VOLUME 4 GEOTECHNICS AND DRAINAGE

SECTION 2 DRAINAGE

PART 4

HD 43/04

DRAINAGE DATA MANAGEMENT SYSTEM FOR HIGHWAYS

SUMMARY

This document provides best practice guidance for the recording of physical data associated with drainage assets.

INSTRUCTIONS FOR USE

This is a new document to be inserted into the manual.

1. Remove Contents page for Volume 4.
2. Insert new Contents page for Volume 4 dated November 2004.
3. Insert HD 43/04 into Volume 4, Section 2.
4. Please archive this sheet as appropriate.

Note: A quarterly index with a full set of Volume Contents Pages is available separately from The Stationery Office Ltd.

THE HIGHWAYS AGENCY

SCOTTISH EXECUTIVE

WELSH ASSEMBLY GOVERNMENT
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THE DEPARTMENT FOR REGIONAL DEVELOPMENT
NORTHERN IRELAND

Drainage Data Management System for Highways

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Volume 4 home page

REGISTRATION OF AMENDMENTS

Amend No	Page No	Signature & Date of incorporation of amendments	Amend No	Page No	Signature & Date of incorporation of amendments

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1. INTRODUCTION

General

1.1 It is essential to have accurate data on the location and condition of highway drainage assets in order to plan ordered and cost effective maintenance. Data gathered should be stored in a manner that permits quick and easy access and in a format that is readily understandable to the Managing Agents and Operating Companies (MAs) and the Overseeing Organisations irrespective of the data source.

1.2 This Standard defines the data to be collected and the way it should be recorded. Data storage software is not specified, but a Geographical Information System (GIS) should be used. The Highways Agency will provide a GIS to ensure national uniformity within its network.

Scope

1.3 This Standard applies to all surveys and schemes on motorways and other trunk roads.

Mandatory Sections

1.4 Boxed text indicates sections that the MAs shall comply with or shall have agreed a suitable departure from this Standard with the relevant Overseeing Organisation. The remainder of the document contains advice and guidance which is commended to all Overseeing Organisations, MAs and other Highway Authorities.

Implementation with Existing Schemes

1.5 This Standard should be used forthwith for all new management contracts for England for the inspection and maintenance of drainage data. Whilst the general principles of the advice and guidance contained in this documnet are endorsed, this Standard is not mandatory for use in Scotland, Wales or Northern Ireland, and reference as to correct procedural aspects should be made to the respective Overseeing Organisation's maintenance instructions and manuals.

2. DATA COLLECTION

General

2.1 Information relating to highway drainage items can be obtained from a number of sources and in a variety of formats.

2.2 The Managing Agents (MAs) and Operating Companies are responsible for collating drainage data from all available sources and also selecting which data are to be included within the Highways Agency Dranage Data Management System (HADDMS).

2.3 Where existing information currently held within the Routine Maintenance Management System (RMMS) databases are considered for transfer into HADDMS, the accuracy of such information, and also the suitability of the data set for conversion, should be carefully checked prior to making a decision.

Closed Circuit Television Survey

2.4 CCTV survey is a means of obtaining data on the condition of enclosed drainage systems, by the insertion of a camera into the drain and recording the image electronically.

2.5 SD15, Model Contract Documents for the CCTV Survey of Highway Drainage Systems (MCHW 5.9.1) contains requirements on the data to be recorded and the recording format.

3. INVENTORY

General

3.1 This Chapter identifies drainage inventory item types. A definition or description of each inventory item is provided.

3.2 The symbols to be used for displaying highway drainage assets within a HADDMS are shown in Appendix A.

Item Types

3.3 The inventory items described below have been grouped as either 'Point', 'Continuous' or 'Region' items.

3.4 For consistency, the definitions used in the drainage inventory of the RMMS Manual have been adopted and identified within this Standard.

Definitions for Point Items

Manhole

3.5 A chamber constructed to give access to a drain, sewer or other underground service (RMMS).

Piped Grip

3.6 A piped conduit across the verge of a road to lead surface water away from the carriageway (RMMS).

Outfall

3.7 The point where one drainage system discharges to a watercourse.

Inlet/Outlet

3.8 An inlet is the point where a watercourse, ditch, swale or pond discharges into another system. An outlet is a point where a system discharges into a pond or channel.

Gully

3.9 A chamber at the side of the road connected to a drainage system to receive surface water and to trap debris. The chamber is usually surmounted by a surface grating (RMMS).

3.10 A gully may incorporate a sump to retain sediment.

Catchpit

3.11 A pit in a drainage system whose base lies below the level of the outgoing invert. It prevents silt or solid material from moving downstream (RMMS).

Interceptor

3.12 A structure placed where surface water enters the drainage system with a similar function to that of a catch pit (RMMS).

3.13 A petrol and oil interceptor is a gravity separator, which uses the difference between the specific gravity of water and fuel/oil to trap the latter. These items are a form of pollution control.

Soakaway

3.14 This may be an underground pit, usually filled with large aggregate, or a chamber that enables water to soak into the ground. A soakaway may also be a length of porous pipeline with a granular surround or rubble filled trench (*Exfiltration ditch*).

Bifurcation or Storm Overflow

3.15 Chamber with two or more outgoing pipes.

Pumping Station

3.16 An installation which pumps water under pressure from one point to another through a rising main.

3.17 A pumping station will include a number of valves, usually between the station and the rising main, which may be in a separate chamber.

Rodding Eye

3.18 Rodding eyes provide access at surface level for the clearance, in one direction only, of obstructions and debris using normally accepted manual rodding techniques.

Ghost Manhole

3.19 Ghost manholes are a database representation used to identify the location of bends within continuous items or the positions of junctions where no manholes exist.

Definitions for Continuous Sub-surface Items

3.20 The following definitions are for continuous drainage items which generally transfer flow below ground.

Pipework

3.21 A pipeline normally conveys surface water runoff within closed pipework.

Rising Main

3.22 A sealed pipeline through which water is pumped under pressure.

Culvert

3.23 An enclosed conduit, usually a large pipe for conveying a watercourse or ditch drain, below the carriageway or adjacent ground (RMMS).

Land Drainage

3.24 Pipework installed for the purpose of removing groundwater.

Syphon (inverted)

3.25 A section of pipeline, more often a culvert, that is depressed below the adjacent pipeline levels for the purpose of transferring flows beneath an obstruction, usually the carriageway.

Definitions for Continuous Surface Channel Items

3.26 The following definitions are for continuous drainage items which generally transfer flow above ground (along the surface of the item).

3.27 Drawings of continuous channel types are shown in Series F of the Highway Construction Details (HCD MCHW 3) and RMMS.

Surface Water Channel

3.28 A narrow channel, generally located near the edge of the carriageway, constructed to carry and lead away surface water (RMMS).

Edge Channel

3.29 A channel formed where the surface of the carriageway meets the kerb.

Drainage Channel Block

3.30 A precast concrete unit. The Highway Construction Details, Section 1: Series B - Edge of Pavement Details, (MHCW 3) show six shapes of channel block.

Grip

3.31 A shallow trench, located across the verge of a road, to lead surface water away from the carriageway (RMMS).

Swales and Grassed Channels

3.32 Swales are wide shallow grassed channels normally located adjacent to carriageways but often separated by a section of verge.

3.33 Grass channels are of similar dimensions to conventional concrete channels, are generally narrower than swales and are located at the edge of the pavement.

Ditch

3.34 A trench, generally parallel to the carriageway. This may be lined (RMMS).

Region Connector

3.35 A *Region Connector* should only be used to identify connectivity between regional items and adjacent point items.

Definitions for Continuous Surface and Sub-surface Channels and Drain Items

3.36 The following definitions are for continuous drainage items which generally transfer flow both above and below ground.

Combined Pipe and Channel Drain

3.37 A surface water channel combined with a drainage conduit below it, all cast in one. The channel is connected hydraulically to the conduit via gratings or intermittent slots.

Linear Drainage Channel

3.38 A closed profile hydraulic conduit with slots located in and above the conduit.

3.39 A U-shaped channel that usually has a separate grating or, in some instances, an integral grating.

Combined Surface and Ground Water Filter Drains

3.40 Also known as French Drains, these comprise a perforated or porous carrier pipe surrounded by bedding material within a trench filled with filter material. The surface of the drain may be topped with a range of materials or exposed filter material. The system drains both surface and sub surface water.

Fin Drain

3.41 A planar geo-composite arrangement designed to remove sub surface moisture from beneath the pavement. This may solely comprise a core surrounded by textile, refer to Type 5 in drawing F18 (HCD), or incorporate a pipe within the geotextile wrap, refer to Type 6 in drawing F18 (HCD).

Narrow Filter Drain

3.42 An edge of pavement subsurface drain that comprises filter material and a carrier pipe, which may be wrapped in a geotextile, refer to Type 8 and Type 9 in drawing F15 (HCD).

Combined Kerb Drain

3.43 Monolithic kerb-drains have an internal drainage channel within the pre-cast concrete or metal kerb unit.

Filter Drain

3.44 A field drain, usually running parallel and adjacent to a carriageway, surrounded by granular material such as gravel, within which may be laid porous or perforated pipe (RMMS).

Informal Drain

3.45 Also known as 'Over the edge drainage,' where surface water flows off the carriageway and across the verge to a drainage system, usually a ditch.

Counterfort Drain

3.46 A drain, other than a filter drain running parallel to a carriageway, surrounded by granular material such as gravel. Includes herringbone and intercepting drains (RMMS).

Definitions for Region Items

3.47 Balancing ponds are featured within the RMMS inventory. All ponds should be identified as one of the categories specified in the following paragraphs. MAs will be responsible for ensuring that pond items have been correctly classified.

Detention Pond

3.48 A detention pond temporarily stores run-off following heavy rainfall and discharges it later from highway drainage systems to a different system.

3.49 A detention pond is designed to be dry for extended periods.

Retention Pond

3.50 A retention pond allows water to be held for long periods. It may allow for the controlled release of water, in some instances water is allowed to seep into permeable banks or gravel. A retention pond will generally retain some water at all times.

Sedimentation Pond

3.51 Sedimentation ponds provide some degree of water treatment by allowing sediment to settle out.

Infiltration Basins

3.52 Infiltration basins are designed to retain storm water flows and allow the water to percolate through a filter layer which may typically comprise porous material, such as gravel.

Pollution Containment Pond/Tank

3.53 This is a device or an area located immediately upstream of the outlet from a drainage system to a watercourse. Having a minimum volume of 20m^3 it should incorporate a shut off mechanism. Its purpose is to contain spillages of potentially polluting liquids.

Wetlands

3.54 Wetlands are areas that are permanently saturated by surface water or groundwater. They are able to support aquatic and/or semi-aquatic vegetation such as reed swamps, marshes, or bogs, depending on the degree of saturation and inundation.

4. GENERAL DRAINAGE RECORDS

General

4.1 This section identifies the attributes to be recorded for all inventory items.

4.2 The following details shall be gathered for all item types.

Origin of Data and Other Source

4.3 The source of data records shall be identified within the *Origin of Data* field. This will enable future users to associate a level of confidence with data. Table B1 of Appendix B lists codes which describe the source of data.

4.4 The *Other Source* field shall be populated in cases where data has been obtained from other validated sources.

4.5 Where more than one data source is available the more reliable source should be used.

4.6 As-Built drawings are prepared immediately after construction is complete.

4.7 Drainage data featured within record plans should also be identified as an As-Built drawing origin type if MAs can confirm that the information illustrated within the drawings is current and accurate.

Date

4.8 The *Date* field should contain the date of survey/ inspection and **not** when the data was entered within a GIS.

Item Reference

4.9 All items shall have a unique reference. Further details regarding the production of references are given in Chapter 8.

Item Type

4.10 A two character code shall be attributed to all items to classify the item type.

4.11 Item type codes are shown in Tables B2, B3 and B4 of Appendix B.

System Type

4.12 Any items which convey domestic or industrial wastewater shall be identified as a 'foul sewerage system' within the *System Type* field.

Owner

4.13 Owners of known public or private drains which contribute to the drainage network shall be identified within the *Ownership* field.

Downstream Watercourse

4.14 Drainage networks will eventually discharge into a watercourse or will permeate into the ground.

4.15 Drainage items may permeate into the ground via exfiltration ditches, swales or soakaways. In these cases, the *Downstream Watercourse* field should be populated with the point reference of the item which enables flow to percolate into the ground.

4.16 All items which eventually discharge to watercourses should contain the *Downstream Watercourse* field populated with the name of the most immediate downstream watercourse. In cases where watercourses are unnamed (i.e. a tributary of a main river) then the nearest named downstream watercourse should be used.

5. DRAINAGE RECORDS FOR POINT ITEMS

General

5.1 This Chapter identifies additional fields to be populated for all point items. Examples of survey inspection sheets for point items are shown in Appendix D.

Spatial Data

5.2 Coordinates of each asset shall be recorded within the *Easting* and *Northing* fields. The coordinates shall be based on the location of the asset's point of entry and not the location of any associated offset underground features. Coordinates shall be entered in metres.

5.3 Guidance on the production of point item references is given in Chapter 8.

Access Details

5.4 The inclusion of ladders and step irons shall be identified to all point items which can be inspected internally. Side entry manholes shall also be identified.

5.5 Point items which have several landings shall be identified within the *Number of Landings* field.

5.6 Details of the construction of the inventory item (i.e. brick or pre-cast concrete etc.) shall be recorded.

Cover Details

5.7 Cover details should be allocated to relevant item types. Cover details are **not** required for Ghost Manhole point item type.

5.8 The data to be recorded for covers are as follows:

(i) *Cover Level (m AOD)*

(ii) *Cover Shape*

(iii) *Cover Length (m)*

(iv) *Cover Width (m)*

(v) *Cover Duty (BSEN 124)*

(vi) *Manufacturer.*

5.9 Additionally, the *Grating* field shall be populated to identify whether the cover acts as an inlet for surface runoff.

Shaft and Chamber Details

5.10 Shaft and chamber details should be allocated to the following point items:

(i) *Manhole*

(ii) *Gully*

(iii) *Interceptor*

(iv) *Catch Pit*

(v) *Bifurcation or Overflow*

(vi) *Pumping Station*

(vii) *Soakaway*

(viii) *Rodding Eye.*

5.11 These point items may accommodate both a chamber and shaft area. The chamber is generally located between the base of the item and the shaft (or the chamber roof). The shaft provides access from the cover to the chamber itself.

5.12 The chamber and shaft dimensions should be identified and populated within the following fields:

(i) *Shaft Width (m)*

(ii) *Shaft Length (m)*

(iii) *Chamber Width (m)*

(iv) *Chamber Length (m).*

5.13 Some items may only accommodate a chamber (e.g. shallow catchpit). Shaft dimensions should match chamber dimensions for these cases.

Flow Controls

5.14 Several types of flow control exist within the drainage network. The following flow controls should be identified:

(i) *Orifice*

(ii) *Flap Valve*

(iii) *Sluice Gate*

(iv) *Weir*

(v) *Screen or Grill*

(vi) *Penstock*

(vii) *Flume*

(viii) *Headwall*

(ix) *Hydro-Dynamic Flow Control Device.*

5.15 The existence of flow controls within a point item shall be identified.

Ghost Nodes at Ponds

5.16 Ghost nodes should be applied to represent the centroid of regional item. The ghost nodes should be populated with the fields identified within Section 4 *(General Data Records)*.

6. DRAINAGE RECORDS FOR CONTINUOUS ITEMS

General

6.1 This Chapter identifies attributes to be recorded for all continuous items. Examples of survey inspection sheets for continuous items are shown in Appendix E.

6.2 All continuous inventory items shall have a unique reference.

6.3 Guidance on the referencing of continuous items is stated in Chapter 8.

6.4 Both upstream and downstream references of point items shall be recorded to ensure connectivity and flow direction to relevant point items.

6.5 If the flow direction for a continuous item is unknown then this should be identified within the *Flow direction known* field.

Physical Details

6.6 All continuous elements shall have the *Shape* field populated. Standard shapes for above and below ground items are shown in Table B5 and B6 of Appendix B.

6.7 The *Material* field should be populated for the following continuous items:

(i) *All Channels*

(ii) *Combined Pipe and Channel Drain*

(iii) *Combined Kerb and Drainage*

(iv) *Culvert*

(v) *Land Drain*

(vi) *Pipework*

(vii) *Syphon.*

6.8 Material codes to be used within the *Material* field are listed in Table B7 of Appendix B.

6.9 The *Material* field should be the material of the conveyance element and not of filter material.

6.10 Surface materials shall be identified for all channels.

6.11 The *Surface Material* field should be populated for the following continuous items:

(i) *Combined Pipe and Channel Drain*

(ii) *Linear Drainage Channel*

(iii) *Combined Surface and Ground Water Filter Drain*

(iv) *Fin Drain*

(v) *Narrow Filter Drain*

(vi) *Filter drain.*

6.12 Channels with continuous access covers should be identified within the *Surface Material* field.

Item Dimensions and Levels

6.13 The following fields should be populated for all continuous items types.

(i) *Width (mm)*

(ii) *Height - excluding circular shaped items (mm)*

(iii) *Length (m)*

(iv) *Upstream Depth (m)*

(v) *Upstream Invert Level (m AOD)*

(vi) *Downstream Depth (m)*

(vii) *Downstream Invert Level (m AOD).*

6.14 All invert levels shall be in metres above Ordnance Datum.

Lined or Unlined

6.15 The following continuous items may be lined:

(i) *Ditches*

(ii) *Grips*

(iii) *Pipework.*

Region Connector

6.16 A *Region Connector* (defined in Section 3.35) should be populated with fields stated in Section 4 (General Drainage Records) only.

7. DRAINAGE RECORDS FOR REGION ITEMS

General

7.1 This Chapter identifies additional fields to be populated for all region items. Examples of survey inspection sheets for point items are shown in Appendix F.

Spatial Data

7.2 The *Easting* and *Northing* fields shall be populated with coordinates of the centre of a region item.

7.3 Guidance on the production of item references is given in Chapter 8.

Connectivity

7.4 Table A2 in Appendix A shows the graphical region style for ponds. A ghost node should also be digitised at the centroid of all regional items.

7.5 A *Region Connector* should be used to connect ghost nodes allocated at the centroid of regions, to upstream and downstream point items.

8. REFERENCING DRAINAGE ITEMS

General

8.1 A referencing system provides the key to the accumulation of additional information. All items within the inventory require a unique reference.

8.2 The item referencing convention contained in this Standard is based on the item's relative position to the Ordnance Survey National Grid.

References for point and region items are always 12 characters in length. References for continuous items are 13 characters in length.

8.3 The reference system describes the location of a drainage asset to the nearest 10m Ordnance Survey grid square. The final character within the reference of point and region items is a unique alphanumeric character.

8.4 An asset's reference should be used as a guide to its approximate location. Actual location of the asset is stored within the Easting and Northing fields (see section 5.2 for further details).

8.5 Allocation of new references to drainage assets should be managed by MAs. References allocated during surveys by sub contractors are to be validated by MAs.

Reference System for Point and Region Items

8.6 An example of how to produce a drainage reference for a point item from Eastings and Northings values is shown in Table C1, Appendix C.

8.7 The first two characters of the reference refer to the asset's location to the nearest Ordnance Survey 100 km grid square (see Table C3 and Figure C1 in Appendix C).

8.8 The first four digits of the reference relate to the item's location within 10,000m and 1,000m Ordnance Survey grid squares. This is followed by an underscore and four more digits which refer to the item's location within 1,000m and 100m Ordnance Survey grid squares.

8.9 The following single arbitrary character should be assigned to all items located within 10m Ordnance Survey grid squares as an alphanumeric letter.

Reference System for Link Items

8.10 All continuous items should also have unique reference identifiers.

Link references are composed of the upstream point reference and a sequentially numbered reference (example shown in Table C2 of Appendix C).

Reference System for Region Items

8.11 The reference of a region should be based on the estimated coordinates of the centre of a region.

9. REFERENCES AND BIBLIOGRAPHY

1. **Trunk Road Maintenance Manual (TRMM).** The Stationery Office, London

2. **Routine Maintenance Management System Manual (RMMS)**. The Stationery Office, London

3. **Manual of Contract Documents for Highway Works (MCHW).** The Stationery Office, London

   Volume 3: Highway Construction Details (HCD) (MHCW 3)

   Volume 5: Contract Documents for Specialist Activities (MCHW 5) SD 15. "Documents for the CCTV Survey of Highway Drainage Systems". (MCDHW 5.9).

   Series 9000 - Specification. (MCDHW 5.9.2).

   Series NG 9000 - Notes for Guidance. (MCDHW 5.9.3).

4. **Design Manual for Road and Bridges (DMRB).** The Stationery Office, London

10. ENQUIRIES

All technical enquiries or comments on this Standard should be sent in writing as appropriate to:

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Roads Service
Clarence Court
10-18 Adelaide Street
Belfast BT2 8GB

G W ALLISTER
Director of Engineering

APPENDIX A: LINE TYPES AND SYMBOLOGY

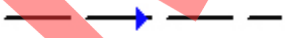
Type	Line type
Sub Surface Continuous Items (i.e. Pipework)	
Surface Continuous Items (i.e. Surface Water Channel)	
Combined Surface and Sub Surface Items (i.e. Combined Surface and Ground Water Filter Drains)	

Table A1 – Line types for Continuous Items

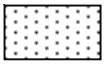
Type	Symbol
Manhole	
Outfall	
Pumping Station	
Bifurcation or Overflow	
Gully	
Piped Grip	
Soakaway	
Interceptor	
Catch Pit	
Ghost Node	
All Ponds and Wetlands	

Table A2 – Symbols for Point and Region Items

APPENDIX B: TABLES

Inventory Item	Item Code
Internal Asset Survey	IS
External Asset Survey	ES
Digital As Built Drawing	DP
Hardcopy As Built Drawing	HP
RMMS Database	RS
Other	OT

Table B1 – Data Source Codes

Inventory Item	Item Code
Manhole	MH
Piped Grip	PG
Outfall	OU
Inlet	IT
Gully	GU
Catchpit	CP
Interceptor	IN
Soakaway	SO
Bifurcation or Storm Overflow	BI
Pumping Station	PS
Rodding Eye	RE
Ghost Manhole	GN

Table B2 – Codes for Point Items

Inventory Item	Item Code
Detention Pond	DP
Retention Pond	RP
Sediment Pond	SP
Infiltration Basin	IB
Pollution Containment Pond/Tank	PC
Wetlands	WL

Table B3 – Codes for Region Inventory Items

Inventory Item	Item Code
Pipework	PW
Rising Main	RM
Culvert	CU
Land Drainage	LD
Syphon (inverted)	SY
Surface Water Channel	CH
Edge Channel	EC
Drainage Channel Block	DB
Grip	GP
Ditch	DI
Swale or Grassed Channel	SC
Linear Drainage Channel	LI
Combined Surface and Ground Water Filter Drains	CF
Fin Drain	FN
Narrow Filter Drain	ND
Filter Drain	FD
Counterfort Drain	CD
Informal Drainage 'Over the Edge'	OE
Combined Kerb and Drainage	CK
Combined Pipe and Channel Drain	CS
Region Connector	RC

Table B4 - Codes for continuous inventory items

Inventory Item	Item Code
Circular	CI
Rectangular	RE
Egg	EG
Oval	OV
Arch	AC
Other	OT

Table B5 – Shape codes for below ground continuous inventory items

Inventory Item	Item Code
Triangular	TG
Rectangular	RE
Trapezoidal	TP
U Shaped	US

Table B6 – Shape codes for above ground continuous inventory items

Inventory Item	Item Code
Vitrified Clay	VC
Concrete	CO
MDPE	MD
PVC	PV
HPPE	HE
Cast Iron	CI
Asbestos Cement	AC
Pitch Fibre	PF

Table B7 – Material codes for continuous inventory items

Inventory Item	Item Code
Granular	GR
Turf	TU
Pre-coated Chips	CC
Tar Spray	TS
Bitumen Bonded Shredded Tyres	BB
Removable Bars	RB
Continuous Gratings	CG

Table B8 – Surface material codes for continuous inventory items

System Type	Item Code
Foul	FW
Storm	SW

Table B9 – System type codes

APPENDIX C: REFERENCING DETAILS

Easting (m)	Northing (m)	Easting (100,000m figure)	Northing (100,000m figure)	OS 100km grid square	Easting 10,000m & 1,000m figures	Northing 10,000m & 1,000m figures	Easting 100m & 10m figures	Northing 100m & 10m figures	Sequential reference
286,743	673,489	2	6	NS	86	73	74	48	a
				NS8673_7448a					

Table C1 – Referencing convention for point and region items

Upstream Point reference	Link Number
12 Characters	Sequential Number
NS8673_7489a	1
NS8673_7489a.1	

Table C2 – Referencing convention for continuous items

OS Suffix	Minimum Easting (m)	Maximum Easting (m)	Minimum Northing (m)	Maximum Northing (m)
NA	0	100,000	9000,000	1,000,000
NF	0	100,000	800,000	900,000
NL	0	100,000	700,000	800,000
NQ	0	100,000	600,000	700,000
NV	0	100,000	500,000	600,000
SA	0	100,000	400,000	500,000
SF	0	100,000	300,000	400,000
SL	0	100,000	200,000	300,000
SQ	0	100,000	100,000	200,000
SV	0	100,000	0	100,000
HW	0	100,000	1,000,000	1,100,000
NB	100,000	200,000	900,000	1,000,000
NG	100,000	200,000	800,000	900,000
NM	100,000	200,000	700,000	800,000
NR	100,000	200,000	600,000	700,000
NW	100,000	200,000	500,000	600,000
SB	100,000	200,000	400,000	500,000
SG	100,000	200,000	300,000	400,000
SM	100,000	200,000	200,000	300,000
SR	100,000	200,000	100,000	200,000
SW	100,000	200,000	0	100,000
HX	200,000	300,000	1,000,000	1,100,000
NC	200,000	300,000	900,000	1,000,000
NH	200,000	300,000	800,000	900,000
NN	200,000	300,000	700,000	800,000
NS	200,000	300,000	600,000	700,000
NX	200,000	300,000	500,000	600,000
SC	200,000	300,000	400,000	500,000
SH	200,000	300,000	300,000	400,000
SN	200,000	300,000	200,000	300,000
SS	200,000	300,000	100,000	200,000
SX	200,000	300,000	0	100,000

OS Suffix	Minimum Easting (m)	Maximum Easting (m)	Minimum Northing (m)	Maximum Northing (m)
HY	300,000	400,000	1,000,000	1,100,000
ND	300,000	400,000	900,000	1,000,000
NJ	300,000	400,000	800,000	900,000
NO	300,000	400,000	700,000	800,000
NT	300,000	400,000	600,000	700,000
NY	300,000	400,000	500,000	600,000
SD	300,000	400,000	400,000	500,000
SJ	300,000	400,000	300,000	400,000
SO	300,000	400,000	200,000	300,000
ST	300,000	400,000	100,000	200,000
SY	300,000	400,000	0	100,000
NE	400,000	500,000	900,000	1,000,000
NK	400,000	500,000	800,000	900,000
NP	400,000	500,000	700,000	800,000
NU	400,000	500,000	600,000	700,000
NZ	400,000	500,000	500,000	600,000
SE	400,000	500,000	400,000	500,000
SK	400,000	500,000	300,000	400,000
SP	400,000	500,000	200,000	300,000
SU	400,000	500,000	100,000	200,000
SZ	400,000	500,000	0	100,000
TA	500,000	600,000	400,000	500,000
TF	500,000	600,000	300,000	400,000
TL	500,000	600,000	200,000	300,000
TQ	500,000	600,000	100,000	200,000
TV	500,000	600,000	0	100,000
TG	600,000	700,000	300,000	400,000
TM	600,000	700,000	200,000	300,000
TR	600,000	700,000	100,000	200,000

Table C3 – Boundary coordinates for Ordnance Survey 100km grid squares

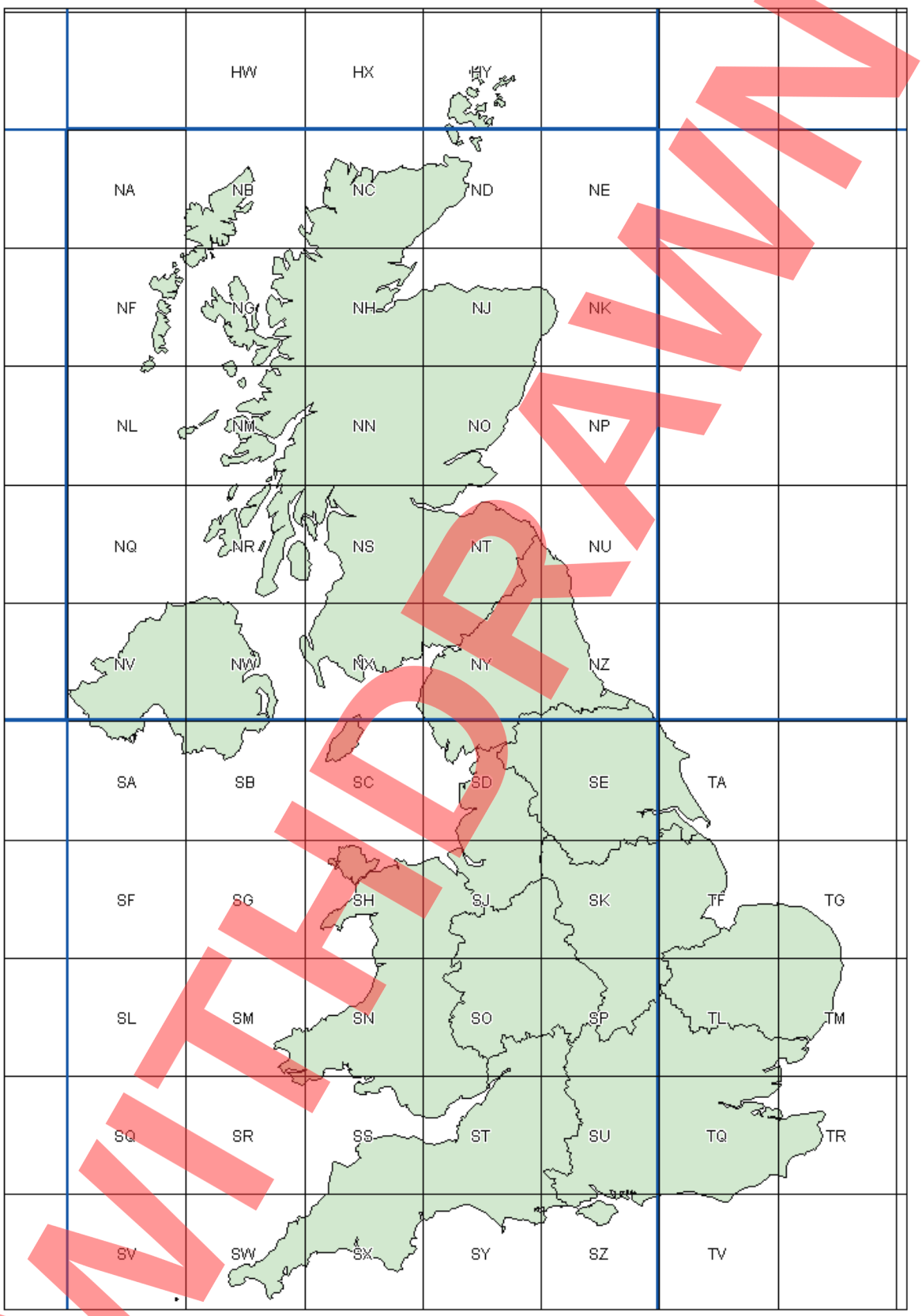


Figure C1 – Ordnance survey 100km grid square references

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APPENDIX D: SURVEY INSPECTION SHEETS FOR POINT ITEMS

Manhole Details

Overall

Item Type Code: MH
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')
Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT - Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder?: Y (Yes or No)
Step Irons?: N (Yes or No)
Side Entry?: N (Yes or No)
Manhole Construction: BR (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings: 0

Cover Details

Cover Level: 58.85 (m AOD)
Cover Shape: CI (SQ - Square, CI - Circular, TR - Triangle or Ot - Other)
Other Shape: -
Cover Duty: H (H - Heavy, M - Medium or L - Low)
Cover Width: 0.6 (m)
Cover Length: 0.6 (m)
Manufacterer: Brickhouse Dudley
Grating: N (Yes or No)

Shaft and Chamber

Shaft Width: 0.6 (m)
Shaft Length: 0.6 (m)
Chamber Width: 1.1 (m)
Chamber Length: 1.5 (m)

Flow Controls

Flap Valve?: N (Yes or No)
Orifice?: N (Yes or No)
Sluice Gate?: N (Yes or No)
Weir?: N (Yes or No)
Screens?: N (Yes or No)
Penstock?: N (Yes or No)
Flume?: N (Yes or No)
Headwall?: ☒ (Yes or No)

Location	Details

Piped Grip Details

Overall

Item Type Code: PG | System Type: ☒ | Onwer: HA | Date of Survey: 20/03/2003

SW - Surface Water, F - Foul or CO - Combined | *HA - Highways Agency, Public or Private* | *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames | Origin of Data: IS | Other Source: -

ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Spatial Information

Easting: 286,743 (m) | Northing: 673,489 (m) | Identifier: a | Asset Reference: NS8673_7448a

(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? ☒ *(Yes or No)* | Step Irons? ☒ *(Yes or No)* | Side Entry? ☒ *(Yes or No)* | Manhole Construction ☒ *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)* | Number of Landings ☒

Cover Details

Cover Level: 58.85 (m AOD) | Cover Shape: CI | Other Shape: - | Cover Duty: H

(SQ - Square, CI - Circular, TR - Triangle or Ot - Other) | *(H - Heavy, M - Medium or L - Low)*

Cover Width: 0.6 (m) | Cover Length: 0.6 (m) | Manufacterer: Brickhouse Dudley | Grating: N *(Yes or No)*

Shaft and Chamber

Shaft Width ☒ (m) | Shaft Length ☒ (m) | Chamber Width ☒ (m) | Chamber Length ☒ (m)

Flow Controls

Flap Valve? ☒ *(Yes or No)* | Orifice? ☒ *(Yes or No)* | Sluice Gate? ☒ *(Yes or No)* | Weir? ☒ *(Yes or No)* | Screens? ☒ *(Yes or No)* | Penstock? ☒ *(Yes or No)* | Flume? ☒ *(Yes or No)* | Headwall? ☒ *(Yes or No)*

Location	Details

Outfall Details

Overall

Item Type Code: OU
System Type: [ ]
SW - Surface Water, F - Foul or CO - Combined
Onwer: HA
HA - Highways Agency, Public or Private
Date of Survey: 20/03/2003
Date of Survey or drawing production for 'as built'

Downstream Watercourse: Thames
Origin of Data: IS
Other Source: [ ]
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a
(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? [ ] *(Yes or No)*
Step Irons? [ ] *(Yes or No)*
Side Entry? [ ] *(Yes or No)*
Manhole Construction [ ] *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)*
Number of Landings [ ]

Cover Details

Cover Level: 56 (m AOD)
Cover Shape [ ] *(SQ - Square, CI - Circular, TR - Triangle or OT - Other)*
Other Shape [ ]
Cover Duty [ ] *(H - Heavy, M - Medium or L - Low)*

Cover Width [ ] (m)
Cover Length [ ] (m)
Manufacterer [ ]
Grating [ ] *(Yes or No)*

Shaft and Chamber

Shaft Width [ ] (m)
Shaft Length [ ] (m)
Chamber Width [ ] (m)
Chamber Length [ ] (m)

Flow Controls

Flap Valve? Y *(Yes or No)*
Orifice? [ ] *(Yes or No)*
Sluice Gate? [ ] *(Yes or No)*
Weir? [ ] *(Yes or No)*
Screens? Y *(Yes or No)*
Penstock? [ ] *(Yes or No)*
Flume? [ ] *(Yes or No)*
Headwall? Y *(Yes or No)*

Location	Details

Inlet/ Outlet Details

Overall

Item Type Code: IT
System Type: ☒
SW - Surface Water, F - Foul or CO - Combined
Onwer: HA
HA - Highways Agency, Public or Private
Date of Survey: 20/03/2003
Date of Survey or drawing production for 'as built'

Downstream Watercourse: Thames
Origin of Data: IS
Other Source: -
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a
(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? ☒ *(Yes or No)*
Step Irons? ☒ *(Yes or No)*
Side Entry? ☒ *(Yes or No)*
Manhole Construction ☒ *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)*
Number of Landings ☒

Cover Details

Cover Level: 56 (m AOD)
Cover Shape ☒ *(SQ - Square, CI - Circular, TR - Triangle or OT - Other)*
Other Shape ☒
Cover Duty ☒ *(H - Heavy, M - Medium or L - Low)*

Cover Width ☒ (m)
Cover Length ☒ (m)
Manufacterer ☒
Grating ☒ *(Yes or No)*

Shaft and Chamber

Shaft Width ☒ (m)
Shaft Length ☒ (m)
Chamber Width ☒ (m)
Chamber Length ☒ (m)

Flow Controls

Flap Valve? Y *(Yes or No)*
Orifice? ☒ *(Yes or No)*
Sluice Gate? ☒ *(Yes or No)*
Weir? ☒ *(Yes or No)*
Screens? Y *(Yes or No)*
Penstock? ☒ *(Yes or No)*
Flume? ☒ *(Yes or No)*
Headwall? Y *(Yes or No)*

Location	Details

Gully Details

Overall

Item Type Code: GU
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT - Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? Y (Yes or No)
Step Irons? N (Yes or No)
Side Entry? N (Yes or No)
Manhole Construction: BR (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings: 0

Cover Details

Cover Level: 58.85 (m AOD)
Cover Shape: CI (SQ - Square, CI - Circular, TR - Triangle or Ot - Other)
Other Shape: -
Cover Duty: H (H - Heavy, M - Medium or L - Low)

Cover Width: 0.6 (m)
Cover Length: 0.6 (m)
Manufacterer: Brickhouse Dudley
Grating: N (Yes or No)

Shaft and Chamber

Shaft Width: 0.6 (m)
Shaft Length: 0.6 (m)
Chamber Width: 1.1 (m)
Chamber Length: 1.5 (m)

Flow Controls

Flap Valve? ☒ (Yes or No)
Orifice? ☒ (Yes or No)
Sluice Gate? ☒ (Yes or No)
Weir? ☒ (Yes or No)
Screens? ☒ (Yes or No)
Penstock? ☒ (Yes or No)
Flume? ☒ (Yes or No)
Headwall? ☒ (Yes or No)

Location	Details

Catchpit Details

Overall

Item Type Code: CP
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? Y (Yes or No)
Step Irons? N (Yes or No)
Side Entry? N (Yes or No)
Manhole Construction: BR (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings: 0

Cover Details

Cover Level: 58.85 (m AOD)
Cover Shape: CI (SQ - Square, CI - Circular, TR - Triangular or Ot - Other)
Other Shape: -
Cover Duty: H (H - Heavy, M - Medium or L - Low)

Cover Width: 0.6 (m)
Cover Length: 0.6 (m)
Manufacterer: Brickhouse Dudley
Grating: N (Yes or No)

Shaft and Chamber

Shaft Width: 0.6 (m)
Shaft Length: 0.6 (m)
Chamber Width: 1.1 (m)
Chamber Length: 1.5 (m)

Flow Controls

Flap Valve?	Orifice?	Sluice Gate?	Weir?	Screens?	Penstock?	Flume?	Headwall?
(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)

Location	Details

Interceptor Details

Overall

Item Type Code: IN
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RIMMS Database, AB - As built drawing or OT- Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? Y (Yes or No)
Step Irons? N (Yes or No)
Side Entry? N (Yes or No)
Manhole Construction: BR (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings: 0

Cover Details

Cover Level: 58.85 (m AOD)
Cover Shape: CI (SQ - Square, CI - Circular, TR - Triangle or Ot - Other)
Other Shape: -
Cover Duty: H (H - Heavy, M - Medium or L - Low)

Cover Width: 0.6 (m)
Cover Length: 0.6 (m)
Manufacterer: Brickhouse Dudley
Grating: N (Yes or No)

Shaft and Chamber

Shaft Width: 0.6 (m)
Shaft Length: 0.6 (m)
Chamber Width: 1.1 (m)
Chamber Length: 1.5 (m)

Flow Controls

Flap Valve? ☒ (Yes or No)
Orifice? ☒ (Yes or No)
Sluice Gate? ☒ (Yes or No)
Weir? ☒ (Yes or No)
Screens? ☒ (Yes or No)
Penstock? ☒ (Yes or No)
Flume? ☒ (Yes or No)
Headwall? ☒ (Yes or No)

Location	Details

Soakaway Details

Overall

Item Type Code: SO
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? Y (Yes or No)
Step Irons? N (Yes or No)
Side Entry? N (Yes or No)
Manhole Construction: BR (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings: 0

Cover Details

Cover Level: 58.85 (m AOD)
Cover Shape: CI (SQ - Square, CI - Circular, TR - Triangular or Ot - Other)
Other Shape: -
Cover Duty: H (H - Heavy, M - Medium or L - Low)

Cover Width: 0.6 (m)
Cover Length: 0.6 (m)
Manufacterer: Brickhouse Dudley
Grating: N (Yes or No)

Shaft and Chamber

Shaft Width: 0.6 (m)
Shaft Length: 0.6 (m)
Chamber Width: 1.1 (m)
Chamber Length: 1.5 (m)

Flow Controls

Flap Valve?	Orifice?	Sluice Gate?	Weir?	Screens?	Penstock?	Flume?	Headwall?
(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)

Location	Details

Bifurcation or Storm Overflow Details

Overall

Item Type Code: BI
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')
Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? Y (Yes or No)
Step Irons? N (Yes or No)
Side Entry? N (Yes or No)
Manhole Construction: BR (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings: 0

Cover Details

Cover Level: 58.85 (m AOD)
Cover Shape: CI (SQ - Square, CI - Circular, TR - Triangle or Ot - Other)
Other Shape: -
Cover Duty: H (H - Heavy, M - Medium or L - Low)
Cover Width: 0.6 (m)
Cover Length: 0.6 (m)
Manufacterer: Brickhouse Dudley
Grating: N (Yes or No)

Shaft and Chamber

Shaft Width: 0.6 (m)
Shaft Length: 0.6 (m)
Chamber Width: 1.1 (m)
Chamber Length: 1.5 (m)

Flow Controls

Flap Valve? N (Yes or No)
Orifice? N (Yes or No)
Sluice Gate? N (Yes or No)
Weir? N (Yes or No)
Screens? N (Yes or No)
Penstock? N (Yes or No)
Flume? N (Yes or No)
Headwall? ☒ (Yes or No)

Location	Details

Pumping Station Details

Overall

Item Type Code: PS
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT - Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? Y (Yes or No)
Step Irons? N (Yes or No)
Side Entry? N (Yes or No)
Manhole Construction: BR (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings: 0

Cover Details

Cover Level: 58.85 (m AOD)
Cover Shape: CI (SQ - Square, CI - Circular, TR - Triangular or Ot - Other)
Other Shape: -
Cover Duty: H (H - Heavy, M - Medium or L - Low)

Cover Width: 0.6 (m)
Cover Length: 0.6 (m)
Manufacterer: Brickhouse Dudley
Grating: N (Yes or No)

Shaft and Chamber

Shaft Width: 0.6 (m)
Shaft Length: 0.6 (m)
Chamber Width: 1.1 (m)
Chamber Length: 1.5 (m)

Flow Controls

Flap Valve?	Orifice?	Sluice Gate?	Weir?	Screens?	Penstock?	Flume?	Headwall?
(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)	(Yes or No)
☒	☒	☒	☒	☒	☒	☒	☒

Location	Details

Rodding Eye Details

Overall

Item Type Code: RE
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')
Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? Y (Yes or No)
Step Irons? N (Yes or No)
Side Entry? N (Yes or No)
Manhole Construction: BR (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings: 0

Cover Details

Cover Level: 58.85 (m AOD)
Cover Shape: CI (SQ - Square, CI - Circular, TR - Triangle or Ot - Other)
Other Shape: -
Cover Duty: H (H - Heavy, M - Medium or L - Low)
Cover Width: 0.6 (m)
Cover Length: 0.6 (m)
Manufacterer: Brickhouse Dudley
Grating: N (Yes or No)

Shaft and Chamber

Shaft Width: 0.6 (m)
Shaft Length: 0.6 (m)
Chamber Width: 1.1 (m)
Chamber Length: 1.5 (m)

Flow Controls

Flap Valve? N (Yes or No)
Orifice? N (Yes or No)
Sluice Gate? N (Yes or No)
Weir? N (Yes or No)
Screens? N (Yes or No)
Penstock? N (Yes or No)
Flume? N (Yes or No)
Headwall? ☒ (Yes or No)

Location	Details

Ghost Manhole Details

Overall

Item Type Code: GN
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')
Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT - Other Source)
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a (100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? (Yes or No)
Step Irons? (Yes or No)
Side Entry? (Yes or No)
Manhole Construction (BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)
Number of Landings

Cover Details

Cover Level (m AOD)
Cover Shape (SQ - Square, CI - Circular, TR - Triangle or Ot - Other)
Other Shape
Cover Duty (H - Heavy, M - Medium or L - Low)
Cover Width (m)
Cover Length (m)
Manufacterer
Grating (Yes or No)

Shaft and Chamber

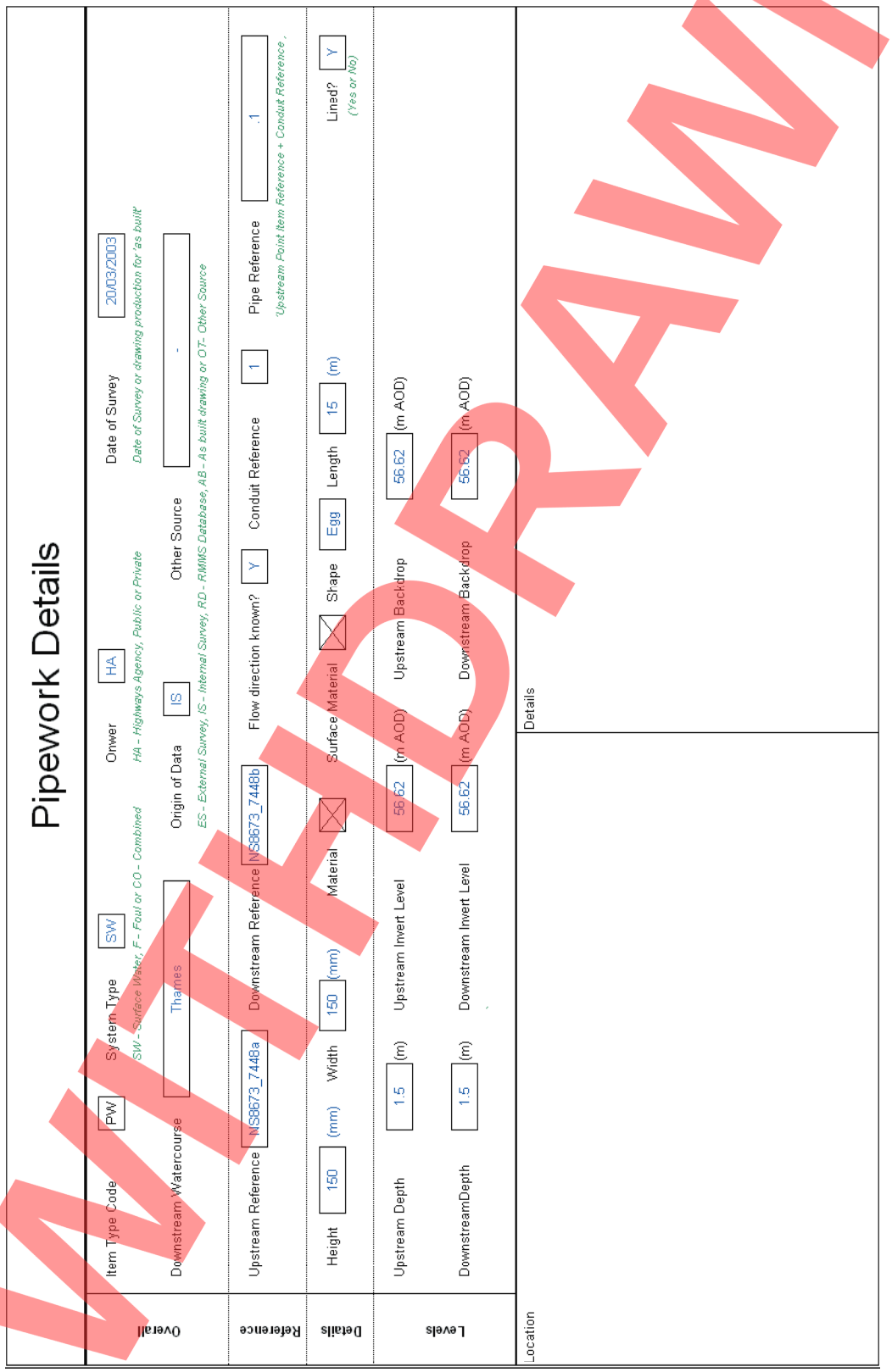
Shaft Width (m)
Shaft Length (m)
Chamber Width (m)
Chamber Length (m)

Flow Controls

Flap Valve? Y (Yes or No)
Orifice? (Yes or No)
Sluice Gate? (Yes or No)
Weir? (Yes or No)
Screens? Y (Yes or No)
Penstock? (Yes or No)
Flume? (Yes or No)
Headwall? Y (Yes or No)

Location	Details

APPENDIX E: SURVEY INSPECTION SHEETS FOR CONTINUOUS ITEMS



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Rising Main Details

Overall

Item Type Code: RM — System Type: SW — Onwer: HA — Date of Survey: 20/03/2003

SW - Surface Water, F - Foul or CO - Combined — *HA - Highways Agency, Public or Private* — *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

'Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) — Width: 150 (mm) — Material: BR — Surface Material: ☒ — Shape: CI — Length: 15 (m) — Lined?: ☒

(Yes or No)

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

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Culvert Details

Overall

Item Type Code: CU — System Type: SW — Onwer: HA — Date of Survey: 20/03/2003

SW - Surface Water, F - Foul or CO - Combined | *HA - Highways Agency, Public or Private* | *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

'Upstream Point Item Reference + Conduit Reference ,

Details

Height: 1500 (mm) — Width: 1500 (mm) — Material: BR — Surface Material: — Shape: CI — Length: 15 (m) — Lined?: — *(Yes or No)*

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

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Land Drainage Details

Overall

Item Type Code: LD — System Type: SW — Onwer: HA — Date of Survey: 20/03/2003

SW - Surface Water, F - Foul or CO - Combined | *HA - Highways Agency, Public or Private* | *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

'Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) — Width: 150 (mm) — Material: VC — Surface Material: — Shape: CI — Length: 15 (m) — Lined?: — *(Yes or No)*

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

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Syphon Details

Overall

Item Type Code: SY — System Type: SW (SW - Surface Water, F - Foul or CO - Combined) — Onwer: HA (HA - Highways Agency, Public or Private) — Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

(ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

('Upstream Point Item Reference + Conduit Reference ,)

Details

Height: 150 (mm) — Width: 150 (mm) — Material: CI — Surface Material: ☒ — Shape: CI — Length: 15 (m) — Lined?: ☒ (Yes or No)

Levels

Upstream Depth	1.5 (m)	Upstream Invert Level	56.62 (m AOD)	Upstream Backdrop	56.62 (m AOD)
DownstreamDepth	1.5 (m)	Downstream Invert Level	56.62 (m AOD)	Downstream Backdrop	56.62 (m AOD)

Location	Details

Volume 4 home page

Surface Water Channel Details

Overall

Item Type Code: CH
System Type: SW
SW - Surface Water, F - Foul or CO - Combined
Onwer: HA
HA - Highways Agency, Public or Private
Date of Survey: 20/03/2003
Date of Survey or drawing production for 'as built'

Downstream Watercourse: Thames
Origin of Data: IS
Other Source: -
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Reference

Upstream Reference: NS8673_7448a
Downstream Reference: NS8673_7448b
Flow direction known?: Y
Conduit Reference: 1
Pipe Reference: .1
'Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm)
Width: 150 (mm)
Material:
Surface Material: TS
Shape: CI
Length: 15 (m)
Lined?:
(Yes or No)

Levels

Upstream Depth: 1.5 (m)
Upstream Invert Level: 56.62 (m AOD)
Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m)
Downstream Invert Level: 56.62 (m AOD)
Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Edge Channel Details

Overall

Item Type Code: EC — System Type: SW (SW - Surface Water, F - Foul or CO - Combined) — Onwer: HA (HA - Highways Agency, Public or Private) — Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

(ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

('Upstream Point Item Reference + Conduit Reference ,)

Details

Height: 150 (mm) — Width: 150 (mm) — Material: — Surface Material: TS — Shape: CI — Length: 15 (m) — Lined?: — (Yes or No)

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

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Drainage Channel Block Details

Overall

Item Type Code: DB | System Type: SW | Onwer: HA | Date of Survey: 20/03/2003

SW - Surface Water, F - Foul or CO - Combined | *HA - Highways Agency, Public or Private* | *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames | Origin of Data: IS | Other Source: -

ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Reference

Upstream Reference: NS8673_7448a | Downstream Reference: NS8673_7448b | Flow direction known? Y | Conduit Reference: 1 | Pipe Reference: .1

'Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) | Width: 150 (mm) | Material: CO | Surface Mate: ☒ | Shape: CI | Length: 15 (m) | Lined? ☒

(Yes or No)

Levels

Upstream Depth: 1.5 (m) | Upstream Invert Level: 56.62 (m AOD) | Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) | Downstream Invert Level: 56.62 (m AOD) | Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Grip Details

Overall

Item Type Code: GP — System Type: SW (SW - Surface Water, F - Foul or CO - Combined) — Onwer: HA (HA - Highways Agency, Public or Private) — Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

(ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

('Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) — Width: 150 (mm) — Material: CO — Surface Material: — Shape: US — Length: 15 (m) — Lined?: Y (Yes or No)

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

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Swale or Grassed Channel Details

Overall

Item Type Code: SC
System Type: SW — *SW - Surface Water, F - Foul or CO - Combined*
Onwer: HA — *HA - Highways Agency, Public or Private*
Date of Survey: 20/03/2003 — *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames
Origin of Data: IS
Other Source: -
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Reference

Upstream Reference: NS8673_7448a
Downstream Reference: NS8673_7448b
Flow direction known?: Y
Conduit Reference: 1
Pipe Reference: .1
'Upstream Point Item Reference + Conduit Reference ,

Details

Height: 800 (mm)
Width: 2500 (mm)
Material:
Surface Material:
Shape: RE
Length: 15 (m)
Lined?
(Yes or No)

Levels

Upstream Depth: 1.5 (m)
Upstream Invert Level: 56.62 (m AOD)
Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m)
Downstream Invert Level: 56.62 (m AOD)
Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Ditch Details

Overall

Item Type Code: DI
System Type: SW (SW - Surface Water, F - Foul or CC - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)
Other Source: -

Reference

Upstream Reference: NS8673_7448a
Downstream Reference: NS8673_7448b
Flow direction known?: Y
Conduit Reference: 1
Pipe Reference: .1 ('Upstream Point Item Reference + Conduit Reference ,')

Details

Height: 150 (mm)
Width: 150 (mm)
Material:
Surface Material:
Shape: TP
Length: 15 (m)
Lined?: N (Yes or No)

Levels

Upstream Depth: 1.5 (m)
Upstream Invert Level: 56.62 (m AOD)
Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m)
Downstream Invert Level: 56.62 (m AOD)
Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Combined Pipe and Channel Drain Details

Overall

Item Type Code: CS — System Type: SW (SW - Surface Water, F - Foul or CO - Combined) — Onwer: HA (HA - Highways Agency, Public or Private) — Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

(ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

('Upstream Point Item Reference + Conduit Reference ,)

Details

Height: 150 (mm) — Width: 150 (mm) — Material: CC — Surface Material: TS — Shape: CI — Length: 15 (m) — Lined? ☒ (Yes or No)

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Linear Drainage Channel Details

Overall

Item Type Code: LI
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames
Origin of Data: IS
Other Source: -
(ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)

Reference

Upstream Reference: NS8673_7448a
Downstream Reference: NS8673_7448b
Flow direction known?: Y
Conduit Reference: 1
Pipe Reference: .1
('Upstream Point Item Reference + Conduit Reference ,)

Details

Height: 150 (mm)
Width: 150 (mm)
Material: CO
Surface Material: CG
Shape: CI
Length: 15 (m)
Lined?: ☒ (Yes or No)

Levels

Upstream Depth: 1.5 (m)
Upstream Invert Level: 56.62 (m AOD)
Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m)
Downstream Invert Level: 56.62 (m AOD)
Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Combined Surface and Ground Water Filter Drain Details

Overall

Item Type Code: CF
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames
Origin of Data: IS
Other Source: -
(ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)

Reference

Upstream Reference: NS8673_7448a
Downstream Reference: NS8673_7448b
Flow direction known?: Y
Conduit Reference: 1
Pipe Reference: .1
('Upstream Point Item Reference + Conduit Reference')

Details

Height: 150 (mm)
Width: 150 (mm)
Material: VC
Surface Material: TS
Shape: CI
Length: 15 (m)
Lined? ☒ (Yes or No)

Levels

Upstream Depth: 1.5 (m)
Upstream Invert Level: 56.62 (m AOD)
Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m)
Downstream Invert Level: 56.62 (m AOD)
Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Fin Drain Details

Overall

Item Type Code: FN
System Type: SW (SW - Surface Water, F - Foul or CO - Combined)
Onwer: HA (HA - Highways Agency, Public or Private)
Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')
Downstream Watercourse: Thames
Origin of Data: IS (ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)
Other Source: -

Reference

Upstream Reference: NS8673_7448a
Downstream Reference: NS8673_7448b
Flow direction known?: Y
Conduit Reference: 1
Pipe Reference: .1 ('Upstream Point Item Reference + Conduit Reference ,')

Details

Height: 150 (mm)
Width: 150 (mm)
Material: VC
Surface Material: TS
Shape: CI
Length: 15 (m)
Lined? ☒ (Yes or No)

Levels

Upstream Depth: 1.5 (m)
Upstream Invert Level: 56.62 (m AOD)
Upstream Backdrop: 56.62 (m AOD)
DownstreamDepth: 1.5 (m)
Downstream Invert Level: 56.62 (m AOD)
Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Narrow Filter Drain Details

Overall

Item Type Code: ND — System Type: SW (SW - Surface Water, F - Foul or CO - Combined) — Onwer: HA (HA - Highways Agency, Public or Private) — Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

(ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

('Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) — Width: 150 (mm) — Material: VC — Surface Material: TS — Shape: CI — Length: 15 (m) — Lined?: ☒ (Yes or No)

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Combined Kerb and Drainage Details

Overall

Item Type Code: CK — System Type: SW (SW – Surface Water, F – Foul or CO – Combined) — Onwer: HA (HA – Highways Agency, Public or Private) — Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

(ES – External Survey, IS – Internal Survey, RD – RMMS Database, AB – As built drawing or OT– Other Source)

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

('Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) — Width: 150 (mm) — Material: CO — Surface Material: — Shape: CI — Length: 15 (m) — Lined?: (Yes or No)

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

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Filter Drain Details

Overall

Item Type Code: FD — System Type: SW — Onwer: HA — Date of Survey: 20/03/2003

SW - Surface Water, F - Foul or CO - Combined | *HA - Highways Agency, Public or Private* | *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

'Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) — Width: 150 (mm) — Material: VC — Surface Material: TS — Shape: CI — Length: 15 (m) — Lined? ☒

(Yes or No)

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Informal Drainage Details

Overall

Item Type Code: OE — System Type: SW — Onwer: HA — Date of Survey: 20/03/2003

SW - Surface Water, F - Foul or CO - Combined | *HA - Highways Agency, Public or Private* | *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

'Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) — Width: 150 (mm) — Material: — Surface Material: GR — Shape: US — Length: 15 (m) — Lined?: — *(Yes or No)*

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

Volume 4 home page

Counterfort Drain Details

Overall

Item Type Code: CD — System Type: SW (SW - Surface Water, F - Foul or CO - Combined) — Onwer: HA (HA - Highways Agency, Public or Private) — Date of Survey: 20/03/2003 (Date of Survey or drawing production for 'as built')

Downstream Watercourse: Thames — Origin of Data: IS — Other Source: -

(ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source)

Reference

Upstream Reference: NS8673_7448a — Downstream Reference: NS8673_7448b — Flow direction known?: Y — Conduit Reference: 1 — Pipe Reference: .1

('Upstream Point Item Reference + Conduit Reference ,

Details

Height: 150 (mm) — Width: 150 (mm) — Material: — Surface Material: BB — Shape: CI — Length: 15 (m) — Lined?: (Yes or No)

Levels

Upstream Depth: 1.5 (m) — Upstream Invert Level: 56.62 (m AOD) — Upstream Backdrop: 56.62 (m AOD)

DownstreamDepth: 1.5 (m) — Downstream Invert Level: 56.62 (m AOD) — Downstream Backdrop: 56.62 (m AOD)

Location	Details

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Region Connector Details

Overall

Item Type Code: RC
System Type: SW
SW - Surface Water, F - Foul or CO - Combined
Onwer:
HA - Highways Agency, Public or Private
Date of Survey: 20/03/2003
Date of Survey or drawing production for 'as built'

Downstream Watercourse:
Origin of Data: IS
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source
Other Source:

Reference

Upstream Reference: NS8673_7448a
Downstream Reference: NS8673_7448b
Flow direction known?: Y
Conduit Reference: 1
Pipe Reference: .1
'Upstream Point Item Reference + Conduit Reference ,

Details

Height: (mm)
Width: (mm)
Material:
Surface Material:
Shape:
Length:
Lined?
(Yes or No)

Levels

Upstream Depth: (m)
Upstream Invert Level: (m AOD)
Upstream Backdrop: (m AOD)

DownstreamDepth: (m)
Downstream Invert Level: (m AOD)
Downstream Backdrop: (m AOD)

Location	Details

Volume 4 home page

APPENDIX F: SURVEY INSPECTION SHEETS FOR REGION ITEMS

Detention Pond Details

Overall

Item Type Code: DP
System Type: ☒
SW - Surface Water, F - Foul or CO - Combined
Onwer: HA
HA - Highways Agency, Public or Private
Date of Survey: 20/03/2003
Date of Survey or drawing production for 'as built'

Downstream Watercourse: Thames
Origin of Data: IS
Other Source: -
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a
(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? ☒ *(Yes or No)*
Step Irons? ☒ *(Yes or No)*
Side Entry? ☒ *(Yes or No)*
Manhole Construction ☒ *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)*
Number of Landings ☒

Cover Details

Cover Level ☒ (m AOD)
Cover Shape ☒ *(SQ - Square, CI - Circular, TR - Triangular or Ot - Other)*
Other Shape ☒
Cover Duty ☒ *(H - Heavy, M - Medium or L - Low)*

Cover Width ☒ (m)
Cover Length ☒ (m)
Manufacterer ☒
Grating ☒ *(Yes or No)*

Shaft and Chamber

Shaft Width ☒ (m)
Shaft Length ☒ (m)
Chamber Width ☒ (m)
Chamber Length ☒ (m)

Flow Controls

Flap Valve? ☒ *(Yes or No)*
Orifice? ☒ *(Yes or No)*
Sluice Gate? ☒ *(Yes or No)*
Weir? ☒ *(Yes or No)*
Screens? ☒ *(Yes or No)*
Penstock? ☒ *(Yes or No)*
Flume? ☒ *(Yes or No)*
Headwall? ☒ *(Yes or No)*

Location	Details

Retention Pond Details

Overall

Item Type Code: RP | System Type: ☒ | Onwer: HA | Date of Survey: 20/03/2003

SW - Surface Water, F - Foul or CO - Combined | *HA - Highways Agency, Public or Private* | *Date of Survey or drawing production for 'as built'*

Downstream Watercourse: Thames | Origin of Data: IS | Other Source: -

ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Spatial Information

Easting: 286,743 (m) | Northing: 673,489 (m) | Identifier: a | Asset Reference: NS8673_7448a

(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? ☒ *(Yes or No)* | Step Irons? ☒ *(Yes or No)* | Side Entry? ☒ *(Yes or No)* | Manhole Construction ☒ *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)* | Number of Landings ☒

Cover Details

Cover Level ☒ (m AOD) | Cover Shape ☒ *(SQ - Square, CI - Circular, TR - Triangular or Ot - Other)* | Other Shape ☒ | Cover Duty ☒ *(H - Heavy, M - Medium or L - Low)*

Cover Width ☒ (m) | Cover Length ☒ (m) | Manufacterer ☒ | Grating ☒ *(Yes or No)*

Shaft and Chamber

Shaft Width ☒ (m) | Shaft Length ☒ (m) | Chamber Width ☒ (m) | Chamber Length ☒ (m)

Flow Controls

Flap Valve? ☒ *(Yes or No)* | Orifice? ☒ *(Yes or No)* | Sluice Gate? ☒ *(Yes or No)* | Weir? ☒ *(Yes or No)* | Screens? ☒ *(Yes or No)* | Penstock? ☒ *(Yes or No)* | Flume? ☒ *(Yes or No)* | Headwall? ☒ *(Yes or No)*

Location	Details

Sedimentation Pond Details

Overall

Item Type Code: SP
System Type: ☒
SW - Surface Water, F - Foul or CO - Combined
Onwer: HA
HA - Highways Agency, Public or Private
Date of Survey: 20/03/2003
Date of Survey or drawing production for 'as built'

Downstream Watercourse: Thames
Origin of Data: IS
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a
(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? ☒ *(Yes or No)*
Step Irons? ☒ *(Yes or No)*
Side Entry? ☒ *(Yes or No)*
Manhole Construction ☒ *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)*
Number of Landings ☒

Cover Details

Cover Level ☒ (m AOD)
Cover Shape ☒ *(SQ - Square, CI - Circular, TR - Triangular or Ot - Other)*
Other Shape ☒
Cover Duty ☒ *(H - Heavy, M - Medium or L - Low)*

Cover Width ☒ (m)
Cover Length ☒ (m)
Manufacterer ☒
Grating ☒ *(Yes or No)*

Shaft and Chamber

Shaft Width ☒ (m)
Shaft Length ☒ (m)
Chamber Width ☒ (m)
Chamber Length ☒ (m)

Flow Controls

Flap Valve? ☒ *(Yes or No)*
Orifice? ☒ *(Yes or No)*
Sluice Gate? ☒ *(Yes or No)*
Weir? ☒ *(Yes or No)*
Screens? ☒ *(Yes or No)*
Penstock? ☒ *(Yes or No)*
Flume? ☒ *(Yes or No)*
Headwall? ☒ *(Yes or No)*

Location	Details

Infiltration Basin Details

Overall

Item Type Code: IB
System Type: ☒
SW - Surface Water, F - Foul or CO - Combined
Onwer: HA
HA - Highways Agency, Public or Private
Date of Survey: 20/03/2003
Date of Survey or drawing production for 'as built'

Downstream Watercourse: Thames
Origin of Data: IS
Other Source: -
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a
(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? ☒ *(Yes or No)*
Step Irons? ☒ *(Yes or No)*
Side Entry? ☒ *(Yes or No)*
Manhole Construction ☒ *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)*
Number of Landings ☒

Cover Details

Cover Level ☒ (m AOD)
Cover Shape ☒ *(SQ - Square, CI - Circular, TR - Triangular or OT - Other)*
Other Shape ☒
Cover Duty ☒ *(H - Heavy, M - Medium or L - Low)*

Cover Width ☒ (m)
Cover Length ☒ (m)
Manufacterer ☒
Grating ☒ *(Yes or No)*

Shaft and Chamber

Shaft Width ☒ (m)
Shaft Length ☒ (m)
Chamber Width ☒ (m)
Chamber Length ☒ (m)

Flow Controls

Flap Valve? ☒ *(Yes or No)*
Orifice? ☒ *(Yes or No)*
Sluice Gate? ☒ *(Yes or No)*
Weir? ☒ *(Yes or No)*
Screens? ☒ *(Yes or No)*
Penstock? ☒ *(Yes or No)*
Flume? ☒ *(Yes or No)*
Headwall? ☒ *(Yes or No)*

Location	Details

Pollution Containment Pond / Tank Details

Overall

Item Type Code: PC
System Type: ☒ *SW - Surface Water, F - Foul or CO - Combined*
Onwer: HA *HA - Highways Agency, Public or Private*
Date of Survey: 20/03/2003 *Date of Survey or drawing production for 'as built'*
Downstream Watercourse: Thames
Origin of Data: IS
Other Source: -
ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source

Spatial Information

Easting: 286,743 (m) Northing: 673,489 (m) Identifier: a Asset Reference: NS8673_7448a *(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)*

(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? ☒ *(Yes or No)* Step Irons? ☒ *(Yes or No)* Side Entry? ☒ *(Yes or No)* Manhole Construction ☒ *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)* Number of Landings ☒

Cover Details

Cover Level ☒ (m AOD) Cover Shape ☒ *(SQ - Square, CI - Circular, TR - Triangle or Ot - Other)* Other Shape ☒ Cover Duty ☒ *(H - Heavy, M - Medium or L - Low)*

Cover Width ☒ (m) Cover Length ☒ (m) Manufacterer ☒ Grating ☒ *(Yes or No)*

Shaft and Chamber

Shaft Width ☒ (m) Shaft Length ☒ (m) Chamber Width ☒ (m) Chamber Length ☒ (m)

Flow Controls

Flap Valve? ☒ *(Yes or No)* Orifice? ☒ *(Yes or No)* Sluice Gate? ☒ *(Yes or No)* Weir? ☒ *(Yes or No)* Screens? ☒ *(Yes or No)* Penstock? ☒ *(Yes or No)* Flume? ☒ *(Yes or No)* Headwall? ☒ *(Yes or No)*

Location	Details

Wetlands Details

Overall

Item Type Code: WL
System Type: ☒ *SW - Surface Water, F - Foul or CO - Combined*
Onwer: HA *HA - Highways Agency, Public or Private*
Date of Survey: 20/03/2003 *Date of Survey or drawing production for 'as built'*
Downstream Watercourse: Thames
Origin of Data: IS *ES - External Survey, IS - Internal Survey, RD - RMMS Database, AB - As built drawing or OT- Other Source*
Other Source: -

Spatial Information

Easting: 286,743 (m)
Northing: 673,489 (m)
Identifier: a
Asset Reference: NS8673_7448a *(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)*

(100km Grid Square ref + first two eastings + first two northings + "_" + eastings to 10m+ northings to 10m + identifier)

Item Data

Ladder? ☒ *(Yes or No)*
Step Irons? ☒ *(Yes or No)*
Side Entry? ☒ *(Yes or No)*
Manhole Construction ☒ *(BR - Brick, PC - Pre-cast concrete, IC - In-situ Concrete or BS - Bolted Segments)*
Number of Landings ☒

Cover Details

Cover Level ☒ (m AOD)
Cover Shape ☒ *(SQ - Square, CI - Circular, TR - Triangle or Ot - Other)*
Other Shape ☒
Cover Duty ☒ *(H - Heavy, M - Medium or L - Low)*
Cover Width ☒ (m)
Cover Length ☒ (m)
Manufacterer ☒
Grating ☒ *(Yes or No)*

Shaft and Chamber

Shaft Width ☒ (m)
Shaft Length ☒ (m)
Chamber Width ☒ (m)
Chamber Length ☒ (m)

Flow Controls

Flap Valve? ☒ *(Yes or No)*
Orifice? ☒ *(Yes or No)*
Sluice Gate? ☒ *(Yes or No)*
Weir? ☒ *(Yes or No)*
Screens? ☒ *(Yes or No)*
Penstock? ☒ *(Yes or No)*
Flume? ☒ *(Yes or No)*
Headwall? ☒ *(Yes or No)*

Location	Details