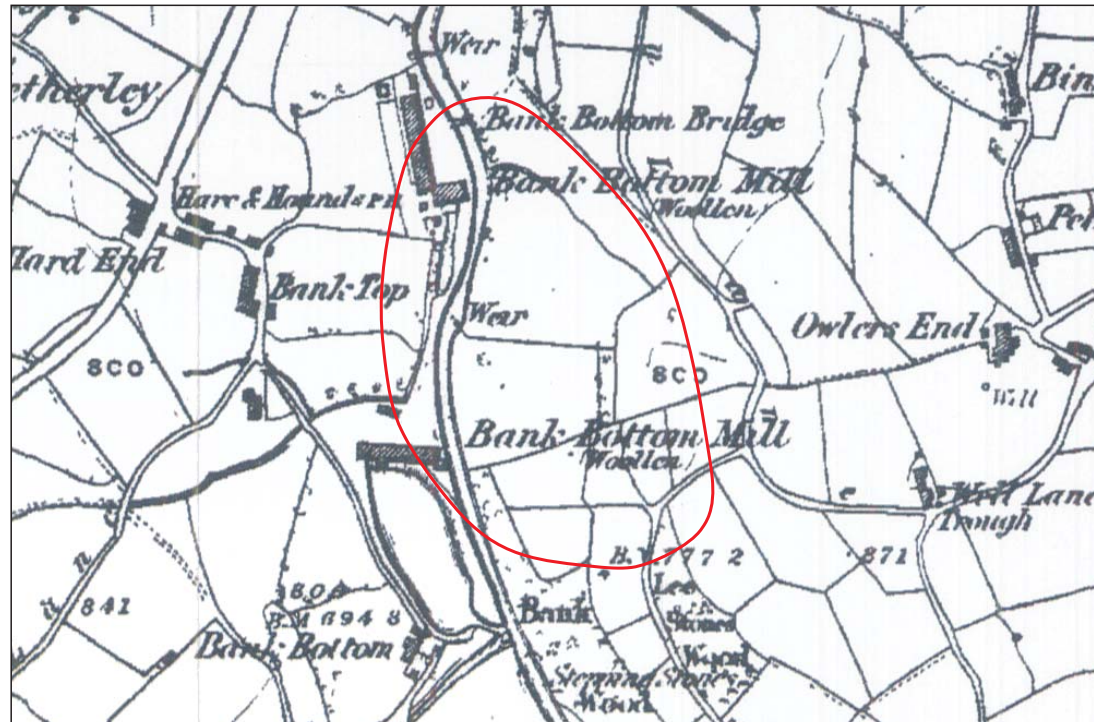
**Registry of Deeds
Newstead Road
Wakefield
WF1 2DE**

**Telephone: (01924) 306798
Fax: (01924) 306810
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Site location

Figure 1



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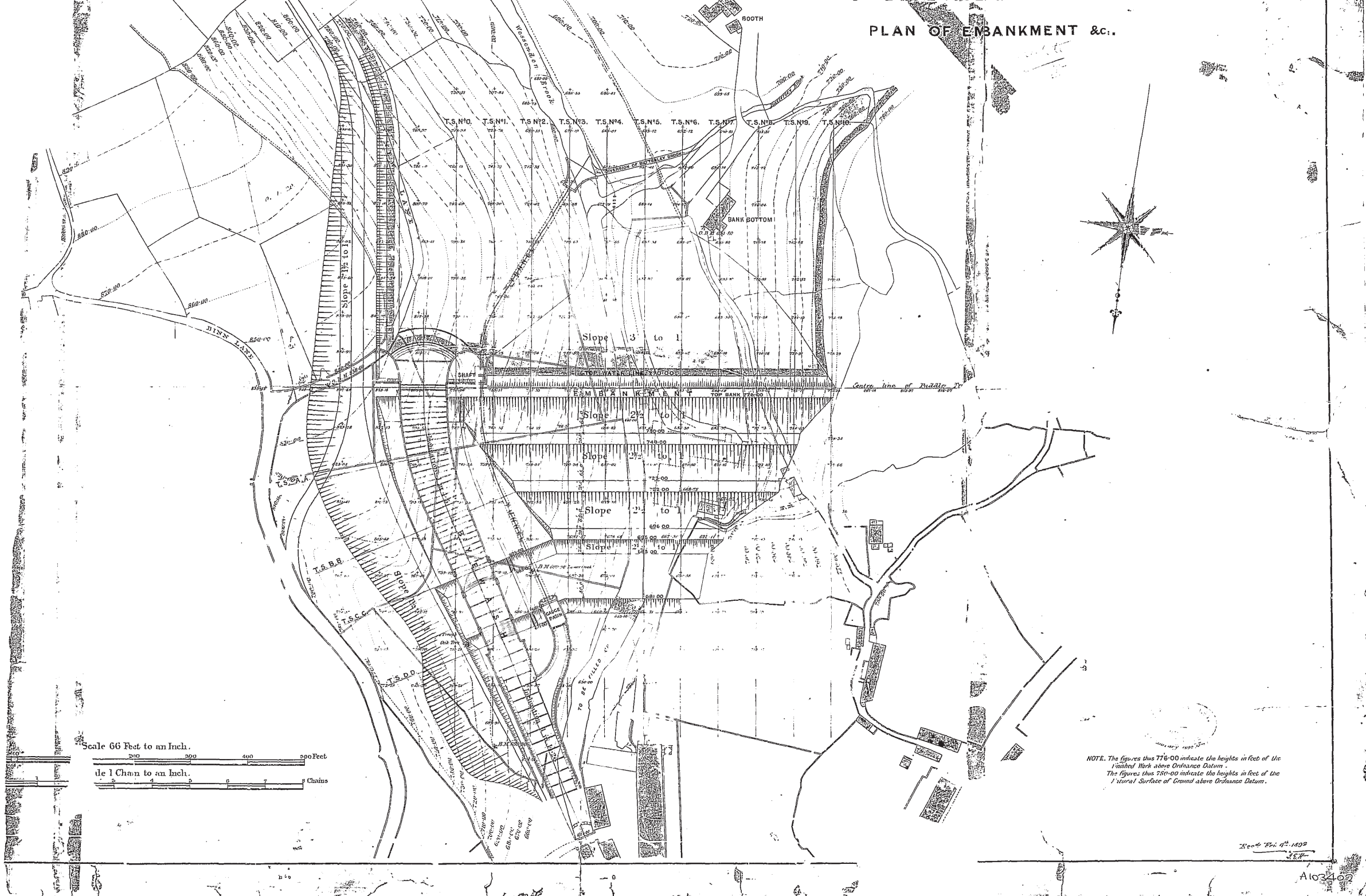
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WERSFIELD CORPORATION WATERWORKS.

BUTTERLEY RESERVOIR.

PLAN OF EMBANKMENT &c..



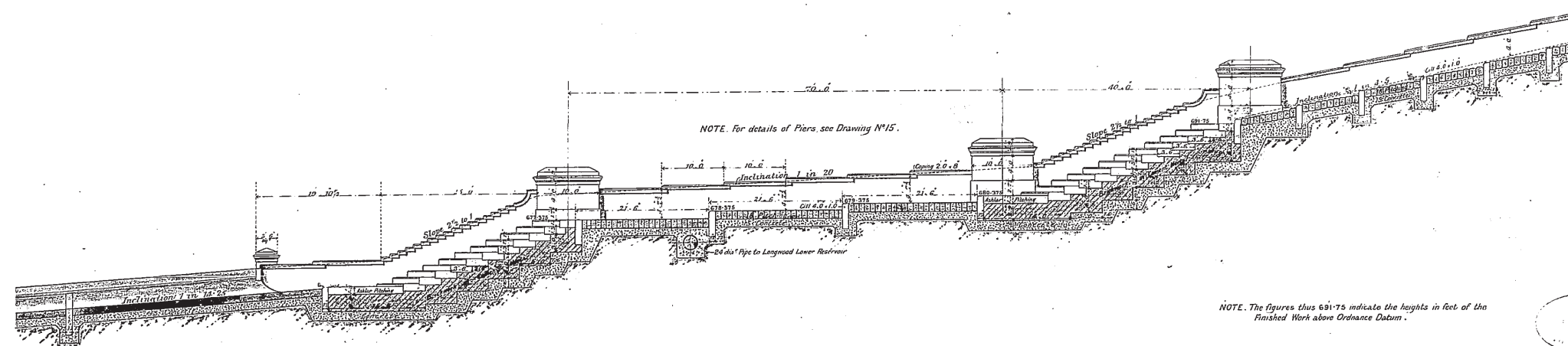
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N^o 13.

The drawing is a technical cross-section of a dam, oriented vertically. It features two main views: 'Inclination 1 in 20' on the left and 'Inclination 1 in 4.5' on the right. The dam structure is shown with a central core and outer slopes. Key components include:

- Spillways:** Located at the top of the dam, with labels like '15 Pflanzung' and '16 Pflanzung' indicating planting or structural details.
- Foundations:** The base of the dam is shown with various layers and dimensions, including '15.5 m' and '16.5 m'.
- Dimensions:** Numerous vertical and horizontal dimensions are provided, such as '100.0 m', '110.0 m', '120.0 m', '130.0 m', '140.0 m', '150.0 m', '160.0 m', '170.0 m', '180.0 m', '190.0 m', '200.0 m', '210.0 m', '220.0 m', '230.0 m', '240.0 m', '250.0 m', '260.0 m', '270.0 m', '280.0 m', '290.0 m', '300.0 m', '310.0 m', '320.0 m', '330.0 m', '340.0 m', '350.0 m', '360.0 m', '370.0 m', '380.0 m', '390.0 m', '400.0 m', '410.0 m', '420.0 m', '430.0 m', '440.0 m', '450.0 m', '460.0 m', '470.0 m', '480.0 m', '490.0 m', '500.0 m', '510.0 m', '520.0 m', '530.0 m', '540.0 m', '550.0 m', '560.0 m', '570.0 m', '580.0 m', '590.0 m', '600.0 m', '610.0 m', '620.0 m', '630.0 m', '640.0 m', '650.0 m', '660.0 m', '670.0 m', '680.0 m', '690.0 m', '700.0 m', '710.0 m', '720.0 m', '730.0 m', '740.0 m', '750.0 m', '760.0 m', '770.0 m', '780.0 m', '790.0 m', '800.0 m', '810.0 m', '820.0 m', '830.0 m', '840.0 m', '850.0 m', '860.0 m', '870.0 m', '880.0 m', '890.0 m', '900.0 m', '910.0 m', '920.0 m', '930.0 m', '940.0 m', '950.0 m', '960.0 m', '970.0 m', '980.0 m', '990.0 m', '1000.0 m'.
- Labels:** Various German labels are present, including '15.5 m', '16.5 m', '17.5 m', '18.5 m', '19.5 m', '20.5 m', '21.5 m', '22.5 m', '23.5 m', '24.5 m', '25.5 m', '26.5 m', '27.5 m', '28.5 m', '29.5 m', '30.5 m', '31.5 m', '32.5 m', '33.5 m', '34.5 m', '35.5 m', '36.5 m', '37.5 m', '38.5 m', '39.5 m', '40.5 m', '41.5 m', '42.5 m', '43.5 m', '44.5 m', '45.5 m', '46.5 m', '47.5 m', '48.5 m', '49.5 m', '50.5 m', '51.5 m', '52.5 m', '53.5 m', '54.5 m', '55.5 m', '56.5 m', '57.5 m', '58.5 m', '59.5 m', '60.5 m', '61.5 m', '62.5 m', '63.5 m', '64.5 m', '65.5 m', '66.5 m', '67.5 m', '68.5 m', '69.5 m', '70.5 m', '71.5 m', '72.5 m', '73.5 m', '74.5 m', '75.5 m', '76.5 m', '77.5 m', '78.5 m', '79.5 m', '80.5 m', '81.5 m', '82.5 m', '83.5 m', '84.5 m', '85.5 m', '86.5 m', '87.5 m', '88.5 m', '89.5 m', '90.5 m', '91.5 m', '92.5 m', '93.5 m', '94.5 m', '95.5 m', '96.5 m', '97.5 m', '98.5 m', '99.5 m', '1000.0 m'.



NOTE. Pitching stones to be set vertically in a similar manner to those in the upper part of Byemash.

Scale $\frac{1}{8}$ of an Inch to a Foot.

A 103 69



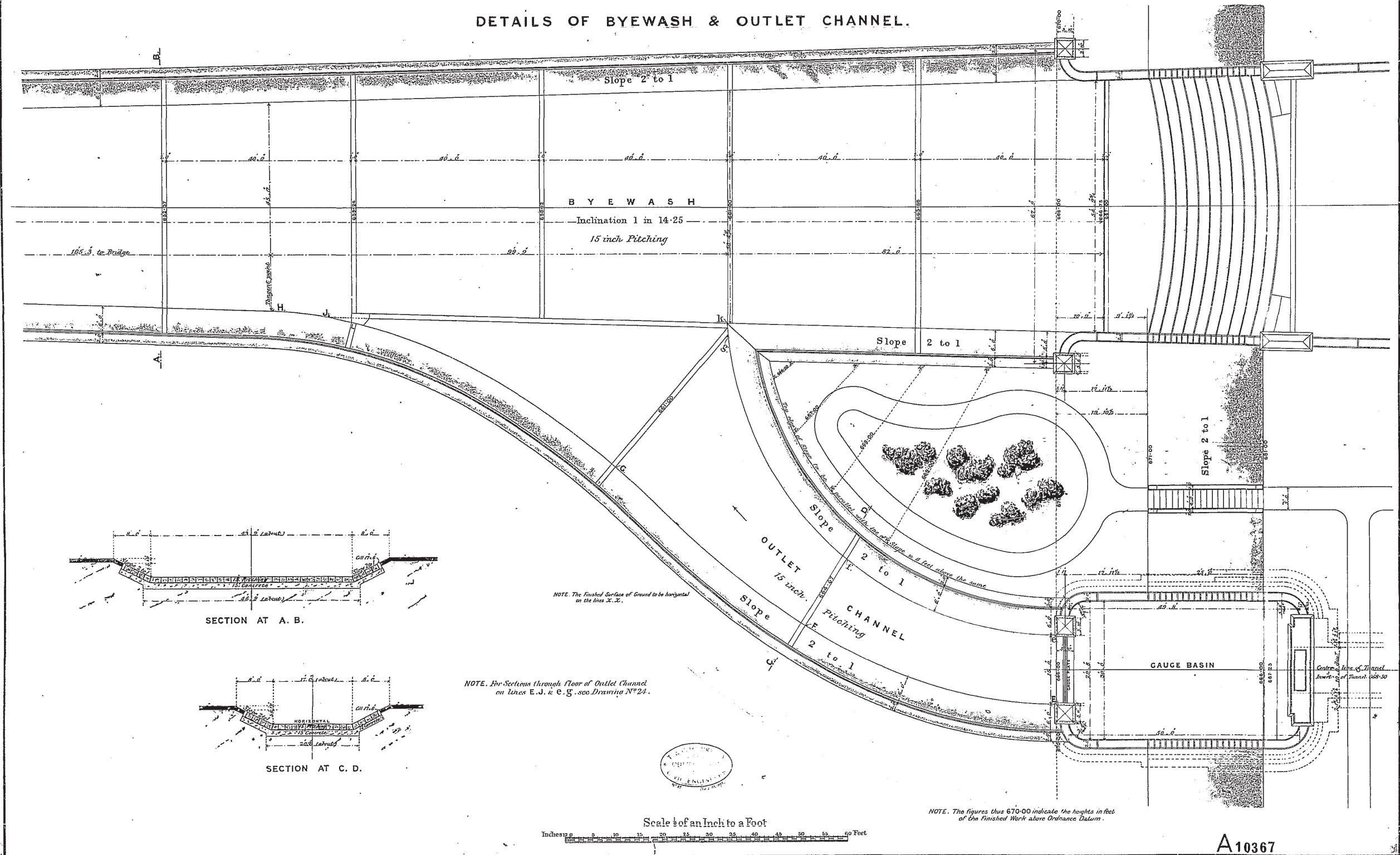
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HUDDERSFIELD CORPORATION WATERWORKS.

BUTTERLEY RESERVOIR.

N^o 14.

DETAILS OF BYEWASH & OUTLET CHANNEL.



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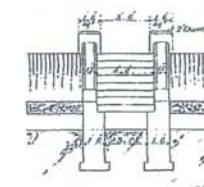
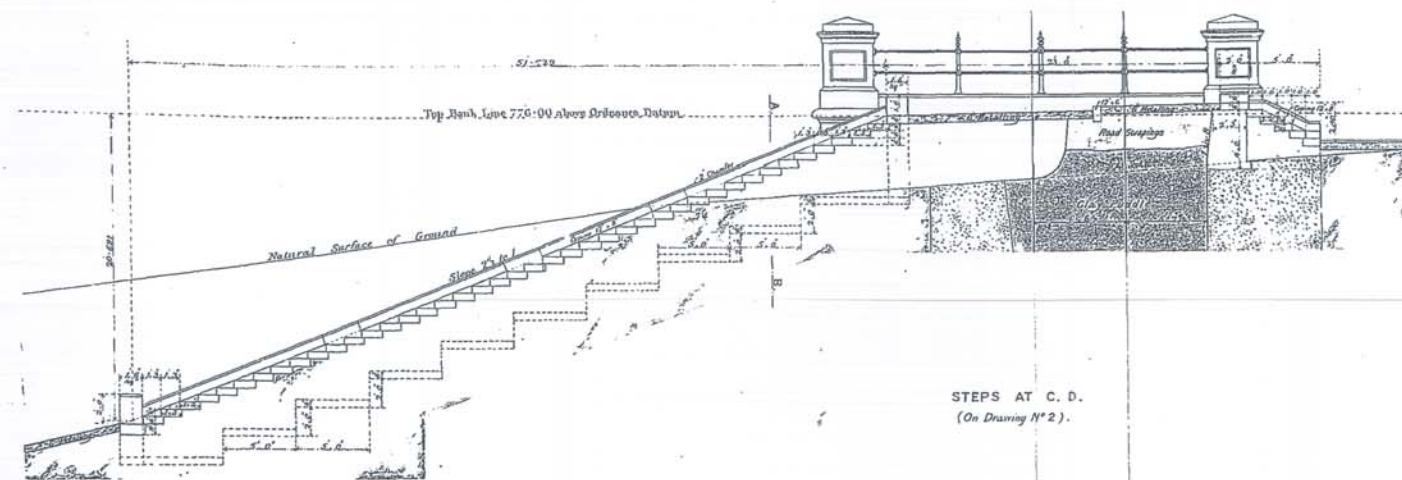
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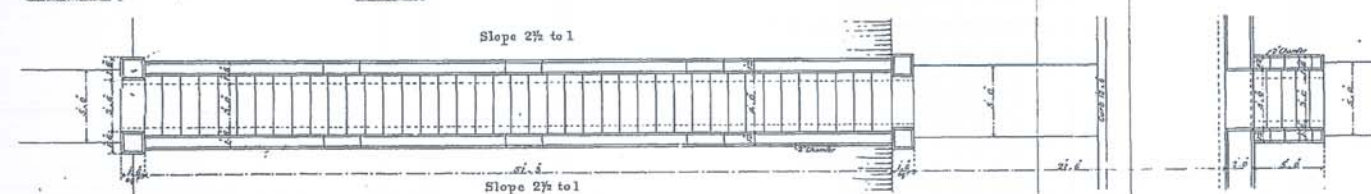
BUTTERLEY RESERVOIR.

Nº.22.

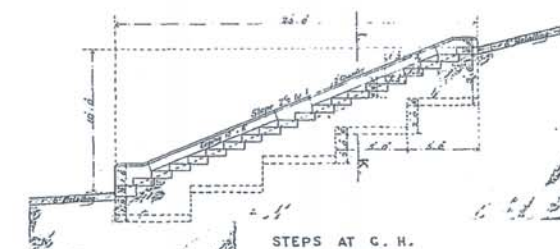
DETAILS OF STEPS.



SECTION AT A B.



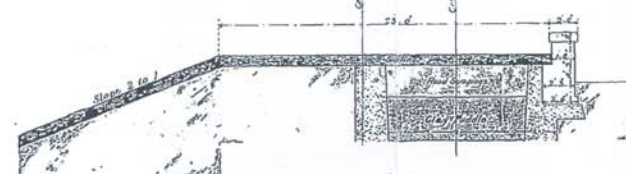
STEPS AT C. D.
(On Drawing Nº 2).



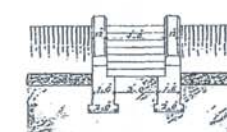
STEPS AT E. F.
(On Drawing Nº 2).



SECTION OF PATH.



SECTION AT I. K.
(On Drawing Nº 2).



SECTION AT I. K.

Scale 1/4 of an Inch to a Foot.



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6 CONTRACT DRAWINGS N° 6



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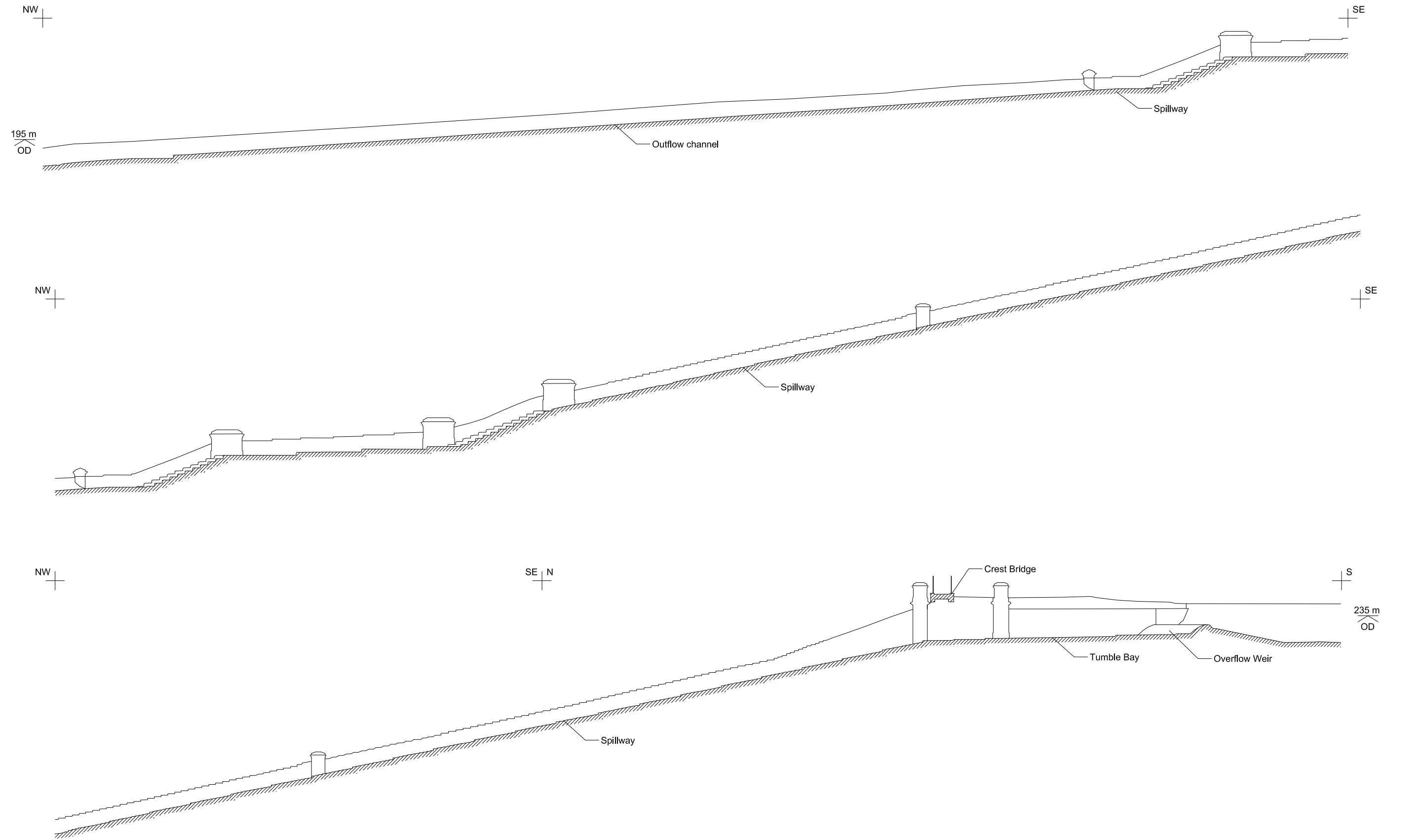
Historic photograph showing Puddle Trench of Butterley Reservoir during construction

Figure 8



Plan of Spillway showing plate viewpoints constructed from 3D laser scan data

Figure 9



0 10 20m

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Profile through Spillway

Figure 10



Plate 1: General view of Butterley Spillway looking southeast from the Bank Bottom Bridge (Film D.2)



Plate 2: General view of Butterley Spillway, scour portal, and outlet channel with the dam embankment, valve house and crest bridge beyond, looking south (Film D.4)


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Plate 3: General view of Butterley Spillway, scour portal, and outlet channel with the dam embankment, valve house and crest bridge beyond, looking south (Film D.13)



Plate 4: View of steps leading up to Bin Road and Wessenden Road with the Spillway beyond, looking southeast (Film D.8)


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Plate 5: General view of the north end of the Spillway, outlet channel and Grade II Listed Bank Bottom Bridge (Film D.22)



Plate 6: View of the northwest wall terminal of the Spillway with the scour portal beyond, looking southwest (Film D.15)


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Plate 7: General view of the Grade II Listed scour portal, looking southwest (Film 2.3)



Plate 8: General view of the Grade II Listed scour portal and outlet channel, looking southeast (Film D.20)


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Plate 9: General view of the Grade II Listed scour portal, looking east (Film 2.6)



Plate 10: Detail of cast iron access walkway to the scour portal, looking northeast (Film 7.36)


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Plate 11: View of the rear (south) side of the moulded cornice and pediment of the scour portal, looking northwest (Film 7.35)



Plate 12: View of the terminal of the west wall of the Spillway with stone pier, looking south (Film 7.32)


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Plate 13: View of the terminal of the east wall of the Spillway with stone pier, looking northeast (Film 7.10)



Plate 14: General view looking southeast up the Spillway (Film D.24)


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Plate 15: Detail of the northern-most cascade steps of the Spillway (Film 3.2)



Plate 16: View of the west ashlar wall and junction with cascade steps of the Spillway, looking south (Film 7.31)


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Plate 17: Detail of the western pier at the top of the lower flight of cascade steps of the Spillway (Film 7.11)

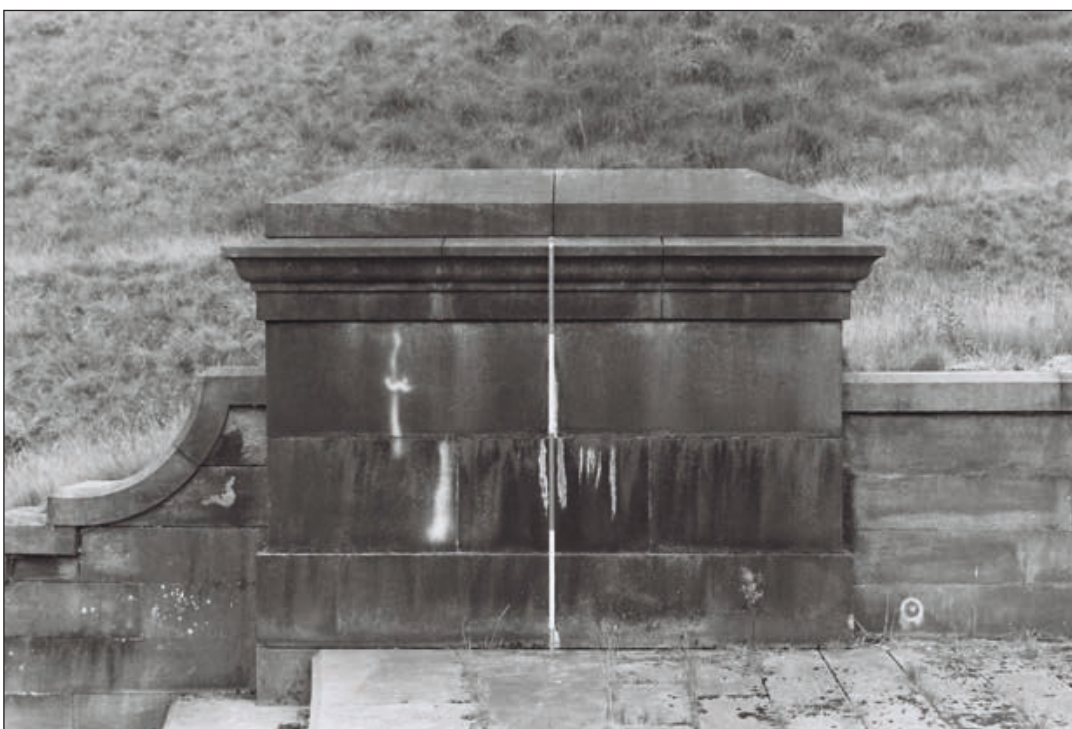


Plate 18: Detail of the eastern pier at the top of the lower flight of cascade steps of the Spillway (Film 7.12)


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Plate 19: Detail of the western pier at the bottom of the upper flight of cascade steps of the Spillway (Film 7.13)



Plate 20: Detail of the eastern pier at the bottom of the upper flight of cascade steps of the Spillway (Film 7.14)


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Plate 21: Detail of the western pier at the top of the upper flight of cascade steps of the Spillway
(Film 7.16)

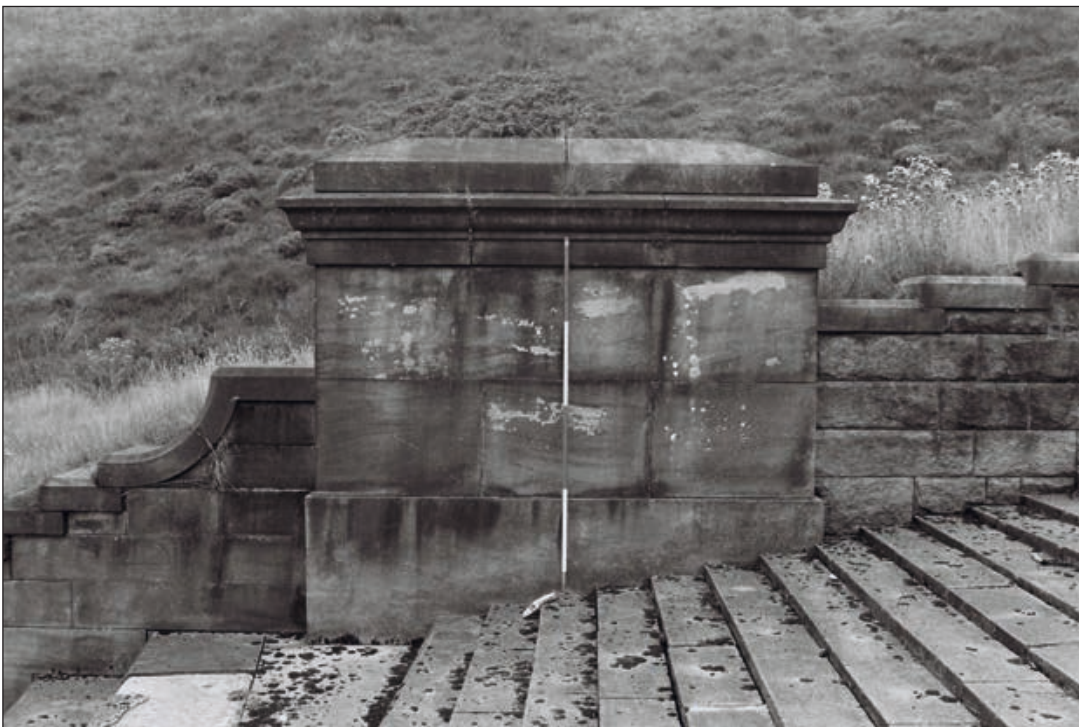


Plate 22: Detail of the eastern pier at the top of the upper flight of cascade steps of the Spillway
(Film 7.17)


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Plate 23: Detail of Spillway steps (Film 7.15)



Plate 24: Detail of the western pier positioned along the Spillway steps (Film 7.18)


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Plate 25: Detail of the eastern pier positioned along the Spillway steps (Film 7.19)



Plate 26: Detail of the Spillway steps (Film 7.20)


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Plate 27: General view looking down the Spillway, showing the curve of the structure and valley beyond (Film D.29)



Plate 28: General view of Spillway looking down towards Bank Bottom Bridge with valley beyond (Film D.31)


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Plate 29: General view looking down the Spillway, showing the curve of the structure and valley beyond (Film 4.7)



Plate 30: General view of Spillway looking down towards Bank Bottom Bridge with valley beyond (Film 7.24)


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Plate 31: General view across Butterley Reservoir showing the tumble bay, overflow weir and valve house, looking southwest (Film D.25)



Plate 32: View at the top of the Spillway showing the overflow weir, tumble bay, crest bridge, valve house and reservoir, looking west (Film D.27)


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Plate 33: General view along crest bridge with dam embankment beyond and valve house to the south, looking west (Film 7.30)



Plate 34: General view along crest bridge with dam embankment beyond and valve house to the south, looking west (Film 7.28)


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Plate 35: General view from the dam embankment across the reservoir showing the valve house, looking southeast (Film D.33)



Plate 36: View from the reservoir looking towards the overflow weir, valve house and crest bridge (Film D.35)


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Plate 37: General view looking northwest from the reservoir showing the overflow weir and valve house (Film D.37)



Plate 38: General view across the reservoir looking southeast up the valley (Film 5.10)


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Plate 39: General view looking southwest across the reservoir from overflow weir
(Film 5.8)



Plate 40: Detail of the join between the overflow weir and the western retaining wall
(Film 7.27)


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Plate 41: General view across the tumble bay showing the western retaining wall and valve house (Film 5.2)



Plate 42: Detail of the western retaining wall and join with the tumble bay (Film 7.23)


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Plate 43: General view across the tumble bay showing the eastern retaining wall, piers and crest bridge (Film 5.3)



Plate 44: General view of the tumble bay and overflow weir looking south towards the reservoir (Film D.39)


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Plate 45: View of the join between the overflow weir and tumble bay, showing stone detailing (Film 7.26)



Plate 46: General view of the tumble bay, crest bridge and top of the Spillway, looking northeast (Film D.41)


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Plate 47: View from the tumble bay looking north showing the crest bridge, top of the Spillway and valley beyond (Film 5.5)



Plate 48: Detail of the east retaining wall with flanking piers and crest bridge overhead at join between the tumble bay and Spillway (Film 7.25)


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Plate 49: Detail of the eastern pier at the top of the Spillway
(Film 7.21)



Plate 50: Detail of the west southern-most pier, between
the tumble bay and Spillway (Film 7.22)




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Plate 51: View from the crest bridge looking northwest across the valley with the Spillway in the foreground (Film 4.2)

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