The Highland Council

Agenda Item	18
Report No	PDI 73/15

Planning, Development and Infrastructure Committee
4 November 2015

Smithton and Culloden, and Caol Flood Protection Schemes

Report by Director of Development and Infrastructure

Summary

This report advises Members on the progress of two Flood Protection Schemes namely Smithton and Culloden, and Caol, and seeks approval to publish draft documents for consultation.

1. Background

1.1 The Planning, Development and Infrastructure Committee was advised, on the 3 June 2015 (Report 31/15), of the recommended actions to be taken forward in the first Flood Risk Management Strategy (to be published by SEPA in December 2015), and Local Flood Risk Management Plan (to be published by the Highland Council in June 2016) for the Highland and Argyll Local Plan District. This included the progression through to construction of three Flood Protection Schemes, namely Caol, Smithton and Culloden, and Drumnadrochit (River Enrick). The same report allocated funding from the 'Major Flood Schemes'' generic Capital Programme to enable The Highland Council to meet these objectives. This report outlines the progress on the Smithton and Culloden, and Caol Schemes.

2. Legislative and Legal Framework

2.1 Prior to The Flood Risk Management (Scotland) Act (2009), under the Flood Prevention Act (1961), Scottish Ministers were required to confirm formal Flood Protection Schemes and Planning Permission was required to be gained from the Local Planning Authority. This process was considered to be both expensive and time consuming resulting in few schemes being delivered.

2.2 The Flood Risk Management (Scotland) Act (2009) established new powers within Part 4 of the Act for Local Authorities to confirm formal Flood Protection Schemes, thereby removing the need for Scottish Ministerial approval. In addition, if a Flood Protection Scheme was confirmed by the Local Authority, the Act allows Scottish Ministers to deem it to have Planning Permission.

2.3 The Council's Scheme of Delegation (approved on 25 June 2015) allows the Planning, Development and Infrastructure Committee to promote Flood Protection Schemes on behalf of The Highland Council.

2.4 Schedule 2 of the Flood Risk Management (Scotland) Act (2009) sets out a procedure for the making of a Flood Protection Scheme, and this requires a

statutory consultation of a *proposed* scheme.

2.5 The proposed scheme must be advertised for a period of 28 days, and Objections to the draft scheme are invited to be submitted for consideration. In order for an Objection to be 'relevant', the Objector must state their full name, address and the nature of their Objection.

2.6 A future report will be submitted to this Committee to consider the nature of the Objections, and this Committee will then be asked to:

- confirm the scheme (as advertised);
- Modify the scheme (for example to accommodate an objection) or
- Reject the scheme.

2.7 Confirmation of a Flood Protection Scheme establishes permission to construct the proposed operations on 3rd party land. This power means that purchase of the land affected is not (usually) required. However, land purchase is to be progressed for the Caol/ River Lochy Scheme, and it is hoped that this will progress by agreement.

2.8 This report seeks approval to begin this process, with the statutory consultation on the draft proposed schemes for Caol/ River Lochy and Smithton and Culloden.

3. Development of the Smithton and Culloden Flood Protection Scheme

3.1 Smithton and Culloden (to the east of Inverness) has suffered from flooding over a number of years, from 1999 up to and including last year. A number of small 'flashy' watercourses run off Culloden Moor towards the sea and pass through heavily developed areas of Smithton and Culloden.

3.2 Following major floods in 2011, a Capital Scheme was approved by TECS Committee to be developed.

3.3 Throughout 2013, 2014 and 2015, Flood Protection Works have progressed on the ground (Phases 2, 3A and 3B) to install course debris screens, restore open watercourses, reduce erosion and construct improved culvert screens to reduce the flood risk.

3.4 The next phase (Phase 4) is being developed as a formal Flood Protection Scheme as the works require major development in public and private land. The scheme comprises of:

1) a flood storage area (attenuation) in Culloden Park, reducing flood risk to properties on Culloden Burn West and North;
2) a flood storage area (attenuation) in Smithton (Metal) Park, reducing flood risk to properties on Smithton Burn;
3) an upsized culvert between Redburn and Ferntower Avenue, reducing flood risk to properties on Culloden Burn West; and

4) the creation of a new open watercourse from the Railway Line to Tower Road, reducing flood risk to properties on Smithton Burn.

3.5 The proposed scheme (including all Phases) will alleviate 132 properties from flooding. The proposed Standard of Protection to be provided is the 1:200 year return period flood event (plus a 20% increase in fluvial flows for climate change). The design will also include a 'freeboard' allowance to allow for uncertainties in the design process.

3.6 An early draft of the Scheme proposals was used to begin consultation in 2015. A public exhibition of these proposals was held in Smithton Free Church on 10th March 2015. The event was well attended and a number of the concerns raised related to the proximity of the pitches to the open watercourse in Smithton Park. The design has now been modified to mitigate these concerns. No major concerns were raised about Culloden Park.

3.7 Consultations have also progressed with affected stakeholders. The design team has attended Ward Business Meetings, School visits and a Major Application Meeting in January 2015.

3.8 The draft Flood Prevention Scheme drawings and description of Operations in **Appendix A**, is now sufficiently developed to allow formal consultation (as described above) to begin.

4. Development of the Caol Flood Protection Scheme

4.1 The village of Caol is situated to the north of Fort William and is bounded by the River Lochy to the southeast and Loch Linnhe to the southwest. The village is low lying and is at risk of flooding from both high water levels in the River Lochy and tidal surge in Loch Linnhe.

4.2 Caol has been subject to flooding on several occasions in recent decades, most recently in 2005.

4.3 Prior to 2005, floods were recorded in and around the area in 1957, 1974, 1981-2, 1989 and 1992.

4.4 The 2005 flood caused damage to around 20 homes and the sewage works in Caol. The significance of the 2005 flood is that the major cause was a large tidal surge in Loch Linnhe. Tidal surge is where sea levels rise higher than expected due to atmospheric conditions such as low pressure. In the 2005 flood, the sea level of 4.44m was recorded; this was 2.52m higher than the expected high tide level of 1.92m.

4.5 In 2014 the Council's consultants, JBA, published an appraisal report. This report has established the height of the flood defence required for Caol and Lochyside as well as updating the flood mapping for the area.
The report can be access at:
http://www.highland.gov.uk/info/1210/environment/80/flood_alleviation_schemes/4

4.6 The scheme comprises a 2.1 km (1.3 mile) long direct flood defence, consisting of 1200 metres of embankment and wave wall along the shore of Loch Linnhe and 900 metres of flood wall along the bank of the River Lochy. The draft scheme seeks to protect 300 properties at risk from the predicted 1:200 year storm event.

4.7 The aim of the Caol Flood Protection scheme is to protect 274 residential and 23 non-residential properties in Caol and Lochyside which are at risk from the predicted 1:200 year storm event.

4.8 An early draft of the Scheme proposals was used to begin consultation in 2015. A public exhibition of these proposals was held in Killmallie Free Church on 25 May 2015. The event was well attended and a number of the concerns raised public access to the beach, impact on existing play areas as well as the impact on the Great Glen Way. Amendments have been made to the access arrangements and discussions are ongoing regarding play area provision in Caol.

4.9 Consultations have also progressed with affected stakeholders. The design team has attended Ward Business Meetings, Community Exhibitions and a Major Application Meeting.

4.10 The draft Flood Prevention Scheme drawings and description of Operations are attached in **Appendix B**. Further stakeholder discussions will continue and when sufficiently developed will allow formal consultation (as described above) to begin.

5. Next Steps

5.1 Once committee approval to commence formal consultation on the draft Flood Protection Schemes is received, the design teams will prepare the formal documents, notices and adverts as required by the Act.

5.2 Smithton and Culloden

5.2.1 A Design Justification Report, explaining in full the development of the Smithton and Culloden Flood Protection Scheme and a Flood Risk Assessment of the proposed works, is in progress and will be completed by January 2016. It is expected that once this report is available, consultation on Smithton and Culloden will begin in February 2016. Consultation will run for a period of 28 days. A report on the outcome of this consultation, final scheme documentation and a scheme cost estimate will be submitted to Committee in the Spring of 2016 for consideration.

5.2.2 Members are asked to note, that as the design of the scheme will be progressing between this report and February 2016, it is possible that minor modifications to the scheme documents may arise. The scheme as presented in **Appendix A** should therefore be treated as draft.

5.3 River Lochy and Caol

5.3.1 Additional public and stakeholder consultation is proposed to establish the

surface finishes and ancillary works associated with the scheme. In addition this will ensure all parties are aware of the timescale for publication of the scheme.

5.3.2 It is expected that consultation on the River Lochy and Caol Flood Protection Scheme will begin in Spring of 2016. The consultation will run for a period of 28 days. A report on the outcome of this consultation, final scheme documentation and a scheme cost estimate will be submitted to Committee in 2016 for consideration.

5.3.3 Members are asked to note, that as the design of the scheme will be progressing between this report and publication, it is possible that minor modifications to the scheme documents may arise. The scheme as presented in **Appendix B** should therefore be treated as draft.

6. Implications

6.1 Resource

6.1.1 PDI committee Report 31/15 outlined the position of Caol FPS within the prioritisation in the Council's Capital Programme with regarding to allocated budget for flooding works. Caol is ranked number 1 within the report, and Smithton and Culloden was ranked number 2. The capital allocation for Flood Protection Schemes between the years 14/15 and 23/24 is £31.4m.

6.1.2 It is expected that 80% of all eligible costs for both Schemes will be funded from the Scottish Government, with the Council's Capital Programme meeting the remaining 20%.

6.2 Legal:

6.2.1 Land Purchase and entry will be required for the Caol Flood Protection Scheme, however it is hoped that this will progress by agreement. However there is provision within the Act, with the permission of the Scottish Ministers, to compulsorily acquire land should it be necessary.

6.2.2 Licence applications will be required from SEPA regarding Controlled Activities in watercourses and by Marine Scotland for works below mean high water spring level.

6.3 Equalities:

Issues relating to equality would be addressed at detailed design. Improved access and amenity for all users is being considered and incorporated in the proposals for both the Caol, and Smithton and Culloden Schemes.

6.4 Climate Change/Carbon Clever:

Detailed design will incorporate measures to minimise the importation of materials and make best use of natural materials encountered on-site. In addition measures will be put in place to minimise waste during the construction works. The procurement procedures for the construction of the project will be managed to maximise the use of locally sourced goods, services and materials.

6.5 Risk:
A Ground Investigation contract was commenced in September 2015 for both schemes to provide detailed information on ground conditions, the location of utilities and tree roots. This will be used to inform the detailed design. Japanese Knotweed is known to be present in Caol. To reduce cost of disposal during the works a programme of chemical spaying has commenced to reduce the risk prior to construction in 2018.

6.6 Gaelic:
The scheme has no significant implications for use of Gaelic.

6.7 Rural:
The scheme has no significant implications for rural areas.

Recommendation

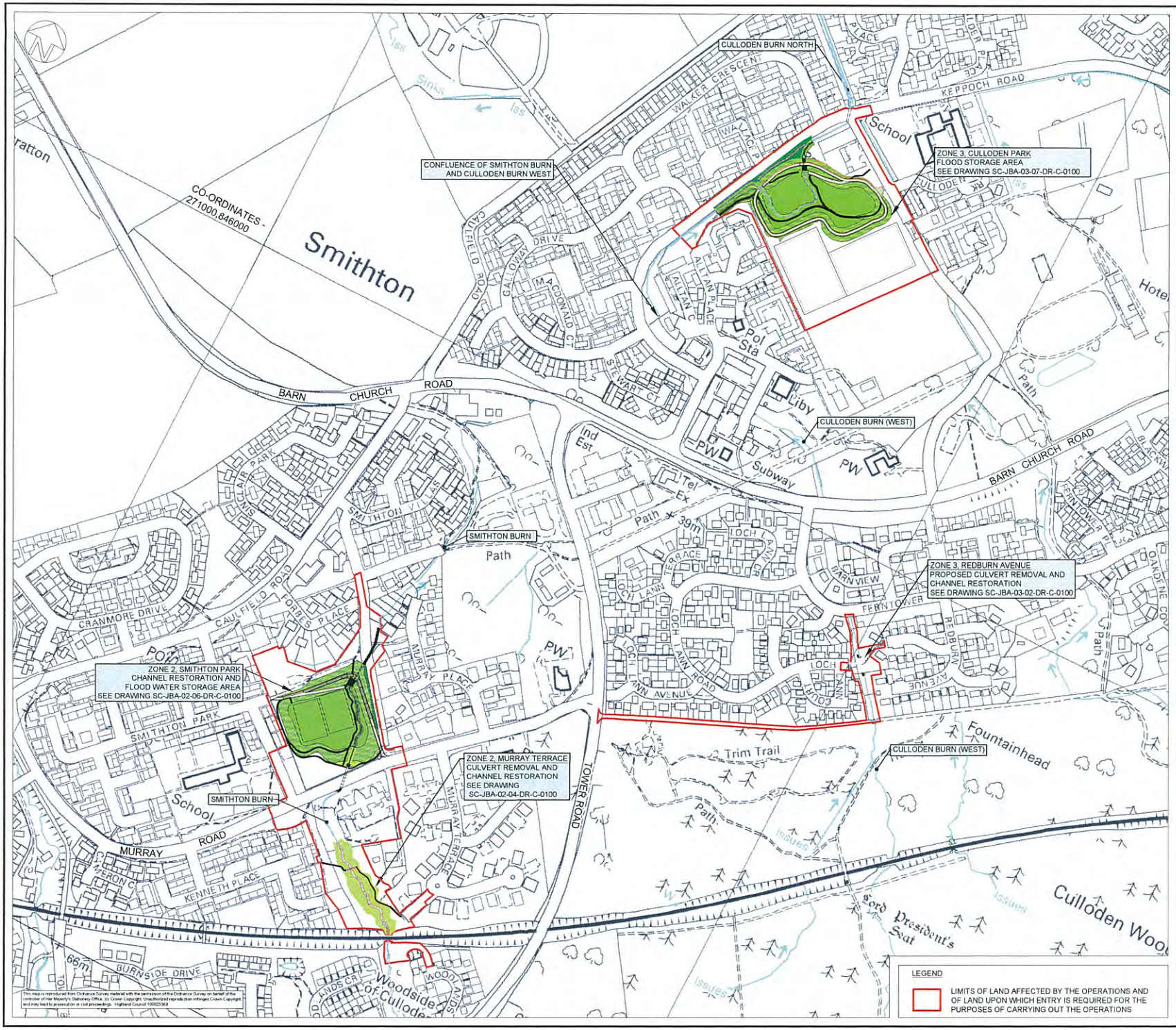
Members are asked to note the draft drawings and description of Operations, for the Smithton and Culloden, and Caol Flood Protection Schemes, and approve the publication of these for formal consultation.

Designation: Principal Engineer

Date: 7 October 2015

Authors: C Howell, G Smith, M Smith

Background Papers: Planning, Development and Infrastructure Committee Report PDI/31/15 (Agenda Item 10 – 3 June 2015)



Notes

1 These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009.
2 Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.

DRAFT

APPENDIX A

137

Rev	Date	Drawn	Designed	Checked	Approved	Comments
P1.2						Title and revision number updated
	16/10/15	LA	SC	SC		
P1.1						Hatching for limits of land removed, hatching originally used in FPO drawings added. Annotation added.
	18/09/15	JR	SC	SC	RD	

Client Approval
A - Approved
B - Approved with Revisions
C - Do Not Use

Purpose of Issue: Review & Comment
Status: S3

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Project
Smithton & Culloden Flood Protection Scheme

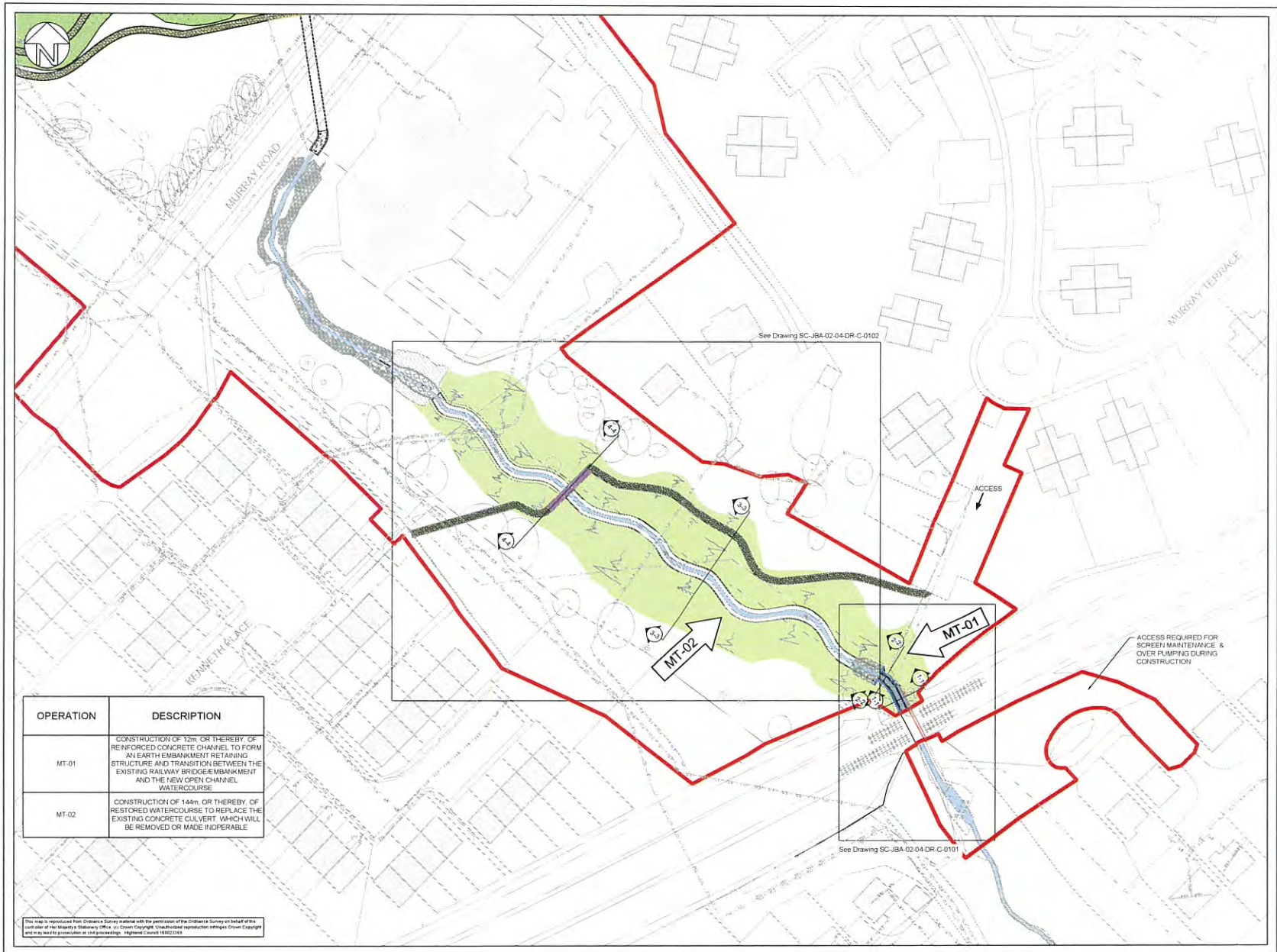
Title
Flood Protection Scheme Drawings
Location Plan For All Zones

for

Client
The Highland Council
Comhairle na Gàidhealtachd

Scale	Drawn	S. Thomson	18/02/15
1:2500 @ A1	Designed	S. Thomson	18/02/15
	Checked	S. Cooney	19/02/15
	Approved	S. Cooney	30/06/15

Project Number: 2013s7134
Drawing Number: SC-JBA-00-00-DR-C-0100
Revision: P1.2



OPERATION	DESCRIPTION
MT-01	CONSTRUCTION OF 12m, OR THEREBY, OF REINFORCED CONCRETE CHANNEL TO FORM AN EARTH EMBANKMENT RETAINING STRUCTURE AND TRANSITION BETWEEN THE EXISTING RAILWAY BRIDGE/EMBANKMENT AND THE NEW OPEN CHANNEL WATERCOURSE
MT-02	CONSTRUCTION OF 144m, OR THEREBY, OF RESTORED WATERCOURSE TO REPLACE THE EXISTING CONCRETE CULVERT, WHICH WILL BE REMOVED OR MADE INOPERABLE

LEGEND

- OPEN CHANNEL WATERCOURSE
- NEW BRIDGE
- EROSION PROTECTION
- CONCRETE STRUCTURE
- GRAVEL PATH
- REPROFILED GROUND
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- EMBANKMENT TOE PROTECTION AND SWALE PROTECTION
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- RETAINING WALL
- LIMITS OF LAND AFFECTED BY OPERATIONS AND OF LAND UPON WHICH ENTRY IS REQUIRED FOR THE PURPOSES OF CARRYING OUT THE OPERATIONS
- EXISTING TREES
- NEW MANHOLE
- SECTION MARKER

EXISTING SERVICES

- SURFACE WATER SEWER
- COMBINED SEWER
- FOUL SEWER
- WATER MAIN
- BT OVERHEAD
- BT UNDERGROUND
- ELECTRICITY OVERHEAD
- ELECTRICITY UNDERGROUND
- GAS

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0101
   SC-JBA-03-07-DR-C-0102
   SC-JBA-03-07-DR-C-0103
   SC-JBA-03-07-DR-C-0104
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0100 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
P1.3	Comments: Title and revision number updated. related drawings corrected				
Rev	Date 16/10/15	Drawn LA	Designed ST	Checked SC	Approved
P1.2	Comments: Note 5 added. Legend and Title updated. Section lines Style Changed.				
Rev	Date 07/10/15	Drawn SD	Designed ST	Checked SC	Approved
P1.1	Comments: Section Lines changed. Operation and description text box and markers added. Note 4 added. title box updated. Site boundary updated, extent of works removed, annotation added, watercourse extended.				
Rev	Date 01/10/15	Drawn JR	Designed SC	Checked	Approved

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 2 Murray Terrace Plan
Sheet 1 of 3
for

Client: The Highland Council / Comhairle na Gàidhealtachd

Scale		
1:500 @ A1	Drawn: J. Redpath	25/08/15
	Designed: S. Cooney	25/08/15
	Checked:	
	Approved:	

Project Number: 2013s7134

Drawing Number	Revision
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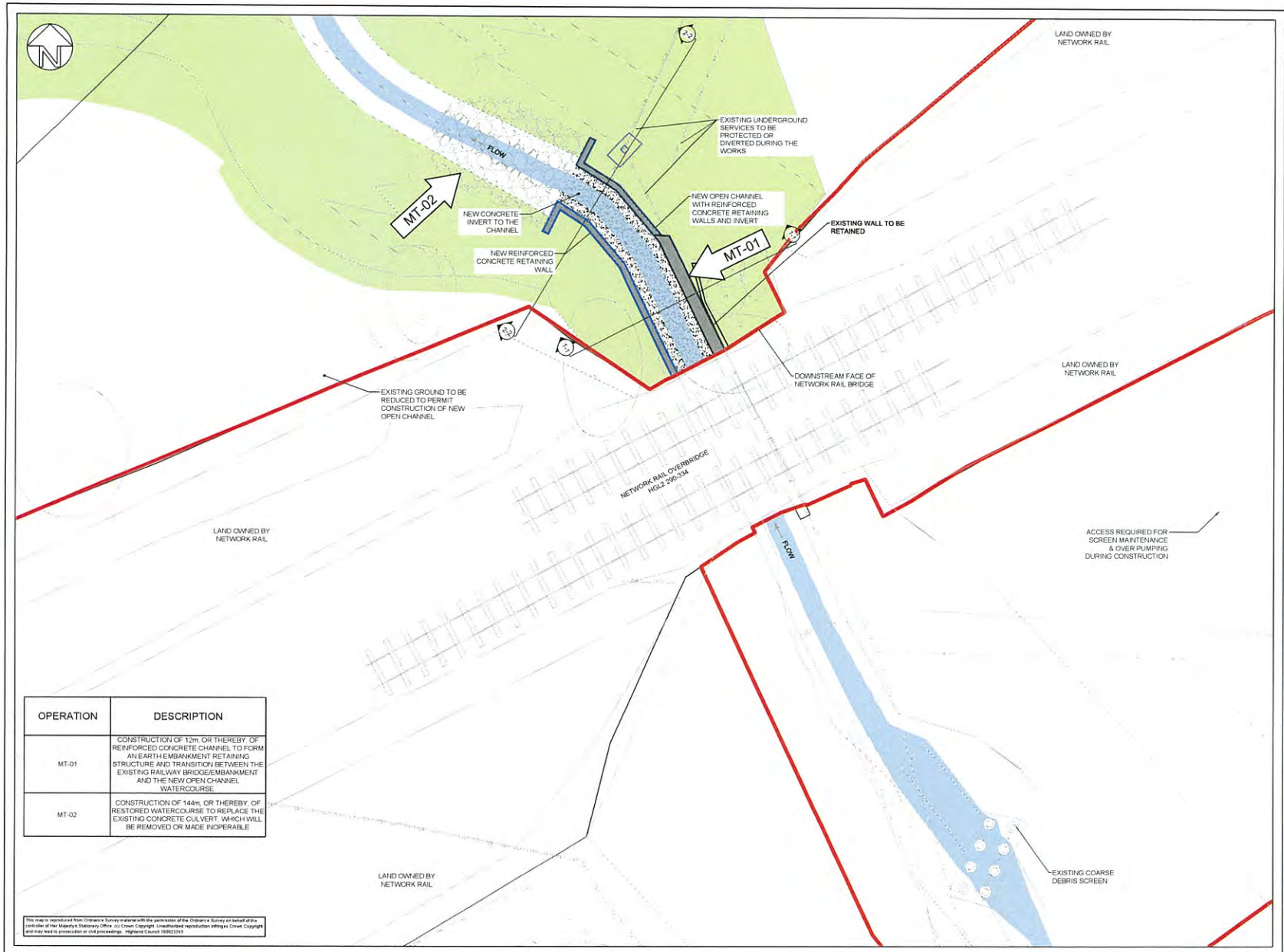

OPERATION	DESCRIPTION
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Notes

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2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design
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   SC-JBA-03-07-DR-C-0102
   SC-JBA-03-07-DR-C-0103
   SC-JBA-03-07-DR-C-0104
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers

DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0101 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
P1 3	Comments: Title and revision number updated, related drawings corrected				
Rev	Date 16/10/15	Drawn LA	Designed ST	Checked SC	Approved
P1 2	Comments: Note 5 Added, Legend and Title Updated, Debris Screen and Section Lines Style Changed				
Rev	Date 07/10/15	Drawn SO	Designed ST	Checked SC	Approved
P1 1	Comments: Hatching and legend updated, existing ground and concrete invert annotation added, Erosion protection added, operation and description text box and marker added, Service diversion removed				
Rev	Date 01/10/15	Drawn JR	Designed ST	Checked SC	Approved

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 2 Murray Terrace Plan
Sheet 2 of 3
for

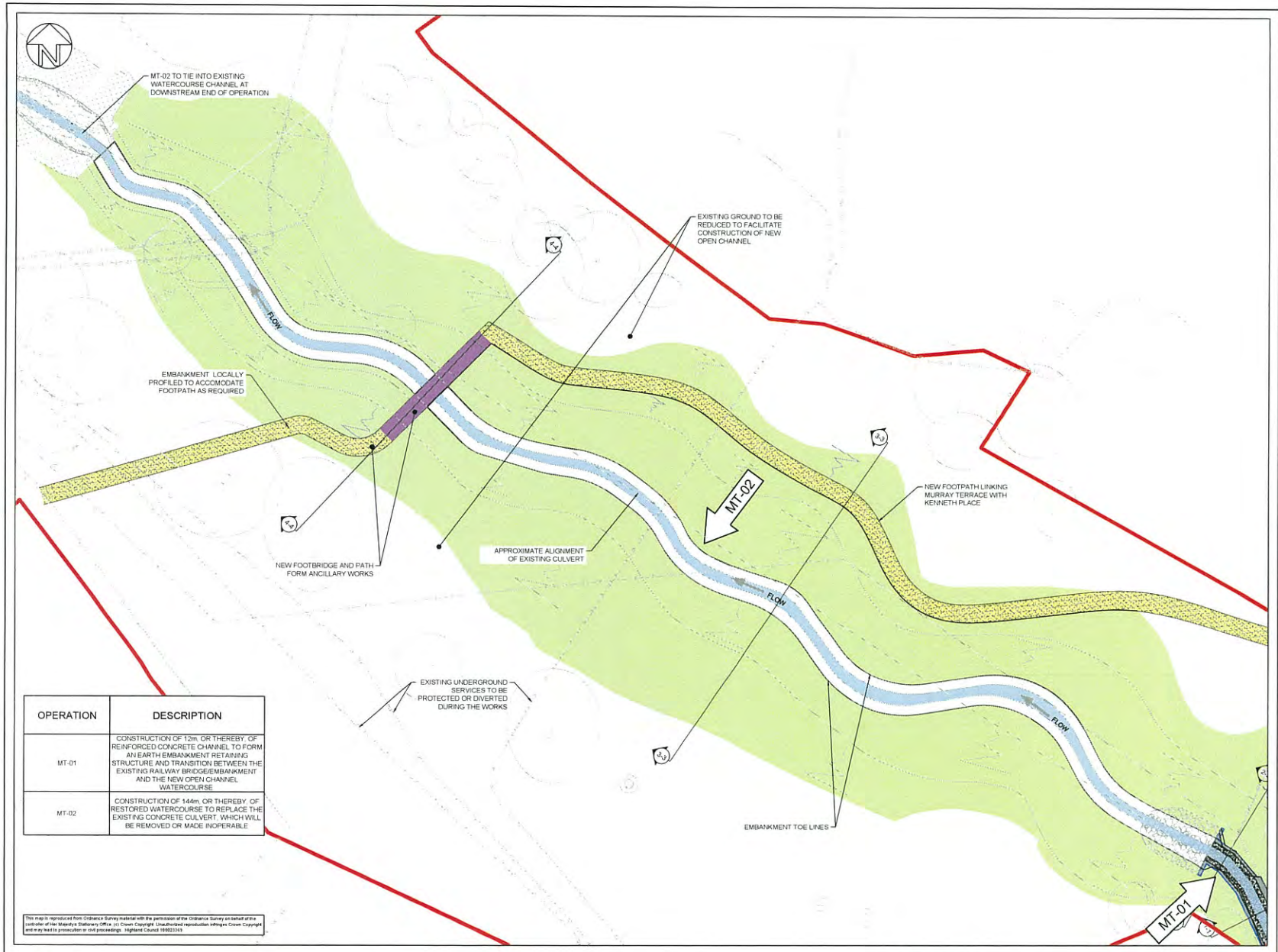
Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:100 @ A1	Drawn J Redpath	26/08/15	
	Designed S Cooney	25/08/15	
	Checked		
	Approved		

Project Number: 2013s7134

Drawing Number: SC-JBA-02-04-DR-C-0101

Revision: P1 3



OPERATION	DESCRIPTION
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   SC-JBA-03-07-DR-C-0100
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   SC-JBA-03-07-DR-C-0104
   SC-JBA-00-00-RP-Z-0006
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DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0102 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council.

Director of Corporate Services

Date

Signature

Rev	Comments	Date	Drawn	Designed	Checked	Approved
P1.3	Title and revision number updated. related drawings corrected.	16/10/15	LA	SC	SC	SC
P1.2	Note 5 and Annotation Added. Legend and Title Updated. Section Lines Style Changed	07/10/15	SO	ST	SC	SC
P1.1	Hatching and legend updated. existing ground annotation added. Proposed service diversion removed, annotation added/removed. watercourse extended. Title frame updated. note 4 added.	21/09/15	JR	SC		

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project

Smithton & Culloden Flood Protection Scheme

Title

Flood Protection Scheme Drawings
Zone 2 Murray Terrace Plan
Sheet 3 of 3
for

Client

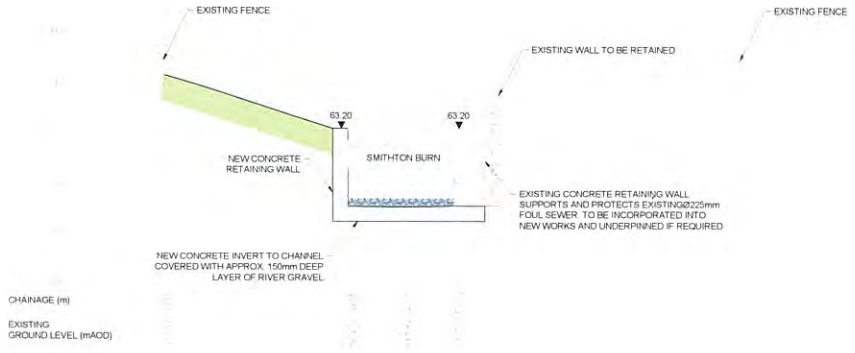
The Highland Council
Comhairle na Gàidhealtachd

Scale			
1:200 @ A1	Drawn	J. Redpath	25/08/15
	Designed	S. Cooney	24/08/15
	Checked		
	Approved		

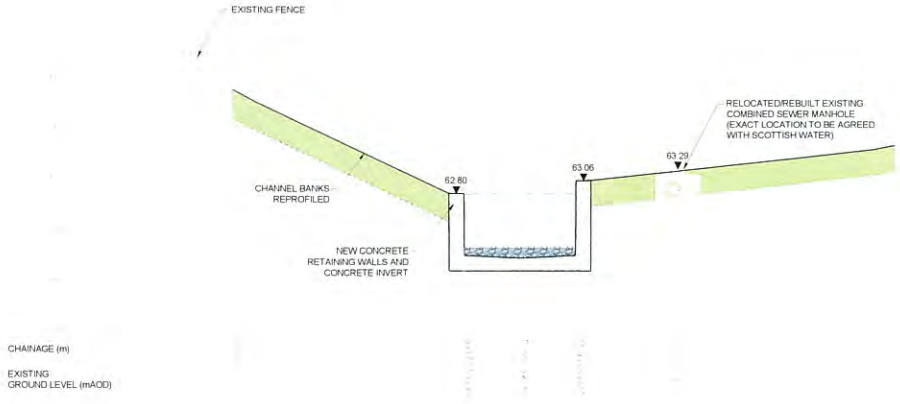
Project Number 2013s7134

Drawing Number SC-JBA-02-04-DR-C-0102

Revision P1.3



SECTION 1-1 (MT-01)



SECTION 2-2 (MT-01)

OPERATION	DESCRIPTION
MT-01	CONSTRUCTION OF 12m OR THEREBY, OF REINFORCED CONCRETE CHANNEL TO FORM AN EARTH EMBANKMENT RETAINING STRUCTURE AND TRANSITION BETWEEN THE EXISTING RAILWAY BRIDGE/EMBANKMENT AND THE NEW OPEN CHANNEL WATERCOURSE

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0100
   SC-JBA-03-07-DR-C-0101
   SC-JBA-03-07-DR-C-0102
   SC-JBA-03-07-DR-C-0104
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme.
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0103 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved	Comments
P1.3						Title and revision number updated, related drawings corrected
P1.2	16/10/15	LA	SC	SC	SC	Note 5 and Hatching Added, Legend and Title Updated
P1.1	07/10/15	SO	ST	SC	SC	Operation added to sections, legend updated, limits of deviation removed, Title frame updated, note 4 added, Section 3-3 removed, Section 4-4 renamed 3-3, Section 5-5 added, renamed 4-4
	30/09/15	JR	SC			

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of issue	Status
For review and comment	S3

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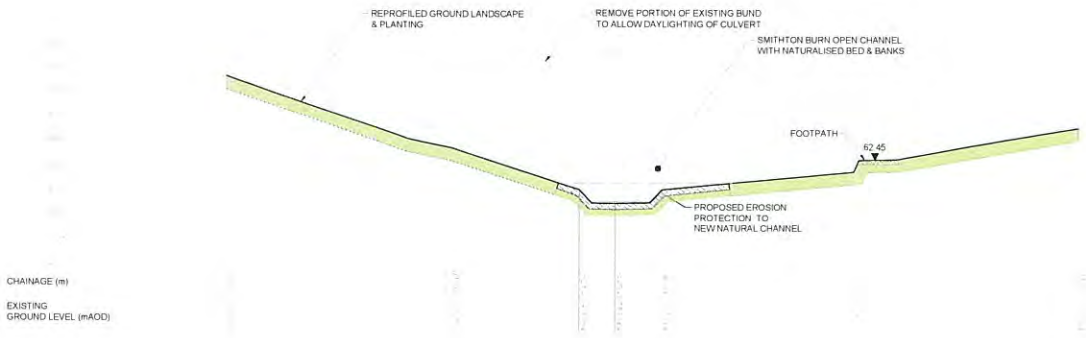
Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 2 Murray Terrace Sections
Sheet 1 of 2
for

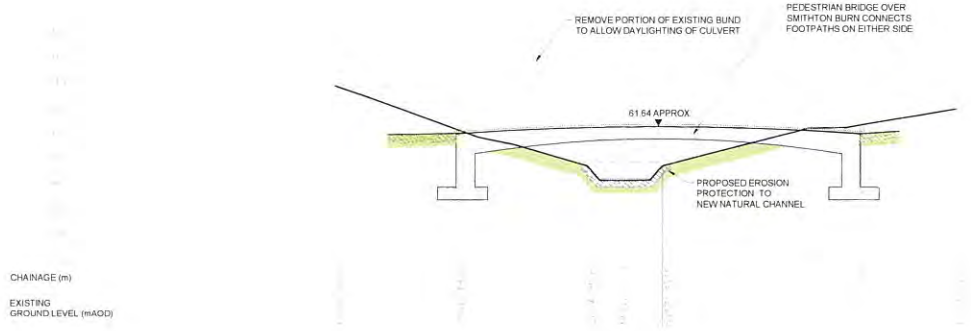
Client: The Highland Council / Comhairle na Gaidhealtachd

Scale	Drawn	J Redpath	25/08/15
1:50 @ A1	Designed	S Thomson	20/08/15
	Checked		
	Approved		

Project Number	2013s7134
Drawing Number	Revision
SC-JBA-02-04-DR-C-0103	P1.3



SECTION 3-3 (MT-02)



SECTION 4-4

ELEMENT	DESCRIPTION
MT-02	REMOVE PORTION OF EXISTING SOIL BUND AND CREATE OPEN NATURAL CHANNEL WITH EROSION PROTECTION

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 ▼ PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009.
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0100
   SC-JBA-03-07-DR-C-0101
   SC-JBA-03-07-DR-C-0102
   SC-JBA-03-07-DR-C-0103
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme.
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0104 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved	Comments
P1.3	16/10/15	LA	ST	SC		Title and revision number updated, related drawings corrected
P1.2	07/10/15	SO	ST	SC		Note 5 and Hatching Added, Legend and Title Updated
P1.1	JR	SC				Operation added to sections, legend updated, limits of deviation removed, Title frame updated, note 4 added, Section 3-3 removed, Section 4-4 renamed 3-3, Section 5-5 added, renamed 4-4

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 2 Murray Terrace Sections
Sheet 2 of 2
for

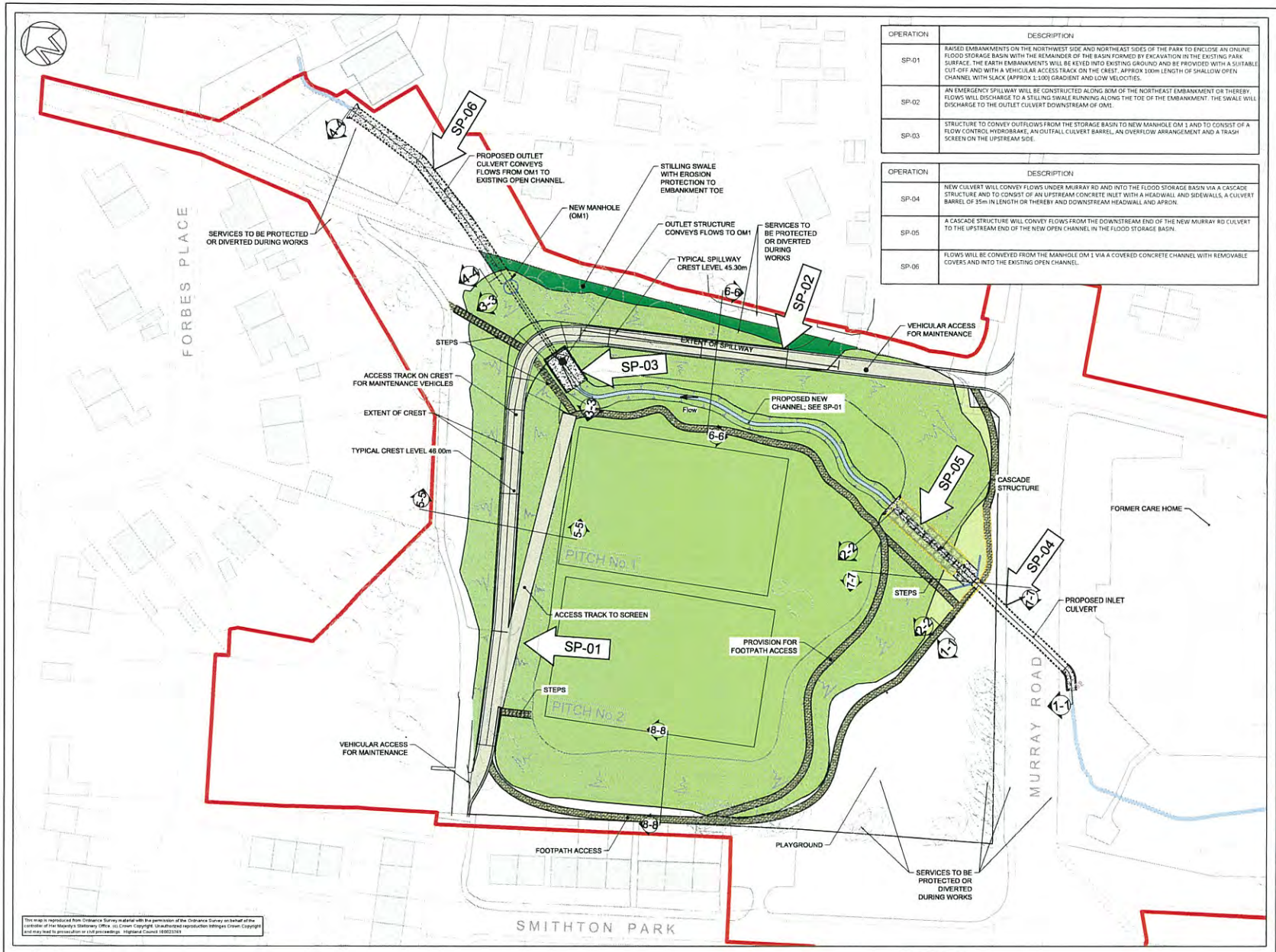
Client: The Highland Council / Comhairle na Gaidhealtachd

Scale	Drawn J. Redpath	08/08/15
1:100 @ A1	Designed C Robertson	07/08/15
	Checked	
	Approved	

Project Number: 2013s7134

Drawing Number: SC-JBA-02-04-DR-C-0104

Revision: P1.3



OPERATION	DESCRIPTION
SP-01	RAISED EMBANKMENTS ON THE NORTHWEST SIDE AND NORTHEAST SIDES OF THE PARK TO ENCLOSE AN ONLINE FLOOD STORAGE BASIN WITH THE REMAINDER OF THE BASIN FORMED BY EXCAVATION IN THE EXISTING PARK SURFACE. THE EARTH EMBANKMENTS WILL BE KEYED INTO EXISTING GROUND AND BE PROVIDED WITH A SUITABLE CUT-OFF AND WITH A VEHICULAR ACCESS TRACK ON THE CREST. APPROX 100m LENGTH OF SHALLOW OPEN CHANNEL WITH SLACK (APPROX 1:100) GRADIENT AND LOW VELOCITIES.
SP-02	AN EMERGENCY SPILLWAY WILL BE CONSTRUCTED ALONG 80M OF THE NORTHEAST EMBANKMENT OR THEREBY. FLOWS WILL DISCHARGE TO A STILLING SWALE RUNNING ALONG THE TOE OF THE EMBANKMENT. THE SWALE WILL DISCHARGE TO THE OUTLET CULVERT DOWNSTREAM OF OM1.
SP-03	STRUCTURE TO CONVEY OUTFLOWS FROM THE STORAGE BASIN TO NEW MANHOLE OM 1 AND TO CONSIST OF A FLOW CONTROL HYDROBRAKE, AN OUTFALL CULVERT BARREL, AN OVERFLOW ARRANGEMENT AND A TRASH SCREEN ON THE UPSTREAM SIDE.

OPERATION	DESCRIPTION
SP-04	NEW CULVERT WILL CONVEY FLOWS UNDER MURRAY RD AND INTO THE FLOOD STORAGE BASIN VIA A CASCADE STRUCTURE AND TO CONSIST OF AN UPSTREAM CONCRETE INLET WITH A HEADWALL AND SIDEWALLS, A CULVERT BARREL OF 35m IN LENGTH OR THEREBY AND DOWNSTREAM HEADWALL AND APRON.
SP-05	A CASCADE STRUCTURE WILL CONVEY FLOWS FROM THE DOWNSTREAM END OF THE NEW MURRAY RD CULVERT TO THE UPSTREAM END OF THE NEW OPEN CHANNEL IN THE FLOOD STORAGE BASIN.
SP-06	FLOWS WILL BE CONVEYED FROM THE MANHOLE OM 1 VIA A COVERED CONCRETE CHANNEL WITH REMOVABLE COVERS AND INTO THE EXISTING OPEN CHANNEL.

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009.
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-02-06-DR-C-0101
   SC-JBA-02-06-DR-C-0102
   SC-JBA-02-06-DR-C-0103
   SC-JBA-02-06-DR-C-0104
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-02-06-DR-C-0100 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Comments	Date	Drawn	Designed	Checked	Approved
P1.2	Title and revision number updated	16/10/15	JR	ST	SC	
P1.1	Legend updated, element and description added	22/09/15	JR	ST	SC	

Client Approval

A - Approved
B - Approved with Revisions
C - Do Not Use

Purpose of Issue	Status
Review and Comment	S3

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Project
Smithton & Culloden Flood Protection Scheme

Title
Flood Protection Scheme Drawings
Zone 2 Smithton Park Plan
Sheet 1 of 1
for

Client
The Highland Council
Comhairle na Gàidhealtachd

Scale			
1:500 @ A1	Drawn	S Ortgosa	10/09/15
	Designed	C Robertson	10/09/15
	Checked	S Cooney	10/09/15
	Approved		

Project Number 2013s7134

Drawing Number SC-JBA-02-06-DR-C-0100

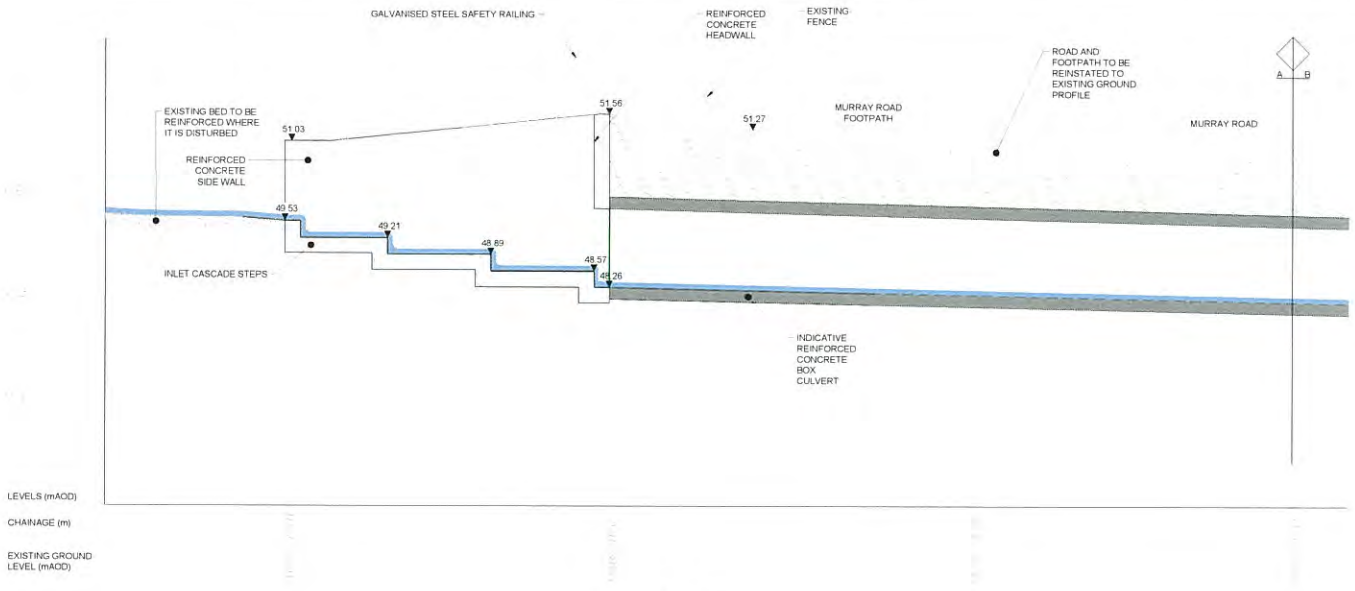
Revision P1.2

LEGEND

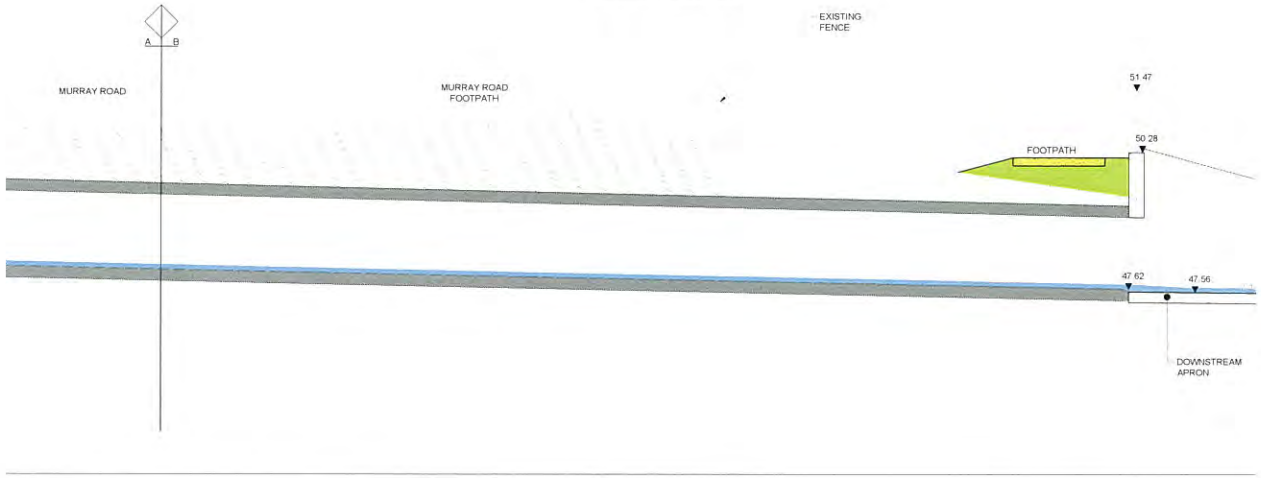
- OPEN CHANNEL WATERCOURSE
- NEW BRIDGE
- EROSION PROTECTION
- CONCRETE STRUCTURE
- GRAVEL PATH
- REPROFILED GROUND
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- EMBANKMENT TOE PROTECTION AND SWALE PROTECTION
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- RETAINING WALL
- LIMITS OF LAND AFFECTED BY OPERATIONS AND OF LAND UPON WHICH ENTRY IS REQUIRED FOR THE PURPOSES OF CARRYING OUT THE OPERATIONS
- EXISTING TREES
- NEW MANHOLE
- SECTION MARKER

EXISTING SERVICES

- SURFACE WATER SEWER
- COMBINED SEWER
- FOUL SEWER
- WATER MAIN
- BT OVERHEAD
- BT UNDERGROUND
- ELECTRICITY OVERHEAD
- ELECTRICITY UNDERGROUND
- GAS



SECTION 1-1 (SP-04)



SECTION 1-1 (SP-04)

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

OPERATION	DESCRIPTION
SP-04	NEW CULVERT WILL CONVEY FLOWS UNDER MURRAY RD AND INTO THE RESERVOIR BASIN VIA CASCADE STRUCTURE AND TO CONSIST OF AN UPSTREAM CONCRETE INLET WITH A HEADWALL AND SIDEWALLS, A CULVERT PIPE OF 40M IN LENGTH OR THEREBY AND DOWNSTREAM HEADWALL AND APRON.

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009.
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with:
   SC-JBA-00-00-DR-C-0100
   SC-JBA-02-06-DR-C-0100
   SC-JBA-02-06-DR-C-0102
   SC-JBA-02-06-DR-C-0103
   SC-JBA-02-06-DR-C-0104
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme.
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-02-06-DR-C-0101 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Rev	Date	Drawn	Designed	Checked	Approved	Comments
P1.2						Title and revision number updated.
P1.1	16/10/15	LA	ST	SC		Annotations added, chainages altered
P1	02/10/15	JR	ST	SC		

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
Review and comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 2 Smithton Park Sections
Sheet 1 of 4
for

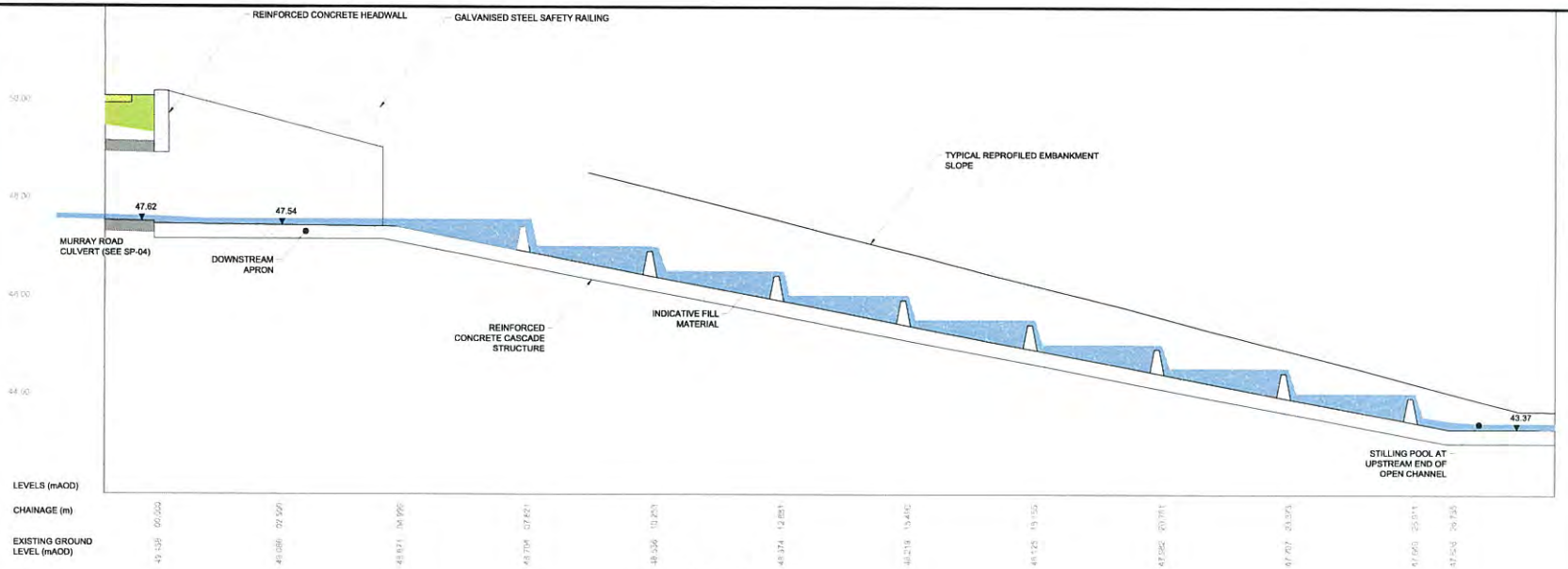
Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:50 @ A1	Drawn	S Thomson	10/09/15
	Designed	C Robertson	10/09/15
	Checked	S Cooney	10/09/15
	Approved		

Project Number: 2013s7134

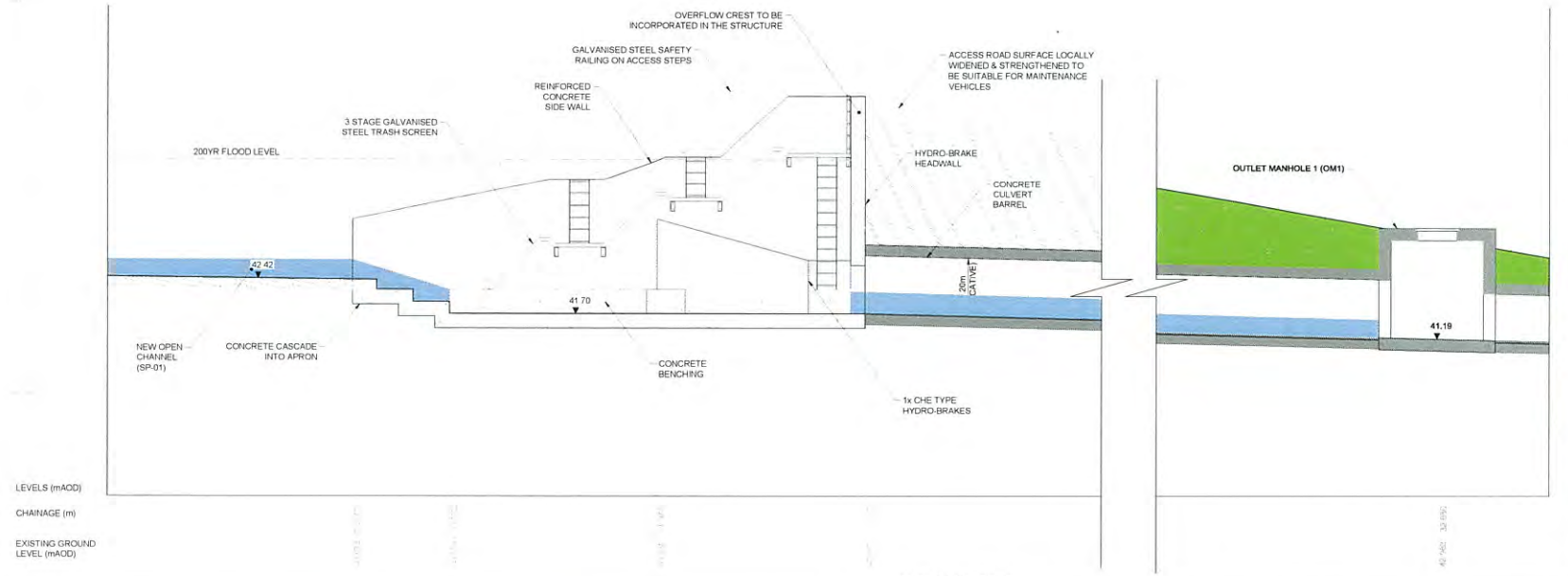
Drawing Number: SC-JBA-02-06-DR-C-0101

Revision: P1.2



SECTION 2-2- (SP-05)

SCALE 1:50



SECTION 3-3 (SP-03)

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

OPERATION	DESCRIPTION
SP-03	STRUCTURE TO CONVEY OUTFLOWS FROM THE STORAGE BASIN TO NEW MANHOLE OM1 AND TO CONSIST OF A FLOW CONTROL HYDROBRAKE, AN OUTFALL CULVERT BARREL, AN OVERFLOW ARRANGEMENT AND A TRASH SCREEN ON THE UPSTREAM SIDE.

OPERATION	DESCRIPTION
SP-05	A CASCADE STRUCTURE WILL CONVEY FLOWS FROM THE DOWNSTREAM END OF THE NEW MURRAY RD CULVERT TO THE UPSTREAM END OF THE NEW OPEN CHANNEL IN THE FLOOD STORAGE BASIN.

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-02-06-DR-C-0101
   SC-JBA-02-06-DR-C-0103
   SC-JBA-02-06-DR-C-0104
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers

DRAFT

This is the plan marked SC-JBA-02-06-DR-C-0102 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council.

Rev	Date	Drawn	Designed	Checked	Approved	Comments
P1.2	19/10/15	LA	SC	SC	SC	Title and revision number updated.
P1.1	08/10/15	JR	SC	SC	SC	Sections updated to reflect changes in model e.g. manhole added, headwall added, cascade structure

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
Review and Comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 2 Smithton Park Sections
Sheet 2 of 4
for

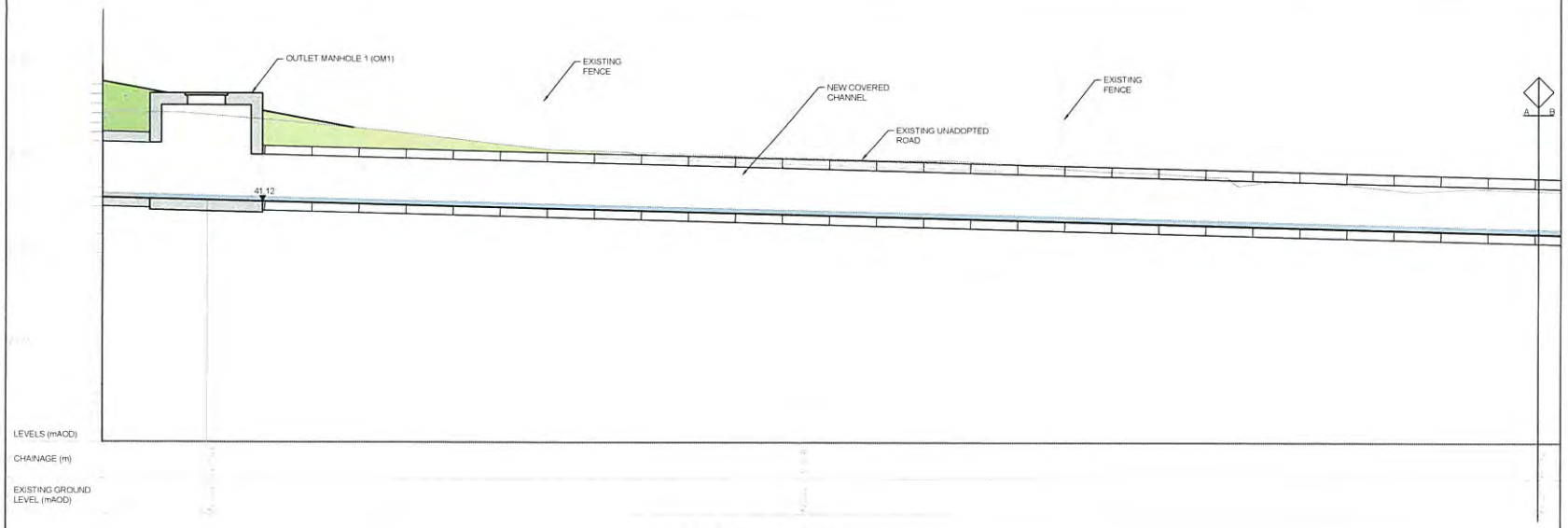
Client: The Highland Council / Comhairle na Gàidhealtachd

Scale	Drawn	S Thomson 10/09/15
1:50 @ A1	Designed	C Robertson 10/09/15
	Checked	S Cooney 10/09/15
	Approved	

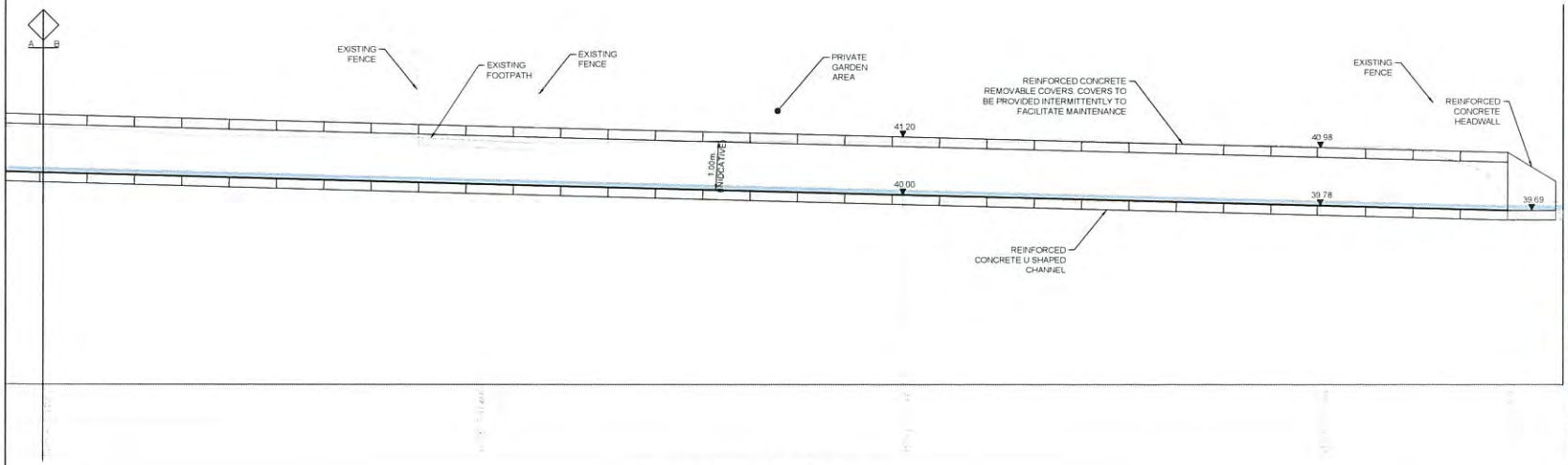
Project Number: 2013s7134

Drawing Number: SC-JBA-02-06-DR-C-0102

Revision: P1.2



SECTION 4-4 (SP-06)



SECTION 4-4 (SP-06)

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

OPERATION	DESCRIPTION
SP-06	FLOWS WILL BE CONVEYED FROM THE MANHOLE OM1 VIA A COVERED CONCRETE CHANNEL WITH REMOVABLE COVERS AND INTO THE EXISTING OPEN CHANNEL.

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-02-06-DR-C-0101
   SC-JBA-02-06-DR-C-0102
   SC-JBA-02-06-DR-C-0104
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers

DRAFT

This is the plan marked SC-JBA-02-06-DR-C-0103 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Rev	Date	Drawn	Designed	Checked	Approved	Comments
P1.2	16/10/15	LA	SC	SC		Title and revison number updated
P1.1	07/10/15	SO	SC	SC		Menhole added, new covered channel shown, annotation added, title frame updated

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
Review and Comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 2 Smithton Park Sections
Sheet 3 of 4
for

Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:50 @ A1	Drawn	S Thomson	10/09/15
	Designed	C Robertson	10/09/15
	Checked	S Cooney	10/09/15
	Approved		

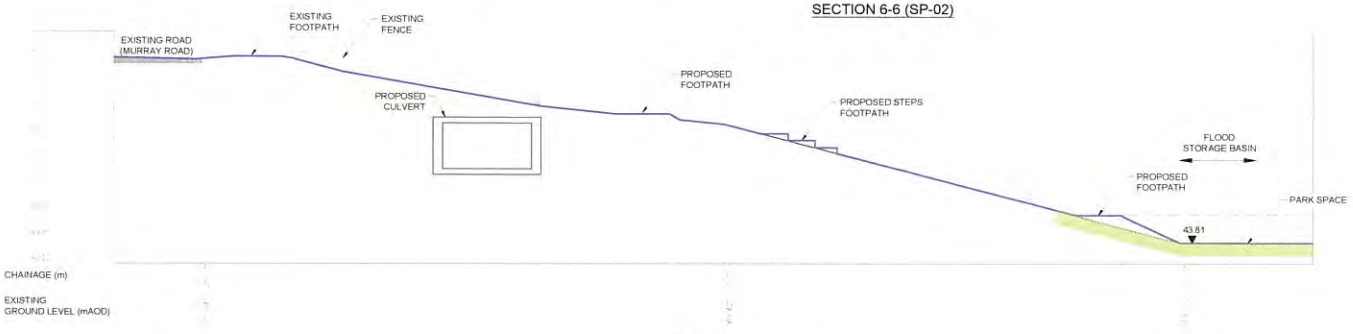
Project Number: 2013s7134

Drawing Number	Revision
SC-JBA-02-06-DR-C-0103	P1.2

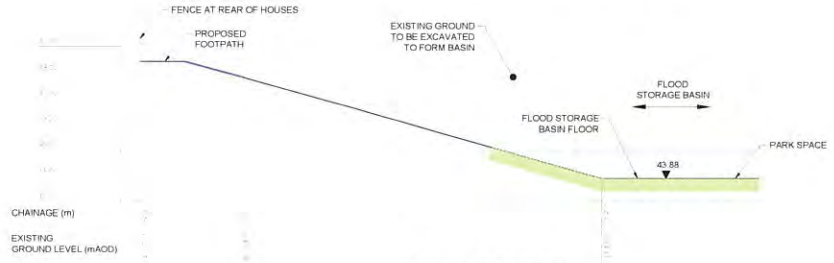
SECTION 5-5 (SP-01)

SECTION 6-6 (SP-02)

1.50



SECTION 7-7 (SP-01)



SECTION 8-8 (SP-01)

OPERATION	DESCRIPTION
SP-01	RAISED EMBANKMENTS ON THE NORTHWEST SIDE AND NORTHEAST SIDES OF THE PARK TO ENCLOSE AN ONLINE RESERVOIR BASIN WITH THE REMAINDER OF THE BASIN FORMED BY EXCAVATION IN THE EXISTING PARK SURFACE. THE EARTH EMBANKMENTS WILL BE KEYED INTO EXISTING GROUND AND BE PROVIDED WITH A SUITABLE CUT-OFF AND WITH AVEHICULAR ACCESS TRACK ON THE CREST.
SP-02	AN EMERGENCY SPILLWAY WILL BE CONSTRUCTED ALONG 80M OF THE NORTHEAST EMBANKMENT OR THEREBY. FLOWS WILL DISCHARGE TO A STILLING SWALE RUNNING ALONG THE TOE OF THE EMBANKMENT. THE SWALE WILL DISCHARGE TO THE OUTLET CULVERT DOWNSTREAM OF OM1.

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-02-06-DR-C-0100
   SC-JBA-02-06-DR-C-0101
   SC-JBA-02-06-DR-C-0102
   SC-JBA-02-06-DR-C-0103
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme.
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-03-02-DR-C-0101 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved	Comments
P1.2	16/10/15	LA	ST	SC		Title and revision number updated
P1.1	22/09/15	JR	ST	SC		Annotations added, chainages altered

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
Review and Comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme drawings
Phase 4 Zone 2 Smithton Park Sections
Sheet 4 of 4
for

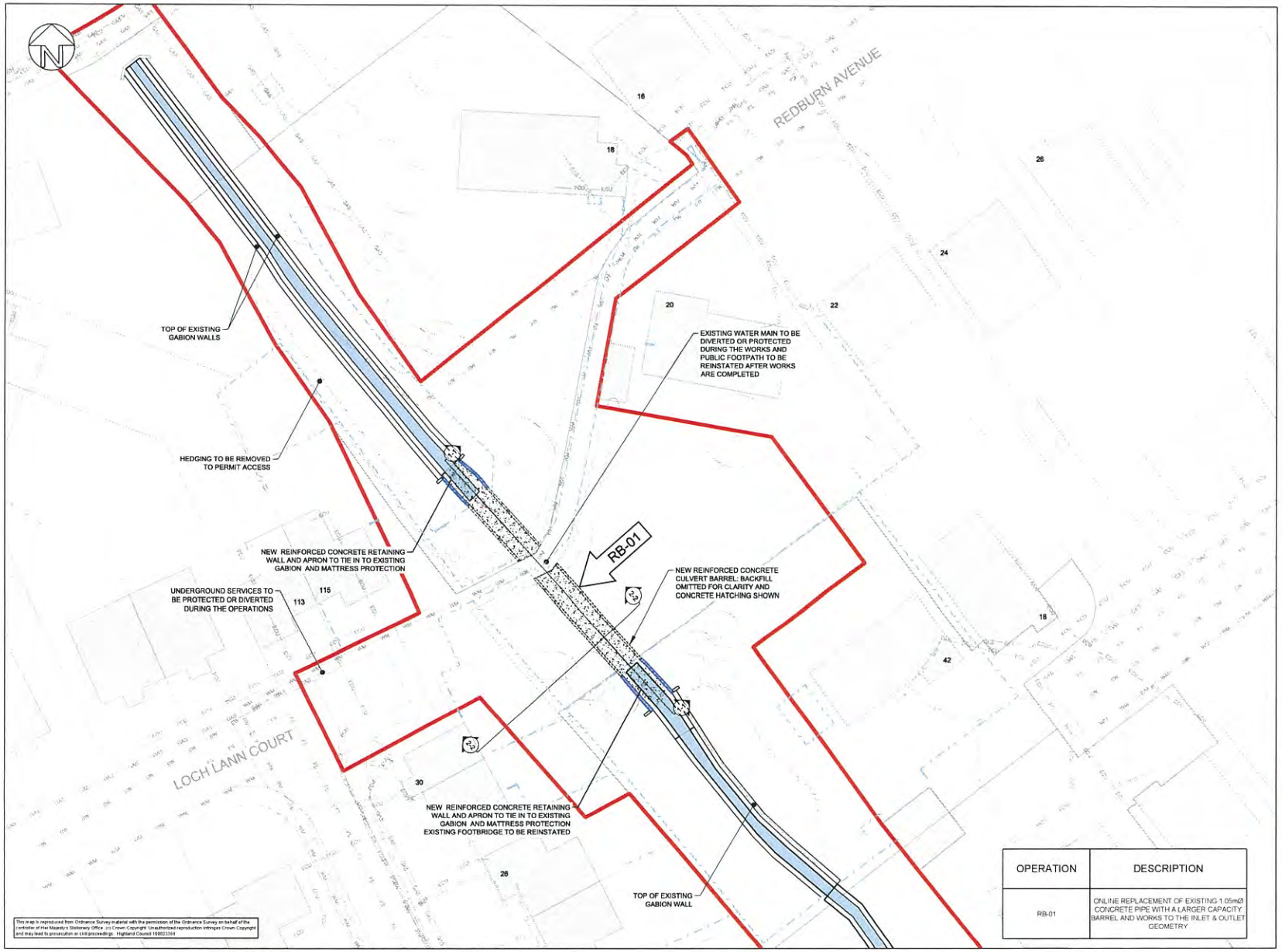
Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:100 @ A1	Drawn	S Ortigosa	09/09/15
	Designed	C Robertson	09/09/15
	Checked	S Cooney	09/09/15
	Approved	R Dobson	

Project Number: 2013s7134

Drawing Number: SC-JBA-02-06-DR-C-0104

Revision: P1.2



OPERATION	DESCRIPTION
RB-01	ONLINE REPLACEMENT OF EXISTING 1.05mØ CONCRETE PIPE WITH A LARGER CAPACITY BARREL AND WORKS TO THE INLET & OUTLET GEOMETRY

LEGEND

- OPEN CHANNEL WATERCOURSE
- NEW BRIDGE
- EROSION PROTECTION
- CONCRETE STRUCTURE
- GRAVEL PATH
- REPROFILED GROUND
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- EMBANKMENT TOE PROTECTION AND SWALE PROTECTION
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- RETAINING WALL
- LIMITS OF LAND AFFECTED BY OPERATIONS AND OF LAND UPON WHICH ENTRY IS REQUIRED FOR THE PURPOSES OF CARRYING OUT THE OPERATIONS
- EXISTING TREES
- NEW MANHOLE
- SECTION MARKER

EXISTING SERVICES

- SURFACE WATER SEWER
- COMBINED SEWER
- FOUL SEWER
- WATER MAIN
- BT OVERHEAD
- BT UNDERGROUND
- ELECTRICITY OVERHEAD
- ELECTRICITY UNDERGROUND
- GAS

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009.
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0101
   SC-JBA-03-07-DR-C-0102
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme.
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-03-02-DR-C-0100 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
P1.3	Title and revision number updated, related drawings corrected				
Rev	Date 16/10/15	Drawn LA	Designed ST	Checked SC	Approved
P1.2	Comments Note 5 Added. Title, Legend, Annotation Updated. Some Annotations Removed				
Rev	Date 07/10/15	Drawn SO	Designed ST	Checked SC	Approved
P1.1	Comments Annotation added, legend updated, background mapping made clearer. Note 4 added, drawing title frame updated, hedging to be removed shown and update to boundaries				
Rev	Date 28/09/15	Drawn JR	Designed SC	Checked	Approved

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project
Smithton & Culloden Flood Protection Scheme

Title
Flood Protection Scheme Drawings
Zone 3 Redburn Avenue Plan
Sheet 1 of 1
for

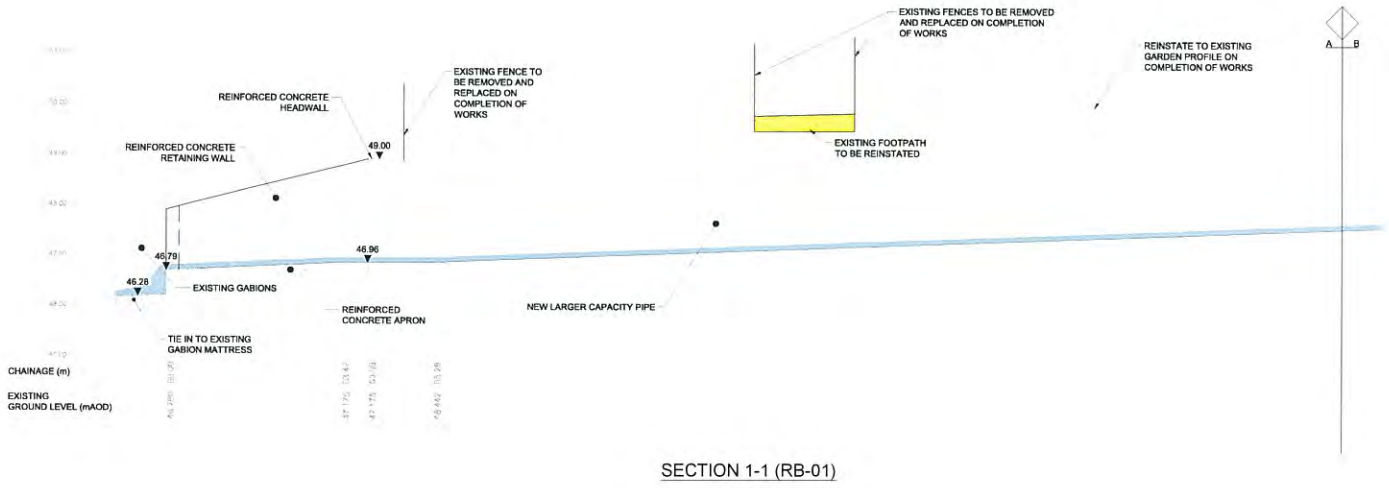
Client
The Highland Council
Comhairle na Gàidhealtachd

Scale			
1:200 @ A1	Drawn	S. Thomson	28/08/15
	Designed	C. Robertson	28/08/15
	Checked	S. Cooney	28/08/15
	Approved		

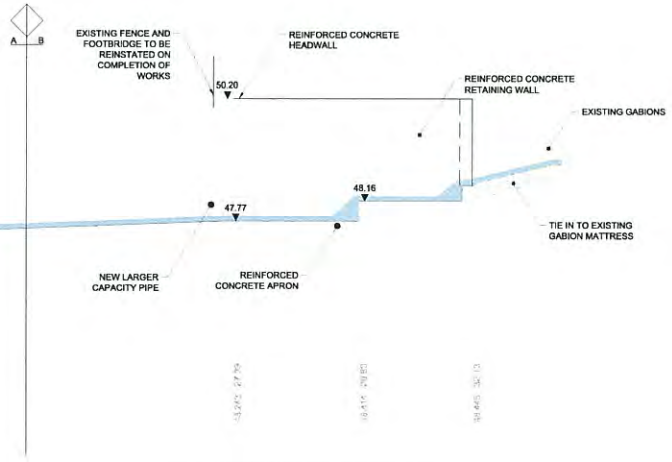
Project Number 2013s7134

Drawing Number SC-JBA-03-02-DR-C-0100

Revision P1.3



SECTION 1-1 (RB-01)



SECTION 1-1 (RB-01)

OPERATION	DESCRIPTION
RB-01	ONLINE REPLACEMENT OF EXISTING 1.05mØ CONCRETE PIPE WITH A LARGER CAPACITY BARREL AND WORKS TO THE INLET & OUTLET GEOMETRY

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1:200 YEAR FLOOD LEVEL

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0100
   SC-JBA-03-07-DR-C-0102
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-03-02-DR-C-0101 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
P1.3	Comments: Title and revision number updated, related drawings corrected				
Rev	Date: 16/10/15	Drawn: LA	Designed: ST	Checked: SC	Approved:
P1.2	Comments: Note 5 Added. Title and Legend Updated. Some Annotations Removed.				
Rev	Date: 07/10/15	Drawn: SO	Designed: ST	Checked: SC	Approved:
P1.1	Comments: Footpath, fence and hedges added. Limit of deviation removed, low flow water level (100mm) shown				
Rev	Date: 28/09/15	Drawn: JR	Designed: SC	Checked:	Approved:

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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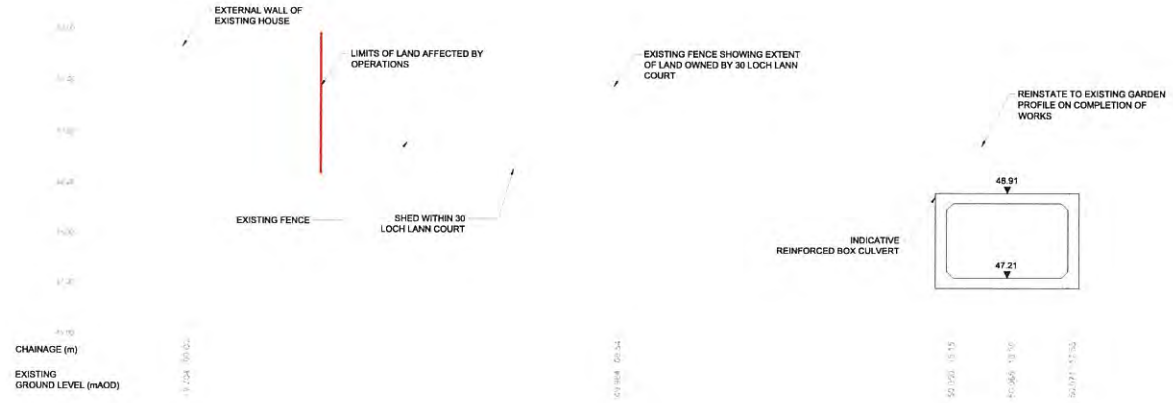
Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 3 Redburn Avenue Sections
Sheet 1 of 2
for

Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:50 @ A1	Drawn	S Thomson	28/08/15
	Designed	C Robertson	28/08/15
	Checked	S Cooney	28/08/15
	Approved		

Project Number	2013s7134	
Drawing Number		Revision
SC-JBA-03-02-DR-C-0101		P1.3



SECTION 2-2 (RB-01)

OPERATION	DESCRIPTION
RB-01	ONLINE REPLACEMENT OF EXISTING 1.05m∅ CONCRETE PIPE WITH A LARGER CAPACITY BARREL AND WORKS TO THE INLET & OUTLET GEOMETRY

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0100
   SC-JBA-03-07-DR-C-0101
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers

DRAFT

This is the plan marked SC-JBA-03-02-DR-C-0102 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
P1.3	Comments: Title and revision number updated, related drawings cancelled				
Rev	Date: 16/10/15	Drawn: LA	Designed: ST	Checked: SC	Approved
P1.2	Comments: Note 5 Added. Title and Legend Annotation				
Rev	Date: 07/10/15	Drawn: SO	Designed: ST	Checked: SC	Approved
P1.1	Comments: Existing fence shed and limits of land affected by operations added, title frame updated, note 4 added. Operation/decription box added, operation number added to section, box culvert lowered 0.4m				
Rev	Date: 30/09/15	Drawn: JR	Designed: SC	Checked:	Approved

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 3 Redburn Avenue Sections
Sheet 2 of 2
for

Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:50 @ A1	Drawn	S. Thomson	28/08/15
	Designed	C. Robertson	28/08/15
	Checked	S. Cooney	28/08/15
	Approved		

Project Number: 2013s7134

Drawing Number: SC-JBA-03-02-DR-C-0102

Revision: P1.3

OPERATION	DESCRIPTION
CP-01	THE EXISTING CULLODEN BURN WEST CHANNEL WILL BE DIVERTED INTO THE FLOOD STORAGE AREA USING A CONCRETE FLOOD WALL.
CP-02	NEW BRIDGE OF 14m SPAN, OR THEREBY, CROSSING THE DIVERTED WATERCOURSE TO ALLOW ACCESS FOR MAINTENANCE VEHICLES AND PEDESTRIANS.
CP-03	WORKS WILL BE UNDERTAKEN TO CONSTRUCT AN ONLINE FLOOD STORAGE BASIN TO CONSIST OF EARTH EMBANKMENTS KEYED INTO EXISTING GROUND WITH A SUITABLE CUT-OFF AND A VEHICULAR ACCESS TRACK ON THE CREST. THE CHANNEL WILL BE REALIGNED.

OPERATION	DESCRIPTION
CP-04	NEW OUTFLOW STRUCTURE TO INCLUDE FLOW CONTROL HYDROBRAKES, AN OUTFALL CULVERT BARREL, AN OVERFLOW ARRANGEMENT AND A TRASH SCREEN ON THE UPSTREAM SIDE AND A SECURITY SCREEN ON THE DOWNSTREAM HEADWALL.
CP-05	A LENGTH OF ABOUT 25m OF THE WALL FROM THE DOWNSTREAM END WILL BE USED AS A SPILLWAY ALONG WITH ABOUT 56m LENGTH OF THE EMBANKMENT. THE EXISTING ABANDONED CHANNEL TO BE REINSTATED AS A SHALLOW SWALE WITH EROSION PROTECTION TO THE EMBANKMENT TOE WHERE REQUIRED.
CP-06	CONSTRUCTION OF A NEW OUTFALL CHANNEL, 28m IN LENGTH OR THEREBY, WITH TIE-IN TO THE EXISTING CHANNEL DOWNSTREAM FROM THE FLOOD STORAGE AREA.

LEGEND

- OPEN CHANNEL WATERCOURSE
- NEW BRIDGE
- EROSION PROTECTION
- CONCRETE STRUCTURE
- GRAVEL PATH
- REPROFILED GROUND
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- EMBANKMENT TOE PROTECTION AND SWALE PROTECTION
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- RETAINING WALL
- LIMITS OF LAND AFFECTED BY OPERATIONS AND OF LAND UPON WHICH ENTRY IS REQUIRED FOR THE PURPOSES OF CARRYING OUT THE OPERATIONS
- EXISTING TREES
- NEW MANHOLE
- SECTION MARKER

EXISTING SERVICES

- SURFACE WATER SEWER
- COMBINED SEWER
- FOUL SEWER
- WATER MAIN
- BT OVERHEAD
- BT UNDERGROUND
- ELECTRICITY OVERHEAD
- ELECTRICITY UNDERGROUND
- GAS

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009.
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0101
   SC-JBA-03-07-DR-C-0102
   SC-JBA-03-07-DR-C-0103
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme.
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0100 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
P1.3	Comments: Title and revision number updated				
Rev	Date: 16/10/15	Drawn: LA	Designed: ST	Checked: SC	Approved
P1.2	Comments: Note 5 added. Hatching, Boxes, annotation and Legend updated				
Rev	Date: 07/10/15	Drawn: SO	Designed: ST	Checked: SC	Approved
P1.1	Comments: Hatching and legend updated. Annotation added, embankment toe protection added, separation fence added				
Rev	Date: 21/09/15	Drawn: JR	Designed: ST	Checked: SC	Approved

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 3 Culloden Park Plan
Sheet 1 of 1
for

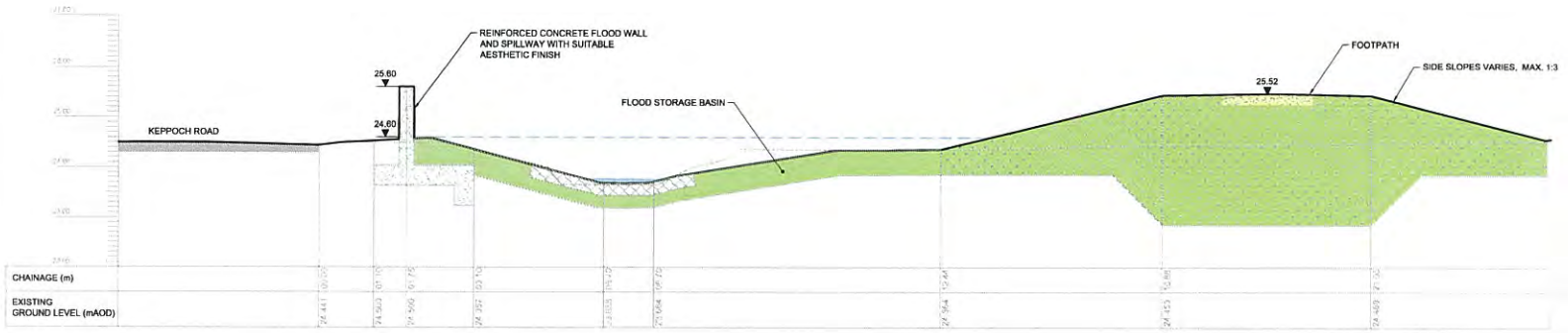
Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:500 @ A1	Drawn	J Redpath	25/08/15
	Designed	S Thomson	25/08/15
	Checked	S Cooney	25/08/15
	Approved		

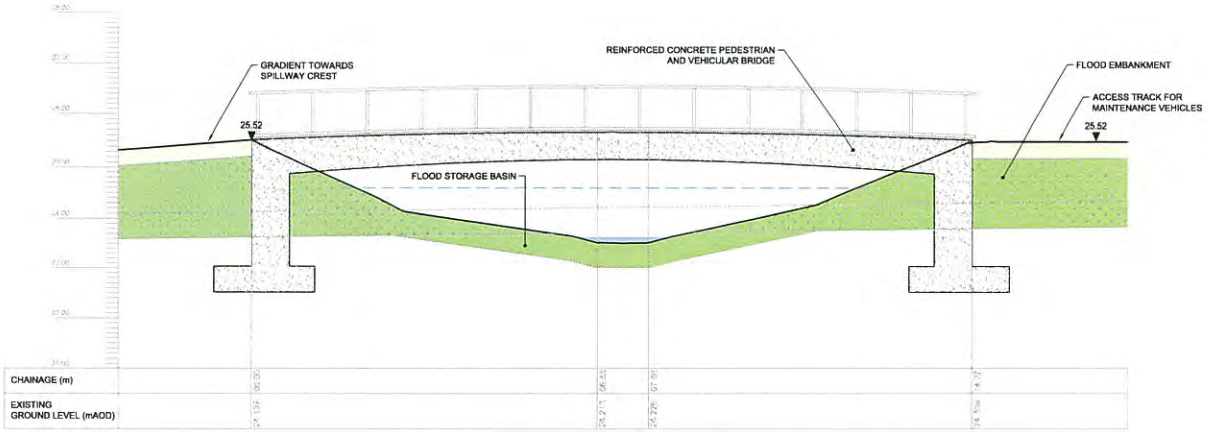
Project Number: 2013s7134

Drawing Number: SC-JBA-03-07-DR-C-0100

Revision: P1.3



SECTION 1-1 (CP-01)



SECTION 2-2 (CP-02)

OPERATION	DESCRIPTION
CP-01	THE EXISTING CULLODEN BURN WEST CHANNEL WILL BE DIVERTED INTO THE FLOOD STORAGE AREA USING A CONCRETE FLOOD WALL.
CP-02	NEW BRIDGE OF 14m SPAN, OR THEREBY, CROSSING THE DIVERTED WATERCOURSE TO ALLOW ACCESS FOR MAINTENANCE VEHICLES AND PEDESTRIANS.

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009.
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0100
   SC-JBA-03-07-DR-C-0102
   SC-JBA-03-07-DR-C-0103
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme.
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers.

DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0101 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council.

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
P1.3	Comments: Title and revision number updated, related drawings corrected.				
Rev	Date 16/10/15	Drawn LA	Designed ST	Checked SC	Approved
P1.2	Comments: Note 5 Added. Hatching Added, Box Annotation and Legend Updated.				
Rev	Date 07/10/15	Drawn SO	Designed ST	Checked SC	Approved
P1.1	Comments: Box Added. Annotation And Legend Updated.				
Rev	Date 21/09/15	Drawn SO	Designed ST	Checked SC	Approved

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 3 Culloden Park Sections
Sheet 1 of 3
for

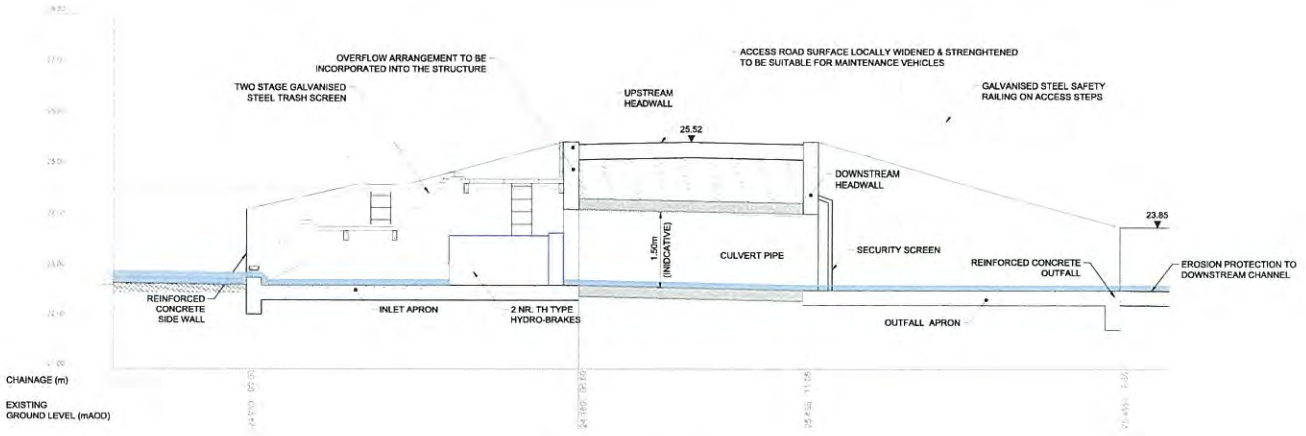
Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:50 @ A1	Drawn	J. Redpath	25/08/15
	Designed	S. Thomson	25/08/15
	Checked	S. Cooney	25/08/15
	Approved		

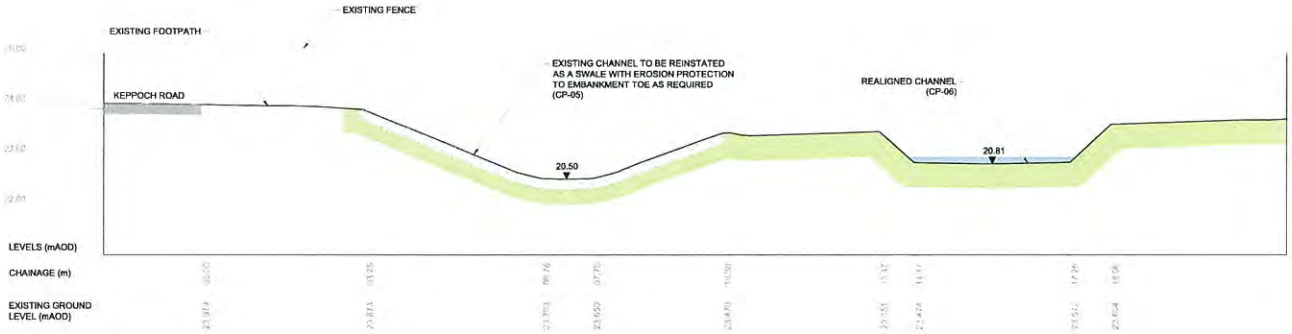
Project Number: 2013s7134

Drawing Number: SC-JBA-03-07-DR-C-0101

Revision: P1.3



SECTION 3-3 (CP-04)



SECTION 4-4 (CP-05 / CP-06)

OPERATION	DESCRIPTION
CP-04	NEW OUTFLOW STRUCTURE TO INCLUDE FLOW CONTROL HYDROBRAKES, AN OUTFALL CULVERT BARREL, AN OVERFLOW ARRANGEMENT AND A TRASH SCREEN ON THE UPSTREAM SIDE AND A SECURITY SCREEN ON THE DOWNSTREAM HEADWALL.
CP-05	A LENGTH OF ABOUT 25m OF THE WALL FROM THE DOWNSTREAM END WILL BE USED AS A SPILLWAY ALONG WITH ABOUT 56m LENGTH OF THE EMBANKMENT. THE EXISTING ABANDONED CHANNEL TO BE REINSTATED AS A SHALLOW SWALE WITH EROSION PROTECTION TO THE EMBANKMENT TOE WHERE REQUIRED.
CP-06	CONSTRUCTION OF A NEW OUTFALL CHANNEL, 28m IN LENGTH OR THEREBY, WITH TIE-IN TO THE EXISTING CHANNEL DOWNSTREAM FROM THE FLOOD STORAGE AREA.

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design.
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0100
   SC-JBA-03-07-DR-C-0101
   SC-JBA-03-07-DR-C-0103
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers

DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0102 referred to in the Smithton & Culloden Flood Protection Scheme 2016 made by The Highland Council

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
P1.3	Comments: Title and revision number updated, related drawings corrected				
Rev	Date 16/10/15	Drawn LA	Designed ST	Checked SC	Approved
P1.2	Comments: Note 5 Added. Legend and Title of Project Updated				
Rev	Date 07/10/15	Drawn SO	Designed ST	Checked SC	Approved
P1.1	Comments: Annotation and Legend Updated				
Rev	Date 21/09/15	Drawn SO	Designed ST	Checked SC	Approved

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S2

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 3 Culloden Park Sections
Sheet 2 of 3
for

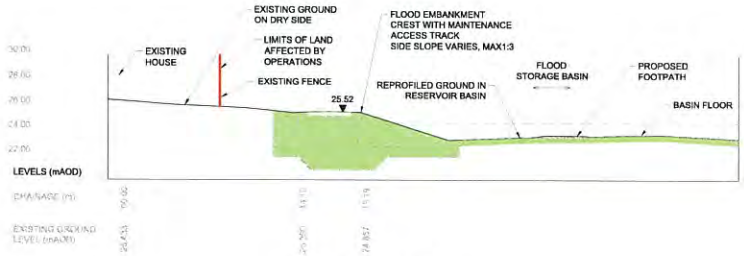
Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:50 @ A1	Drawn	J Redpath	25/08/15
	Designed	S Thomson	25/08/15
	Checked	S Cooney	25/08/15
	Approved		

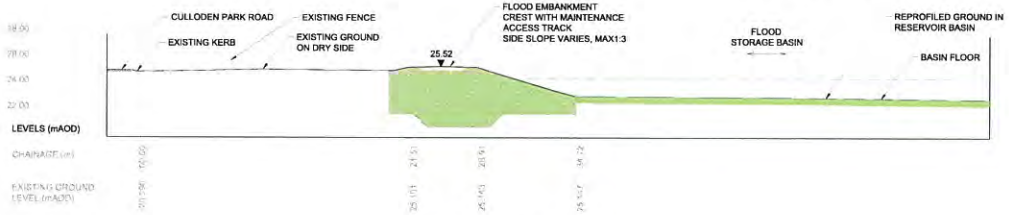
Project Number: 2013s7134

Drawing Number: SC-JBA-03-07-DR-C-0102

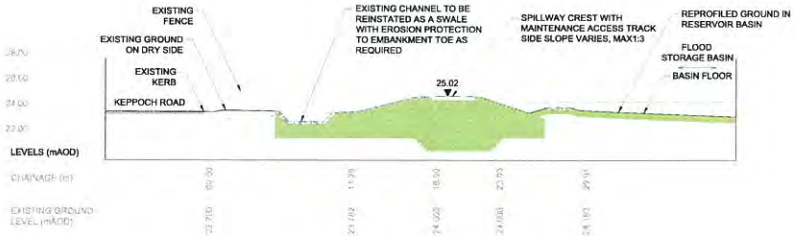
Revision: P1.3



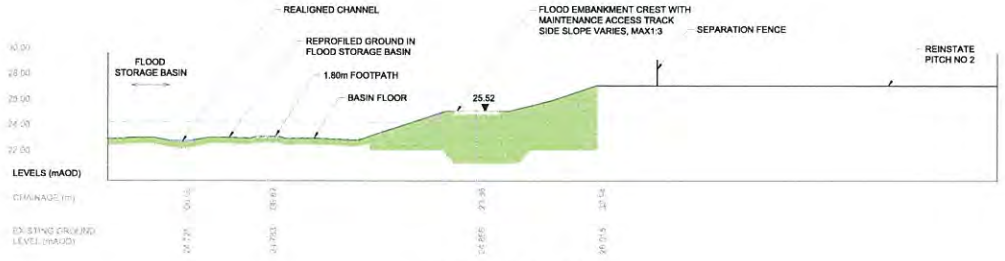
SECTION 5-5 (CP-03)



SECTION 6-6 (CP-03)



SECTION 7-7 (CP-05)



SECTION 8-8 (CP-03)

OPERATION	DESCRIPTION
CP-03	WORKS WILL BE UNDERTAKEN TO CONSTRUCT AN ONLINE RESERVOIR BASIN TO CONSIST OF EARTH EMBANKMENTS KEYED INTO EXISTING GROUND WITH A SUITABLE CUT-OFF AND A VEHICULAR ACCESS TRACK ON THE CREST. THE CHANNEL WILL BE REALIGNED.
CP-05	A LENGTH OF ABOUT 25m OF THE WALL FROM THE DOWNSTREAM END WILL BE USED AS A SPILLWAY ALONG WITH ABOUT 56m LENGTH OF THE EMBANKMENT. THE EXISTING ABANDONED CHANNEL TO BE REINSTATED AS A SHALLOW SWALE WITH EROSION PROTECTION TO THE EMBANKMENT TOE WHERE REQUIRED.

LEGEND

- ROAD/FOOTPATH MATERIAL
- EROSION PROTECTION
- COMPACTED FILL MATERIAL
- REINFORCED CONCRETE
- RIVER GRAVEL
- NORMAL FLOW
- EXISTING ROAD
- FLOOD EMBANKMENT
- FLOOD STORAGE BASIN
- VEHICLE ACCESS TRACK TO FPS STRUCTURES FOR MAINTENANCE
- REPROFILED GROUND
- GRAVEL PATH
- 00.00 PROPOSED LEVEL
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- MODELLED 1 200 YEAR FLOOD LEVEL

Notes

1. These plans are in accordance with the requirements of section 60 and schedule 2 of the Flood Risk Management (Scotland) Act 2009
2. Information received from statutory undertakers has been used to identify approximate locations of services, exact locations of these services will be determined during detailed design
3. Drawing to be read in conjunction with
   SC-JBA-00-00-DR-C-0100
   SC-JBA-03-07-DR-C-0100
   SC-JBA-03-07-DR-C-0101
   SC-JBA-03-07-DR-C-0102
   SC-JBA-00-00-RP-Z-0006
4. The location, horizontal and vertical extents of the operations may vary by those limits (where applied) as noted in the Description of the Flood Protection Scheme
5. Diversion of any statutory undertaker apparatus will be carried out by or on behalf of the statutory undertaker under its own statutory powers

DRAFT

This is the plan marked SC-JBA-02-04-DR-C-0103 referred to in the Smithton & Culloden Flood Alleviation Scheme 2016 made by The Highland Council.

Director of Corporate Services

Date

Signature

Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
	Comments				
Rev	Date	Drawn	Designed	Checked	Approved
P1 3	Comments: Title and revision number updated, related drawings corrected.				
Rev	Date: 16/10/15	Drawn: LA	Designed: ST	Checked: SC	Approved
P1 2	Comments: Note 5 Added. Legend annotation and Hatching Updated.				
Rev	Date: 07/10/15	Drawn: SO	Designed: ST	Checked: SC	Approved
P1 1	Comments: Section A-A renamed 5-5 (and vice-versa), separation fence added to section 7-7				
Rev	Date: 21/09/15	Drawn: JR	Designed: ST	Checked: SC	Approved

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

Purpose of Issue	Status
For review and comment	S3

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Project: Smithton & Culloden Flood Protection Scheme

Title: Flood Protection Scheme Drawings
Zone 3 Culloden Park Sections
Sheet 3 of 3
for

Client: The Highland Council / Comhairle na Gàidhealtachd

Scale			
1:200 @ A1	Drawn	J Redpath	25/08/15
	Designed	S Thomson	25/08/15
	Checked	S Cooney	25/08/15
	Approved		

Project Number: 2013s7134

Drawing Number	Revision
SC-JBA-03-07-DR-C-0103	P1 3

FLOOD RISK MANAGEMENT (SCOTLAND) ACT 2009

THE HIGHLAND COUNCIL

SMITHTON AND CULLODEN FLOOD PROTECTION SCHEME 2016

1. General

1.1 In exercise of the powers conferred upon them by the Flood Risk Management (Scotland) Act 2009 (hereinafter referred to as "the Act") The Highland Council, established under the Local Government etc (Scotland) Act 1994 (hereinafter referred to as "the Council") have prepared the following flood protection scheme (hereinafter referred to as "the Scheme") the purpose of which is to manage the risk of flooding of residential, non-residential commercial and agricultural land in the towns of Smithton and Culloden from the Smithton Burn and the Culloden Burn (West).

1.2 The draft National Flood Risk Management Strategy due to be published by the Scottish Environment Protection Agency in December 2015 and the draft Local Flood Risk Management Plan due to be published by the Council in June 2016 both identify the need for the Scheme as a recommended measure to alleviate flooding in the Smithton and Culloden Potentially Vulnerable Area (PVA) in the first Flood Risk Management Cycle from 2016 – 2022, and the implementation of the Scheme will address that need.

2. Terms of the Scheme

2.1 The terms of the Scheme are as detailed in Sections 3 to 8 hereunder.

3. Description of the Operations

3.1 The flood protection operations (hereinafter referred to as "the Operations") are as detailed in Sections 3 hereunder.

3.2 The Operations to be carried out in terms of the Scheme are as shown on the plan(s) marked, annexed and executed as relative hereto, and are as follows:

Drawing Number	Title	Revision
SC-JBA-00-00-DR-C-0100	Flood Protection Order Drawings, Location Plan For All Zones	P 1.3
Zone 2 Murray Terrace		
SC-JBA-02-04-DR-C-0100	Flood Protection Scheme Drawings, Zone 2 Murray Terrace Plan. Sheet 1 of 3	P 1.3
SC-JBA-02-04-DR-C-0101	Flood Protection Scheme Drawings, Zone 2 Murray Terrace Plan. Sheet 2 of 3	P 1.3
SC-JBA-02-04-DR-C-0102	Flood Protection Scheme Drawings, Zone 2 Murray Terrace Plan. Sheet 3 of 3	P 1.3
SC-JBA-02-04-DR-C-0103	Flood Protection Scheme Drawings, Zone 2 Murray Terrace Sections. Sheet 1 of 2	P 1.3
SC-JBA-02-04-DR-C-0104	Flood Protection Scheme Drawings, Zone 2 Murray Terrace Sections. Sheet 2 of 2	P 1.3
Zone 2 Smithton Park		
SC-JBA-02-06-DR-C-0100	Flood Protection Scheme Drawings, Zone 2 Smithton Park Plan. Sheet 1 of 1	P 1.2
SC-JBA-02-06-DR-C-0101	Flood Protection Scheme Drawings, Zone 2 Smithton Park Sections. Sheet 1 of 4	P 1.2
SC-JBA-02-06-DR-C-0102	Flood Protection Scheme Drawings, Zone 2 Smithton Park Sections. Sheet 2 of 4	P 1.2

SC-JBA-02-06-DR-C-0103	Flood Protection Scheme Drawings, Zone 2 Smithton Park Sections. Sheet 3 of 4	P 1.2
SC-JBA-02-06-DR-C-0104	Flood Protection Scheme Drawings, Phase 4 Zone 2 Smithton Park Sections. Sheet 4 of 4	P 1.2
Zone 3 Redburn Avenue		
SC-JBA-03-02-DR-C-0100	Flood Protection Scheme Drawings, Zone 3 Redburn Avenue Plan. Sheet 1 of 1	P 1.3
SC-JBA-03-02-DR-C-0101	Flood Protection Scheme Drawings, Zone 3 Redburn Avenue Sections. Sheet 1 of 2	P 1.3
SC-JBA-03-02-DR-C-0102	Flood Protection Scheme Drawings, Zone 3 Redburn Avenue Sections. Sheet 2 of 2	P 1.3
Zone 3 Culloden Park		
SC-JBA-03-07-DR-C-0100	Flood Protection Scheme Drawings, Zone 3 Culloden Park Plan. Sheet 1 of 1	P 1.3
SC-JBA-03-07-DR-C-0101	Flood Protection Scheme Drawings, Zone 3 Culloden Park Sections. Sheet 1 of 3	P 1.3
SC-JBA-03-07-DR-C-0102	Flood Protection Scheme Drawings, Zone 3 Culloden Park Sections. Sheet 2 of 3	P 1.3
SC-JBA-03-07-DR-C-0103	Flood Protection Scheme Drawings, Zone 3 Culloden Park Sections. Sheet 3 of 3	P 1.3

3.3 Smithton Burn – Zone 02-04; Murray Terrace (MT)

3.3.1 The following Operations will work together to convey flows from downstream of the railway bridge and towards Murray Road via a new open channel. The channel will commence with about 12m of rectangular concrete open channel which will then discharge to a new open natural channel. The new open

natural channel will be 145m in length, or thereby, and convey flows through the reach towards Murray Road. The channel passes through steep terrain and will require a cascade arrangement and bed reinforcement.

3.3.2 The new natural channel will replace an existing culvert pipe which has a history of blockage and is a risk flood risk to nearby housing from overland flow. Maintaining flows in channel in this reach will assist the proper functioning of the Smithton park flood storage area further downstream by reducing the risk of bypass by overland flows. The works have the potential to provide amenity value to the community by having an open watercourse and by reducing an existing soil tip.

3.3.3 **MT-01.** Construction of 12m, or thereby, of reinforced open concrete channel, 2m wide and 1.5m high or thereby, to form a transition structure between the existing railway bridge / embankment and the new open channel watercourse. The structure will retain the existing railway embankment and protect the bridge from scour. An existing concrete wall enclosing a foul sewer extends through the railway bridge eye and continues approximately 6m downstream. This wall, which is shown in Section 1-1 on drawing SC-JBA-02-04-DR-C-0103, will be incorporated into the new structure. The channel will have a layer of river gravel to the invert.

3.3.4 **MT-02.** Construction of 144m, or thereby, of restored open watercourse to protect Murray Terrace and other areas from a design flood event. The channel will replace the existing concrete culvert, which will be removed or made inoperable. The new channel will ensure design flows are conveyed towards the Smithton Park flood storage area through a reach with a steep gradient. The channel will include a cascade of steps in the steeper lengths and erosion protection to resist scouring in high flows. Along with reducing flood risk the open channel will remove portion of an existing soil tip and improve the potential for amenity and public access in the area. Section 3-3 on drawing SC-JBA-02-04-DR-C-0104 is a typical view of the channel.

3.4 Smithton Burn – Zone 02-06; Smithton Park (SP)

3.4.1 The following Operations will work together to convey flows under Murray Road into Smithton Park (SP-04 and SP-05) then through the park in a new open natural channel and out of the park through a flow control structure (SP-03) then into a new larger capacity culvert (SP06) which will finally discharge into the existing open channel. The new natural channel in the park will replace a 100m, or thereby, portion of the existing culvert which will be removed. During flood events the flow control structure will limit outflows to the downstream channel and water will collect in a newly constructed flood storage basin (SP-01). The flood storage basin will have a capacity of not less than 12,000 m^3. In the event this capacity is exceeded a spillway is provided to allow the flood storage basin to safely overflow into the downstream channel (SP-02). When inflows return to normal the stored water will be gradually released to the downstream channel allowing the basin to revert to normal amenity use.

3.4.2 **SP-01.** Works will be undertaken to construct raised embankments on the northwest side and northeast sides of the park to enclose an online flood storage basin with a capacity of not less than 12,000 m^3 as measured to the spillway crest. The remainder of the basin will be formed by excavation in the existing park surface. The earth embankments will be keyed into existing ground and be provided with a suitable cut-off. The flood storage basin will be accessed for maintenance purposes by a permanent track way on the crests of the raised embankments with access to Murray Road and to Smithton Park and a track leading to the screen inlet at basin floor level. The location of the embankment and extents of the toe from the position shown in plan may vary by ±5m in any direction. The crest of the flood embankment is typically 46.0m AOD and that of the spillway is 45.3m AOD but may vary from the level shown in section by ±0.25m. See Sections on SC-JBA-02-06-DR-C-0104 for details of embankments. The basin floor level is typically 43.9m AOD and provides

potential for two 7-a-side football pitches with suitable drainage to be constructed. Approximately 110m of the existing culvert pipe through Smithton Park will be removed and replaced with a new open channel which will follow a new alignment to the eastern side of the flood storage basin. The new channel will have a slack gradient of 1:100, or thereby, and have a relatively wide and shallow cross section. The combination of the wide cross section and the shallow gradient will promote a shallow water depth with low velocities during normal flows. The location of the channel from the position shown in plan may vary by ±5m in any direction.

3.4.3 **SP-02.** An emergency spillway will be constructed along 70m, or thereby, of the northeast embankment crest or thereby. The location of the structure from the position shown in plan may vary by ±5m in any direction. The crest of the structure may vary from the level shown in section by ±0.25m. Flows will discharge to a stilling swale running along the toe of the embankment. See Section 6-6 on SC-JBA-02-06-DR-C-0104 for details of the spillway.

3.4.4 **SP-03.** A new outflow control structure will be constructed to convey outflows from the storage basin. The structure will permit a regulated flow through the embankment culvert pipe to the manhole OM 1. The outflow structure will consist of a flow control hydrobrake, an outfall culvert pipe, an overflow arrangement and a trash screen on the upstream side. The location of the structure from the position shown in plan may vary by ±5m in any direction. The crest of the structure may vary from the level shown in section by ±0.25m. See Section 3-3 on SC-JBA-02-06-DR-C-0102 for details of the outflow structure.

3.4.5 **SP-04.** A new culvert will be constructed to convey flows from south to north under Murray Road and into the flood storage basin. The structure will consist of an upstream concrete inlet with a headwall, a culvert pipe of 40m in length or thereby and section area of 2.1m wide and 1.5m high or thereby with its downstream end discharging into the Smithton Park basin via a cascade

structure. The location and invert levels of the culvert may vary as with variations in the connected structures. See Section 1-1 on SC-JBA-02-06-DR-C-0101 for details of the culvert structure.

3.4.6 **SP-05.** The new Murray Road culvert (SP-04) will deliver flows into the park about 4.5m higher level than the open channel invert. A suitable ramped cascade structure will convey flows from the downstream end of the new Murray Road culvert to the open channel in the flood storage basin. The cascade will have a length of about 25m and will use a combination of concrete weirs and rock to prevent excessive velocity in the flow and erosion to the embankment. The location of the structure from the position shown in plan may vary by ±5m in any direction. The crest levels within the structure may vary from the levels shown in section by ±0.25m. See Section 2-2 on SC-JBA-02-06-DR-C-0102 for details of the cascade structure.

3.4.7 **SP-06.** Flows will be conveyed from the manhole OM 1 via a covered channel of 55m in length, or thereby, with removable covers over some or all of its length to facilitate maintenance. The channel will be rectangular of about 2m wide and 1m in depth and is likely to be constructed of concrete. The covered channel will discharge into the existing open channel at a point within the property of Number 29, Murray Place. This channel will replace the existing undersized 0.9m diameter culvert pipe which is prone to blockage. The location of the structure from the position shown in plan may vary by ±5m in any direction. The invert level of the structure may vary from the level shown in section by ±0.25m. See Section 4-4 on SC-JBA-02-06-DR-C-0103 for details of the covered channel structure.

3.5 Culloden Burn (West) – Zone 03-02; Redburn Avenue (RB)

3.5.1 There is currently a blockage risk from an undersized culvert pipe underneath the garden property in Redburn Avenue which has led to flooding at Lochlann Court and overland flows towards Culloden.

3.5.2 The works described in the operation below to replace the pipe will remove this risk and reduce the risk of overland flows bypassing the flood storage area in Culloden Park.

3.5.3 **RB-01.** Removal of the existing 1.05m diameter culvert pipe and its replacement on line with a larger capacity box culvert pipe, of 26m in length, 2.4m in width and 1.5m in height or thereby.

3.5.4 Construction of new headwalls to the new culvert pipe with reinforced concrete side walls and stepped aprons to improve inlet and outlet geometry and also to form a suitable tie-in to the existing erosion protection at the upstream and downstream channel ends. The sidewalls and aprons will be about 5m in length or thereby. The location of the structure from the position shown in plan may vary by ±2m in any direction. The crest of the structure may vary from the level shown in section by ±0.3m. See Section 1-1 on SC-JBA-03-02-DR-C-0101 and Section 2-2 on SC-JBA-03-02-DR-C-0102 for details of the box culvert pipe structure.

3.6 Culloden Burn (West) – Zone 03-07; Culloden Park (CP)

3.6.1 The following Operations will work together by initially conveying flows into Culloden Park thus preventing flow onto Keppoch Road (CP 01), then conveying flow through the park in a new open natural channel with potential for amenity and wetland. Flows will leave the park through a flow control structure (CP-04) and into the existing open channel via a short length of new open channel (CP-06). During flood events the flow control structure will limit outflows to downstream and water will collect in the flood storage basin (CP-03). When inflows return to normal the stored water will be gradually released to the downstream channel allowing the basin to revert to normal amenity use. For very severe storm events a spillway is provided to allow the basin to safely overflow (CP05). Maintenance works to the structures will be facilitated

by provision of an access track and bridge (CP-02) on the embankment crests and a track leading to the screen inlet at basin floor level.

3.6.2 The works will protect the houses in the vicinity from flooding and provide potential for amenity in the storage basin. Additional works will improve the surface quality and drainage of two football pitches. The existing playground, buildings and car parking on the bottom tier will be retained.

3.6.3 **CP-01.** A new wall about 60m in length, or thereby, will be constructed parallel to Keppoch Road to prevent the existing Culloden Burn West flood flows from escaping onto Keppoch Road. The arrangement is shown on Section 1-1 of SC-JBA-03-07-DR-C-0101. All flows will be diverted from the existing channel alongside Keppoch Road and into the park area by a portion of flood wall about 25m in length, or thereby. The location of the structure from the position shown in plan may vary by ±1m in any direction for the portion alongside Keppoch Road. The crest of the structure may vary from the level shown in section by ±0.4m. This portion of the wall forms part of the spillway and will have a crest level of 25.02m AOD. The location of this portion of the structure from the position shown in plan may vary by ±5m in any direction. The crest of the structure may vary from the level shown in section by ±0.25m.

3.6.4 **CP-02.** Construction of a new pedestrian and vehicular bridge of 14m span, or thereby, and at least 3.5m width to cross the diverted watercourse and to allow access for maintenance vehicles to and from the outlet structure. The location of the structure may vary by ±5m in any direction from the position shown in plan. The crest of the structure may vary from the level shown in section by ±0.25m. The arrangement is shown in Section 2-2 of SC-JBA-03-07-DR-C-0101.

3.6.5 **CP-03.** Works will be undertaken to construct an online flood storage basin with realigned channel on the bottom tier and extending in to the middle tier with a capacity of not less than 17,000 m^3. The flood storage basin will be

located principally on the existing bottom tier in the park and extending into the middle tier. The basin will be formed by excavating about 1m into the existing park surface and constructing embankments to the north-west and north-east sides of the park. The basin will consist of earth embankments keyed into existing ground and with a suitable cut-off to prevent seepage. A permanent track way on the crests of the raised embankments and a track leading to the screen inlet at basin floor level will be provided for maintenance access. Embankment crest level will be typically at 25.52m AOD, the spillway crest level will be 25.02m AOD but may vary from the level shown in section by ±0.4m. The location of the embankment and extents of the toe from the position shown in plan may vary by ±5m in any direction. The basin floor will typically be at 23.5m AOD. A new water course will constructed through the basin area to convey flows towards the outlet structure CP-04. The general arrangement is shown on the plan SC-JBA-03-07-DR-C-0100. See Sections 5-5, 6-6, 7-7 and 8-8 on SC-JBA-03-07-DR-C-0103 for details of the flood storage basin.

3.6.6 **CP-04.** A new outflow control structure will be constructed to convey outflows from the storage basin. The structure will regulate flows back into a new outlet channel (CP-06) and then onwards into the existing channel at a point south of the Keppoch Road culvert. The control structure will include flow control hydrobrakes, an outfall culvert pipe, an overflow arrangement and a trash screen on the upstream side and a security screen on the downstream end of the outfall pipe through the embankment. The location of the structure may vary by ±5m in any direction from the position shown in plan. The crest levels of the structure may vary from the levels shown in section by ±0.25m. The arrangement is shown in Section 3-3 of SC-JBA-03-07-DR-C-0102

3.6.7 **CP-05.** A spillway will be constructed to include the 25m downstream portion of the floodwall and 55m, or thereby, of adjacent embankment as shown on the plan SC-JBA-03-07-DR-C-0100 and Section 7-7 of SC-JBA-03-07-DR-C-0103. The existing abandoned channel will be reinstated as a shallow swale

with erosion protection as required to convey spillway flows towards the existing channel. The location of the structure may vary by ±5m in any direction from the position shown in plan. The crest of the structure may vary from the level shown in section by ±0.25m.

3.6.8 **CP-06.** Construction of a new outfall channel, 28m in length or thereby, with tie-in to the existing channel to the downstream of the storage area. The location of the channel may vary by ±5m in any direction from the position shown in plan. The crest of the structure may vary from the level shown in section by ±0.25m. A typical Section 4-4 is shown on SC-JBA-03-07-DR-C-0102

4. Land

4.1 The land which will be affected by the Operations and the land upon which entry is required for the purpose of carrying out the Operations and of executing temporary works is as shown on the said plan(s) and marked respectively: SC-JBA-00-00-DR-C-0100.

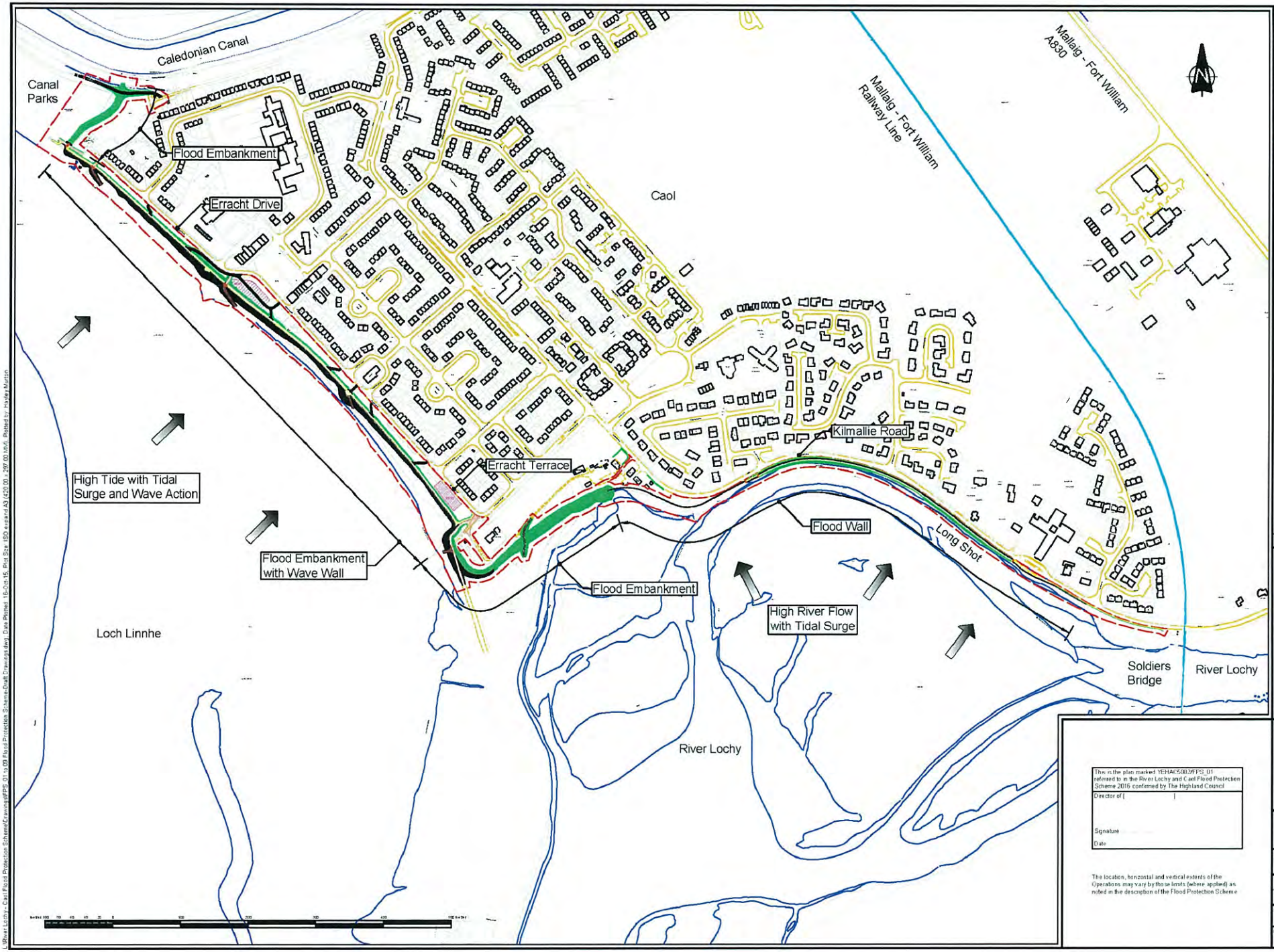
5. Cost

5.1 The current estimated cost of the said Operations is eleven million, four hundred thousand pounds sterling (£11.4M, November 2015).

Made by The Highland Council on the day of 2015.

……Proper Officer of the Council

……Dated



Notes

1. Refer to drawings FPS_02 to FPS_07 for details of the scheme operations

Limits of Land Affected by the Operations and of Land upon which entry is required for the purposes of carrying out the Operations

Revision Details	Drawn By	Check By	Check Date	Suffix

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Comhairle na Gàidhealtachd
DEVELOPMENT & INFRASTRUCTURE
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This is the plan marked YEHAC5002/FPS_01 referred to in the River Lochy and Caol Flood Protection Scheme 2016 confirmed by The Highland Council

Director of [ ]

Signature

Date

The location, horizontal and vertical extents of the Operations may vary by those limits (where applied) as noted in the description of the Flood Protection Scheme

Project: River Lochy and Caol Flood Protection Scheme 2016 (DRAFT)

Title: Scheme Plan

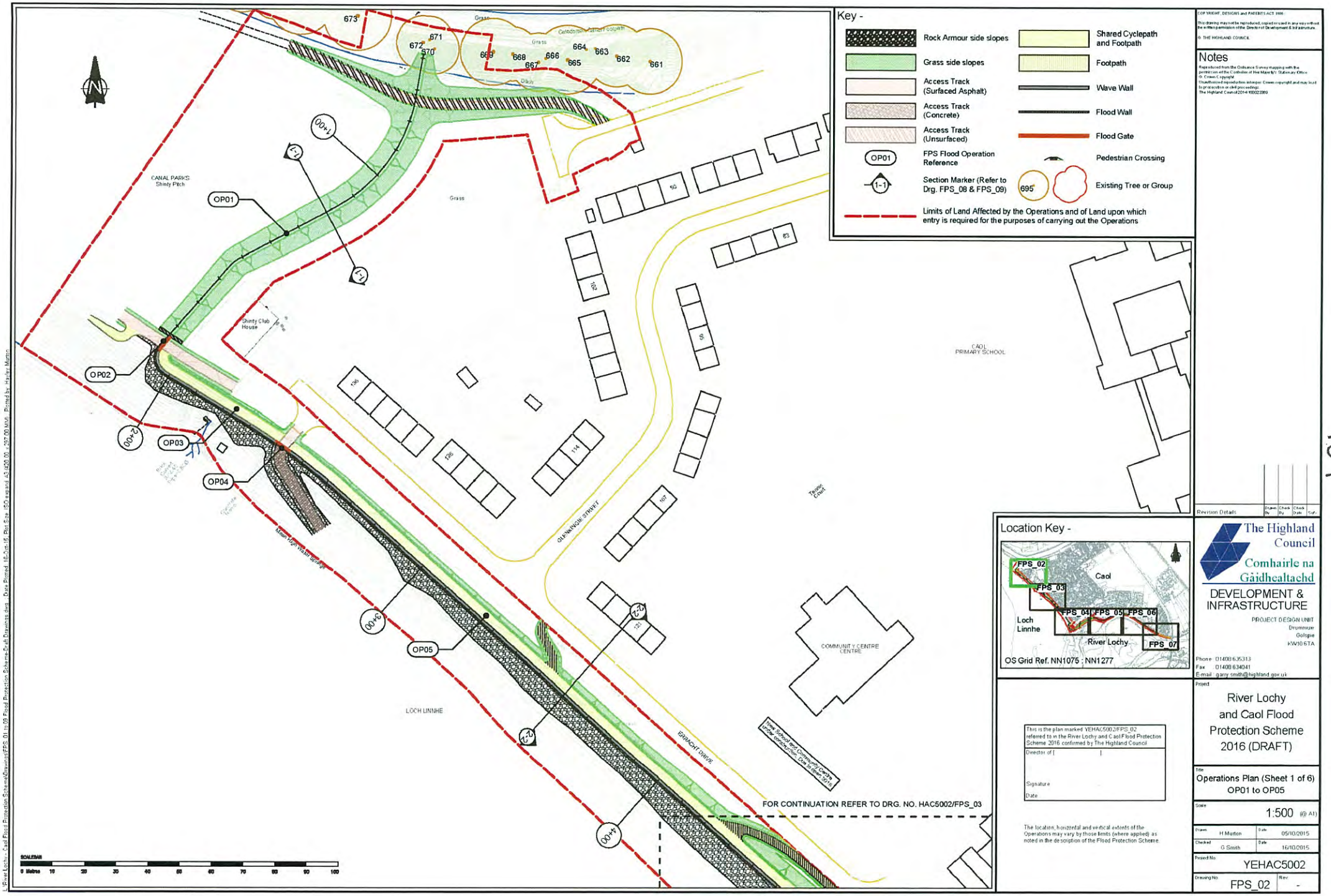
Scale: Not to Scale (@ A1)

Drawn	H Murton	Date	05/10/2015
Checked	G Smith	Date	16/10/2015

Project No: YEHAC5002

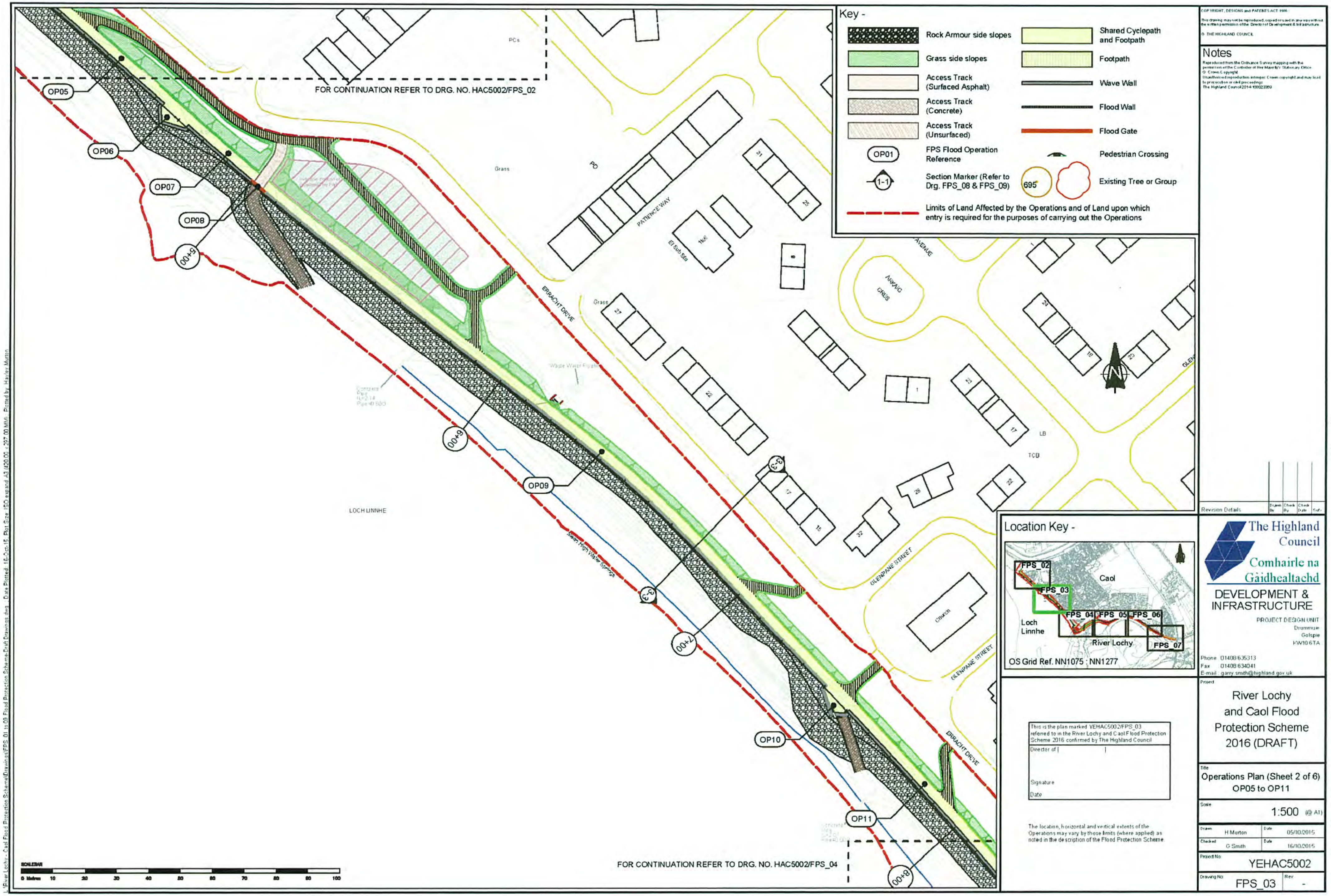
Drawing No: FPS_01 Rev: -

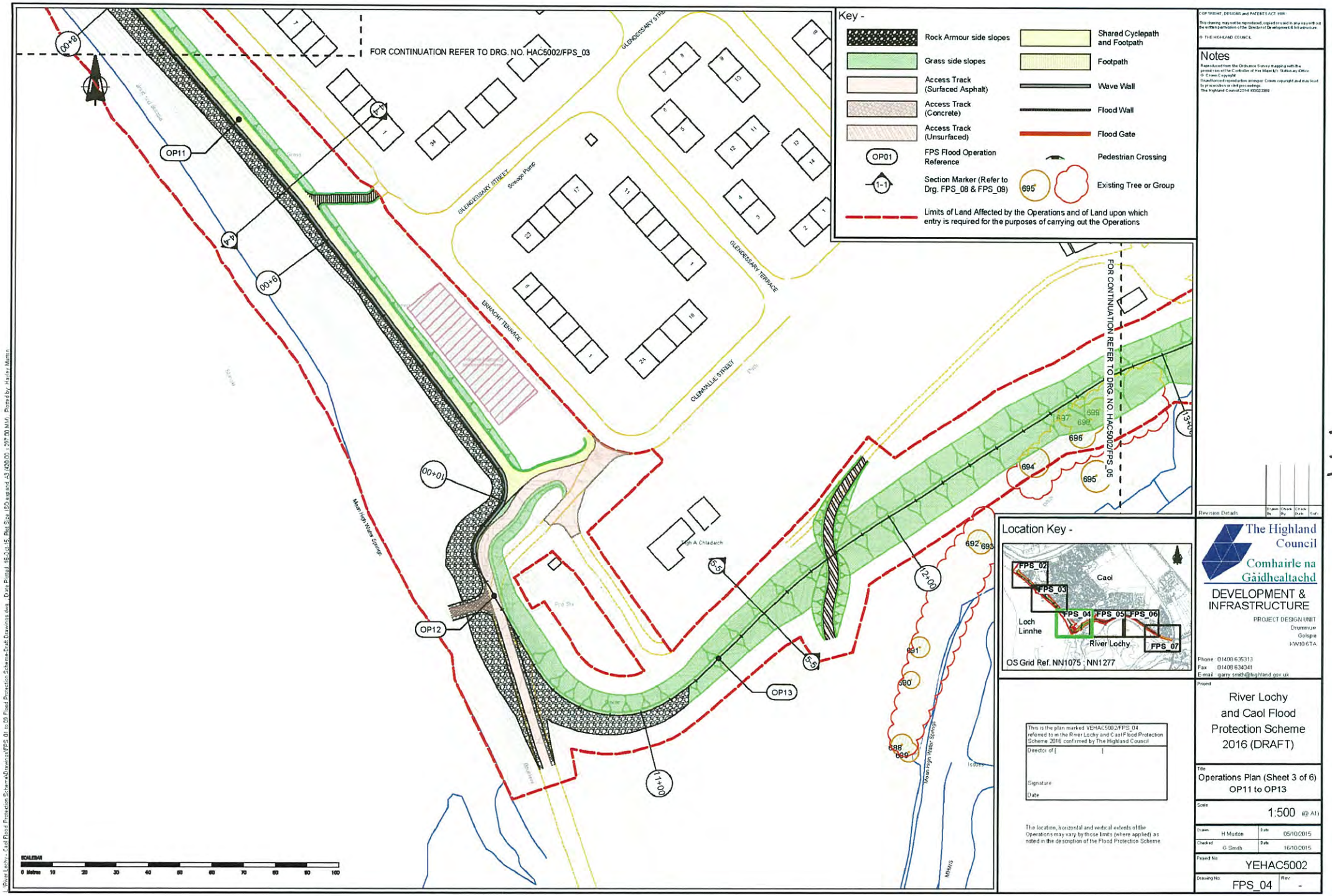
APPENDIX B



Revision Details | Drawn By | Check By | Check Date | Suff.

170


Key -
Rock Armour side slopes
Grass side slopes
Access Track (Surfaced Asphalt)
Access Track (Concrete)
Access Track (Unsurfaced)
FPS Flood Operation Reference
Section Marker (Refer to Drg. FPS_08 & FPS_09)
Shared Cyclepath and Footpath
Footpath
Wave Wall
Flood Wall
Flood Gate
Pedestrian Crossing
Existing Tree or Group
Limits of Land Affected by the Operations and of Land upon which entry is required for the purposes of carrying out the Operations
FOR CONTINUATION REFER TO DRG. NO. HAC5002/FPS_02
FOR CONTINUATION REFER TO DRG. NO. HAC5002/FPS_04
OP05
OP06
OP07
OP08
OP09
OP10
OP11
5+00
6+00
7+00
8+00
LOCH LINNHE
ERRACHT DRIVE
PATIENCE WAY
GLENPANE STREET
Mean High Water Springs
Location Key -
Caol
Loch Linnhe
River Lochy
FPS_02
FPS_03
FPS_04
FPS_05
FPS_06
FPS_07
OS Grid Ref. NN1075 : NN1277
Notes
The Highland Council
Comhairle na Gàidhealtachd
DEVELOPMENT & INFRASTRUCTURE
PROJECT DESIGN UNIT
Phone 01408 635313
Fax 01408 634041
River Lochy and Caol Flood Protection Scheme 2016 (DRAFT)
Operations Plan (Sheet 2 of 6)
OP05 to OP11
1:500 @ A1
H Morton 05/10/2015
G Smith 16/10/2015
YEHAC5002
FPS_03
This is the plan marked YEHAC5002/FPS_03 referred to in the River Lochy and Caol Flood Protection Scheme 2016 confirmed by The Highland Council
Director of
Signature
Date
The location, horizontal and vertical extents of the Operations may vary by those limits (where applied) as noted in the description of the Flood Protection Scheme.


FOR CONTINUATION REFER TO DRG. NO. HAC5002/FPS_03
FOR CONTINUATION REFER TO DRG. NO. HAC5002/FPS_05
OP11
OP12
OP13
00+00
00+01
11+00
12+00
13+00
GLENGESSARY STREET
GLENGESSARY TERRACE
ERRACHT TERRACE
CLEMVILLE STREET
Sewage Pump
Mean High Water Springs
Mean High Water Springs
Tigh A Chladaich
Caol
Loch Linnhe
River Lochy
FPS_02
FPS_03
FPS_04
FPS_05
FPS_06
FPS_07
OS Grid Ref. NN1075 : NN1277
Key -
Rock Armour side slopes
Grass side slopes
Access Track (Surfaced Asphalt)
Access Track (Concrete)
Access Track (Unsurfaced)
OP01 FPS Flood Operation Reference
1-1 Section Marker (Refer to Drg. FPS_08 & FPS_09)
Limits of Land Affected by the Operations and of Land upon which entry is required for the purposes of carrying out the Operations
Shared Cyclepath and Footpath
Footpath
Wave Wall
Flood Wall
Flood Gate
Pedestrian Crossing
Existing Tree or Group
Location Key -
Notes
Revision Details
The Highland Council
Comhairle na Gàidhealtachd
DEVELOPMENT & INFRASTRUCTURE
PROJECT DESIGN UNIT
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Golspie
KW10 6TA
Phone 01408 635313
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E-mail garry.smith@highland.gov.uk
Project
River Lochy and Caol Flood Protection Scheme 2016 (DRAFT)
This is the plan marked YEHAC5002/FPS_04 referred to in the River Lochy and Caol Flood Protection Scheme 2016 confirmed by The Highland Council
Director of [ ]
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Date
The location, horizontal and vertical extents of the Operations may vary by those limits (where applied) as noted in the description of the Flood Protection Scheme
Title
Operations Plan (Sheet 3 of 6) OP11 to OP13
Scale 1:500 (@ A1)
Drawn H Muxton Date 05/10/2015
Checked G Smith Date 16/10/2015
Project No YEHAC5002
Drawing No FPS_04 Rev -
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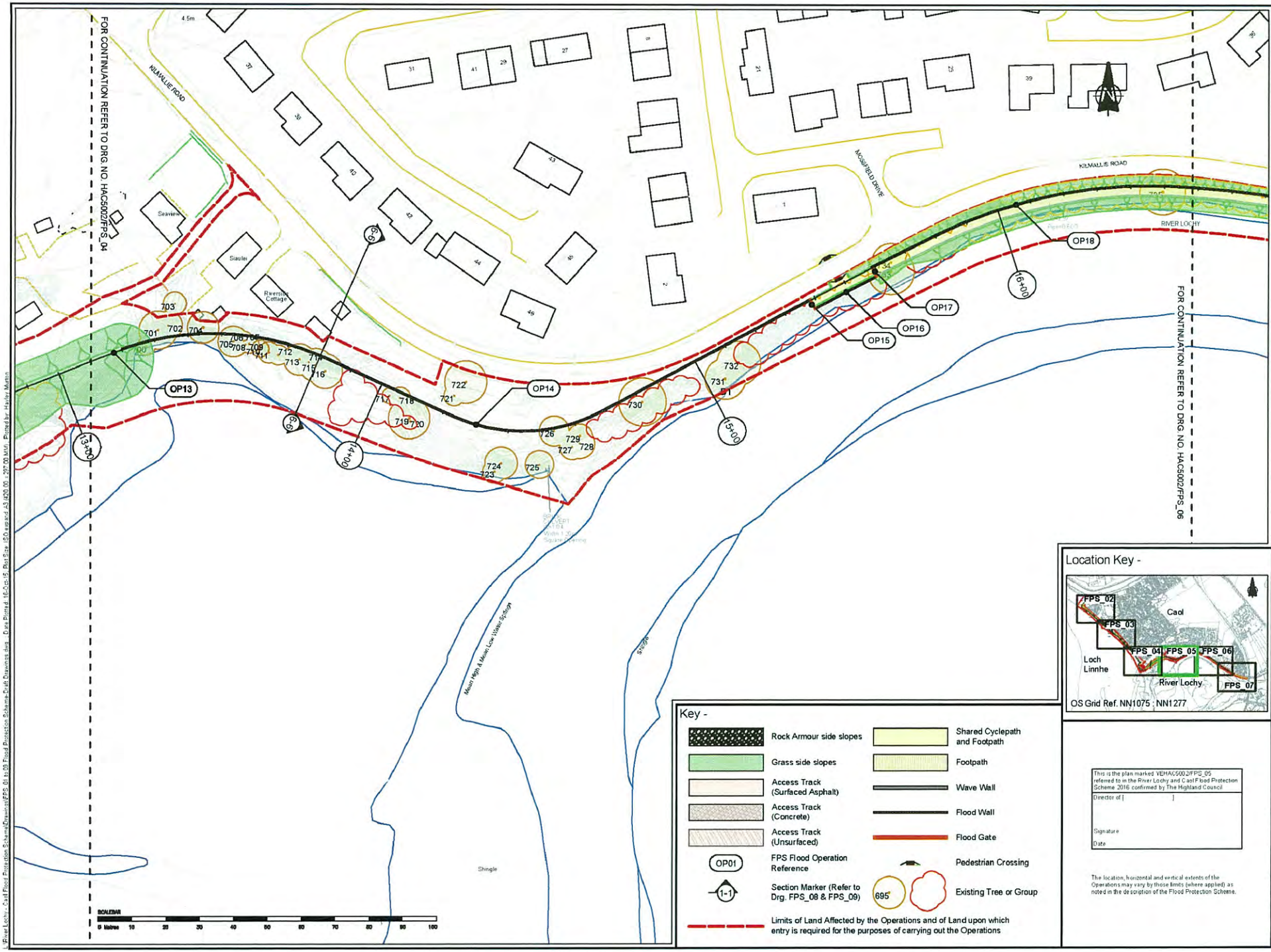

Key -

- Rock Armour side slopes
- Grass side slopes
- Access Track (Surfaced Asphalt)
- Access Track (Concrete)
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- OP01 — FPS Flood Operation Reference
- 1-1 — Section Marker (Refer to Drg. FPS_08 & FPS_09)
- Limits of Land Affected by the Operations and of Land upon which entry is required for the purposes of carrying out the Operations
- Shared Cyclepath and Footpath
- Footpath
- Wave Wall
- Flood Wall
- Flood Gate
- Pedestrian Crossing
- 695 — Existing Tree or Group

Location Key -

OS Grid Ref. NN1075 : NN1277

This is the plan marked YEHAC5002/FPS_05 referred to in the River Lochy and Caol Flood Protection Scheme 2016 confirmed by The Highland Council

Director of [ ]

Signature

Date

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Project
River Lochy and Caol Flood Protection Scheme 2016 (DRAFT)

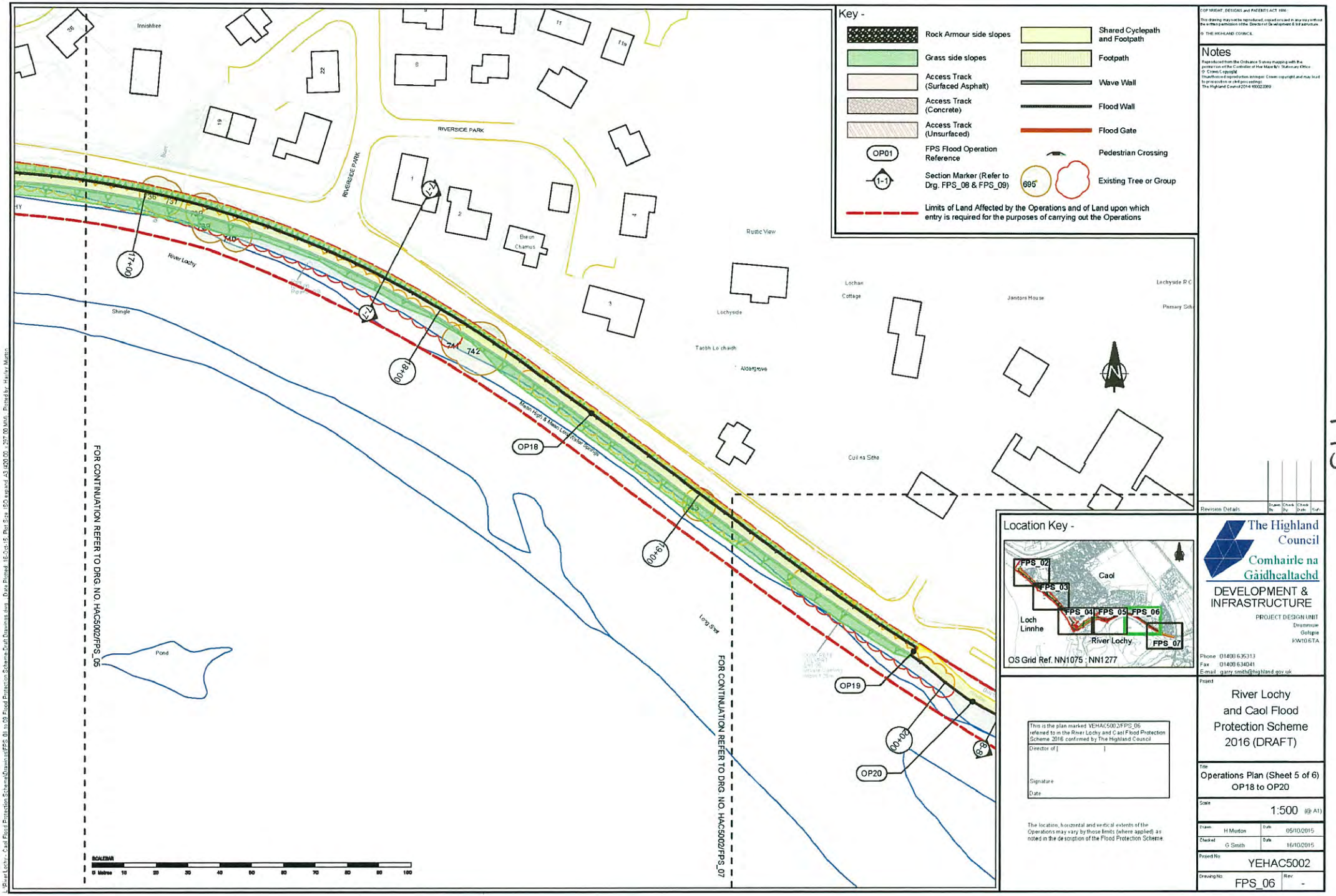
Title
Operations Plan (Sheet 4 of 6) OP13 to OP18

Scale 1:500 (@ A1)

Drawn	H Murton	05/10/2015
Checked	G Smith	16/10/2015

Project No YEHAC5002

Drawing No FPS_05 | Rev -


Key -
Rock Armour side slopes
Grass side slopes
Access Track (Surfaced Asphalt)
Access Track (Concrete)
Access Track (Unsurfaced)
OP01
FPS Flood Operation Reference
1-1
Section Marker (Refer to Drg. FPS_08 & FPS_09)
Limits of Land Affected by the Operations and of Land upon which entry is required for the purposes of carrying out the Operations
Shared Cyclepath and Footpath
Footpath
Wave Wall
Flood Wall
Flood Gate
Pedestrian Crossing
695
Existing Tree or Group
RIVERSIDE PARK
Innisfree
Rustic View
Lochan Cottage
Janitors House
Lochyside
Lochyside R C Primary Sch
Taobh Lo chaidh
Aldergrove
Cuil na Sithe
Bheun Chamus
River Lochy
Shingle
Pond
Mean High & Mean Low Water Springs
Long Spit
OP18
OP19
OP20
FOR CONTINUATION REFER TO DRG. NO. HAC5002/FPS_05
FOR CONTINUATION REFER TO DRG. NO. HAC5002/FPS_07
SCALEBAR
0 Metres 10 20 30 40 50 60 70 80 90 100
Location Key -
FPS_02
FPS_03
FPS_04
FPS_05
FPS_06
FPS_07
Caol
Loch Linnhe
River Lochy
OS Grid Ref. NN1075 ; NN1277
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Check Date
Ref.
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Director of [ ]
Signature
Date
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The Highland Council
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Project
River Lochy and Caol Flood Protection Scheme 2016 (DRAFT)
Title
Operations Plan (Sheet 5 of 6) OP18 to OP20
Scale
1:500 (@ A1)
Drawn H Murton Date 05/10/2015
Checked G Smith Date 16/10/2015
Project No YEHAC5002
Drawing No FPS_06 Rev -

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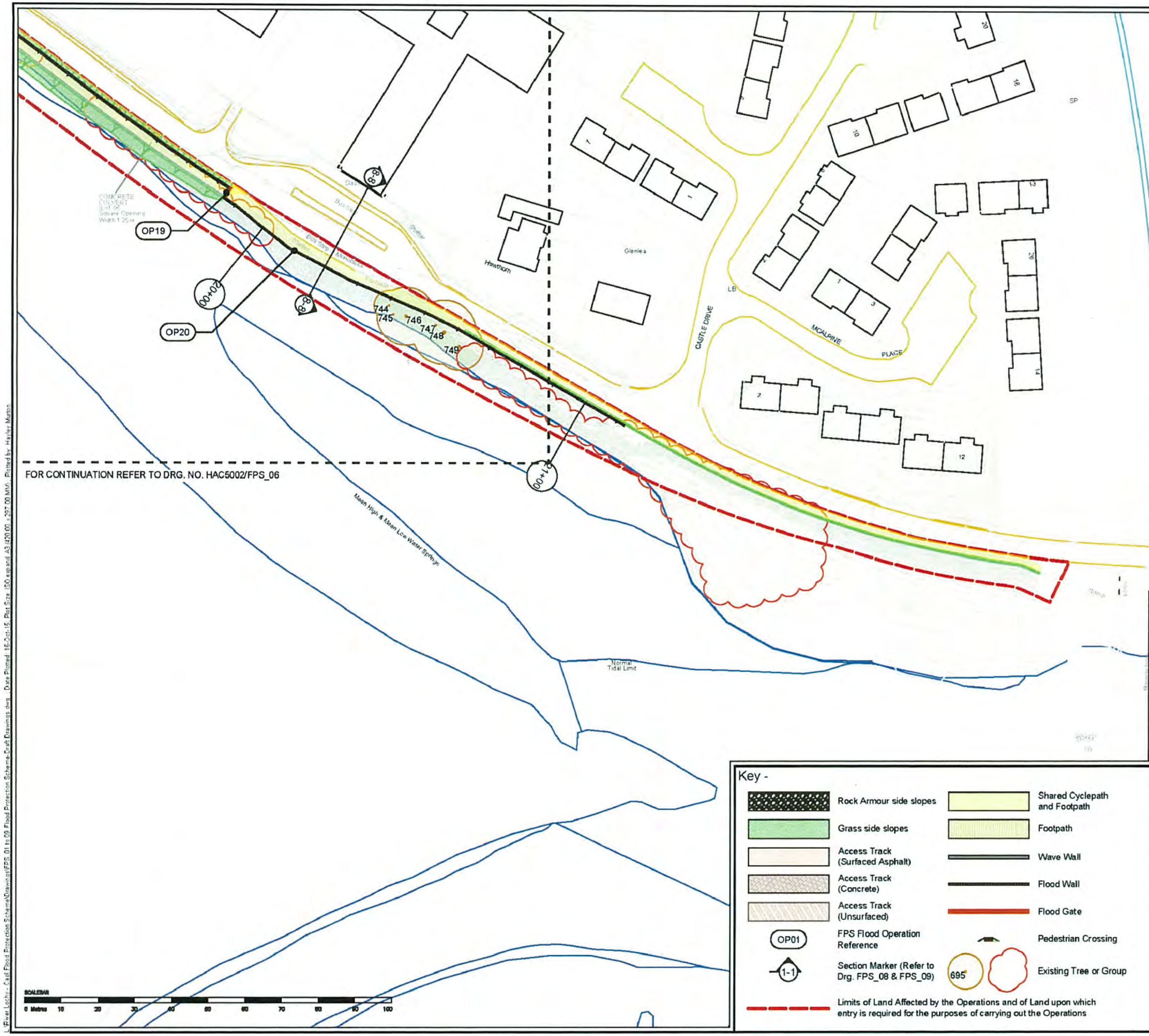
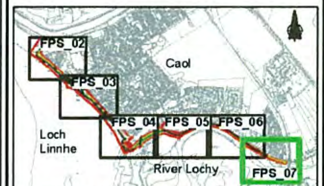


Key -

	Rock Armour side slopes		Shared Cyclepath and Footpath
	Grass side slopes		Footpath
	Access Track (Surfaced Asphalt)		Wave Wall
	Access Track (Concrete)		Flood Wall
	Access Track (Unsurfaced)		Flood Gate
OP01	FPS Flood Operation Reference		Pedestrian Crossing
1-1	Section Marker (Refer to Drg. FPS_08 & FPS_09)	695	Existing Tree or Group
	Limits of Land Affected by the Operations and of Land upon which entry is required for the purposes of carrying out the Operations		

Location Key -



OS Grid Ref. NN1075 : NN1277

This is the plan marked YEHAC5002/FPS_07 referred to in the River Lochy and Caol Flood Protection Scheme 2016 confirmed by The Highland Council
Director of [ ]
Signature
Date

The location, horizontal and vertical extents of the Operations may vary by those limits (where applied) as noted in the description of the Flood Protection Scheme

Revision Details

The Highland Council
Comhairle na Gàidhealtachd
DEVELOPMENT & INFRASTRUCTURE
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Project: River Lochy and Caol Flood Protection Scheme 2016 (DRAFT)

Title: Operations Plan (Sheet 6 of 6) OP19 to OP20

Scale: 1:500 @ A1

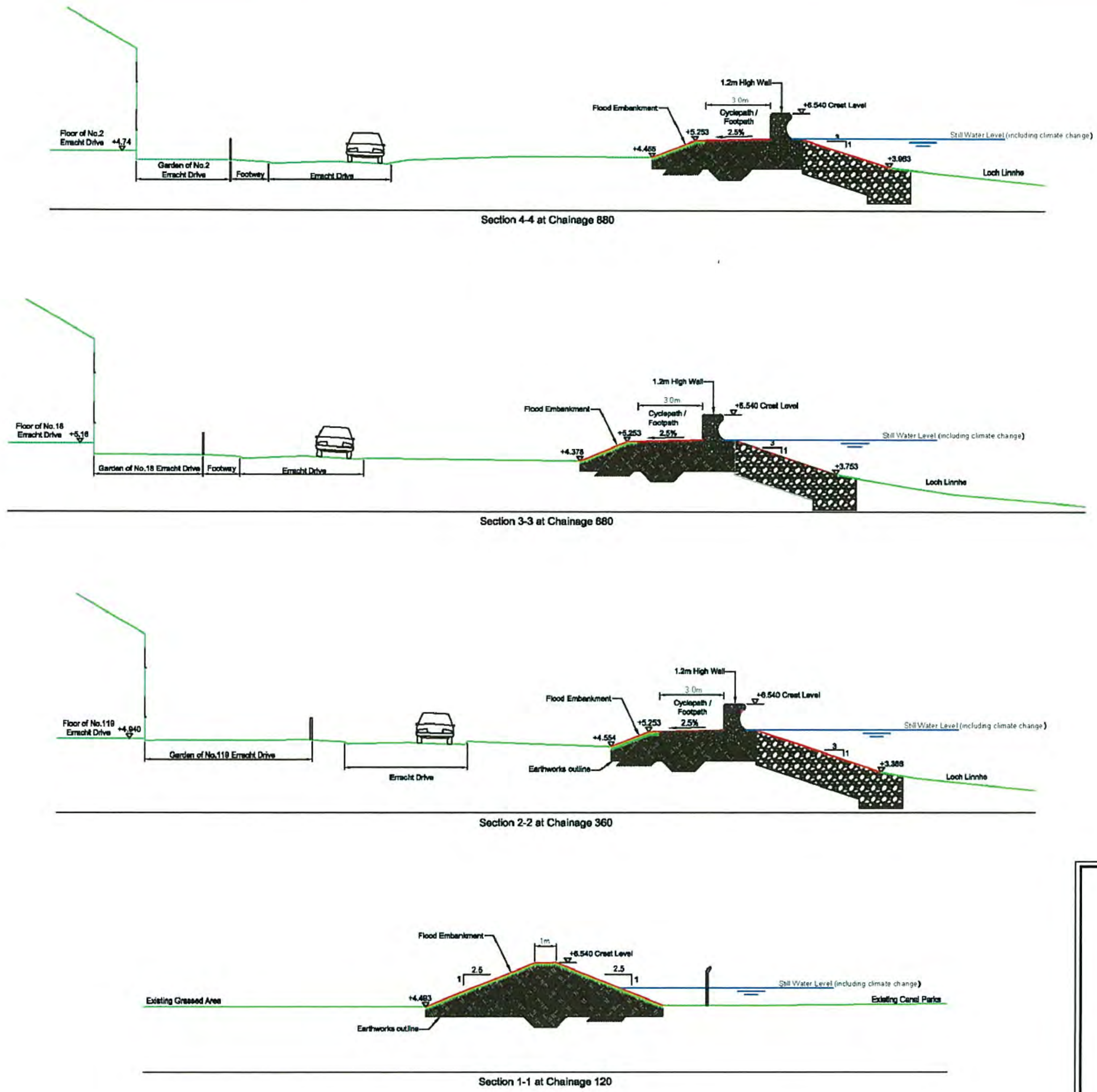
Drawn: H Murton — Date: 05/10/2015

Checked: G Smith — Date: 16/10/2015

Project No: YEHAC5002

Drawing No: FPS_07 — Rev: -

175



Key -

- Concrete Flood Defence
- Rock Armour side slopes
- Shared Cyclepath/Footpath Construction
- Grass side slopes
- Flood Embankment Construction

Notes

Revision Details | Drawn By | Check By | Check Date | Suff.

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Project	River Lochy and Caol Flood Protection Scheme 2016 (DRAFT)
Title	Cross Sections (Sheet 1 of 2)
Scale	1:100 (@ A1)
Drawn	H Murton — Date 05/10/2015
Checked	G Smith — Date 16/10/2015
Project No	YEHAC5002
Drawing No	FPS_08 — Rev -

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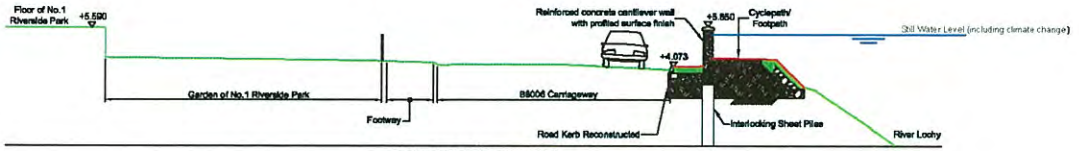
Section 8-8 at Chainage 2020



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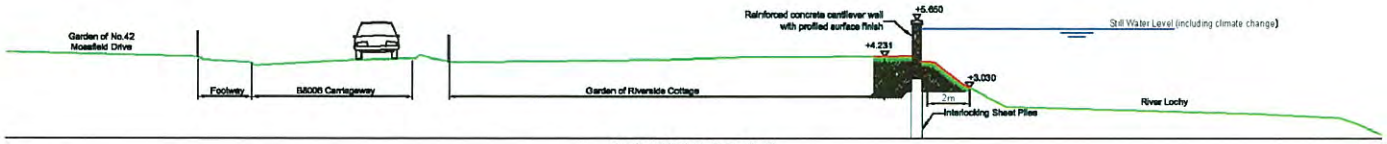

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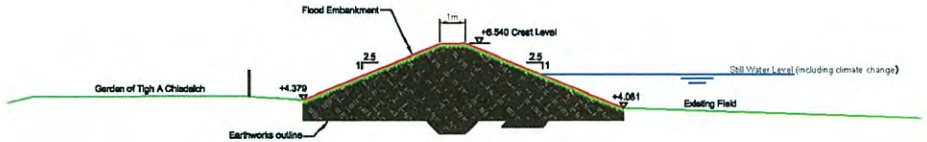

Section 5-5 at Chainage 1150

Key -

- Concrete Flood Defence
- Rock Armour side slopes
- Shared Cyclepath/Footpath Construction
- Grass side slopes
- Flood Embankment Construction

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Project
River Lochy and Caol Flood Protection Scheme 2016 (DRAFT)

Title
Cross Sections (Sheet 2 of 2)

This is the plan marked YEHAC5002/FPS_09 referred to in the River Lochy and Caol Flood Protection Scheme 2016 confirmed by The Highland Council
Director of [ ]
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Date

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Scale	1:100 @ A1
Drawn H Murton	Date 05/10/2015
Checked G Smith	Date 16/10/2015
Project No	YEHAC5002
Drawing No	FPS_09
Rev	-

176

Flood Risk Management

(Scotland) Act 2009

The Highland Council

River Lochy and Caol

Flood Protection Scheme 2016

1. General

1.1. In exercise of the powers conferred upon them by the Flood Risk Management (Scotland) Act 2009 (hereinafter referred to as "the Act") The Highland Council, established under the Local Government etc (Scotland) Act 1994 (hereinafter referred to as "the Council") have prepared the following flood protection scheme (hereinafter referred to as "the Scheme") the purpose of which is to reduce the risk of flooding of residential and commercial properties within the villages of Caol and Lochyside to the north of Fort William arising from tidal surge and wave action from Loch Linnhe and combined effects of flows within the River Lochy

1.2. The draft National Flood Risk Management Strategy due to be published by the Scottish Environmental Protection Agency in December 2015 and the draft Local Flood Risk Management Plan due to be published by the Council in June 2016 both identify the need for the Scheme as a recommended measure to alleviate flooding in the Caol and Inverlochy Potentially Vulnerable Area (PVA) in the first Flood Risk Management Cycle from 2016 – 2022, and the implementation of the Scheme will address that need.

2. Description of the Operations

2.1. The sites at which the operations are to be carried out commence on land adjacent to the Caledonian Canal from where the operations cross canal parks and turn along the foreshore of Caol parallel to Erracht Drive and Erracht Terrace the operations then turns to run through crofting land until Kilmallie Road and then continue between Kilmallie Road and the River Lochy to terminate to 175m west of Soldiers Bridge. The alignment of the scheme is shown on the plan marked YEHAC5002/FPS_01 Scheme Plan, annexed and executed as relative hereto.

2.2. The operations to be carried out in terms of the scheme are as shown on the plans marked, annexed and executed as relative hereto, and are as follows:

YEHAC5002/FPS_02, YEHAC5002/FPS_03, YEHAC5002/FPS_04, YEHAC5002/FPS_05, YEHAC5002/FPS_06, YEHAC5002/FPS_07, YEHAC5002/FPS_08, YEHAC5002/FPS_09

The location of the embankment, wall and extents of the toe may vary within the boundary (following detailed design) from the position shown in plan by +/- 5m in any direction. The crest of the flood embankment may vary (following detailed design) from the level shown in section by +/- 0.2m. A cut-off may be required for seepage control purposes the depth of which will be determined through detailed design and may vary between 1 and 10m below ground level.

2.3. Canal Parks

2.3.1. OP01 – Operations are to be carried out to construct a flood defence earthwork between the Caledonian Canal embankment and the southern corner of Canal Park adjacent to the Kilmallie Shinty Club. The flood embankment will continue for a length of 125m and shall have grassed side slopes formed to a 1:2.5 side slope with a 1m wide berm on the top. The defence level shall be 6.54m above ordnance datum (AOD) and shall be constructed an average of 1.4m above the existing ground level or thereby. The location is shown on drawing YEHAC5002/FPS_02 and a typical section on drawing YEHAC5002/FPS_08. A ramped vehicle access will be provided adjacent to and parallel with the Canal embankment to tie into the existing unsurfaced track on the northern boundary of Canal Parks.

2.3.2. OP02 – Operations are to be carried out to construct a flood defence earthworks and flood gate at the southern corner of Canal Parks. The flood gate will have a clear opening width of 4.5m and shall be 1.2m high to provide a defence level of 6.54m AOD and shall be constructed 1.6m above the existing ground level or thereby. The gate will be constructed on a 0.4m high embankment which will provide a ramped vehicle access to the southern corner of Canal Parks and form a shared cyclepath and footpath on the Great Glen Way. The location is shown on drawing YEHAC5002/FPS_02.

2.4. Erracht Drive to Erracht Terrace

2.4.1. OP03 – Operations are to be carried out to construct a flood defence earthwork with wave return wall. The flood embankment will continue for a length of 51m or thereby. The outer seawards slope shall be rock armour formed to a 1:3 side slope and shall have a toe constructed into the existing beach and foreshore to prevent scour, (the size of rock armour and toe is to be determined during the detailed design). The wave return wall shall be 1.2m high and have a concave seaward face to deflect generated waves back out to sea. The inner face shall be vertical and the wall will be formed of concrete. The wall shall be constructed on a 0.5m high embankment. The defence level shall be 6.54m AOD and shall be constructed 1.7m above the existing ground level or thereby. A 3m wide shared cyclepath and footpath with 0.5m verge shall be constructed on the landward side of the wave wall. This footpath will form part of the Great Glen Way. The landward side slope will be formed in grass at a 1:2.5 side slope to tie into the existing foreshore level. The location is shown on drawing YEHAC5002/FPS_02 and a typical section on drawing YEHAC5002/FPS_08.

2.4.2. OP04 - Operations are to be carried out to construct a flood defence earthworks and flood gate adjacent to the turning head at the western end of

Erracht Drive. The flood gate will have a clear opening width of 4.5m and shall be 1.2m high to provide a defence level of 6.54m AOD and shall be constructed 1.7m above the existing ground level or thereby. The gate will be constructed on a 0.5m high embankment which will provide a ramped vehicle access to the beach and foreshore. The ramped vehicle access shall be formed in fibre reinforced concrete and shall be 3.5m wide. The location is shown on drawing YEHAC5002/FPS_02.

2.4.3. OP05 – Operations are to be carried out to construct a flood defence earthwork with wave return wall. The flood embankment will continue for a length of 218m or thereby. The outer seawards slope shall be rock armour formed to a 1:3 side slope and shall have a toe constructed into the existing beach and foreshore to prevent scour, (the size of rock armour and toe is to be determined during the detailed design). The wave return wall shall be 1.2m high and have a concave seaward face to deflect generated waves back out to sea. The inner face shall be vertical and the wall will be formed of concrete. The wall shall be constructed on a 1.3m high embankment. The defence level shall be 6.54m AOD and shall be constructed 2.5m above the existing ground level or thereby. A 3m wide shared cyclepath and footpath with 0.5m verge shall be constructed on the landward side of the wave wall. This footpath will form part of the Great Glen Way. The landward side slope will be formed in grass at a 1:2.5 side slope to tie into the existing foreshore level. The location is shown on drawing YEHAC5002/FPS_02 & 03 and a typical section on drawing YEHAC5002/FPS_08.

2.4.4. OP06 – Operations are to be carried out to construct a flood defence earthwork with wave return wall. The flood embankment will continue for a length of 15m or thereby. The outer seawards slope shall be rock armour formed to a 1:3 side slope and shall have a toe constructed into the existing beach and foreshore to prevent scour, (the size of rock armour and toe is to be determined during the detailed design). The wave return wall shall be 1.2m high and have a concave seaward face to deflect generated waves back out to sea. The inner face shall be vertical and the wall will be formed of concrete. The wall shall be constructed on a 2.2m high embankment. The defence level shall be 6.54m AOD and shall be constructed 3.4m above the existing ground level or thereby. A seating area will be formed with a 3m wide shared cyclepath and footpath with 0.5m verge shall be constructed on the landward side of the wave wall. This footpath will form part of the Great Glen Way. The landward side slope will be formed in grass at a 1:2.5 side slope to tie into the existing foreshore level. The location is shown on drawing YEHAC5002/FPS_03 and a typical section on drawing YEHAC5002/FPS_08.

2.4.5. OP07 – Operations are to be carried out to construct a flood defence earthwork with wave return wall. The flood embankment will continue for a

length of 36m or thereby. The outer seawards slope shall be rock armour formed to a 1:3 side slope and shall have a toe constructed into the existing beach and foreshore to prevent scour, (the size of rock armour and toe is to be determined during the detailed design). The wave return wall shall be 1.2m high and have a concave seaward face to deflect generated waves back out to sea. The inner face shall be vertical and the wall will be formed of concrete. The wall shall be constructed on a 2.0m high embankment. The defence level shall be 6.54m AOD and shall be constructed 3.2m above the existing ground level or thereby. A 3m wide shared cyclepath and footpath with 0.5m verge shall be constructed on the landward side of the wave wall. This footpath will form part of the Great Glen Way. The landward side slope will be formed in grass at a 1:2.5 side slope to tie into the existing foreshore level. The location is shown on drawing YEHAC5002/FPS_03 and a typical section on drawing YEHAC5002/FPS_08.

2.4.6. OP08 - Operations are to be carried out to construct a flood defence earthworks and flood gate 25m east of the Junction between Erracht Drive and the service road at the rear of Caol shopping centre (U1166). The flood gate will have a clear opening width of 4.5m and shall be 1.2m high to provide a defence level of 6.54m AOD and shall be constructed 3.4m above the existing ground level or thereby. The gate will be constructed on a 2.2m high embankment which will provide a ramped vehicle access to the beach and foreshore. The ramped vehicle access shall be formed in fibre reinforced concrete and shall be 3.5m wide. The location is shown on drawing YEHAC5002/FPS_03.

2.4.7. OP09 – Operations are to be carried out to construct a flood defence earthwork with wave return wall. The flood embankment will continue for a length of 236m or thereby. The outer seawards slope shall be rock armour formed to a 1:3 side slope and shall have a toe constructed into the existing beach and foreshore to prevent scour, (the size of rock armour and toe is to be determined during the detailed design). The wave return wall shall be 1.2m high and have a concave seaward face to deflect generated waves back out to sea. The inner face shall be vertical and the wall will be formed of concrete. The wall shall be constructed on a 1.7m high embankment. The defence level shall be 6.54m AOD and shall be constructed 2.9m above the existing ground level or thereby. A 3m wide shared cyclepath and footpath with 0.5m verge shall be constructed on the landward side of the wave wall. This footpath will form part of the Great Glen Way. The landward side slope will be formed in grass at a 1:2.5 side slope to tie into the existing foreshore level. The location is shown on drawing YEHAC5002/FPS_03 and a typical section on drawing YEHAC5002/FPS_08.

2.4.8. OP10 – Operations are to be carried out to construct a flood defence earthwork with wave return wall. The flood embankment will continue for a length of 15m or thereby. The outer seawards slope shall be rock armour formed to a 1:3 side slope and shall have a toe constructed into the existing beach and foreshore to prevent scour, (the size of rock armour and toe is to be determined during the detailed design). The wave return wall shall be 1.2m high have a concave seaward face to deflect generated waves back out to sea. The inner face shall be vertical and the wall will be formed of concrete. The wall shall be constructed on a 2.2m high embankment. The defence level shall be 6.54m AOD and shall be constructed 3.4m above the existing ground level or thereby. A seating area will be formed with a 3m wide shared cyclepath and footpath with 0.5m verge shall be constructed on the landward side of the wave wall. This footpath will form part of the Great Glen Way. A stepped crossing point of the wave wall will be provided within the seating area to provide access to the beach and foreshore. The landward side slope will be formed in grass at a 1:2.5 side slope to tie into the existing foreshore level. The location is shown on drawing YEHAC5002/FPS_03 and a typical section on drawing YEHAC5002/FPS_08.

2.4.9. OP11 – Operations are to be carried out to construct a flood defence earthwork with wave return wall. The flood embankment will continue for a length of 263m or thereby. The outer seawards slope shall be rock armour formed to a 1:3 side slope and shall have a toe constructed into the existing beach and foreshore to prevent scour, (the size of rock armour and toe is to be determined during the detailed design). The wave return wall shall be 1.2m high have a concave seaward face to deflect generated waves back out to sea. The inner face shall be vertical and the wall will be formed of concrete. The wall shall be constructed on a 1.1m high embankment. The defence level shall be 6.54m AOD and shall be constructed 2.3m above the existing ground level or thereby. A 3m wide shared cyclepath and footpath with 0.5m verge shall be constructed on the landward side of the wave wall. This footpath will form part of the Great Glen Way. The landward side slope will be formed in grass at a 1:2.5 side slope to tie into the existing foreshore level. The location is shown on drawing YEHAC5002/FPS_04 and a typical section on drawing YEHAC5002/FPS_08.

2.5. Erracht Terrance to Kilmallie Road

2.5.1. OP12 – Operations are to be carried out to construct a flood defence earthwork. The flood embankment will continue for a length of 50m. The outer seawards slope shall be rock armour formed to a 1:3 side slope and shall have a toe constructed into the existing beach and foreshore to prevent scour, (the size of rock armour and toe is to be determined during the detailed design). The landward side shall have grassed side slopes formed to a 1:2.5

side slope. The defence level shall be 6.54m AOD and shall be constructed 2.1m above the existing ground level or thereby. The location is shown on drawing YEHAC5002/FPS_04 and a typical section on drawing YEHAC5002/FPS_09. A ramped 3.5m wide vehicle access track will be provided as an access to the existing Scottish Water foul pumping station.

2.5.2. OP13 – Operations are to be carried out to construct a flood defence earthwork between the Scottish Water Sewage Works access and the bank of the River Lochy adjacent to the property Siaulei. The flood embankment will continue for a length of 250m and shall have grassed side slopes formed to a 1:2.5 side slope with a 1m wide berm on the top. The defence level shall be 6.54m AOD and shall be constructed 2.7m above the existing ground level or thereby. The location is shown on drawing YEHAC5002/FPS_04 & 05 and a typical section on drawing YEHAC5002/FPS_09. A ramped vehicle access will be provided to access crofting land on the riverside of the flood embankment.

2.5.3. OP14 – Operations are to be carried out to construct a flood defence wall between the bank of the River Lochy, adjacent to the property known as Siaulei, to where the river bank intersects with Kilmallie Road. The flood wall will continue for a length of 218m or thereby. The wall will be 1.2m to 3.0m above the existing ground and will have a defence level of 5.65m AOD. The concrete retaining wall will have a sheet piled cut off driven into the underlying soil to prevent ingress of water under the flood wall (this will be confirmed during the detailed design for the scheme). The location is shown on drawing YEHAC5002/FPS_05 and a typical section on drawing YEHAC5002/FPS_09.

2.5.4. OP15 - Operations are to be carried out to construct a flood defence gate. The flood gate will have a clear opening width of 2.5m and shall be 1.2m high and shall provide a defence level of 5.65m AOD and shall be constructed 1.9m above the existing ground level or thereby. The location is shown on drawing YEHAC5002/FPS_05 and a typical section on drawing YEHAC5002/FPS_09.

2.5.5. OP16 – Operations are to be carried out to construct a flood defence wall between the River Lochy and Kilmallie Road. The flood wall will continue for a length of 20m or thereby. The wall will be 1.8m to 3.2m above the existing ground and will have a defence level of 5.65m AOD. The landward side of the wall will have a 2m wide shared cycleway and footway with a pedestrian crossing point onto Kilmallie Road. The location is shown on drawing YEHAC5002/FPS_05 and a typical section on drawing YEHAC5002/FPS_09.

2.5.6. OP17 - Operations are to be carried out to construct a flood defence gate. The flood gate will have a clear opening width of 2.5m and shall be 1.2m high

to provide a defence level of 5.65m AOD and shall be constructed 1.8m above the existing ground level or thereby. The location is shown on drawing YEHAC5002/FPS_05 and a typical section on drawing YEHAC5002/FPS_09.

2.5.7. OP18 – Operations are to be carried out to construct a flood defence wall between the River Lochy and Kilmallie Road. The flood wall will continue for a length of 426m or thereby. The wall will be 1.0m to 2.5m above the existing ground and will have a defence level of 5.65m AOD. The river side of the wall will have a 2.5m wide shared cycleway and footway, the side slope of the existing river bank will be strengthened to prevent scour. The location is shown on drawing YEHAC5002/FPS_05 and a typical section on drawing YEHAC5002/FPS_09.

2.5.8. OP19 - Operations are to be carried out to construct a flood defence gate. The flood gate will have a clear opening width of 2.5m and shall be 1.2m high to provide a defence level of 5.65m AOD and shall be constructed 1.1m above the existing ground level or thereby. The location is shown on drawing YEHAC5002/FPS_05 and a typical section on drawing YEHAC5002/FPS_09.

2.5.9. OP20 – Operations are to be carried out to construct a flood defence wall between the River Lochy and Kilmallie Road. The flood wall will continue for a length of 124m or thereby. The wall will be 0.15m to 1.2m above the existing ground and will have a defence level of 5.65m AOD. The landward side of the wall will have a 2m wide shared cycleway and footway adjacent to Kilmallie Road. The location is shown on drawing YEHAC5002/FPS_05 and a typical section on drawing YEHAC5002/FPS_09.

3. Land

3.1. The land which is affected by the operations and land which entry is required for the purposes of carrying out the operations, Regulation 11 of The Flood Risk Management (Flood Protection Schemes, Potentially Venerable Area and Local Plan Districts) (Scotland) Regulations 2010 are shown on the following plans:

YEHAC5002/FPS_02, YEHAC5002/FPS_03, YEHAC5002/FPS_04, YEHAC5002/FPS_05, YEHAC5002/FPS_06, YEHAC5002/FPS_07

4. Cost

4.1. The estimated cost for the Operations is £8.2M (Oct 2014), eight million two hundred thousand pounds sterling.

Confirmed by The Highland Council on the day of 2016.
(note: May need to refer to how Scheme has been confirmed – schedule 2 para 4(1) or para 9(1)

……Proper Officer of the Council

……Dated

Page to enable Scottish Ministers to approve deemed planning consent (agree text with Matt / Colin / Forbes etc)