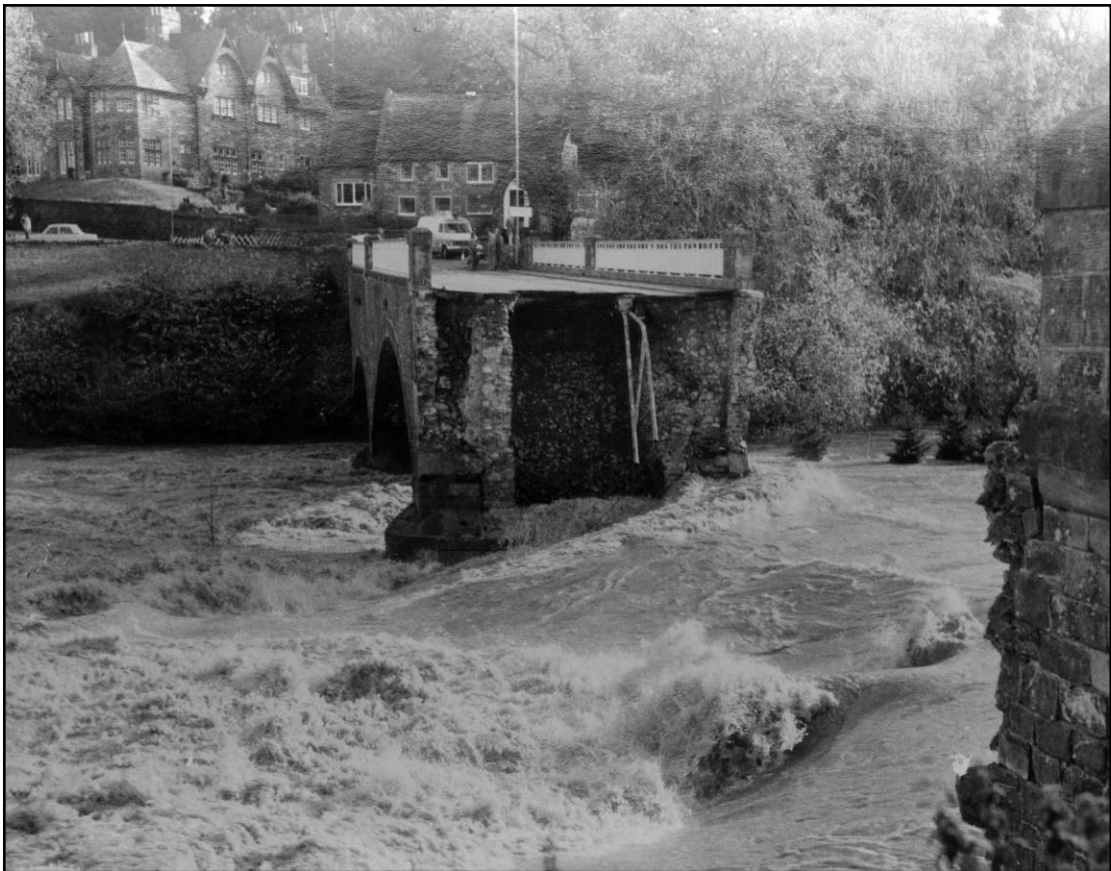


**FLOOD RISK MANAGEMENT (SCOTLAND) ACT 2009**

**SCOTTISH BORDERS COUNCIL**

**SELKIRK FLOOD PROTECTION SCHEME 2012**

**SCHEDULE OF OPERATIONS**



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## **FLOOD RISK MANAGEMENT (SCOTLAND) ACT 2009**

### **SCOTTISH BORDERS COUNCIL**

### **SELKIRK FLOOD PROTECTION SCHEME 2012**

#### **SCHEDULE OF SCHEME OPERATIONS**

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#### **1. GENERAL**

In exercise of the powers conferred upon them by the Flood Risk Management (Scotland) Act 2009 (hereinafter referred to as 'the Act'), Scottish Borders Council (hereinafter referred to as the 'Council') hereby proposes the following Flood Protection Scheme (hereinafter referred to as the 'Scheme'), the purpose of which is:

- To generally reduce the risk of flooding to residential, agricultural, community and business properties along the length of the Yarrow Water from the outlet of St Mary's Loch to the confluence with the Ettrick Water.
- To generally reduce the risk of flooding to residential, agricultural, community and business properties along the length of the Ettrick Water from its confluence with the Yarrow Water to its confluence with the River Tweed.
- To mitigate the effects of flooding to residential, community and business properties in the Philiphaugh, Bannerfield and Riverside areas of Selkirk from the Ettrick Water.
- To mitigate the effects of flooding to residential, agricultural, community and business properties in the Bannerfield and Philiphaugh areas of Selkirk from the Long Philip Burn
- To mitigate the effects of flooding to residential and business properties in the Riverside area of Selkirk from the Shaw Burn.

- The Scheme is also to include the adaptation of the existing infrastructure and level control of St Mary's Loch on the Yarrow Water for flood storage purposes.

In the current absence of Flood Risk Management Plans (to be developed by the Scottish Environment Protection Agency) and Local Flood Risk Management Plans (to be developed by Scottish Borders Council), the intention to make this Scheme is aligned with Scottish Borders Council's Flood Protection Scheme Implementation Strategy, which was developed on 4<sup>th</sup> September 2007. This strategy identified the need to develop a Scheme for Selkirk within two to five years.

## **2. TERMS OF THE SCHEME**

The terms of the Scheme are detailed in Sections 3 to 6 hereunder.

## **3. SITE OF THE FLOOD PROTECTION OPERATIONS**

The sites at which the Flood Protection Operations (hereinafter referred to as the 'Operations') are to be carried out in terms of the Scheme are situated

- On land adjacent to the downstream end and outlet of St Mary's Loch (occupying land wholly within the Scottish Borders)
- On land adjacent to the un-named watercourse which connects Loch of the Lowes to St Mary's Loch (occupying land wholly within the Scottish Borders)
- On land adjacent to various public and private access points around the perimeter of St Mary's Loch (occupying land wholly within the Scottish Borders)
- On land adjacent to the Yarrow Water just upstream of the confluence with the Ettrick Water (occupying land wholly within the Scottish Borders)
- On land adjacent to the Yarrow Water and Ettrick Water at Philiphaugh (occupying land wholly within the Scottish Borders)
- On land adjacent to the Ettrick Water at Selkirk Riverside Business Park (occupying land wholly within the Scottish Borders)

- On land adjacent to the Ettrick Water at Bannerfield (occupying land wholly within the Scottish Borders)
- On land adjacent to the Shaw Burn at Selkirk Riverside Business Park (occupying land wholly within the Scottish Borders)
- On land adjacent to the Long Philip Burn at Ravensheugh and Bannerfield (occupying land wholly within the Scottish Borders)

and are shown on the most up to date revision of the plans marked as listed below:

**St Mary's Loch**

WN/SFPD/SML/001  
 WN/SFPD/SML/002  
 WN/SFPD/SML/003  
 WN/SFPD/SML/004  
 WN/SFPD/SML/005

WN/SFPD/EWR/004  
 WN/SFPD/EWR/005  
 WN/SFPD/EWR/006  
 WN/SFPD/EWR/007  
 WN/SFPD/EWR/008  
 WN/SFPD/EWR/009

**Ettrick Water (Philippaugh)**

WN/SFPD/EWP/001  
 WN/SFPD/EWP/002  
 WN/SFPD/EWP/003  
 WN/SFPD/EWP/004  
 WN/SFPD/EWP/005  
 WN/SFPD/EWP/006  
 WN/SFPD/EWP/007  
 WN/SFPD/EWP/008  
 WN/SFPD/EWP/009  
 WN/SFPD/EWP/010

**Ettrick Water (Bannerfield)**

WN/SFPD/EWB/001  
 WN/SFPD/EWB/002  
 WN/SFPD/EWB/003

**Long Philip Burn (River Restoration)**

WN/SFPD/LPB/001  
 WN/SFPD/LPB/002  
 WN/SFPD/LPB/003  
 WN/SFPD/LPB/004  
 WN/SFPD/LPB/005

**Ettrick Water (Riverside)**

WN/SFPD/EWR/001  
 WN/SFPD/EWR/002  
 WN/SFPD/EWR/003

**Shaw Burn**

WN/SFPD/SB/001

attached and executed as relative hereto.

#### 4. DESCRIPTION AND BENEFITS OF THE OPERATIONS

##### St Mary's Loch

The flood protection operations to be carried out in terms of the Scheme at St Mary's Loch are as follows:

- SML01** At the downstream end of St Mary's Loch, from the south eastern end of the existing fish pass structure, construct a 100m long or thereby reinforced concrete capping to augment the existing reinforced concrete pile cap to a level of 247.030 metres above Ordnance Datum or thereby and as generally shown and detailed on the said plan marked WN/SFPD/SML/002 and elevation 1-SML.
- SML02** At the downstream end of St Mary's Loch, at the existing flow control structures, undertake a programme of upgrade and overhaul of the existing civil, mechanical and electrical equipment, including the reinforced concrete Parshall flumes, the hydraulically actuated radial gates and actuators, the measurement of level in the loch, the measurement of flow from the loch and telemetry links to the remote control station. Carry out local diversion or protection to telecommunications and power lines and cables. All as generally shown and detailed on the said plan marked WN/SFPD/SML/002 and elevation 1-SML.
- SML03** At the downstream end of St Mary's Loch, at the existing fish pass cascade structure, demolish a short section of the existing baffle wall over which water from St Mary's Loch cascades into the first (uppermost) pool of the fish pass structure. The baffle wall shall be reduced in height over a width of 2.0 metres or thereby from directly adjacent to the existing vertical reinforced concrete wall which forms the flow control structures, to create a notch in the baffle wall. The baffle wall shall be reduced to a level of 246.150 metres above Ordnance Datum or thereby. All as generally shown and detailed on the said plan marked WN/SFPD/SML/002 and elevation 1-SML.
- SML04** At the downstream end of St Mary's Loch, downstream of the existing flow control structures and to the south of the existing vehicle bridge across the Yarrow Water, raise approximately 45 linear metres of the existing

private access track to Bowerhope by up to 0.35m or thereby. Equip the upstream and downstream side of the new embankment with erosion protection geotextile. All as shown on the said plan marked WN/SFPD/SML/002.

- SML05** At the upstream end of St Mary's Loch, at the upstream end of the stream which connects Loch of the Lowes to St Mary's Loch, armour the bed of the said stream with rock mattresses to reduce the risk of erosion. The bed armouring works shall extend across the entire width of the stream to a depth not exceeding 1.0m below existing stream bed level as shown on the said plan marked WN/SFPD/SML/003 and on the section marked 1-SML on the said plan marked WN/SFPD/SML/003.
- SML06** At the upstream end of St Mary's Loch. on the south side of the access road leading from the A708 to Tibbie Shiels Inn, construct a swale to route excess flow exiting Loch of the Lowes to the secondary masonry arch beneath the said access road. The level of the swale shall be no lower than 247.50m above Ordnance Datum and the length shall be no greater than 20 metres. All as shown on the said plan marked WN/SFPD/SML/003.
- SML07** At the St Mary's Loch Sailing Club boathouse undertake flood resilience measures including the provision of demountable flood protection barriers to all existing air bricks and accesses to the building. The demountable barriers shall be stored in a lockable storage bin, at a specific location to be agreed with the Sailing Club and adjacent to the boathouse which is shown on the said plan marked WN/SFPD/SML/004.
- SML08** At the St Mary's Loch Sailing Club floating pontoon, provide 1 no. additional floating pontoon for the Sailing Club's use to ensure that accessibility from the pontoon is not adversely affected by the flood storage proposals. All as shown on the said plan marked WN/SFPD/SML/004.
- SML09** At the St Mary's Loch Sailing Club shorefront, from the fixed / floating pontoon to a point 90 metres or thereby west south west of the fixed / floating pontoon, regrade the existing shoreline and bed of the loch to ensure that accessibility for launching vessels is not adversely affected by the flood water resource and flood management proposals. All as shown

on the said plan marked WN/SFPD/SML/004 and as typically detailed on Section 2-SML on the said plan marked WN/SFPD/SML/004.

**SML10** At the private Rodono House jetty undertake all necessary works to ensure that accessibility from the jetty and slipway is not adversely affected by the water resource and flood management proposals: this will include extending the existing timber jetty, extending the existing concrete slipway, provision of a floating pontoon and localised gravel removal. All as shown on the said plan marked WN/SFPD/SML/005.

**SML11** At the private Tibbie Shiels Inn jetty, upgrade the existing timber jetty to ensure that accessibility from the jetty and slipway is not adversely affected by the flood water resource and flood management proposals. All as shown on the said plan marked WN/SFPD/SML/003.

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The benefits of the said operations at St Mary's Loch are as follows:

- To mitigate the flood risk to land and properties adjacent to the Yarrow Water over a distance of 22.5 kilometres or thereby, from the St Mary's Loch outlet to the confluence with the Ettrick Water. Flood risk mitigation results in economic, social and environmental benefits.
- To mitigate the flood risk to land and properties adjacent to the Ettrick Water over a distance of 7.5 kilometres or thereby, from the confluence with the Yarrow Water to the confluence with the River Tweed. Flood risk mitigation results in economic, social and environmental benefits.
- To reduce the risk of flooding to land and properties adjacent to the Ettrick Water at the Lindean Area thereby resulting in economic, social and environmental benefits to a community that has a very high flood risk and which cannot be protected through the Selkirk FPS
- To ensure that the proposed flood protection operations on the Ettrick Water defined at Selkirk Philiphaugh (series EWP) and Selkirk Riverside (series EWR) do not increase the flood risk for areas upstream, opposite or downstream of Selkirk Philiphaugh and Selkirk Riverside.

- To provide a more natural response to rainfall within the upper Yarrow Water catchment
- To deliver an intelligent water management system for St Mary's Loch which allows for better management of the water resource and thus minimise the potential for water related issues during either extreme wet or dry weather periods.

**Ettrick Water (Philiphaugh)**

The Operations to be carried out in terms of the Scheme adjacent to the Ettrick Water at Philiphaugh are as follows:

- EWP01** From chainage C1-0 to C1-2 metres or thereby, construct a flood defence embankment up to 0.60 metres or thereby above existing ground level. The flood defence embankment shall have a crest width of 1.0m and a maximum base width of 5.0 metres or thereby. The embankment shall be topsoiled and grass seeded. All as shown on the said plan marked WN/SFPD/EWP/002 and as typically detailed on Section 1-EWP on the said plan WN/SFPD/EWP/002.
- EWP02** At chainage C1-2 metres or thereby, demolish 225 linear metres or thereby of the existing masonry boundary wall on the north side of the A708. Reconstruct the masonry wall to a height not more than 1.05 metres and not less than 0.1 metres above the revised carriageway levels on the A708 as described in operation EWP03. At transition points between the existing and proposed masonry wall, taper the top of the wall to suit the change in levels at an angle no greater than 45 degrees. All as shown on the said plan marked WN/SFPD/EWP/002 and as typically detailed on Section 1-EWP on the said plan WN/SFPD/EWP/002.
- EWP03** From chainage C1-2 to C1-10 metres or thereby, raise the level of the carriageway of the A708 by up to 1.0 metre or thereby above the existing carriageway level. Reconstruct the carriageway on the approaches to the raised section over a distance of 250 linear metres or thereby with raised embankments, reinforced concrete retaining walls, filter drainage, vehicle containment barriers, special surface treatment and warning signs. Replace the existing culvert which carries the unnamed watercourse beneath the A708. Divert the overhead power and telecommunications supplies. All as shown on the said plan marked WN/SFPD/EWP/002 and as typically detailed on Section 1-EWP on the said plan WN/SFPD/EWP/002
- EWP04** At chainage C1-10 metres or thereby, demolish the existing headwall structure which retains the road and provides the outfall to the culvert carrying the un-named watercourse beneath the A708. Replace with a reinforced concrete headwall structure and erosion protection at the

culvert outlet, tying into the proposed replacement culvert, up to 1.5 metres or thereby above the existing bed level of the unnamed watercourse as shown on the plan marked WN/SFPD/EWP/002

- EWP05** From chainage C1-10 to C1-230 metres or thereby, construct a flood defence embankment up to 3.0 metres or thereby above existing ground level. The flood defence embankment shall have a 1.0 metre wide crest and a maximum base width of 14.0 metres or thereby. Remove the existing post and wire stockproof fence and replace with a new stockproof fence along the north eastern toe of the embankment. Provide filter trench drainage along the north eastern toe of the embankment with outfalls beneath the embankment to the un-named watercourse at intervals not exceeding 100 metres. Equip the outfalls with non-return or non-return or flap valves. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the south western side of the embankment below the topsoil layer. Fell up to 3 trees with DBH<sup>1</sup> greater than 100 millimetres and replace with at least 6 trees within 50 metres or thereby of the felling locations. The embankment shall be topsoiled and grass seeded. All as shown on the said plan marked WN/SFPD/EWP/002 and as typically detailed on Section 2-EWP on the said plan WN/SFPD/EWP/002.
- EWP06** From chainage C1-230 to C1-350 metres or thereby, construct a flood defence embankment up to 3.40 metres or thereby above existing mill lade bed level. The flood defence embankment shall have a 1.0 metre wide crest and a maximum base width of 17.0 metres or thereby. Remove the existing post and wire stockproof fence and replace with a new stockproof fence along the north eastern toe of the embankment. Provide filter trench drainage along the north eastern toe of the embankment with outfalls beneath the embankment to the un-named watercourse at intervals not exceeding 100 metres. Equip the outfalls with non-return or non-return or flap valves. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the south western side of the embankment below the topsoil layer and provide rip rap erosion protection along the southwestern toe of the embankment from chainage C1-280 to C1-330m or thereby . Fell up to 15 trees with DBH greater than 100 millimetres and

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<sup>1</sup> Diameter at Breast Height

replace with at least 30 trees within 50 metres or thereby of the felling locations. The embankment shall be topsoiled and grass seeded. All as shown on the said plan marked WN/SFPD/EWP/003 and as typically detailed on Section 3-EWP on the said plan WN/SFPD/EWP/003.

**EWP06a** At chainage C1-250 metres or thereby, provide a 3.0 metre wide or thereby access ramp on both sides of the embankment to maintain access between fields. The ramp shall have a gradient no steeper than 1 in 8 and shall be surfaced in tarmacadam or concrete. Divert the overhead Scottish Power apparatus in accordance with the Service Provider's requirements. All as shown on the said plan marked WN/SFPD/EWP/003.

**EWP07** From chainage C1-280 to C1-330 metres or thereby, divert the existing un-named watercourse by a maximum plan distance of 50 metres or thereby to avoid the works described in operation EWP06. Proposed channel cross section dimensions to be equivalent to existing channel dimensions. Fell up to 6 trees with DBH greater than 100 millimetres and replace with at least 12 trees within 250 metres or thereby of the felling locations. All as shown on the said plan marked WN/SFPD/EWP/003.

**EWP08** At chainage C1-340 metres or thereby, convey the Mill Lade beneath the proposed flood defence embankment via a 600 millimetre diameter pipe. Construct reinforced concrete inlet and outlet structures, each consisting of head walls and wingwalls, up to 2.0 metres or thereby above the existing bed level of the Mill Lade. Provide rip rap protection around the head and wing walls of the inlet structure on the south western toe and the outlet structure on the northeastern toe of the proposed flood defence embankment, up to 1.0 metre above existing bed level of the Mill Lade. All as shown on the said plan marked WN/SFPD/EWP/003 and as detailed on section 3-EWP on the said plan marked WN/SFPD/EWP/003.

**EWP09** From chainage C1-350 to C1-570 metres or thereby, construct a flood defence embankment up to 2.30 metres or thereby above existing ground (flood plain) level. The flood defence embankment shall have a 3.0 metre wide crest and a maximum base width of 10.0 metres or thereby. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the south eastern side of the embankment below the topsoil layer. Fell up to 45

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trees with DBH greater than 100 millimetres and replace with at least 90 trees within 50 metres or thereby of the felling locations. The embankment shall be topsoiled and grass seeded. Take up the existing public footpath from the Old Mill Farm to the Murray's Cauld and construct a new public footpath on top of the flood defence embankment, up to 2.0m wide. Divert the overhead power cables and ancillary apparatus in accordance with the Service Provider's requirements. All as shown on the said plan marked WN/SFPD/EWP/003 and as typically detailed on Section 4-EWP on the said plan WN/SFPD/EWP/003.

- EWP10** At chainage C1-570 metres or thereby, take up the existing 3.1 metre wide pedestrian / vehicle access track and create a new pedestrian / vehicle access track, up to 2.5 metres wide, raised by up to 1.5 metres or thereby above existing ground level to join the proposed raised access track described in operations EWP11 and EWP13, as shown on the said plan marked WN/SFPD/EWP/004.
- EWP11** From chainage C1-570 to C1-612 metres or thereby, construct a flood defence embankment up to 1.5 metres or thereby above existing ground (flood plain) level. The flood defence embankment shall have a crest width of 3.5 metres and a maximum base width of 11.0 metres or thereby. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on both sides of the embankment below the topsoil layer. Where the proposed flood defence embankment material is placed within 1.0 metre of the edge of the Mill Lade channel, reinforce the toe of the embankment with rip rap material, up to 0.8 metres above the bed level of the Mill Lade. Fell up to 12 trees within the landscape garden area and replace with at least 24 trees in the same location or nearby. The flood defence embankment shall be topsoiled and grass seeded. Take up the existing pedestrian / vehicle access track and construct a new pedestrian / vehicle access track on top of the proposed flood defence embankment, up to 2.55 metres wide. Divert the overhead power cables and any ancillary apparatus in accordance with the Service Provider's requirements. All as shown on the said plan marked WN/SFPD/EWP/004.
- EWP12** At chainage C1-612 metres or thereby, take up the existing 2.5m wide pedestrian / vehicle access track and create a new pedestrian / vehicle access track, up to 2.5 metres wide, raised by up to 1.4 metres or thereby

above existing ground level to join the proposed raised access track described in operations EWP11 and EWP13, as shown on the said plan marked WN/SFPD/EWP/004.

**EWP13** From chainage C1-612 to C1-800 metres or thereby, construct a flood defence embankment up to 1.3 metres or thereby above existing ground (flood plain) level. The flood defence embankment shall have a crest width of 3.5 metres and a maximum base width of 10.0 metres or thereby. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on both sides of the embankment below the topsoil layer. Provide a retaining wall to retain the flood defence embankment around the outbuilding from chainage 619 to 629 metres or thereby. Fell up to 20 trees with DBH greater than 100 millimetres and replace with at least 40 trees within 250 metres or thereby of the felling locations. Where the proposed flood defence embankment material is placed within 1.0 metre of the edge of the Mill Lade channel, reinforce the toe of the embankment with rip rap material, up to 0.8 metres above the bed level of the Mill Lade. The flood defence embankment shall be top soiled and grass seeded. Take up the existing 2.5m wide pedestrian / vehicle access track and construct a new pedestrian / vehicle access track on top of the embankment, up to 2.5 metres wide. Divert the overhead power cables and any ancillary apparatus in accordance with the Service Provider's requirements. All as shown on the said plan marked WN/SFPD/EWP/004 and as typically detailed on Section 5-EWP and 6-EWP on the said plan WN/SFPD/EWP/004.

**EWP14** At chainage C1-800 metres or thereby, take up the existing 2.5 metre wide pedestrian / vehicle access track and create a new pedestrian / vehicle access track, up to 2.5 metres wide, raised by up to 1.0 metre or thereby above existing ground level to join the proposed raised access track described in operation EWP13, as shown on the said plan marked WN/SFPD/EWP/004.

**EWP15** From chainage C1-800 to C1-870 metres or thereby, construct a flood defence embankment up to 1.25 metres or thereby above existing ground (flood plain) level. The flood defence embankment shall have a crest width of 2.5 metres and a maximum base width of 10.0 metres or thereby. Provide anti-burrowing geotextile or netting on both sides of the

embankment below the topsoil layer. Provide erosion protection geotextile on both sides of the embankment below the topsoil layer. The flood defence embankment shall be top soiled and grass seeded. Take up the existing informal public footpath and construct a formal public footpath on top of the embankment, up to 1.5 metres wide. Divert the overhead power cables and any ancillary apparatus in accordance with the Service Provider's requirements. All as shown on the said plan marked WN/SFPD/EWP/004 and as typically detailed on Section 7-EWP on the said plan WN/SFPD/EWP/004.

**EWP16** From chainage C1-870 to C1-1180 metres or thereby, construct a flood defence embankment up to 2.75 metres or thereby above existing ground (flood plain) level or up to 0.60 metres above the existing embankment level. The flood defence embankment shall have a crest width of 3.5 metres and a maximum base width of 10.0 metres or thereby. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the south eastern side of the embankment below the topsoil layer. The flood defence embankment shall be top soiled and grass seeded. Take up the existing informal public footpath and construct a formal public footpath on top of the embankment, up to 1.5 metres wide. Divert the overhead power cables and any ancillary apparatus in accordance with the Service Provider's requirements. All as shown on the said plan marked WN/SFPD/EWP/005 and as typically detailed on Section 8-EWP on the said plan WN/SFPD/EWP/005.

**EWP17** From chainage C1-1180 to C1-1385 metres or thereby, construct a flood defence embankment up to 2.80 metres or thereby above existing ground (flood plain) level. The flood defence embankment shall have a crest width of 3.5 metres from chainage 1180 to 1206 metres and a crest width of 2.5 metres from chainage 1220 to 1385 metres. Between chainage 1206 and 1220 metres, the crest width linearly varies from 3.5 metres to 2.5 metres. All flood defence embankments shall have a maximum base width of 14.0 metres or thereby. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the side of the embankment exposed to flood waters from the Ettrick Water below the topsoil layer. The flood defence embankment shall be topsoiled and grass seeded. Take up the

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existing informal public footpath and steps and construct a formal public footpath without steps on top of the embankment, up to 1.5 metres wide. Take up the existing vehicle access track which crosses the proposed flood defence embankment at chainage C1-1355 metres. Fell up to 40 trees with DBH greater than 100 millimetres and replace with at least 80 trees within 250 metres or thereby of the felling locations. Divert the overhead power cables and any ancillary apparatus in accordance with the Service Provider's requirements. Demolish the existing brickwork outbuilding at chainage C1-1361 metres or thereby. Provide a new outbuilding at a location to be agreed with the landowner. All as shown on the said plan marked WN/SFPD/EWP/006 and as typically detailed on Section 9-EWP on the said plan WN/SFPD/EWP/006.

- EWP18** At chainage C1-1355 metres or thereby, take up the existing 2.5 metre wide pedestrian / vehicle access track or thereby and create a new pedestrian / vehicle access track, surfaced in tarmacadam, up to 2.5 metres wide, raised by up to 0.7 metres or thereby above existing ground level. Take down the existing access gate and provide a new lockable 3.5m wide field gate in a similar location. All as shown on the said plan marked WN/SFPD/EWP/006.
- EWP19** From chainage C1-1425 to C1-1490 metres or thereby, construct a reinforced concrete flood defence wall up to 0.3 metres above the existing embankment crest level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Take up the existing public footpath and replace with a new public footpath, up to 1.5 metres wide. Carry out soft landscaping works including topsoil and seeding to either side of the exposed section of flood defence wall. Divert the overhead power cables and any ancillary apparatus in accordance with the Service Provider's requirements. All as shown on the said plan marked WN/SFPD/EWP/006 and as typically detailed on Section 10-EWP on the said plan WN/SFPD/EWP/006.
- EWP20** From chainage C1-1490 to C1-1662 metres or thereby, construct a reinforced concrete flood defence wall up to 0.85 metres above the existing embankment crest level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Take up the existing public footpath

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and replace with a new public footpath, up to 1.5 metres wide and carry out soft landscaping works including topsoil and seeding to either side of the exposed section of flood defence wall. Fell up to 10 trees with DBH greater than 100 millimetres and replace with at least 20 trees within 25 metres or thereby of the felling locations. All as shown on the said plan marked WN/SFPD/EWP/007 and as typically detailed on Section 11-EWP on the said plan marked WN/SFPD/EWP/007.

**EWP21** At chainage C2-0 / C1-1662 metres or thereby, remove the existing public footbridge spanning the Mill Lade. Construct new reinforced concrete abutments and re-install or if required replace the footbridge. Construct 10 linear metres or thereby of public footpath up to 1.5m wide to connect with the public footpath works described in Operation EWP19. All as shown on the said plan marked WN/SFPD/EWP/007.

**EWP22** From chainage C1-1662 to C1-1792 metres or thereby, construct a reinforced concrete flood defence wall up to 0.45 metres above the existing embankment crest level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Fell up to 30 trees with DBH greater than 100mm and replace with at least 60 trees within 100 metres of the felling location. All as shown on the said plan marked WN/SFPD/EWP/007 and as typically detailed on Section 12-EWP on the said plan WN/SFPD/EWP/007.

**EWP23** From chainage C2-0 to C2-131 metres or thereby, demolish the existing training and retaining walls where necessary and construct a flood defence wall up to 0.65 metres above existing ground level (private garden level), with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0m below existing ground level where the top of the wall is greater than 0.575m above existing garden level. Provide a linear filter drain along the back of the wall with outfalls through the wall to the Mill Lade at intervals not exceeding 50 metres. Equip the outfalls with non-return or flap valves. Exposed sections of the flood defence wall to be finished in formed concrete on the Mill Lade facing side of the wall and reconstituted stone walling on the private garden facing side with complimentary precast concrete coping. Demolish or take down all existing boundary features

adjacent to the Mill Lade where necessary. Scheme of soft landscaping reinstatement to private gardens to be agreed with the landowners, including features to ensure that adequate provision is made to preserve public safety adjacent to the wall. All as shown on the said plan marked WN/SFPD/EWP/007 and as typically detailed on Section 12-EWP on the said plan WN/SFPD/EWP/007.

**EWP24** From chainage C1-1792 to C1-2013 metres or thereby, construct a reinforced concrete flood defence wall up to 0.75 metres above the existing embankment crest level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Fell up to 25 trees with DBH greater than 100mm and replace with at least 50 trees within 250 metres of the felling location. All as shown on the said plan marked WN/SFPD/EWP/008 and as typically detailed on Section 13-EWP on the said plan WN/SFPD/EWP/008.

**EWP25** From chainage C2-131 to C2-390 metres or thereby, demolish the existing training and retaining walls where necessary and construct a flood defence wall up to 1.6 metres above existing ground level (private garden level), with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0m below existing ground level. Provide a linear filter drain along the back of the wall with outfalls through the wall to the Mill Lade at intervals not exceeding 50 metres. Equip the outfalls with non-return or flap valves. Tie the flood defence wall into the south western face of the northern abutment of the existing vehicle bridge carrying the A707 across the Ettrick Water. Exposed sections of the flood defence wall to be finished in formed concrete on the Mill Lade facing side of the wall and reconstituted stone walling on the private garden facing side with complimentary precast concrete coping. Demolish or take down all existing boundary features and outbuildings within private gardens adjacent to the Mill Lade where necessary. Scheme of soft landscaping reinstatement to private gardens to be agreed with the landowners, including features to ensure that adequate provision is made to preserve public safety adjacent to the wall. All as shown on the said plan marked WN/SFPD/EWP/008 and as

typically detailed on Section 13-EWP on the said plan WN/SFPD/EWP/007.

**EWP26** From chainage C3-0 to C3-183 metres or thereby, provide toe reinforcement works to the gabions which form part of the existing Ettrick & Yarrow Flood Prevention Scheme 1979. The toe reinforcement shall generally consist of rip rap rock armouring to a level not exceeding 0.75 metres above the mean bed level of the Ettrick Water at the foot of the gabions and minor repair works to existing gabion baskets all as shown on the said plan marked WN/SFPD/EWP/009 and as typically detailed on Section 14-EWR on the said plan marked WN/SFPD/EWP/009. Maintain the current temporary access track from the A708 to enable access to construct the toe protection works, as shown on the said plan marked WN/SFPD/EWP/009 and WN/SFPD/EWP/010.

**Note:** The existing Ettrick & Yarrow Flood Prevention Scheme, promoted by the Borders Regional Council in 1979 and constructed in 1983, shall be superseded by the flood protection operations described in operations EWP01 to EWP24 inclusive. It is hereby proposed that the Ettrick & Yarrow Flood Prevention Scheme 1979 shall be removed from the Register of Flood Prevention Schemes in Scotland.

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The benefits of the said operations at Ettrick Water (Philiphaugh) are as follows:

- To protect approximately 47 residential, commercial, community and agricultural properties from the effects of flooding up to and including the 1 in 200 year plus climate change flood event on the Ettrick and Yarrow Waters.
- To protect over 30 hectares of agricultural land from the effects of flooding up to and including the 1 in 200 year plus climate change flood event on the Ettrick and Yarrow Waters.
- To protect over 6 hectares of recreational ground at the Selkirk Rugby Club, Cricket Club and Football Club from the effects of flooding up to and including the 1 in 200 year plus climate change flood event on the Ettrick and Yarrow Waters.

- To protect a low lying section of the main A708 Selkirk to Moffat Road from the effects of flooding up to and including the 1 in 200 year plus climate change flood event on the Etrick and Yarrow Waters

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**Ettrick Water (Riverside)**

The Operations to be carried out in terms of the Scheme adjacent to the Ettrick Water at Riverside are as follows. Note chainage D1 extends from upstream of Victoria Park to downstream of the Community Recycling Centre.

**EWR01** From chainage D1-11 to D1-30 metres or thereby, construct a flood defence embankment up to 0.50 metres or thereby above existing ground level. The flood defence embankment shall have a 1.0 metre wide crest and a maximum base width of 8.0 metres or thereby. Provide a seepage cut off to a depth not exceeding 15.0m below existing ground level. Take up the existing 2.0m wide tarmacadam footpath where necessary and replace with a 2.0m wide tarmacadam footpath. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the western facing side of the embankment below the topsoil layer. Fell 1 tree with DBH<sup>2</sup> greater than 100 millimetres and replace with at least 2 trees within 50 metres or thereby of the felling locations. The embankment shall be topsoiled and grass seeded. Divert or protect the Scottish Water apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/002.

**EWR02** From chainage D1-30 to D1-150 metres or thereby, construct a flood defence embankment up to 1.20 metres or thereby above existing ground level. The flood defence embankment shall have a 1.0 metre wide crest and a maximum base width of 17.0 metres or thereby. Provide a seepage cut off to a depth not exceeding 15.0m below existing ground level. Provide rip rap erosion protection to the toe of the western facing side of the flood defence embankment up to 2.0 metres above the mean level of the Ettrick Water river bed along the length of this operation. Take up parts of the existing 3.0m wide tarmacadam footpath where necessary and replace with a 3.0m wide tarmacadam footpath where necessary. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the north western side of the embankment below the topsoil layer. Provide gullies in the replacement footpath at chainages D-30, D80 and

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<sup>2</sup> Diameter at Breast Height

D-130 metres or thereby, with outfalls to the Ettrick Water beneath the embankment. Equip the outfalls with non-return or flap valves. Fell up to 7 trees with DBH greater than 100 millimetres and replace with at least 14 trees within 100 metres or thereby of the felling locations. The embankment shall be topsoiled and grass seeded. Divert or otherwise protect the Scottish Water apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/002 and as typically detailed on Section 1-EWR on the said plan WN/SFPD/EWR/002.

**EWR03** From chainage D1-150 to D1-310 metres or thereby, construct a flood defence embankment up to 1.70 metres or thereby above existing ground level. The flood defence embankment shall have a 1.0 metre wide crest and a maximum base width of 10.0 metres or thereby. Provide a seepage cut off to a depth not exceeding 15.0m below existing ground level. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the west north western facing side of the embankment below the topsoil layer. Take up the existing 3.0m wide tarmacadam footpath where necessary and replace with a 3.0m wide tarmacadam footpath. Provide gullies in the replacement footpath at centres no greater than 50 metres apart or thereby, with outfalls to the Ettrick Water beneath the embankment. Equip the outfalls with non-return or flap valves. Fell up to 5 trees with DBH greater than 100 millimetres and replace with at least 10 trees within 100 metres or thereby of the felling locations. The embankment shall be topsoiled and grass seeded. Divert or otherwise protect the Scottish Water apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. The embankment shall be topsoiled and grass seeded. All as shown on the said plan marked WN/SFPD/EWR/002 and as typically detailed on Section 2-EWR on the said plan WN/SFPD/EWR/002.

**EWR04** From chainage D1-310 to D1-357 metres or thereby, construct a flood defence embankment up to 1.95 metres or thereby above existing ground level. The flood defence embankment shall have a 1.0 metre wide crest and a maximum base width of 11.0 metres or thereby. Provide a seepage

cut off to a depth not exceeding 15.0m below existing ground level. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide erosion protection geotextile on the west north western facing side of the embankment below the topsoil layer. Take up the existing 3.0m wide tarmacadam footpath where necessary and replace with a 3.0m wide tarmacadam footpath. Provide gullies in the replacement footpath at centres no greater than 50 metres apart or thereby, with outfalls to the Ettrick Water beneath the embankment. Equip the outfalls with non-return or flap valves. The embankment shall be topsoiled and grass seeded. Divert or otherwise protect the Scottish Water and Scotia Gas Networks apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. Gradually taper the northern end of the embankment at a gradient of 1 in 5 or thereby from flood defence level to ground level and tie in / overlap with Operation EWR07. The embankment shall be topsoiled and grass seeded. All as shown on the said plan marked WN/SFPD/EWR/ 003.

- EWR05** At chainage D1-370 metres or thereby, and tying in to operation EWR06, construct a flood defence gate, 1.5 metres or thereby above existing ground level. The gate shall be at least 1.5 metres wide and no greater than 2.0 metres wide and shall consist of a hinged gate with appropriate seals, gaskets and locking devices. The gate shall be painted with an appropriate coating system. Appropriate flood warning signs shall be erected. Divert or otherwise protect the Scottish Water, BT Openreach, Scottish Power Energy Networks and Scotia Gas Networks apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/003.
- EWR06** At chainage D1-375 metres or thereby, carry out strengthening works to the 2 no. existing abutments and 5 no. existing intermediate piers on which the Bridge Street footbridge rests, as shown on the plan marked WN/SFPD/EWR/ 003.
- EWR07** From chainage D1-357 to D1-520 metres or thereby (with EWR05 incorporated into this flood protection operation at chainage D1-370 metres or thereby), construct a reinforced concrete flood defence wall up to 1.9 metres or thereby above existing ground level with a maximum

structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 15.0m below existing ground level. Provide road drainage gullies at intervals not exceeding 20 metres on the western side of Riverside Road with carrier drains to outfalls passing through the wall to discharge into the Ettrick Water. Outfalls shall be provided at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. Exposed sections of the flood defence wall to be clad with natural or reconstituted cast stone on both sides and equipped with complimentary natural or cast stone coping. Take up the existing 3.0 metre or thereby wide tarmacadam public footpath where necessary and replace with a 3.0m wide or thereby tarmacadam footpath. Take up parts of Riverside Road where required and realign if required and reinstate to the satisfaction of the Scottish Borders Council Roads Authority. Divert or otherwise protect the Scottish Water, BT Openreach, Scottish Power Energy Networks and Scotia Gas Networks apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/003 and as typically detailed on Section 3-EWR on the said plan WN/SFPD/EWR/003.

**EWR08** From chainage D1-520 to D1-630 metres or thereby, construct a reinforced concrete flood defence wall up to 1.6 metres or thereby above existing ground level with a maximum width above ground level of a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level. Provide road drainage gullies at intervals not exceeding 20 metres on the western side of Riverside Road with carrier drains to outfalls passing through the wall to discharge into the Ettrick Water (carrier drains shall link with carrier drains described in operation EWR10). Outfalls shall be provided at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. Exposed sections of the flood defence wall to be clad with natural or cast stone on both sides and equipped with complimentary natural or cast stone coping. Take up the existing 2.0 metre or thereby wide tarmacadam public footpath and replace with a 2.0m wide or thereby tarmacadam footpath. Take up parts of Riverside Road where required and reinstate to the satisfaction of the

Scottish Borders Council Roads Authority. Divert or otherwise protect the Scottish Water and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/003 and as typically detailed on Section 4-EWR on the said plan WN/SFPD/EWR/003.

**EWR09** At chainage D1-635 metres or thereby, and tying in to operations EWR08 and EWR10, construct a flood defence gate, 1.6 metres or thereby above existing ground level. The gate shall be at least 3.5 metres wide and no greater than 4.0 metres wide and shall consist of a hinged gate or pair of hinged gates with appropriate seals, gaskets, support struts and locking devices. The gate or gates shall be painted dark grey with an appropriate coating system and shall be suitable for large scale equestrian passage. Divert or otherwise protect the Scottish Water and Scotia Gas Networks apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/004.

**EWR10** From chainage D1-630 to D1-682 metres or thereby, construct a reinforced concrete flood defence wall up to 1.6 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level. Provide road drainage gullies at intervals not exceeding 20 metres on the western side of Riverside Road with carrier drains to outfalls passing through the wall to discharge into the Ettrick Water (carrier drains shall link with those described in operations EWR08 and EWR11). Outfalls shall be provided at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. Exposed sections of the flood defence wall to be clad with natural or cast stone on both sides and equipped with complimentary natural or cast stone coping. Take up the existing 2.0 metre or thereby wide tarmacadam public footpath and replace with a re-aligned 2.0m wide or thereby tarmacadam footpath. Footpath to rise up to meet flood defence embankment described in operation EWR11, gradient of footpath to be no steeper than 1 in 20. Remove the existing decorative hedge along the western edge of Riverside Road. Take up parts of Riverside Road where

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required and reinstate to the satisfaction of the Scottish Borders Council Roads Authority. Divert or otherwise protect the Scottish Water, Scottish Power, SBC Street Lighting and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/004 and as typically detailed on Section 5-EWR on the said plan WN/SFPD/EWR/004.

- EWR11** From chainage D1-682 to D1-912 metres or thereby, construct a flood defence embankment up to 2.40 metres or thereby above existing ground level. The flood defence embankment shall have a 2.5 metre wide crest and a maximum base width of 18.0 metres or thereby. Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Take up the existing 2.0 metre wide tarmacadam footpath adjacent to the Ettrick Water river bank and create a level grassed area in place of the footpath. Provide a 1.75 metre wide public footpath on top of the proposed flood defence embankment. Provide road drainage gullies at intervals not exceeding 20 metres on the western side of Riverside Road with carrier drains to outfalls passing through the wall to discharge into the Ettrick Water (carrier drains shall link with those described in operations EWR10 and EWR12). Outfalls shall be provided at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. The embankment shall be topsoiled and grass seeded. Remove the existing decorative hedge and post and wire fence along the western edge of Riverside Road and replace with suitable screening vegetation and fencing. Take up the existing hammerhead turning area at chainage D1-745 metres or thereby and infill with appropriate verge works on the Riverside Road side. Fell up to 1 tree with DBH greater than 100 millimetres and replace with at least 2 trees within 10 metres or thereby of the felling locations. Divert or otherwise protect the Scottish Water, Scottish Power, SBC Street Lighting and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Gradually taper the southern end of the embankment at a gradient no steeper than 1 in 20 from flood defence level to ground level and tie in / overlap with operation EWR10. All as shown on the said plan

marked WN/SFPD/EWR/004 and as typically detailed on Section 6-EWR on the said plan WN/SFPD/EWR/004.

- EWR12** From chainage D1-912 to D1-960 metres or thereby, construct an access embankment up to 2.30 metres or thereby above existing ground level. Take up the existing 2.0 metre wide tarmacadam footpath adjacent to the Ettrick Water river bank and create a level grassed area in place of the footpath. Construct a new footpath on the access embankment footpath to rise up to meet flood defence embankment described in operation EWR11, gradient of footpath to be no steeper than 1 in 20. Construct the footpath such that the proposed finished footpath level shall be no greater than 1.6m below the top of the flood defence wall. Divert or otherwise protect the Scottish Water, Scottish Power and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/004.
- EWR13** From chainage D1-912 to D1-970 metres or thereby, construct a reinforced concrete flood defence wall up to 2.40 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level. Provide road drainage gullies at intervals not exceeding 20 metres on the western side of Riverside Road with carrier drains to outfalls passing through the wall to discharge into the Ettrick Water (carrier drains shall link with those described in operations EWR11 and EWR14). Outfalls shall be provided at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. Exposed sections of the flood defence wall shall be finished in formed concrete both sides. The proposed finished footpath level shall be no greater than 1.6m below the top of the flood defence wall. The wall shall be equipped with a complimentary precast concrete coping. Take up the existing 2.0 metre wide tarmacadam footpath adjacent to the Ettrick Water river bank and create a level grassed area in place of the footpath. Remove the existing decorative hedge and post and wire fence along the western edge of Riverside Road and replace with suitable screening vegetation and fencing. Take up parts of Riverside Road where required and reinstate to the satisfaction of the Scottish Borders Council Roads

Authority. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/004.

**EWR14** From chainage D1-970 to D1-980 metres or thereby, construct a reinforced concrete flood defence wall up to 2.3 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 15.0 metres below existing ground level. Provide road drainage gullies at intervals not exceeding 20 metres on the western side of Riverside Road with carrier drains to outfalls passing through the wall to discharge into the Ettrick Water (carrier drains shall link with those described in operation EWR13). Outfalls shall be provided at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. Exposed sections of the flood defence wall shall be finished in formed concrete on both sides. The wall shall be equipped with a complimentary precast concrete coping. Take up the existing 2.0 metre wide or thereby tarmacadam footpath to facilitate construction of the defence wall and replace with a 2.0 metre wide tarmacadam footpath. The proposed finished footpath level shall be no greater than 1.6m below the top of the flood defence wall. Remove the existing decorative hedge and post and wire fence along the western edge of Riverside Road and replace with suitable screening vegetation and fencing. Take up parts of Riverside Road where required and reinstate to the satisfaction of the Scottish Borders Council Roads Authority. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/005.

**EWR15** At chainage D1-980 metres or thereby, and tying in to operations EWR14 and EWR16, construct a flood defence gate, 2.1 metres or thereby above existing ground level. The gate shall be at least 1.5 metres wide and no greater than 2.0 metres wide and shall consist of a hinged gate with

appropriate seals, gaskets and locking devices. The gate shall be painted dark grey with an appropriate coating system. Appropriate flood warning signs shall be provided when the gate is closed. Divert or otherwise protect the Scottish Water, SBC street lighting and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/005.

**EWR16** From chainage D1-980 to D1-1220 metres or thereby, construct a reinforced concrete flood defence wall up to 2.4 metres or thereby above existing ground level with a maximum width above ground level of 0.3 metres or thereby. Provide a seepage cut off to a depth not exceeding 15.0 metres below existing ground level. From chainage D1-980 to D1-1165 metres or thereby, provide a linear filter trench drainage system on the south eastern side of the wall. From chainage D1-1165 to D1-1220 metres or thereby, upgrade the existing drainage to the adjacent access road / car park with new gullies and carrier pipes. From chainage D1-980 to D1-1220 metres or thereby, and connecting to the drainage works described in this operation, provide outfalls discharging to the Ettrick Water at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. Exposed sections of the flood defence wall shall be finished in formed concrete on the north western facing side and plain concrete on the south eastern facing side. The wall shall be equipped with a complimentary precast concrete coping. Take up the existing 2.0 metre wide or thereby tarmacadam footpath to facilitate construction of the defence wall and replace with a 2.0 metre wide tarmacadam footpath. The proposed finished footpath level shall be no greater than 1.6m below the top of the flood defence wall. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/005 and as typically detailed on sections 7-EWR and 8-EWR on the said plan marked WN/SFPD/ EWR/005.

**EWR17** From chainage D1-1220 to D1-1520 metres or thereby, construct a reinforced concrete flood defence wall up to 2.4 metres or thereby above existing ground level with a maximum structural width above ground level

of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 15.0 metres below existing ground level. From chainage D1-1220 to D1-1250 metres, connect into the drainage works described in operation EWR16 and upgrade the existing drainage to the adjacent access road / car park with new gullies and carrier pipes to outfalls passing through the wall to discharge into the Ettrick Water. Outfalls shall be provided at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. From chainage D1-1220 to D1-1262 metres or thereby, exposed sections of the flood defence wall shall be finished in formed concrete on the north western facing side and plain concrete on the south eastern facing side. From chainage D1-1266 to D1-1520 metres or thereby, exposed sections of the flood defence wall shall be finished in plain concrete on the north western facing side and formed concrete on the south eastern facing side. The wall shall be equipped with a complimentary precast concrete coping. Generally from chainage D1-1220 to D1-1340 metres or thereby, take up the existing 2.0 metre wide or thereby tarmacadam footpath to facilitate construction of the defence wall and replace with a 2.0 metre wide tarmacadam footpath. The proposed finished footpath level shall be no greater than 1.6m below the top of the flood defence wall. Generally from chainage D1-1340 to D1-1520 metres or thereby, reinstate the existing access road where required, allowing a 0.5 metre wide verge between the south eastern face of the flood defence wall and realigned road kerb. Accordingly reduce the width of the access road by no more than 0.25 metres. Fell up to 8 trees with DBH greater than 100 millimetres and replace with at least 16 trees within 250 metres or thereby of the felling location. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/006 and as typically detailed on sections 9-EWR and 10-EWR on the said plan marked WN/SFPD/EWR/006.

- EWR18** From chainage D1-1225 to D1-1310 metres or thereby, construct a new access ramp to ensure that use of the Riverside Road footbridge is not adversely affected by the flood protection operations described in operation EWR17. Construct a new 2.0 metre wide tarmacadam footpath,

27m or thereby in length to connect the footbridge to the proposed footpath described in operation EWR17 to ensure Disability Discrimination Act compliance and also construct a separate link between the footbridge and the proposed footpath with steps. Construct an embankment to enable the proposed footpath described in operation EWR17 to cross the flood defence wall. All proposed footpaths shall have longitudinal gradients no steeper than 1 in 20. All as shown on the said plan marked WN/SFPD/EWR/006 and as typically detailed on section 9-EWR on the said plan marked WN/SFPD/ EWR/006.

- EWR19** At a perpendicular offset distance of 77 metres or thereby from chainage D1-1470 metres, construct a shallow sump in the existing car park which is specifically designated for a mobile pump to be deployed as shown on the said plan marked WN/SFPD/EWR/006. The sump shall be constructed at the low point in the car park and shall be capable of being safely traversed by articulated goods vehicles.
- EWR20** From chainage D1-1520 to D1-1851 metres or thereby, construct a reinforced concrete flood defence wall up to 2.3 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 15.0 metres below existing ground level. From chainage D1-1520 to D1-1665 metres or thereby, connect into the drainage works described in operation EWR17 and upgrade the existing drainage to the adjacent access road / car park with new gullies at 20 metre centres or thereby and carrier pipes to outfalls passing through the wall to discharge into the Etrick Water. Outfalls shall be provided at intervals not exceeding 100 metres. Equip the outfalls with non-return or flap valves. Exposed sections of the flood defence wall shall be finished in plain concrete on the north western facing side and formed concrete on the south eastern facing side. The wall shall be equipped with a complimentary precast concrete coping. Generally from chainage D1-1520 to D1-1665 metres or thereby, reinstate the existing access road where required, allowing a 0.5 metre wide verge between the south eastern face of the flood defence wall and realigned road kerb. Accordingly reduce the width of the access road by no more than 0.25 metres. From chainage D1-1665 to D1-1851 metres or thereby, take up the existing 1.3 metre wide or thereby tarmacadam footpath to

facilitate construction of the defence wall and replace with a 1.3 metre wide tarmacadam footpath. The proposed finished footpath level shall be no greater than 1.6m below the top of the flood defence wall. From chainage D1-1600 to D1-1665 metres or thereby, take down the existing steel palisade security fence. Fell up to 20 trees with DBH greater than 100 millimetres and replace with at least 40 trees within 250 metres or thereby of the felling location. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/007 and as typically detailed on sections 11-EWR and 12-EWR on the said plan marked WN/SFPD/ EWR/007.

**EWR21** From chainage D1-1570 to D1-1710 metres or thereby, regrade the existing highly erodible and undercut river bank to an angle not greater than 30 degrees to the horizontal. Fell up to 35 trees to facilitate these works and retreat the top of bank alignment by no more than 5.0 metres from existing. Construct a new river bank, at an angle of up to 40 degrees or thereby to the horizontal using structural fill material and geogrids. Place rip rap rock armour to the toe of the new embankment, up to 2.0 metres above the mean level of the Ettrick Water river bed along the length of this operation. Provide erosion protection geotextiles over the full extent of the new embankment and implement a scheme of planting to allow the river bank vegetation to colonise as soon as possible. All as shown on the said plan marked WN/SFPD/EWR/007 and as typically detailed on section 11-EWR on the said plan marked WN/SFPD/ EWR/007.

**EWR22** From chainage D1-1851 to D1-1905 metres or thereby, construct a reinforced concrete flood defence wall up to 1.4 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 15.0 metres below existing ground level. Exposed sections of the flood defence wall shall be finished in plain concrete on the north western facing side and formed concrete on the south eastern facing side. The wall shall be equipped with a complimentary precast concrete coping.

Take up the existing 1.3 metre wide or thereby tarmacadam footpath to facilitate construction of the defence wall and replace with a 1.3 metre wide tarmacadam footpath. Fell up to 10 trees with DBH greater than 100 millimetres and replace with at least 20 trees within 250 metres or thereby of the felling location. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/008 and as typically detailed on section 13-EWR on the said plan marked WN/SFPD/ EWR/008.

**EWR23** From chainage D2-0 to D2-178 metres or thereby, construct a reinforced concrete flood defence wall up to 1.0 metre or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level, except where the wall crosses the existing Shaw Burn culvert at chainage D2-160 metres or thereby. Exposed sections of the flood defence wall shall be finished in formed concrete on both sides. The wall shall be equipped with a complimentary precast concrete coping. Fell up to 10 trees with DBH greater than 100 millimetres and replace with at least 20 trees within 50 metres or thereby of the felling location. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/008 and as typically detailed on section 14-EWR on the said plan marked WN/SFPD/ EWR/008.

**EWR24** At a perpendicular offset distance of 18 metres or thereby from chainage D2-88 metres or thereby, construct a shallow sump in the existing entrance to the Belmont Motors site which is specifically designated for a mobile pump to be deployed as shown on the said plan marked WN/SFPD/EWR/008. The sump shall be constructed at the low point in the access road and shall be capable of being safely traversed by all types of vehicle, including articulated goods vehicles.

- EWR25** From chainage D3-0 to D3-77 metres or thereby, raise the existing embankment on the left hand bank of the Shaw Burn by up to 1.1 metres or thereby above existing ground level. Fell up to 10 trees with DBH greater than 100 millimetres and replace with at least 20 trees within 50 metres or thereby of the felling location. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWR/008 and as typically detailed on section 14-EWR on the said plan marked WN/SFPD/ EWR/008.
- EWR26** From chainage D1-1935 to D1-1969 metres or thereby, install a 1.6m diameter culvert to tie in with the downstream end of the existing corrugated arch culvert which carries the access to the Baxters retail unit across the Shaw Burn and to tie in with the upsteam end of the corrugated arch culvert which carries the access to the Co-op NGT site across the Shaw Burn. The culvert shall be backfilled with suitable fill material to be level with the surrounding existing ground profile, topsoiled and seeded. All as shown on the said plan marked WN/SFPD/EWR/009.
- EWR27** From chainage D1-2030 to D1-2230 metres or thereby, construct a reinforced concrete flood defence wall up to 1.9 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level, except where the wall crosses the existing Shaw Burn culvert at chainage D1-2040 metres or thereby. Exposed sections of the flood defence wall shall be finished in formed concrete on both sides. The wall shall be equipped with a complimentary precast concrete coping. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Upgrade the existing road drainage and outfalls through provision of non-return or flap valves to existing outfalls. All as shown on the said plan marked WN/SFPD/EWR/008 and as typically detailed on section 14-EWR on the said plan marked WN/SFPD/EWR/008.

The benefits of the said operations at Ettrick Water (Riverside) are as follows:

- To protect approximately 335 residential, community and commercial properties from the effects of flooding up to and including the 1 in 500 year plus climate change flood event on the Ettrick Water.
- As a by-product of the intention to defend the existing properties and businesses, the flood protection proposed has the potential to permit the economic regeneration of areas of the Riverside which are currently unable to be developed due to the inherent flood risk.

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**Etrick Water (Bannerfield)**

The Operations to be carried out in terms of the Scheme adjacent to the Etrick Water and Long Philip Burn at Bannerfield are as follows:

**EWB01** From the end of operation LPB23, from chainage E1-0 to E1-160 metres or thereby, construct a flood defence embankment up to 1.70 metres or thereby above existing ground level. The flood defence embankment shall have a 2.5 metre wide crest or thereby and a maximum base width of 12.0 metres or thereby. Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Take up the existing informal unbound footpath adjacent to the Etrick Water river bank replace with a new unbound granular path on the top of the embankment, minimum width to be 1.5m. Provide a filter trench at the eastern toe of the embankment, complete with carrier drains to outfalls at 50 metre centres or thereby. Outfalls to pass beneath the embankment to discharge into the Etrick Water (carrier drains shall link with those described in operations LPB23 and EWB02, 03 and 05). Equip the outfalls with non-return or flap valves. The sides of the embankment shall be topsoiled and grass seeded. Relocate the existing picnic benches. Divert or otherwise protect any service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWB/002 and as typically detailed on Section 1-EWB on the said plan WN/SFPD/EWB/002

**EWB02** From chainage E1-160 to E1-186 metres or thereby, construct a reinforced concrete flood defence wall up to 1.60 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level. Exposed sections of the flood defence wall shall be finished in formed concrete on both sides. The wall shall be equipped with a complimentary precast concrete coping. Provide a new 1.5m wide tarmacadam footpath to replace the existing informal grassed track to connect with the end of the footpath described in operation EWB01.

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Gradient on the footpath shall be no steeper than 1 in 20. Fell up to 3 trees with DBH greater than 100 millimetres and replace with at least 6 trees within 10 metres or thereby of the felling location. Divert or otherwise protect any service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWB/002.

**EWB03**

From chainage E1-186 to E1-260 metres or thereby, construct a reinforced concrete flood defence wall up to 1.85 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level. Exposed sections of the flood defence wall shall be finished in formed concrete on both sides. The wall shall be equipped with a complimentary precast concrete coping. Provide a new 1.5m wide tarmacadam footpath to replace the existing informal grassed track to connect with the end of the footpath described in operation EWB02. The proposed finished footpath level shall be no greater than 1.6m below the top of the flood defence wall. Provide gullies at low points on or near the new footpath, complete with carrier drains to outfalls at 50 metre centres or thereby. Outfalls to pass beneath the wall to discharge into the Ettrick Water (carrier drains shall link with those described in operations EWB02 and 05). Equip the outfalls with non-return or flap valves. Fell up to 20 trees with DBH greater than 100 millimetres and replace with at least 40 trees within 50 metres or thereby of the felling location. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which may run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWB/002 and as typically detailed on Section 2-EWB on the said plan WN/SFPD/EWB/002.

**EWB04**

From chainage E1-210 to E1-260 metres or thereby, take up the existing eroded river bank and replace with a new uniformly graded river bank, complete with erosion protection measures. Such erosion protection measures shall consist of large boulders at the toe of the

slope and erosion protection geotextile along the bank slope, beneath the topsoil layer. The slope shall be topsoiled, seeded and planted with small shrubs and trees to encourage stabilisation of the new bank. Fell up to 15 trees with DBH greater than 100 millimetres and replace with at least 30 trees of appropriate species on the slope of the embankment. All as shown on the said plan marked WN/SFPD/EWB/002 and as typically detailed on Section 2-EWB on the said plan WN/SFPD/EWB/002.

**EWB05**

From chainage E1-260 to E1-315 metres or thereby, construct a reinforced concrete flood defence wall up to 1.4 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 15.0 metres below existing ground level. Exposed sections of the flood defence wall shall be finished in formed concrete on both sides. The wall shall be equipped with a complimentary precast concrete coping. Provide a new 1.5m wide tarmacadam footpath to replace the existing informal grassed track / tarmacadam footpath to connect with the end of the footpath described in operation EWB03. Provide gullies at low points on or near the new footpath, complete with carrier drains to outfalls at 50 metre centres or thereby. Outfalls to pass beneath the wall to discharge into the Ettrick Water (carrier drains shall link with those described in operation EWB03). Equip the outfalls with non-return or flap valves. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus or any other service or utility which may run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWB/003 and as typically detailed on Section 3-EWB on the said plan WN/SFPD/EWB/003.

**EWB06**

From chainage E1-260 to E1-315 metres or thereby, take up the existing eroded river bank and replace with a new uniformly graded river bank, complete with erosion protection measures. Such erosion protection measures shall consist of large boulders at the toe of the slope and erosion protection geotextile along the bank slope, beneath the topsoil layer. The slope shall be topsoiled, seeded and planted

with small shrubs and trees to encourage stabilisation of the new bank. Fell up to 18 trees with DBH greater than 100 millimetres and replace with at least 36 trees of appropriate species on the slope of the embankment. From chainage E1-315 to E1 340 metres, provide large boulder protection to the toe of the existing slope only. All as shown on the said plan marked WN/SFPD/EWB/002 and as typically detailed on Section 2-EWB on the said plan WN/SFPD/EWB/002.

**EWB07**

At chainage E1-315 metres or thereby, and tying in to operation EWB06 and EWB08, construct a flood defence gate, 1.4 metres or thereby above existing ground level. The gate shall be at least 1.5 metres wide and no greater than 2.0 metres wide and shall consist of a hinged gate with appropriate seals, gaskets and locking devices. The gate shall be painted with an appropriate coating system. Appropriate flood warning signs shall be erected. Divert or otherwise protect the Scottish Water, BT Openreach, Scottish Power Energy Networks and Scotia Gas Networks apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWB/003.

**EWB08**

From chainage E1-315 to E1-471 metres or thereby, construct a reinforced concrete flood defence wall up to 1.65 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Provide a seepage cut off to a depth not exceeding 15.0 metres below existing ground level. Exposed sections of the flood defence wall shall be finished in formed concrete on both sides. The wall shall be equipped with a complimentary precast concrete coping. Provide a new 1.5m wide tarmacadam footpath to replace the existing 1.0m wide tarmacadam footpath. The proposed finished footpath level shall be no greater than 1.6m below the top of the flood defence wall. Provide gullies at low points on or near the new footpath, complete with carrier drains to outfalls at 50 metre centres or thereby. Outfalls to pass beneath the wall to discharge into the Ettrick Water (carrier drains shall link with those described in operation EWB10). Equip the outfalls with non-return or flap valves. Divert or otherwise protect the Scottish Water

apparatus and any other service or utility which may run in the vicinity of this operation in accordance with the Service Provider requirements. Ensure that all existing accesses to the footpath from the Corbie Terrace properties are maintained. All as shown on the said plan marked WN/SFPD/EWB/003 and as typically detailed on Section 3-EWB on the said plan WN/SFPD/EWB/003.

**EWB09** From chainage E1-440 to E1-471 metres or thereby, construct a pair of access ramps to negotiate the proposed flood defence wall. The ramps shall have a gradient no steeper than 1 in 12 (shallower slope than other gradients on this footpath) and shall be surfaced in tarmac. The existing post and wire fence which runs parallel to the footpath to the north of the northernmost Corbie Terrace property shall be extended to prevent access to the embankment described in operation EWB10. All as shown on the said plan marked WN/SFPD/EWB/003.

**EWB010** From chainage E1-471 to E1-608 metres or thereby, construct a flood defence embankment up to 1.00 metre or thereby above existing ground level. The flood defence embankment shall have a 0.5 metre wide crest or thereby and a maximum base width of 12.0 metres or thereby. Provide a seepage cut off to a depth not exceeding 10.0 metres below existing ground level. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Provide a filter trench at the eastern toe of the embankment, complete with a carrier drain running parallel to the embankment. Outfall to pass beneath the flood wall described in operation EWB09 to discharge into the Ettrick Water (carrier drains shall link with those described in operations EWB08). Equip the outfalls with non-return or flap valves. The sides of the embankment shall be topsoiled and grass seeded. Divert or otherwise protect the Scottish Water apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/EWB/003 and as typically detailed on Section 4-EWB on the said plan WN/SFPD/EWB/003.

The benefits of the said operations at Ettrick Water (Bannerfield) are as follows:

- To protect approximately 130 residential and commercial properties (including a primary school and a care home for the elderly) from the effects of flooding up to and including the 1 in 200 year plus climate change flood event on the Ettrick Water.
- Improve the connectivity between the Bridge Street footbridge and the Long Philip Burn river restoration.

## Long Philip Burn

The Operations to be carried out in terms of the Scheme adjacent to the Long Philip Burn are as follows.

- LPB01** At chainage F1-40 metres or thereby, excavate the existing river bank and construct an overflow spillway to convey excess flow from the Long Philip Burn onto Corby Linn Road. The structure shall be 5 metres wide or thereby and shall consist of reinforced concrete head walls and toe beams with a proprietary tied concrete block base to the spillway for scour protection during operation. The overflow level and spillway base level shall be 132.80 metres aOD or thereby. Fell up to 3 trees with DBH greater than 100 millimetres and replace with at least 6 trees within 25 metres or thereby of the felling location. All as shown on the said plan marked WN/SFPD/LPB/002 and as typically detailed on section 1-LPB on the said plan marked WN/SFPD/ LPB/002.
- LPB02** From chainage F1-40 to F1-70 metres or thereby, take up the existing surface of the access track which runs due west of the Corby Linn Road bridge and replace with suitable crushed rock sub-base and bituminous base course and wearing courses. Ensure that the gradient of the track falls away from the Long Philip Burn. Key the new surfacing into the existing flexibly surfaced Corby Linn Road at chainage F1-70 metres or thereby. Construct a low height earth bund along the right hand bank of the Long Philip Burn from the proposed spillway to the parapet of the Corby Linn Bridge. All as shown on the said plan marked WN/SFPD/LPB/002.
- LPB03** At a perpendicular offset distance of 13 metres or thereby from chainage F1-70 metres, demolish the existing badly damaged western facing parapet of the Corby Linn Road Bridge and reconstruct to the same height above carriageway level as the existing parapet. Curve the parapet around to extend 2 metres or thereby upstream of the bridge to contain flood water. Upgrade local road drainage to permit road and car park runoff to flow unhindered into the burn. Parapet to be constructed in reinforced concrete with stone cladding and coping to match existing where possible. All as shown on the said plan marked WN/SFPD/LPB/002.

- LPB04** From chainage F1-70 to F1-230 metres or thereby, carry out local alterations to the drainage paths from or on to the Corby Linn Road to ensure that all overspill flow arising from the implementation of operation LPB01 re-enters the Long Philip Burn downstream of the Ravensheugh dwellinghouse. Resurface the carriageway where surface damage or irregularities have appeared. All as shown on the said plan marked WN/SFPD/LPB/002.
- LPB05** From chainage F1-230 to F1-361 metres or thereby, carry out local alterations to the drainage paths from or on to the Corby Linn Road to ensure that all overspill flow arising from the implementation of operation LPB01 re-enters the Long Philip Burn downstream of the Ravensheugh dwellinghouse. Resurface the carriageway where surface damage or irregularities have appeared. All as shown on the said plan marked WN/SFPD/LPB/003.
- LPB06** From chainage F1-361 to F1-409 metres or thereby, re-grade Corby Linn Road to increase the height of the carriageway to ensure all flood waters travelling down the Corbie Linn Road from operation LPB01 are prevented from reaching the A708. The maximum height of the carriageway shall be 0.65 metres or thereby above existing road levels, with approach ramps to the raised section not exceeding a gradient of 10%. Construct a new reinforced concrete retaining wall to retain the raised road foundations on the south side of the carriageway. Construct a grassed swale in the verge on the north side of the carriageway to guide normal surface water into operation LPB07. Resurface the carriageway in tarmac. All as shown on the said plan marked WN/SFPD/LPB/003 and as typically detailed on section 2-LPB on the said plan marked WN/SFPD/ LPB/003.
- LPB07** At chainage F1-380 metres or thereby, take down the existing dry stone wall and construct a spillway to convey the flow directed onto Corby Linn Road in operation LPB01 back into the Long Philip Burn. The structure shall be 5 metres wide or thereby and shall consist of reinforced concrete head walls and toe beams with a proprietary tied concrete block base or similar laid to the spillway for scour protection during operation. All as shown on the said plan marked WN/SFPD/LPB/003 and as typically detailed on section 2-LPB on the said plan marked WN/SFPD/ LPB/003.

- LPB08** From chainage F2-0 to F2-185 metres or thereby, take down the existing dry stone wall and construct a reinforced concrete flood defence wall up to 0.65 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Extend the wall height above flood defence level to 1.1m above existing road level to maintain privacy and security. Exposed sections of the flood defence wall shall be finished in recovered or imported stone walling. The wall shall be equipped with a complimentary stone coping to match the existing. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Where required, upgrade the existing road drainage and outfalls through provision of non-return or flap valves to existing outfalls. Fell the existing hedge and up to 12 trees with DBH greater than 100 millimetres and replace with at least 24 trees within 50m of the felling location. All as shown on the said plan marked WN/SFPD/LPB/003 and as typically detailed on sections 2-LPB and 3-LPB on the said plan marked WN/SFPD/LPB/003.
- LPB09** From chainage F2-140 to F2-185 metres or thereby, construct a vehicle containment barrier in accordance with the appropriate Code of Practice. Chevron direction change signage shall be provided for vehicles travelling east along the A708 and new warning signs advising of the revised road layout shall be erected. All as shown on the said plan marked WN/SFPD/LPB/003.
- LPB10** From chainage F1-385 metres or thereby to chainage F3-140 metres or thereby, construct a public footpath and new crossing of the Long Philip Burn. The public footpath shall be 1.5m wide or thereby and shall consist of granular unbound material, surfaced with gravels and whin dust. The new footbridge shall be minimum 2.0m wide with a clear span of no more than 9.0 metres and constructed from Ekki hardwood or similar. The footpath shall be bounded by a wooden post and rail fence on the south side of the Long Philip Burn and a post and wire fence on the north side. At chainage F3-105 metres or thereby, take up 150 square metres or thereby of the existing tarmac carriageway of the now redundant A708 and replace with a bunded landscaped area, topsoiled and seeded.

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All as shown on the said plan marked WN/SFPD/LPB/003 and as typically detailed on sections 2-LPB and 3-LPB on the said plan marked WN/SFPD/LPB/003.

- LPB11** From F3-0 to F3-140 metres or thereby, construct a new channel to convey the Long Philip Burn. The channel shall be sized to replicate the existing upstream channel dimensions such that bank full conditions generally occur at the 1 in 2 to 1 in 10 year return period flood events. The channel shall vary in cross section on the basis of shallower side slopes on the inside of bends and steeper side slopes on the outside of bends. At chainage F3-100 metres or thereby, demolish the existing masonry arched bridge and associated wing walls which conveys the A708 across the Long Philip Burn and provide rip rap armouring on the outside of the bend at the bridge location. The banks of the new channel shall be soiled and seeded and left for one full growing season to stabilise prior to accepting the Long Philip Burn flow. The base of the new channel shall be formed with suitable boulders, cobbles and gravels which match the substrate of the existing channel. From chainage F3-5 to F3-132 metres, infill the existing channel of the Long Philip Burn with suitable material won from site during the new channel excavation process. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Fell the existing hedge and up to 25 trees with DBH greater than 100 millimetres and replace with at least 50 trees within 150m of the felling location. All as shown on the said plan marked WN/SFPD/LPB/003 and as typically detailed on sections 2-LPB and 3-LPB on the said plan marked WN/SFPD/LPB/003.
- LPB12** As a continuation of operation LPB09, from chainage F2-185 to F2-200 metres or thereby, construct a vehicle containment barrier in accordance with the appropriate Code of Practice. Chevron direction change signage shall be provided for vehicles travelling east along the A708 and new warning signs advising of the revised road layout shall be erected on all approaches to the new road layout. All as shown on the said plan marked WN/SFPD/LPB/004.
- LPB13** On the right hand side of the proposed relocated Long Philip Burn, from chainage F2-185 to F2-422 metres or thereby, construct an impermeable

cored flood protection embankment (or augment the existing embankment) up to 1.2 metres or thereby above existing field level. The flood defence embankment shall have a 1.5 metre wide crest and a maximum base width of 10.0 metres or thereby. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. The embankment shall be topsoiled and grass seeded. Fell up to 4 trees with DBH greater than 100 millimetres and replace with at least 8 trees within 50 metres or thereby of the felling locations. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Take up the existing stockproof fenceline and replace with a new stockproof fenceline at the toe of the new embankment. All as shown on the said plan marked WN/SFPD/LPB/004 and as typically detailed on section 4-LPB on the said plan marked WN/SFPD/LPB/004.

- LPB14** From chainage F3-133 to F3-460 metres or thereby, construct a new channel to convey the Long Philip Burn. The channel shall be sized to replicate the existing upstream channel dimensions such that bank full conditions generally occur at the 1 in 2 to 1 in 10 year return period flood events. The channel shall vary in cross section on the basis of shallower side slopes on the inside of bends and steeper side slopes on the outside of bends. The banks of the new channel shall be soiled and seeded and left for one full growing season to stabilise prior to accepting the Long Philip Burn flow. The base of the new channel shall be formed with suitable boulders, cobbles and gravels which match the substrate of the existing channel. From chainage F2-185 to F2-442 metres, infill the existing channel of the Long Philip Burn with suitable material won from site during the new channel excavation process. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Fell up to 2 trees with DBH greater than 100 millimetres and replace with at least 4 trees within 50m of the felling location. On the left hand bank of the Long Philip Burn, from chainage F3-133 to F3-470 metres or thereby, construct a new public footpath. The public footpath shall generally be 2.0m wide or thereby and shall consist

of granular unbound material, surfaced with gravels and whin dust or similar. On the right hand bank of the re-aligned Long Philip Burn, implement a scheme of landscaping and planting on land between the new meanders and the flood defence embankment described in LPB13 to enhance the local biodiversity. All as shown on the said plan marked WN/SFPD/LPB/004 and as typically detailed on section 4-LPB on the said plan marked WN/SFPD/LPB/004.

- LPB15** On the left hand bank of the Long Philip Burn, from chainage F3-150 to F3-470 metres or thereby, construct an impermeable cored flood protection embankment, up to 1.1 metres or thereby above existing field level. The flood defence embankment shall have a 1.0 metre wide crest and a maximum base width of 8.0 metres or thereby. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. The embankment shall be topsoiled and grass seeded. Fell up to 4 trees with DBH greater than 100 millimetres and replace with at least 8 trees within 50 metres or thereby of the felling locations. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Provide a new stockproof fenceline at the toe of the new embankment. All as shown on the said plan marked WN/SFPD/LPB/004 and as typically detailed on section 4-LPB on the said plan marked WN/SFPD/LPB/004.
- LPB16** At chainage F3-470 metres or thereby, and in conjunction with operation LPB18, revise the horizontal and vertical alignments of the A708 Moffat Road and A707 Linglie Road and Philiphaugh Community School playing field access. Erect appropriate signage and road surfacing and markings. All as shown on the said plan marked WN/SFPD/LPB/004.
- LPB17** At chainage F3-460 metres or thereby, convey the small ditch which runs along the eastern side of the Angles field into the Long Philip Burn via a 10 metre long, 225mm diameter culvert as it passes beneath the flood defence embankment and footpath. At the discharge point into the Long Philip Burn, equip the culvert with a non-return or flap valve and house in a concrete outfall structure. All as shown on the said plan marked WN/SFPD/LPB/ 004.

**LPB18** From chainage F3-460 to F3-480 metres or thereby, demolish the existing bridges which convey the A707 Linglie Road and public footpath across the Long Philip Burn. Construct a new bridge structure to convey the A707 Linglie Road and public footpath across the Long Philip Burn. The new structure shall have a clear span no wider than 6.5 metres and a width across the carriageway and footpaths of no greater than 30 metres. Footpaths shall be provided on both sides of the bridge along with appropriate vehicle and pedestrian containment barriers. The base of the structure shall be bottomless or effectively bottomless and the bed of the burn shall be formed from appropriate sized cobbles, boulders and gravels recovered from site excavation. Provide a ledge consisting of larger sized cobbles and small boulders to permit passage of mammals beneath the bridge. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/LPB/004.

**LPB19** From chainage F3-480 to F3-510 metres or thereby, construct a new channel to convey the Long Philip Burn. The channel shall be sized to replicate the existing upstream channel dimensions such that bank full conditions generally occur at the 1 in 50 to 1 in 100 year plus climate change return period flood events. The channel shall vary in cross section on the basis of shallower side slopes on the inside of bends and steeper side slopes on the outside of bends. Implement a low flow channel to convey lower flows with adequate flow depth. The banks of the new channel shall be soiled and seeded and left for one full growing season to stabilise prior to accepting the Long Philip Burn flow. The base of the new channel shall be formed with suitable boulders, cobbles and gravels which match the substrate of the existing channel. From chainage F3-490 to F3-510 metres or thereby, infill the existing channel of the Long Philip Burn with suitable material won from site during the new channel excavation process. From chainage F3-490 to F3-510 metres or thereby, construct a new flood defence wall to augment the new channel, up to 0.80 metres or thereby above existing ground (car park) level with a maximum width above ground level of 0.3 metres or thereby. On the south facing side, exposed sections of the wall shall be finished in formed concrete and on the north facing side, exposed sections of the wall shall

be finished in plain concrete, all complete with a precast concrete coping stone. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. On the right hand bank of the Long Philip Burn, from chainage F3-490 to F3-510 metres or thereby, construct a new public footpath. The public footpath shall generally be part of the existing unbound surfaced car park. All as shown on the said plan marked WN/SFPD/LPB/004.

**LPB20** From chainage F2-422 to F2-431 metres or thereby, construct a new flood defence wall to tie in with the flood defence embankment described in operation LPB13, up to 1.10 metres or thereby above existing ground (Angles field) level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). The wall shall be finished in formed concrete on both sides and complete with a precast concrete coping stone. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/LPB/004.

**LPB21** From the downstream end of operation LPB19, from chainage F3-510 to F3-723 metres or thereby, construct a new channel to convey the Long Philip Burn. The channel shall be sized to replicate the existing upstream channel dimensions such that bank full conditions generally occur between the 1 in 2 and 1 in 100 year plus climate change return period flood events. The channel shall vary in cross section on the basis of shallower side slopes on the inside of bends and steeper side slopes on the outside of bends. Where practicable, the banks of the new channel shall be soiled and seeded and left for one full growing season to stabilise prior to accepting the Long Philip Burn flow. The base of the new channel shall be formed with suitable boulders, cobbles and gravels which match the substrate of the existing channel. From chainage F3-630 to F3-690 metres or thereby, infill the existing channel of the Long Philip Burn with suitable material won from site during the new channel excavation process. On the right hand bank of the Long Philip Burn, from chainage

F3-510 to F3-723 metres or thereby, construct a new flood defence wall to augment the new channel, up to 1.4 metres or thereby above existing burn bed level with a maximum width above ground level of 0.3 metres or thereby. From chainage F3-510 to F3-580 metres or thereby, exposed sections of the wall shall be finished in plain concrete on the north facing side and formed concrete on the south facing side, complete with a precast concrete coping stone. From chainage F3-580 to F3-723 metres or thereby, exposed sections of the wall shall be finished in plain concrete on the south facing side and formed concrete on the north facing side, complete with a precast concrete coping stone. Divert or otherwise protect the Scottish Water, SBC Street Lighting, Scottish Power, BT Openreach and Scotia Gas Networks apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. On the right hand bank of the Long Philip Burn, from chainage F3-510 to F3-559 metres or thereby, construct a new public footpath. The public footpath shall generally be part of the existing unbound surfaced car park. On the left hand bank of the Long Philip Burn, from chainage F3-559 to F3-723 metres or thereby, construct a new public footpath on a raised embankment / retaining wall up to 1.4m above existing ground level. The public footpath shall generally be 1.5m wide or thereby and shall consist of granular unbound material, surfaced with gravels and whin dust or similar. All as shown on the said plan marked WN/SFPD/LPB/005 and as typically detailed on sections 5-LPB and 6-LPB on the said plan marked WN/SFPD/LPB/005.

**LPB22** At chainage F3-558 metres or thereby, remove the existing precast concrete slab and brickwork parapet footbridge and abutments and construct new reinforced concrete abutments and install a new pedestrian bridge. The bridge shall have a clear access width of 2.0m and shall have a clear span of no more than 11.0 metres and shall be constructed from Ekki hardwood or similar. All approach paths shall be constructed on embankments with longitudinal gradients no steeper than 1 in 20 where practicable. Take down part of the close boarded fence at the Allotments and reinstate on similar alignment upon completion. All as shown on the said plan marked WN/SFPD/LPB/005.

**LPB23** At chainage F3-722 metres or thereby, remove the existing precast concrete slab footbridge and abutments and construct new reinforced

concrete abutments and install a new pedestrian bridge. The bridge shall have a clear access width of 2.0m and shall have a clear span of no more than 8.0 metres and shall be constructed from Ekki hardwood or similar. All approach paths shall be constructed on embankments with longitudinal gradients no steeper than 1 in 20 where practicable. All as shown on the said plan marked WN/SFPD/LPB/005.

- LPB24** From chainage F4-0 to F4-114 metres or thereby, construct a flood defence embankment, up to 1.0 metre or thereby above existing ground level. The flood defence embankment shall have a 2.0 metre wide crest and a maximum base width of 8.0 metres or thereby. Provide seepage protection to a depth not exceeding 10.0 metres where the embankment is 375mm or greater above existing ground level. Provide anti-burrowing geotextile or netting on both sides of the embankment below the topsoil layer. Take up the existing public footpath and replace with a new 1.5m wide unbound granular footpath on top of the proposed embankment. The side slopes of the embankment shall be topsoiled and grass seeded. Fell up to 15 trees with DBH greater than 100 millimetres and replace with at least 30 trees within 10 metres or thereby of the felling locations. Divert or otherwise protect any service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Construct a sump to allow a mobile pump to be deployed to remove ponded water in the event of the onset of secondary flooding. All as shown on the said plan marked WN/SFPD/LPB/005.
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The benefits of the said operations adjacent to the Long Philip Burn are as follows:

- To protect approximately 55 residential, community and commercial properties from the effects of flooding up to and including the 1 in 100 year plus climate change flood event on the Ettrick Water.
- To provide a degree of positive environmental impact through restoring parts of the watercourse to more natural form and creating an opportunity for wildlife habitat enhancement.
- To improve the social amenity of the area through improved footpath links and new footbridges, creating an improved public space.

## Shaw Burn

The Operations to be carried out in terms of the Scheme adjacent to the Shaw Burn are as follows.

- SB01** From chainage G1-0 to G1-33 metres or thereby, remove the existing 1m x 1m x 1m gabion baskets which form the right hand bank of the Shaw Burn and install precast concrete U-shaped culverts or similar 500mm below the current level of the bed of the burn. The culverts shall have a minimum clear width of 3.0 metres and a minimum stem height above base level of 2.0 metres. The existing gabions on the right hand bank of the burn shall be retained. The culvert sections shall be filled with mass concrete to a depth of 200mm or thereby above the base and selected recovered river cobbles set into the concrete whilst it is curing. Further loose recovered bed material shall be placed on top of the cast in cobbles to replicate the existing bund bed. Fell up to 15 trees with DBH greater than 100 millimetres and replace with at least 30 trees within 50 metres or thereby of the felling locations. Divert or otherwise protect the Scottish Water apparatus and any other service or utility which runs in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/SB/001 and as typically detailed on section 1-SB on the said plan marked WN/SFPD/SB/001.
- SB02** From chainage G1-53 to G1-208 metres or thereby, construct a reinforced concrete flood defence wall up to 0.95 metres or thereby above existing ground level with a maximum structural width above ground level of 0.3 metres or thereby (not including any additional thickness imposed by the cladding). Exposed sections of the flood defence wall shall be finished in formed concrete and shall be equipped with a complimentary precast concrete coping stone. Divert or otherwise protect the Scottish Water sewer apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. Take down the existing close boarded fence and reinstate on completion, exact alignment to be agreed with the landowner. All as shown on the said plan marked WN/SFPD/SB/001 and as typically detailed on sections 2-SB on the said plan marked WN/SFPD/SB/001.
- SB03** At chainage G1-205 metres or thereby construct a reinforced concrete inlet chamber to permit the flows arriving at the entrance to the existing

culvert to spill into the culvert proposed in operation SB04. The top of the inlet structure shall be 0.85 metres or thereby above ground level and the structure shall be equipped with galvanised steel band screens with bar centres no greater than 150 millimetres and no less than 100 millimetres. Provide a platform and handrails to permit cleaning of the screens. All as shown on the said plan marked WN/SFPD/SB/001.

- SB04** From chainage G2-0 to G2-173 metres or thereby, construct a precast concrete or similar storm overflow culvert parallel to the existing Shaw Burn culvert. The culvert shall have minimum internal width of 2.7 metres and a maximum internal height of 1.2 metres. Provide a manhole at chainage G2-80 metres or thereby with watertight screwdown covers. Divert or otherwise protect the Scottish Water sewer, Scotia Gas Networks, BT Openreach and Scottish Power apparatus and any other service or utility which run in the vicinity of this operation in accordance with the Service Provider requirements. All as shown on the said plan marked WN/SFPD/SB/001 and as typically detailed on section 3-SB on the said plan marked WN/SFPD/SB/001.
- SB05** At chainage G2-173 metres or thereby construct a reinforced concrete outlet chamber to permit the flows discharging from the exit of the existing culvert to merge with the discharge from the culvert proposed in operation SB04. The top of the inlet structure shall be coincident with ground level and the structure shall be equipped with galvanised steel band screens with bar centres no greater than 150 millimetres and no less than 100 millimetres to prevent unauthorised access. All as shown on the said plan marked WN/SFPD/SB/001.
- SB06** At chainage G2-173 metres or thereby, divert the course of the Shaw Burn over a length of 20 metres or thereby from its current approximate west northwest flow direction to an approximate north north west flow direction. The new channel shall be trapezoidal in shape with minimum channel base width of 2 metres and maximum side slopes of 1 in 2. The existing redundant section of the burn shall be infilled with suitable material won from the new channel excavation. All as shown on the said plan marked WN/SFPD/SB/001.
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The benefits of the said operations adjacent to the Shaw Burn are as follows:

- To protect approximately 12 residential and commercial properties from the effects of flooding up to and including the 1 in 200 year plus climate change flood event on the Shaw Burn.
- To stabilise the toe of an existing very steep embankment which threatens to collapse in on the watercourse and cause a serious flood risk.