Scottish Water
Greenock No. 8 & Alum Dam Enhancement Works

Scoping Document

June 2016









FAIRHURST

FAIRHURST

CONTROL SHEET

CLIENT: **Scottish Water**

PROJECT TITLE: **Greenock No. 8 & Alum Dam Enhancement Works**

REPORT TITLE: **Scoping Document**

PROJECT REFERENCE: **109053/R/001**

Issue and Approval Schedule:

ISSUE 2	Name	Signature	Date
Prepared by	Guy Douglas	[redacted]	29.06.16
Reviewed by	Roger Minto		29-06-16
Approved by	Kenneth Barr		29/06/16.

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2	29/06/16	Final	Final Issue	GD	RJM	KMHB
3						
4						
5						
6						
7						

This report has been prepared in accordance with procedure OP/A01 of Fairhurst & Partners' (or the Firm's) Quality Management System.

FAIRHURST

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1 INTRODUCTION

1.1 General

Fairhurst was appointed by Scottish Water to carry out an investigation of and to prepare designs for works associated with two small reservoirs: Greenock No. 8 and Alum Dam in Greenock.

This document sets out the Scope of Works required to carry out the work items identified for the small reservoirs.

Greenock No. 8 and Alum Dam Reservoir form part of the Greenock Water Works system designed by Robert Thom and constructed from 1825-27 to provide drinking water to Greenock and water power for industry in the town. Greenock No. 8 is the last reservoir in the system to provide water to the Cut.

Alum Dam has been abandoned and no longer retains water.

Greenock No. 8 and Alum Dam form part of the ancient monument known as Overton reservoirs 1-8 and associated channels, Clyde Muirshiel Park which is included in the Schedule of Monuments under The Ancient Monuments and Archaeological Areas Act 1979.

1.2 Site Locations

The two reservoirs are located to the south of Greenock and are accessed from Overton Road off Papermill Road.

The site details are as follows:

Name of Site: -	Greenock No. 8 and Alum Dam	
Nearest Postal Address: -	Waterside Cottage, Overton Road, Greenock	
Post Code:-	PA16 9JX	
SW Operational Area: -	West	
Grid Reference: -	E: 226644	N: 674807

1.3 Scope of works:

The following section is a general description of the engineering works involved and should be read in conjunction with the drawings included in Appendix A.

The scope of works shall also comprise, but not be limited to the following:

- All works identified for Greenock No. 8 Reservoir in Section 2.0;
- All works identified for the Alum Dam Reservoir in Section 3.0;

- Disposal of wastes to an appropriately licenced facility in accordance with statutory obligations;
- Carrying out and completion of all tests and test procedures;
- Making good any defects;
- Reinstatement of the grassed surfaces of the embankments and surrounding areas. Where construction phasing leads to the works being completed outwith the growing season, measures should be adopted to protect the surface from erosion until vegetation is established;
- Preparation of as-built drawings.

1.4 Extent of Site

The area of land owned by Scottish Water at each reservoir will be confirmed by Scottish Water.

No area of land has been provided by Scottish Water for the Contractor to establish his site compound. The Contractor shall be responsible for agreeing an area for his site compound with the respective land owner.

1.5 Limitations on the Use of the Site

The site shall only be used for the purposed of providing the Works.

2 GREENOCK NO. 8 RESERVOIR - SCOPE OF WORK

The following works items have been identified for Greenock No. 8 Reservoir.

The locations of the work items are shown on drawing 109053/2001 included in Appendix A.

2.1 Clear and repair approach to secondary overflow spillway

The Works will involve the removal and disposal of material from the approach to the secondary overflow spillway following slope failure.

Photograph 1 shows approach to the secondary overflow spillway.



Photograph 1

The Works also involve cutting back the slope at the top of the failure to a stable angle.

The reprofiled slope shall be finished with topsoil and grass to be taken from the material removed from the spillway approach.

2.2 Increase conveyance capacity of overflow channel

The Works will involve increasing the conveyance capacity of the overflow channel by increasing the height of the left bank over a length of approximately 30m from the secondary spillway to provide a minimum channel depth of 400mm.

The left bank shall be increased as shown on drawing 109053/2002.

2.3 Clear vegetation and repair overflow channel

The Works will involve clearing all vegetation along an approximate 125m length of the overflow channel from the secondary overflow at Greenock No. 8 to the outlet downstream of Alum Dam.

Following completion of the removal of vegetation, repairs to the channel sides shall be undertaken. The repairs shall involve the stone pitching being reinstated or replaced and grouted in place.

The existing channel with damaged sections highlighted is shown in Photograph 2.



Photograph 2

Sections of the channel showing vegetation growth are shown in Photographs 3 and 4.



Photograph 3



Photograph 4

Due to the vegetation growth at the time of Fairhurst's inspection, the full extent of the repair works to the channel sides could not be confirmed.

The Contractor shall include a provisional sum for repairs to the channel sides for a length of 40m.

Following removal of all vegetation from the channel, a joint inspection of the channel shall be carried out by the Project Manager/Supervisor and the Contractor to confirm the final extent of works.

2.4 Repair upstream rock armour protection

The rock armour on the upstream embankment face requires maintenance in areas of original rock armour and previous repair works which are deteriorating.

Photograph 4 shows the upstream face and photographs 5 and 6 show examples of previous repairs and missing rock armour.



Photograph 4



Photograph 5



Photograph 6

The Works will involve the repair/replacement of missing rock armour protection along the upstream face of the embankment. No fines concrete shall be used to fill the joints and fix reinstated or replacement blocks in place. A typical detail for stone pitching reinstatement is shown on drawing 109053/2003 included in Appendix A.

The water level within the reservoir will need to be lowered (by approximately 1m) to determine the full extent of Works.

The Contractor will include a provisional sum for an estimated area 30m^2 for repairs to the rock armour protection.

Following the lowering of the water level within the reservoir, a joint inspection of the upstream face shall be carried out by the Project Manager/Supervisor and the Contractor to confirm the final extent of works.

3 ALUM DAM RESERVOIR – SCOPE OF WORK

The following works items have been identified for Alum Dam Reservoir.

The locations of the work items are shown on drawing 109053/2001 included in Appendix A.

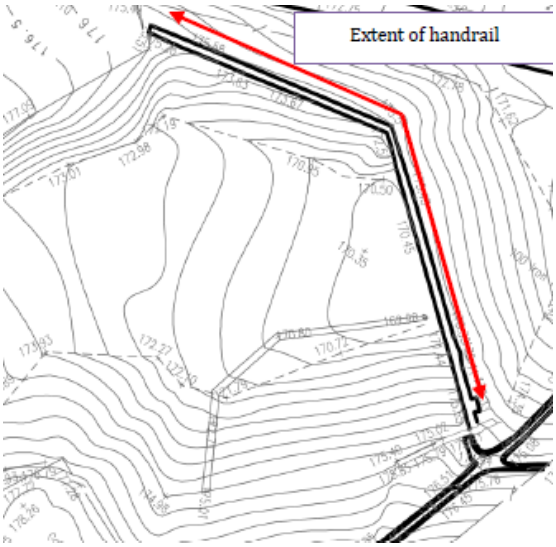
3.1 Installation of handrail along the top of Alum Dam

The Works will involve the installation of a handrail along the top of Alum Dam over a length of 48m.

Proposed handrail details are shown on drawing 109053/2004 included in Appendix A. Photographs 7 and 8 indicate the extent of the handrail installation.



Photograph 7



Photograph 8

3.2 Installation of handrail and replacement screen at the overflow channel outlet

The screened outlet from the overflow channel downstream of Alum Dam is located in a narrow deep open channel downstream of Alum Dam.

Photograph 9 shows the secondary overflow channel.



Photograph 9

The Works will include the installation of 20m length of handrail around the top of the open channel. The extent of the handrail is shown on drawing 109053/2005 and handrail details are shown on drawing 109053/2004 included in Appendix A.

The existing warning sign shall be relocated following installation of the new handrail.

The Work will also include the replacement of the trash screen on the outlet pipe from the overflow channel. The arrangement for the outlet screen is shown on drawing 109053/2006 included in Appendix A.

4 CONSTRUCTION SPECIFICATION

The Construction Specification shall consist of a General and Particular Specification. Where conflict or ambiguity exists between the General and Particular Specification, the Particular Specification shall always take precedence.

Where applicable, all materials, workmanship, finishes, plant and other elements of work shall be in accordance with the relevant clauses of the Specification.

Materials, workmanship, finishes, plant and other elements of the Works which are not covered by the relevant Specification clauses, shall be specified by the Contractor subject to the acceptance of the Project Manager. The Contractor shall provide such information, samples, test data / certificates, and manufacturer's specifications as required by the Project Manager to evaluate or accept the proposal.

British Standards and other documents referred to in the construction specification are deemed to be those that were current 28 days prior to the first issue of this Scoping Document.

The General Specification for the Works is the 'Civil Engineering Specification for the Water Industry, 7th Edition' published by WRc (March 2011)

The Particular Specification for the Works is included in Appendix B of this document.

5 CONSTRAINTS

There are several site-specific constraints which require to be considered in planning the works. Details of the constraints are noted below:

- No record drawings showing the construction details or arrangements of the reservoirs have been made available.
- The Top Water Level (TWL) in Greenock No. 8 will be lowered to enable the proposed works and investigations to be carried out. The Contractor must agree operating levels with Scottish Water prior to works starting on site. The water level should be monitored continuously and the Contractor should prepare a method statement for employing mitigation to protect the works and the dam in the event of a flood.
- The indicative boundary for the reservoirs owned by Scottish Water is to be confirmed by Scottish Water. The Contractor must agree the area available for their compound, stockpiles etc. with Scottish Water and local landowners prior to the construction of the works.
- Local landowners, residents and individuals have rights of access to the areas adjacent to the reservoirs. These rights must be maintained for the duration of the works. Where appropriate access cannot be maintained at any point during the works for reasons of health and safety, Scottish Water must be informed prior to construction.
- Greenock No. 8 and Alum Dam form part of the ancient monument known as Overton reservoirs 1-8 and associated channels, Clyde Muirshiel Park which is included in the Schedule of Monuments under The Ancient Monuments and Archaeological Areas Act 1979.
- Overton Reservoir and the Greenock Cut form part of the ancient monument known as Loch Thom-Overton which is included in the Schedule of Monuments under The Ancient Monuments and Archaeological Areas Act 1979.
- No provision of power at both reservoir sites.

6 DOCUMENTS TO BE PROVIDED

6.1 Design Drawings

The following design drawings are provided and included in Appendix A:

Fairhurst drawings:

- 109053/2001 Greenock No. 8 & Alum Dam
  Location Plan for Works
- 109053/2002 Overflow Channel Remedial Works
- 109053/2003 Typical Detail of Stone Pitching Reinstatement
- 109053/2004 Handrail Details
- 109053/2005 Overflow Channel Outlet Works
- 109053/2006 Overflow Channel Outlet Screen

6.2 Activity Schedules

The Activity Schedules for the Works is included in Appendix B.

6.3 Particular Specification

The Particular Specification for the Works is included in Appendix C.

6.4 Site Information

The following Site Information is provided and included in the Site Information document:

General Information:

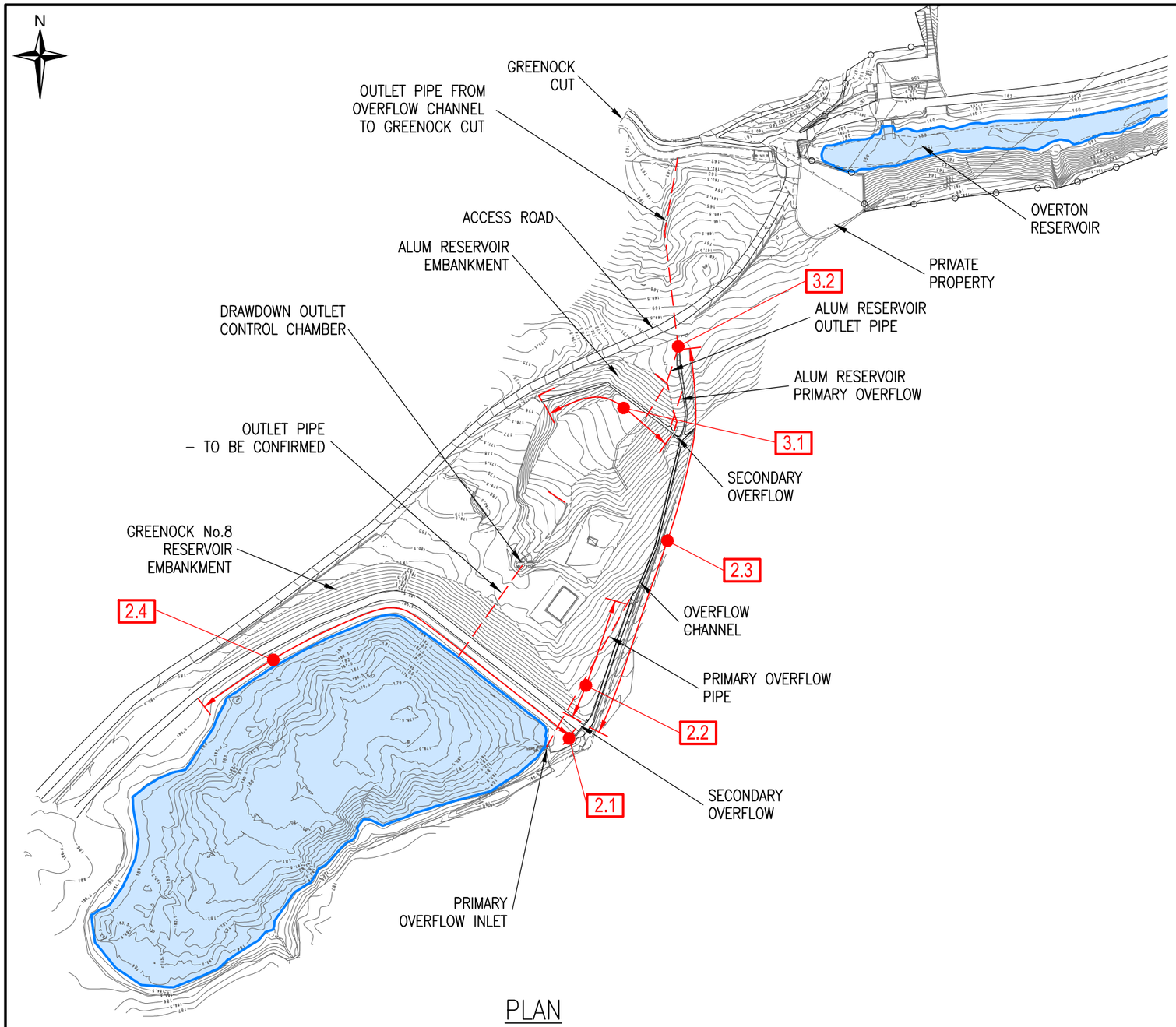
- Scottish Water Minimum PPE Requirements
- Scottish Water Reservoir Induction Notes

Record Drawings:

- Topographic Surveys

APPENDIX A DESIGN DRAWINGS

- 109053/2001 Greenock No. 8 & Alum Dam
  Location Plan for Works
- 109053/2002 Overflow Channel Remedial Works
- 109053/2003 Typical Detail of Stone Pitching Reinstatement
- 109053/2004 Handrail Details
- 109053/2005 Overflow Channel Outlet Works
- 109053/2006 Overflow Channel Outlet Screen



PLAN
(SCALE 1:1500)

Do not scale from this drawing.

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARD/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING RISKS AND INFORMATION.

RISKS LISTED HERE ARE NOT EXHAUSTIVE. REFER TO DESIGN ASSESSMENT FORM NO.

CONSTRUCTION

NO KEY SIGNIFICANT RESIDUAL HAZARDS HAVE BEEN IDENTIFIED DURING THE DESIGN STAGE WHICH ARE CONSIDERED NOT TO BE OBVIOUS TO A COMPETENT CONTRACTOR, OR UNUSUAL, OR LIKELY TO BE DIFFICULT TO MANAGE EFFECTIVELY.

DEMOL

FOR INFORMATION RELATING TO USE, CLEANING AND MAINTENANCE SEE THE HEALTH AND SAFETY FILE

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT.

WORK ITEMS

2.1 CLEAN AND REPAIR APPROACH TO SECONDARY OVERFLOW SPILLWAY
2.2 INCREASE CONVEYANCE CAPACITY OF OVERFLOW CHANNEL
2.3 CLEAR VEGETATION AND REPAIR OVERFLOW CHANNEL
2.4 REPAIR UPSTREAM ROCK ARMOUR PROTECTION
3.1 INSTALL HANDRAIL ALONG THE TOP OF ALUM DAM
3.2 INSTALL HANDRAIL AND REPLACEMENT SCREEN AT OVERFLOW CHANNEL OUTLET



LOCATION PLAN
(NOT TO SCALE)

This plan is based on the Ordnance Survey map with the permission of the controller of Her Majesty's Stationary Office. Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings.

Rev.	Date	Description	Drawn	Checked	Approved

Notes:

Client: Scottish Water – Always serving Scotland

Project Title:
GREENOCK NO. 8 AND ALUM DAM ENHANCEMENT WORKS

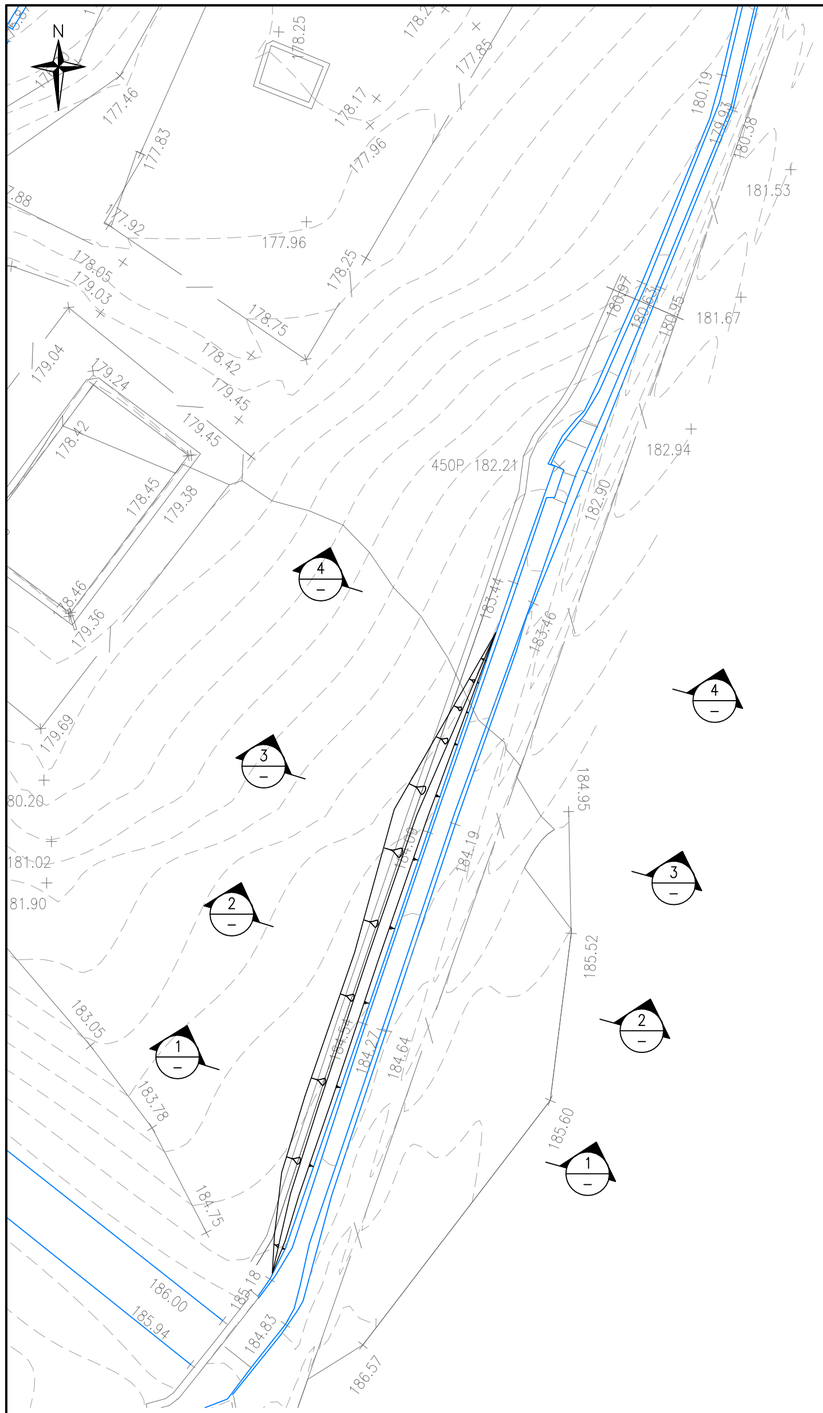
Drawing Title:
LOCATION PLAN FOR WORKS

FAIRHURST
225 Bath Street,
GLASGOW, G2 4GZ
Tel: 0141 204 8800 Fax: 0141 204 8801

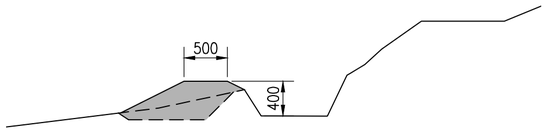
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AS SHOWN	For Information	
Drawn:	Checked:	Approved:
KAB	RJM	KMHB
Date:	Date:	Date:
29/03/16	27/06/16	27/06/16

Drawing No.: 109053/2001
Revision: –

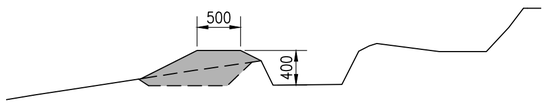
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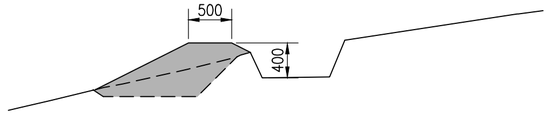
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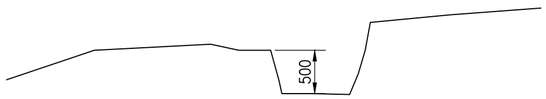
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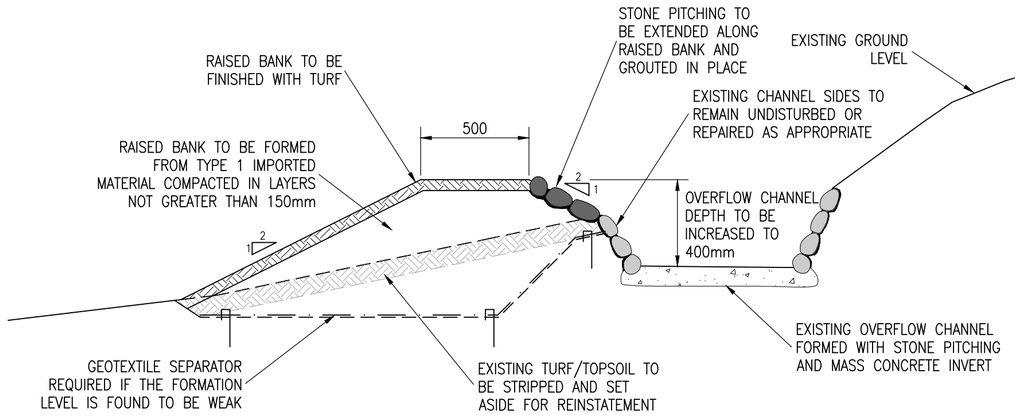
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(SCALE 1:50)



SECTION 3–3
(SCALE 1:50)



SECTION 4–4
(SCALE 1:50)



OVERFLOW CHANNEL DETAIL
(SCALE 1:20)

Rev.	Date	Description	Drawn	Checked	Approved

Notes:

Client: Scottish Water – Always serving Scotland

Project Title: GREENOCK NO. 8 AND ALUM DAM ENHANCEMENT WORKS

Drawing Title: OVERFLOW CHANNEL REMEDIAL WORKS

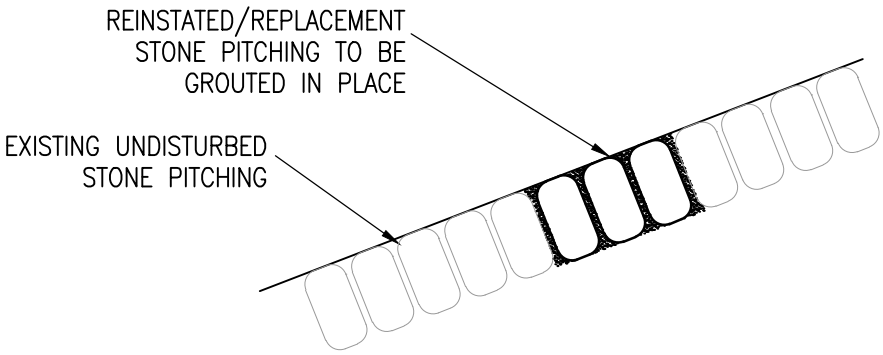
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GLASGOW, G2 4GZ
Tel: 0141 204 8800 Fax: 0141 204 8801

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Drawn: KAB	Checked: RJM	Approved: KMHB
Date: 23/06/16	Date: 29/06/16	Date: 29/06/16
Drawing No.: 109053/2002		Revision: –

Do not scale from this drawing.

NOTES:

1. STONE PITCHING TO BE INSTALLED WITH LONG AXIS ALONG THE EMBANKMENT LENGTH.



Rev.	Date	Description	Drawn	Checked	Approved

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Project Title:

GREENOCK NO. 8 AND ALUM DAM ENHANCEMENT WORKS

Drawing Title:

TYPICAL DETAIL OF STONE PITCHING REINSTATEMENT

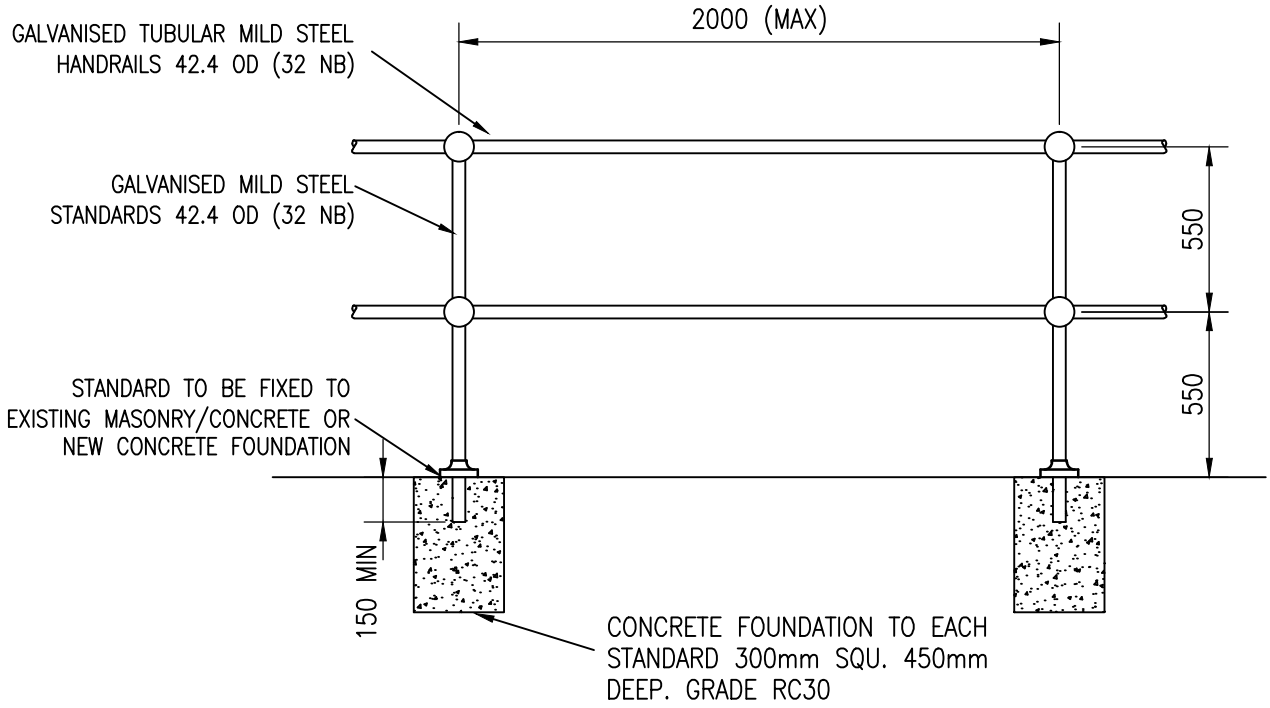
FAIRHURST
225 Bath Street,
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Tel: 0141 204 8800 Fax: 0141 204 8801

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1:25	For Information	
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KAB	RJM	KMHB
Date:	**Date:**	**Date:**
29/03/16	27/06/16	27/06/16

Drawing No.: 109053/2003

Revision: –

Do not scale from this drawing.



ELEVATION ON HANDRAIL

(SCALE 1:25)

Rev.	Date	Description	Drawn	Checked	Approved

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Project Title:

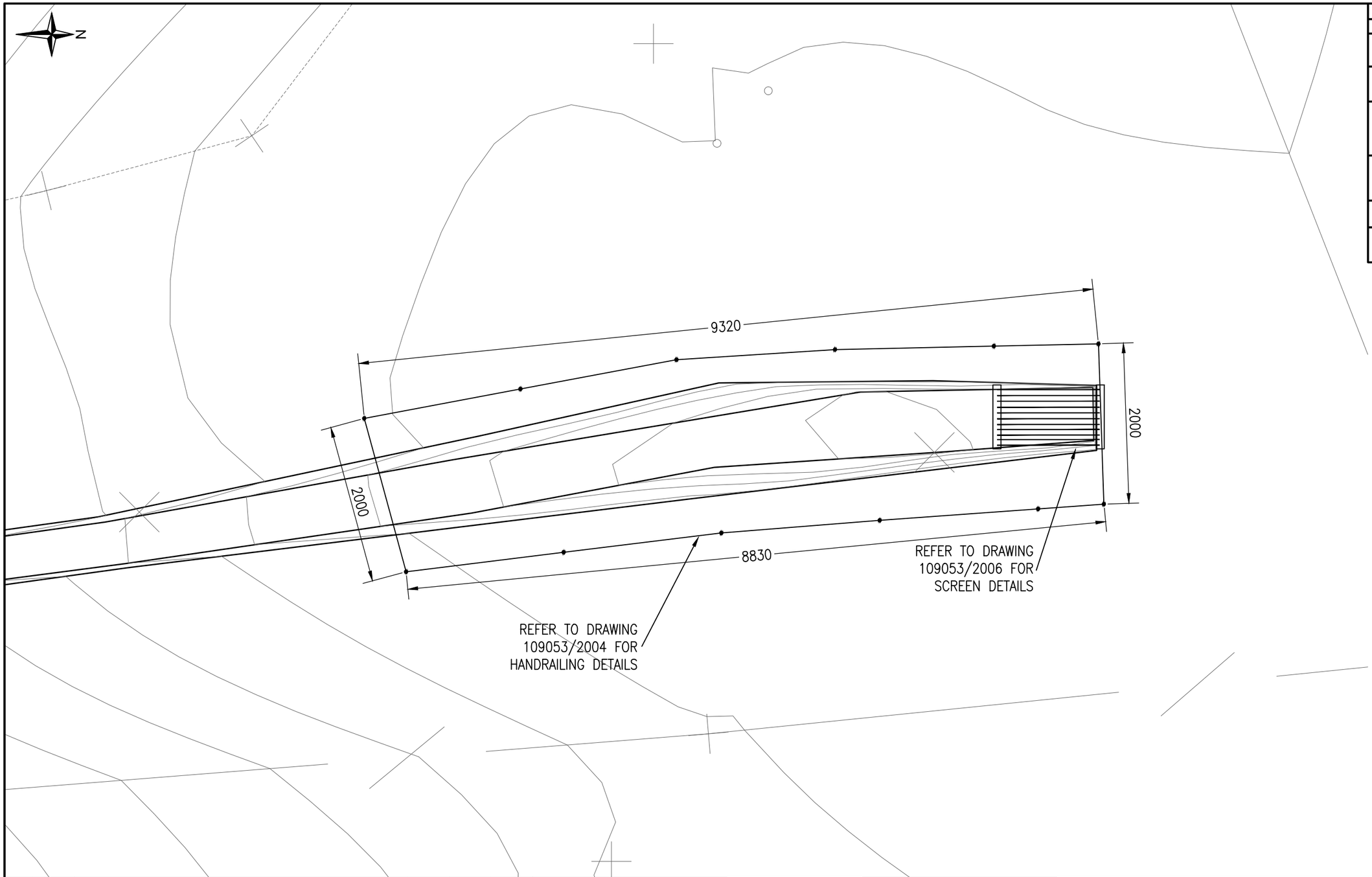
GREENOCK NO. 8 AND ALUM DAM ENHANCEMENT WORKS

Drawing Title:

HANDRAIL DETAILS

FAIRHURST
225 Bath Street,
GLASGOW, G2 4GZ
Tel: 0141 204 8800 Fax: 0141 204 8801

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KAB	RJM	KMHB
Date:	Date:	Date:
29/03/16	27/06/16	27/06/16
Drawing No.:		Revision:
109053/2004		–



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SAFETY HEALTH AND ENVIRONMENTAL INFORMATION

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RISKS LISTED HERE ARE NOT EXHAUSTIVE. REFER TO DESIGN ASSESSMENT FORM NO.

CONSTRUCTION

DEMOLITION

FOR INFORMATION RELATING TO USE, CLEANING AND MAINTENANCE SEE THE HEALTH AND SAFETY FILE

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT.

Rev.	Date	Description	Drawn	Checked	Approved

Notes:

Client: Scottish Water – Always serving Scotland

Project Title:

GREENOCK NO. 8 AND ALUM DAM ENHANCEMENT WORKS

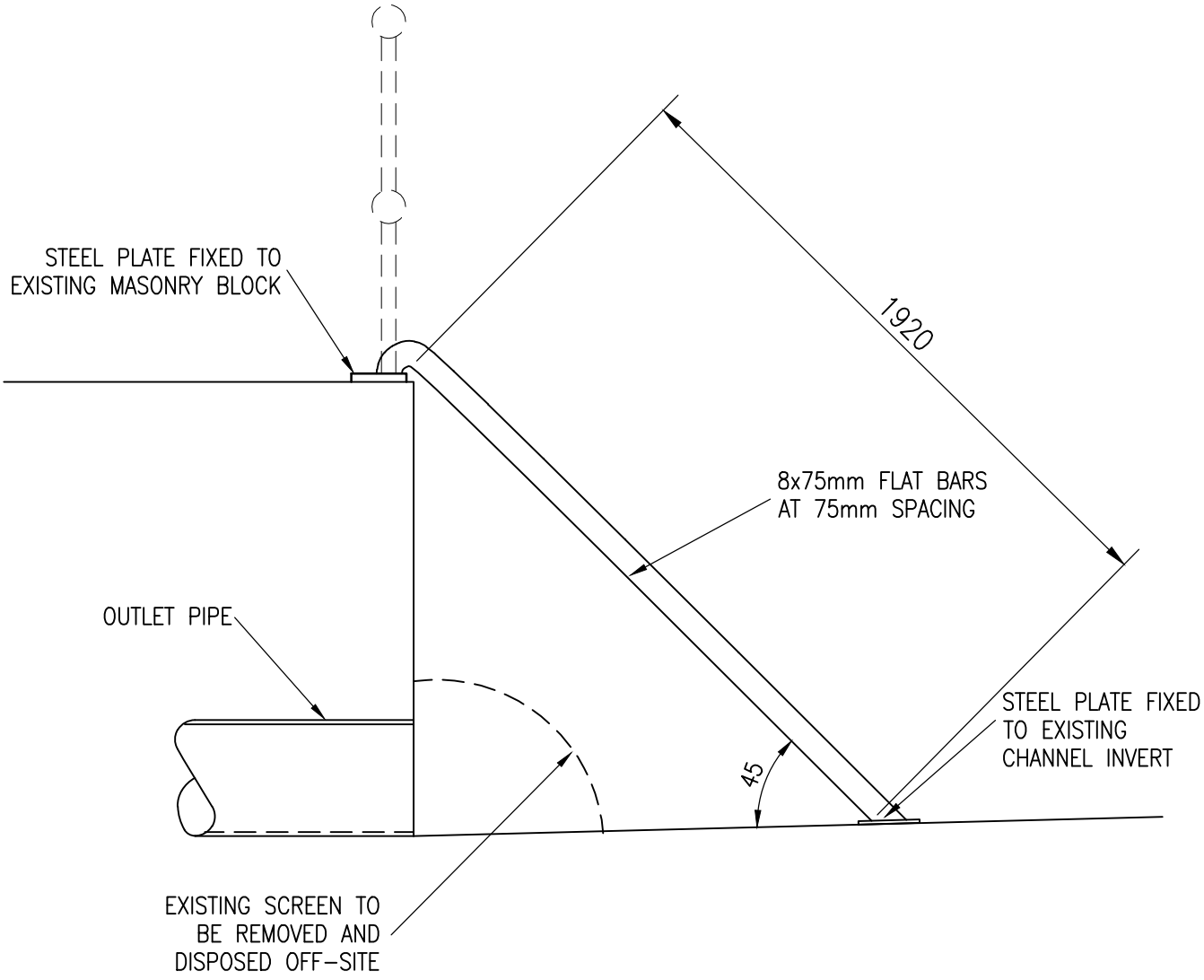
Drawing Title:

OVERFLOW CHANNEL OUTLET WORKS

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Tel: 0141 204 8800 Fax: 0141 204 8801

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1:50	For Information		
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KAB	RJM	KMHB	
Date:	Date:	Date:	
29/03/16	27/06/16	27/06/16	
Drawing No.:			Revision:
109053/2005			–

Do not scale from this drawing.



Rev.	Date	Description	Drawn	Checked	Approved

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Project Title:

GREENOCK NO. 8 AND ALUM DAM ENHANCEMENT WORKS

Drawing Title:

OVERFLOW CHANNEL SCREEN

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Scale at A4:	Status:	
1:20	For Information	
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KAB	RJM	KMHB
Date:	**Date:**	**Date:**
29/03/16	27/06/16	27/06/16
Drawing No.:		**Revision:**
109053/2006		–

APPENDIX B ACTIVITY SCHEDULES

Ref	Item Description	Amount
1	**PRELIMINARIES** *To be completed by the Contractor*	
	Page : PRELIMINARIES/1	

Ref	Item Description	Amount
2	**GREENOCK NO. 8 RESERVOIR**	
2.1	**Clear and repair approach to secondary overflow spillway**	
2.1.1	Clearance of debris from approach to secondary spillway	
2.1.2	Topsoil and grass sods from approach to be cut and stored on site for reinstatment	
2.1.3	Area of failed slope to be cut back and reprofiled to a stable angle	
2.1.4	Topsoil and grass sods to be reinstated on reprofiled slope	
2.2	**Increase conveyance capacity of overflow channel**	
2.2.1	Excavation and setting aside of topsoil and grass sods along the left side of the spillway channel over a length of approx. 30m	
2.2.2	Formation of raised bank along left side of overflow channel as per the detail on drawing 109053/2002.	
2.2.3	Existing stone pitching sides to be repaired or reinstated and grouted in place as appropriate.	
2.2.4	Stone pitching to be installed along left side of overflow channel to be extended along section of raised bank.	
2.2.5	Raised bank crest and downstream face to be finished with topsoil and grass sods set aside under item 2.2.1.	
2.3	**Clear vegetation and repair overflow channel**	
2.3.1	Removal of all vegetation, weeds and moss from the channel over a length of 125m	
2.3.2	Repairs to channel pitching over a total length of approx. 40m Stone pitching to be grouted in place. *The extent of repair works to be confirmed on site following removal of all vegetation and joint inspection with Project Manager/Supervisor* ***PROVISIONAL ITEM***	
2.4	**Repair upstream roack armour protection**	
2.4.1	Repairs to upstream rock armour protection on upstream face of the embankment over an area of $30m^2$ as per the detail on drawing 109053/2003 *The extent of damaged stone pitching to be confirmed on site following lowering of the reservoir level and inspection with Project Manager/ Supervisor* ***PROVISIONAL ITEM***	
	Page : GREENOCK NO. 8/2	

Ref	Item Description	Amount
3	**ALUM DAM**	
3.1	**Installation of handrail along the top of Alum Dam**	
3.1.1	Fabricate and install approx. 48m length of handrail along top of Alum Dam. Handrail to be provided as shown on drawing 109053/2004.	
3.2	**Installation of handrail and replacement screen at the overflow channel outlet**	
3.2.1	Fabricate and install approx. 22m length of handrail around open channel. Handrail to be provided as shown on drawing 109053/2004.	
3.2.2	Remove and dispose of existing trash screen on the outlet pipe.	
3.2.3	Fabricate and install new trash screen on the outlet pipe. Trash screen to be provided as shown on drawing 109053/2006	
	Page : ALUM DAM/3	

FAIRHURST

Ref	Item Description	Amount
	COLLECTION	
	PRELIMINARIES:	
A	Page: PRELIMINARIES/1	
	GREENOCK NO. 8 RESERVOIR:	
B	Page: Greenock No. 8/2	
	ALUM DAM:	
C	Page: Alum Dam/3	
	Page : COLLECTION/4	

APPENDIX C PARTICULAR SPECIFICATION

1.0 GENERAL

2.0 SETTING OUT AND EXISTING GROUND LEVELS

3.0 PROGRAMME OF WORKS

4.0 RISKS TO HEALTH & SAFETY FROM MATERIALS OR SUBSTANCES

5.0 CONSTRUCTION CONSTRAINTS

1.0 GENERAL

1.1 Method Statements for Works

The Contractor shall prepare and submit to the Project Manager for comment method statements for his Works. Method statements shall be project specific and linked to the programme for the Works provided in accordance with Section 3.0 of this Specification.

The method statements shall be fully developed and demonstrate how the Contractor proposes to undertake the works and how he has addressed health and safety issues and minimised risk to all parties affected by the work being undertaken.

The method statements shall be supported by all necessary certifications and/or calculations, erection and dismantling methods and use of Contractor's equipment proposed by the Contractor, all as required by this Specification.

The Contractor shall develop the sequence of undertaking the Works and shall be fully responsible for ensuring his methods and sequence of works are not detrimental or cause damage to the existing Scottish Water infrastructure or the new works. In developing his methods of working the Contractor shall take due account of the existing structures and construction constraints detailed in the Contract Documents or any other information provided by the Project Manager.

The Contractor's method statements shall be submitted in adequate time to allow the Project Manager to comment. The Contractor shall allow sufficient time in his programme to comply with this requirement. As a minimum, the Contractor shall submit his fully developed method statement two weeks before the works, to which it relates, commence. It is the Contractor's responsibility to ensure that adequate information is provided and that sufficient time is allowed in his programme for the Project Manager to comment and for any alterations required to be made to his method statements resulting from the Project Manager's comments. Where significant alterations are required the Contractor shall be required to resubmit his method statement to the Project Manager for comment prior to proceeding with works to which it relates.

The Project Manager's comments shall be covered by one of the following three categories:

Response	**Comment**
A	The Project Manager has no comments and the Contractor may proceed.
B	The Project Manager has minor comments and the Contractor may proceed subject to the Project Manager's comments being adopted by the Contractor and incorporated into the Contractor's Method Statement.
C	The Project Manager's comments require significant alterations to be made to the Method Statement or additional information is to be provided by the Contractor. The Contractor shall provide the information requested or re-draft the Method Statement taking account of the Project Manager's comments and re-submit it to the Project Manager for comment. The Contractor shall not proceed until the Project Manager's response is either an A or B.

1.2 Temporary Works

The Contractor shall supply, erect and maintain throughout the duration of the Works all necessary temporary works required to allow the erection of the permanent works, to provide safe access to and from all working areas and to ensure the stability of all affected structures during the Works.

1.2.1 Design of Temporary Works

When designing his temporary works the Contractor shall take due account of the existing structures, construction constraints set by the Contract Documents and any other information supplied by the Project Manager.

It is the Contractor's responsibility to confirm the information relative to the existing structures provided in the Contract Documents or otherwise provided by the Project Manager, prior to any fabrication or erection of his temporary works. Any discrepancies between the information provided by the Project Manager to the Contractor and that found on site shall be notified by the Contractor to the Project Manager. The Contractor shall incorporate this information into his design prior to submitting it to the Project Manager for comment.

The Contractor shall submit to the Project Manager for comment his proposals for the design of the temporary works including details of the loading that the temporary works will be required to carry and an assessment of the effects that loading will have on any existing structures. The Contractor shall incorporate the Project Manager's comment into his design. However, this shall in no way relieve the Contractor of being solely responsible for the suitability, design and operation of the temporary works.

The Project Manager's comments shall be covered by one of the following three categories:

Response	Comment
A	The Project Manager has no comments and the Contractor may proceed.
B	The Project Manager has minor comments and the Contractor may proceed subject to the Project Manager's comments being adopted by the Contractor and incorporated into the Contractor's design of the temporary works.
C	The Project Manager's comments require significant alterations to be made to the design of the temporary works or additional information is to be provided by the Contractor. The Contractor shall provide the information requested or re-design the temporary works to take into account the Project Manager's comments and re-submit it to the Project Manager for comment. The Contractor shall not proceed until the Project Manager's response is either an A or B.

The Contractor's proposals for his temporary works shall be submitted in adequate time to allow the Project Manager to comment. The Contractor shall allow sufficient time in his programme to comply with this requirement. The Contractor shall submit his fully developed proposals for his temporary works a minimum of two weeks before any fabrication or erection of the temporary works commencing. It is the Contractor's responsibility to ensure that adequate information is provided and that sufficient time is allowed in his programme for the Project Manager to comment and for any alterations required to be made to his proposed temporary works design resulting from the Project Manager's comments. Where significant

alterations are required the Contractor shall be required to resubmit his design to the Project Manager for comment prior to proceeding with any fabrication or erection of the temporary works.

1.2.2 Inspection of Temporary Works

Temporary works shall be inspected by the Contractor on a regular basis at intervals defined in the relevant Legislation, British Standards or Codes of Practice or at weekly intervals whichever is the most frequent and also following any significant weather event. Inspections shall be carried out by competent persons with a report for each item of temporary works being submitted to the Project Manager by the Contractor on a weekly basis.

1.3 Storage and Handling of Materials

The Contractor shall handle materials in a manner that will not be detrimental to the elements of the existing structure, protective finishes, services or any item of fixed plant.

All materials shall be stored in accordance with the manufacturer's instructions in a secure place.

Liquids (such as Diesel Fuel) that are stored in bulk containers on-site shall be located in bunds to contain any spillage that may occur. Drip trays or similar such measures are to be employed to contain any spillages or leaks from equipment.

1.4 Construction Constraints

Details of the Construction Constraints which will be applicable to the Contractor are contained in the following sections:

- 5.1: Construction Constraints – General
- 5.2: Construction Constraints – Environmental.

1.5 Existing Services

No information has been received regarding existing services at either the Greenock reservoirs.

The Contractor shall ensure that any cables identified by Scottish Water are not damaged during the works and shall provide temporary support to cables during the remedial works if required.

1.6 Specified Materials or Equivalent

Where materials or goods are specifically referred to on a drawing or in the Specification the Contractor may propose an alternative. Details of the Contractor's alternative shall be submitted to the Project Manager for acceptance in adequate time but not less than four weeks prior to incorporation into the Works. Alternative material that is not accepted by the Project Manager shall not be incorporated into the Works.

It is the Contractor's responsibility to ensure that any alternative materials proposed are appropriate and that their use in the Works will not result in any additional costs or delays to the programme. The Project Manager's acceptance of the Contractor's proposed alternative materials will not relieve the Contractor of this responsibility.

1.7 Discharges into Watercourses

The Contractor shall at all times comply with the requirements of the Scottish Environmental Protection Agency and shall not:

a) Cause pollution of any river, stream, waterway, drain, watercourse, loch or other body of water so as to adversely affect the quality and appearance of the water or cause injury or death to animal or plant life.

b) Affect any underground water resource (including percolating water) which would interfere with supply to or abstraction from a source or pollute a water source.

c) Cause silting, erosion of beds or banks of any river, stream, waterway, drain, watercourse, loch or other body of water so as to adversely affect the quality and appearance of the water or cause injury or death to animal or plant life.

1.8 Definition of Completion of the Works

The Employer requires all of the Works detailed in the Works Information, with the exception of the handover of record and health and safety information detailed under Clause 1.9, to have been completed before the Completion Date.

1.9 Record Information

The Contractor shall provide within 4 weeks of completion of site based works a full set of record information to the Project Manager.

The set of information shall consist of:

- As-built drawings, clearly endorsed as such, for all elements of the Works including but not limited to; general arrangements, reinforcement drawings, fabrication drawings, drainage layouts. Drawings are to be provided in paper and electronic

format. The electronic format shall include both an Adobe PDF file and an AutoCAD 2008 compatible file. The Contractor shall provide the AutoCAD files in such a manner that the individual drawings can be re-created. The Contractor's plotting files for the AutoCAD drawings shall be provided.

- Documentation, including but not limited to calculations, specifications, documents and computer input and output prepared in connection with the project shall be issued in paper and electronic format. The electronic format shall be in both Adobe PDF file format and Microsoft Word compatible file format where possible.

The Contractor shall provide 2 hard copies and one electronic copy of the above information.

1.10 Temporary Accommodation and Equipment for the Project Manager

The Project Manager and Supervisor shall have full access and unrestricted use of the Contractor's welfare facilities on-site. The Contractor shall ensure that welfare facilities are clean and tidy and comply with the statutory requirements at all times.

1.11 Control of Noise and Vibration

The Contractor shall take all necessary steps to minimise noise and vibration disturbance, which may be caused by the construction of the permanent and temporary works. Where operations are likely to cause disturbance, the Contractor shall liaise with the Local Authority to obtain necessary consents and determine restrictions which may apply to the Contractor's method of working.

Details of the general requirements are given below. The Contractor should note that these requirements are given as a guide only. The Local Authority may require typical noise levels of the equipment to be used.

1. The normal working hours within the site shall be Monday to Friday between 0800 and 1630 hours. Consent for work outside these hours may be given after any necessary consultation. 7 days notice is required from the Contractor when seeking such consent from the relevant statutory authority.

2. The noise levels (see Note (i) below) scheduled below for periods outside the normal working hours will only be permitted when consent has been given to exceptional working.

3. The ambient noise level, Leq (see Note (ii) below) from all sources when measured 1.2 – 1.5 m above the ground at any property shall either not exceed the appropriate level given in the Schedule or not exceed by more than 3dB(A) the existing ambient noise level, Leq (see Note (iii) below) measured over the same period, whichever level is the greater. Where night time working is undertaken the noise level will be measured at the height of the first storey or second storey where there are bedrooms. Exceptionally the Contractor may be given permission to carry out works which exceed the noise levels in the Schedule, provided that 14 days notice of the date and

timing of these works is given to the Project Manager and the Contractor demonstrates that he intends to take all reasonable measures to mitigate the noise nuisance. After consultations with the Local Authorities and any other interested bodies a decision will be given within 14 days of receipt of the notice.

Schedule		**Total Noise Levels**		
Period	**Hours**	**Ambient Noise Level, Leq Measured at Control Station dB(A)**	**Period of Hours over which Leq is applicable**	**Maximum Sound Level (see Note (iv) below) measured at Control Station: dB(A)**
Mondays to Saturdays	0800 to 1630	85	0800 to 1630	Laeq (½ hr) = 88
Monday to Friday	1630 to 2200	To be agreed following consultation with the Local Authority		
Sundays (v)	0800 to 1800	-	-	-
Sundays (v)	1700 to 2200	-	-	-
Night time working(vi)	2200 to 0800	-	-	-
The total noise levels indicated shall apply to all unattended plant outside normal working hours				

Notes:

(i) Noise levels relate to free field conditions. Where noise control stations are located 1m from facades of building, the permitted noise levels can be increased by 3 dB(A).

(ii) The ambient noise level, Leq at a noise control station is the total Leq from all the noise sources in the vicinity over the specified period.

(iii) The existing ambient noise level, Leq, at a control station is the total Leq from all the noise sources in the vicinity over the specified period prior to the commencement of the works.

(iv) The maximum Laeq (Period) allowed is that shown in the last column above; the duration should not be exceeded.

(v) Sunday working only applicable with consent from the local authority.

(vi) Night Time working (22.00hrs and later) only applicable with consent from the local authority.

1.12 Routeing of Vehicles

The Contractor shall agree with Scottish Water, the Local Authority and respective landowners the proposed routeing of construction traffic, including deliveries of materials and plant to the site.

The Contractor must ensure that access to local residents is maintained at all times during the Works.

2.0 SETTING OUT AND EXISTING GROUND LEVELS

Surveys of the Greenock Small Reservoirs were carried out by Mick McWilliam Chartered Land Surveyors in 2013 and are included in the Site Information.

The Contractor shall be responsible for maintaining all reference points for setting out and ensuring their accuracy from the Date of Commencement of the Contract.

Any discrepancy found in the information provided by the Project Manager shall be submitted to the Project Manager within two working days of the discrepancy being confirmed. The Project Manager shall respond as soon as possible and within three working days as to what course of action if any the Contractor shall take.

3.0 PROGRAMME OF WORKS

The Contractor shall submit, in accordance with Clause 31 of the Conditions of Contract, three copies of his programme for the Works in the form of a Gantt or bar chart. The programme shall clearly identify the following:

a) Start Date
b) Access Date
c) Completion Date
d) The order and timing of all activities the Contractor is required to undertake to carry out the Works including off-site fabrication.
e) The critical path through the Contract Period.
f) Predecessor dependencies of each activity
g) Resource requirements for each activity
h) Earliest start and latest finish dates for each activity.
i) Whether activity is undertaken on day, night or other shift pattern.
j) Float and time risk allowances.
k) Submission dates and allowances for approvals in accordance with the requirements of the Conditions of Contract and Specification for the Works.
l) Hand over dates for the Works in accordance with the timescales set out in the Conditions of Contract.

In developing his programme the Contractor shall take full account of the construction constraints imposed by this Specification and all other constraints and requirements set out in the Conditions of Contract, Works Information or in other applicable legislation.

The Contractor shall also provide his proposed payment schedule for the Works.

In addition to the general Programme of Works, the Contractor shall prepare a breakdown of individual items as requested by the Project Manager. Detailed programmes of parts of the Works shall be correlated with a method statement and shall be submitted to the Project Manager a minimum of two weeks before the activity is due to start. Method statements shall comply with the requirements of Clause 1.1 of this Specification.

Progress Meetings shall be held at regular intervals to be confirmed by the Project Manager. At the meetings, the Contractor shall report on overall progress in relation to the accepted programme for the Works. The Contractor's report shall include a report on environmental matters in accordance with Clause 5.2 of this Specification. A copy of the report, in Microsoft Word format, shall be provided to the Project Manager a minimum of 2 days before the progress meeting.

The Contractor shall, at weekly intervals, inform the Project Manager of his proposed work for the coming week and provide written details of resources for each activity.

4.0 RISKS TO HEALTH & SAFETY FROM MATERIALS OR SUBSTANCES

The Contractor shall take all reasonably practicable steps to prevent members of the public or persons visiting the site being affected, due to his operations, by substances hazardous to health. Subject to Contractor's risk assessment where necessary the Contractor shall erect screening and signing to protect members of the public. The proposed protective measures shall be submitted to the Project Manager for approval prior to any work taking place

The Contractor shall prepare and maintain a register of all substances hazardous to health which is brought on to the Site. The Contractor shall operate a documented system to control the issue and use of such materials in connection with the Works.

The Contractor shall make available all personal protection equipment (PPE) necessary for the protection of all persons who may be exposed to substances hazardous to health in connection with the Works. The Contractor shall ensure that such persons are fully trained in the use of the afore-mentioned equipment and that the appropriate equipment is used by such persons when there is a risk of exposure to substances hazardous to health.

The Contractor shall submit detailed method statements for the acceptance by the Project Manager in accordance with Clause 1.1, stating how the Contractor will ensure that the public are not affected by substances hazardous to health which may be used during construction of the Works. These substances may include, but shall not be limited to:

- Wet concrete and cement including constituent materials
- Coatings to concrete
- Dust from cutting operations on concrete

Such method statements shall state the proposed methods to prevent, control and monitor exposure of the public to the above substances when used or generated, in or about the Works. The Contractor shall also take into consideration substances hazardous to health existing within the original construction that may be exposed during demolition.

Compliance with the requirements of this Clause shall not in any way relieve the Contractor of his statutory obligations.

The Contractor shall be responsible for assessing all risks associated with materials encountered in the existing structure. The Contractor shall undertake waste acceptance testing for all material to be removed from site to landfill.

5.0 CONSTRUCTION CONSTRAINTS

5.1 General

The Contractor shall plan, programme and execute the Works in such a manner that the following requirements are met.

1. The Contractor shall undertake a pre-construction condition inspection jointly with Scottish Water within 2 weeks of the start date. The Contractor shall prepare a report detailing the condition of existing embankments and other Scottish Water assets. A copy of the report shall be provided to the Project Manager within two weeks of the condition inspection.

2. The Top Water Level (TWL) in the reservoirs will have to be lowered to enable the works to the upstream face of the embankment and spillway channel to be undertaken. The Contractor must agree operating levels and drawdown rates with Scottish Water prior to works starting on site. The water level should be monitored continuously and the Contractor should prepare a method statement for employing mitigation to protect the works and the dam in the event of a flood.

3. The Contractor shall supply a list of contact telephone numbers for all site management personnel to enable contact to be made outwith site hours and during holidays in the event of an emergency. Individuals whose details have been provided will need to be able to mobilise a work force to address the said emergency.

4. The Contractor shall reinstate all areas within the site that he has been permitted to occupy to their original condition, as recorded in the pre-construction condition inspection report.

5. No crane, whether fixed or mobile shall be permitted to occupy any part of the main earth embankments forming the reservoirs or be located within 5 metres of any structures.

6. The maximum imposed load that can be applied to the top of the main embankment is limited to a maximum of 10.0 kN/m^2. The Contractor shall sequence his works and deliveries to provide any temporary works necessary to ensure that the maximum imposed loading is not exceeded. The Contractor shall demonstrate in his method statements to be submitted how this will be achieved.

7. The Contractor shall not impose any loads from temporary works onto the existing structures without the acceptance of his proposals by the Project Manager.

5.2 Environmental

In programming and planning the Works, the Contractor shall allow adequate time to undertake the removal of any hazardous materials and make due allowance for the effects of such operations on other programmed activities.

Dust produced by the Works shall be contained within the site.

The Contractor shall provide and maintain spill kits at the work fronts in order that any spillages of liquids can be dealt with immediately.

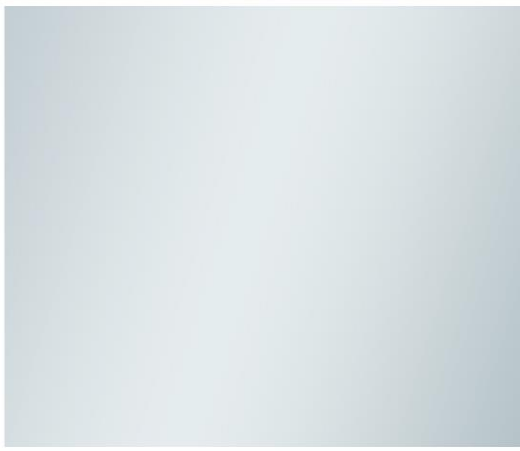
All liquids which the Contractor has on-site shall be stored in accordance with the manufacturer's instructions. Any bulk storage shall be in securely bunded areas, the bund volumes sized at 110% of the bulk contained volume being stored in the bund.

The Contractor shall not discharge any debris laden water or water contaminated from his activities into the surface water drainage system.

The Contractor shall not discharge any debris laden water or water contaminated from his activities into the reservoir or spillway channel.









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