

**FLOOD PREVENTION (SCOTLAND) ACT 1961 (AS AMENDED)****GLASGOW CITY COUNCIL****WHITE CART WATER FLOOD PREVENTION SCHEME 2004****1. GENERAL**

In exercise of the powers conferred upon them by the Flood Prevention (Scotland) Act 1961 (as amended) (hereinafter referred to as 'the Act'), Glasgow City Council (hereinafter referred to as the 'Council') hereby make the following Flood Prevention Scheme (hereinafter referred to as the 'Scheme'), the purpose of which is to mitigate the flooding of residential and business properties in the Cathcart, Langside, Shawlands, Pollokshaws, and Pollok areas of suburban Glasgow by the White Cart Water, and to mitigate the flooding of residential and business properties in the Kennishead and Auldhouse areas of suburban Glasgow by the Auldhouse Burn. The Scheme is also to include construction of flood attenuation areas upstream of Glasgow.

**2. TERMS OF THE SCHEME**

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

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

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

- On land adjacent to the White Cart Water and Polnoon Water upstream from Kirkland Bridge, east of Eaglesham, East Renfrewshire (occupying land in East Renfrewshire and South Lanarkshire)
- On land adjacent to the Earn Water near Blackhouse Farm, south of Newton Mearns, East Renfrewshire (occupying land wholly within East Renfrewshire)
- On land adjacent to the Kittoch Water upstream from Kittoch Bridge, east of Busby (occupying land in East Renfrewshire and South Lanarkshire)
- Adjacent to the White Cart Water at Cathcart (City of Glasgow)
- Adjacent to the White Cart Water at Langside (City of Glasgow)
- Adjacent to the White Cart Water at Shawlands (City of Glasgow)
- Adjacent to the White Cart Water and Auldhouse Burn at Pollokshaws (City of Glasgow)
- Adjacent to the Auldhouse Burn at Auldhouse (City of Glasgow)
- Adjacent to the Auldhouse Burn at Kennishead (City of Glasgow) and Carnwadric (City of Glasgow and East Renfrewshire)
- Adjacent to the White Cart Water at Pollok (City of Glasgow)

and are shown on the plans marked as listed below:

<b>Cathcart</b>	WN/WCWP/C/01	<b>Auldhouse</b>	WN/WCWP/A/01	
	WN/WCWP/C/02		WN/WCWP/A/02	
	WN/WCWP/C/03		WN/WCWP/A/03	
	WN/WCWP/C/04		WN/WCWP/A/04	
	WN/WCWP/C/05		WN/WCWP/A/05	
	WN/WCWP/C/06		WN/WCWP/A/06	
	WN/WCWP/C/07		WN/WCWP/A/07	
	WN/WCWP/C/08		WN/WCWP/A/08	
	WN/WCWP/C/09		WN/WCWP/A/09	
	WN/WCWP/C/10		WN/WCWP/A/10	
<b>Langside</b>	WN/WCWP/L/01		WN/WCWP/A/11	
	WN/WCWP/L/02		WN/WCWP/A/12	
	WN/WCWP/L/03		WN/WCWP/A/13	
	WN/WCWP/L/04		WN/WCWP/A/14	
	WN/WCWP/L/05	<b>Pollok</b>	WN/WCWP/PK/01	
	WN/WCWP/L/06		WN/WCWP/PK/02	
	WN/WCWP/L/07		WN/WCWP/PK/03	
	WN/WCWP/L/08		WN/WCWP/PK/04	
<b>Shawlands</b>	WN/WCWP/S/01		WN/WCWP/PK/05	
	WN/WCWP/S/02		WN/WCWP/PK/06	
	WN/WCWP/S/03		WN/WCWP/PK/07	
	WN/WCWP/S/04		<b>Blackhouse</b>	WN/WCWP/BLA/01
	WN/WCWP/S/05	WN/WCWP/BLA/02		
	WN/WCWP/S/06	WN/WCWP/BLA/03		
	WN/WCWP/S/07	<b>Kirkland Bridge</b>		WN/WCWP/KIR/01
	WN/WCWP/S/08			WN/WCWP/KIR/02
<b>Pollokshaws</b>	WN/WCWP/P/01			WN/WCWP/KIR/03
	WN/WCWP/P/02			WN/WCWP/KIR/04
	WN/WCWP/P/03			WN/WCWP/KIR/05
	WN/WCWP/P/04		<b>Kittoch Bridge</b>	WN/WCWP/KIT/01
	WN/WCWP/P/05			WN/WCWP/KIT/02
	WN/WCWP/P/06			WN/WCWP/KIT/03
	WN/WCWP/P/07			
	WN/WCWP/P/08			
	WN/WCWP/P/09			

attached and executed as relative hereto.

## 4. DESCRIPTION OF THE OPERATIONS

### Cathcart

The Operations to be carried out in terms of the Scheme in Cathcart are as follows. References to the left or right hand banks of the White Cart Water are related to the viewer looking downstream.

- C01** On the right hand bank of the White Cart Water, south of 21 – 27 Snuff Mill Road, strengthen 80m or thereby of the existing reinforced concrete wall from high ground south east of 21 Snuff Mill Road to provide a flood defence wall varying in height up to 1.5m above existing ground levels, as generally shown on the said plan marked WN/WCWP/C/02 and as typically detailed at Section 1C on the said plan marked WN/WCWP/C/07.
- C02** On the right hand bank of the White Cart Water, from the end of Operation C01, adjacent to 23 – 27 Snuff Mill Road, strengthen and adapt 45m or thereby of the existing reinforced concrete wall to provide an upgraded flood defence wall typically 0.7m above existing ground levels, to tie in with the upstream abutment of the Old Bridge carrying Snuff Mill Road across the White Cart Water and as generally shown on the said plan marked WN/WCWP/C/02 and as typically detailed at Section 2C on the said plan marked WN/WCWP/C/07.
- C03** On the right hand bank of the White Cart Water, adjacent to the western property boundaries of 28 – 40 Snuff Mill Road, construct 80m or thereby of new flood defence wall, varying in height up to 1.2m above existing garden levels, to tie into high ground adjacent to 28 Snuff Mill Road and as generally shown on the said plan marked WN/WCWP/C/02 and as typically detailed at Section 3C on the said plan marked WN/WCWP/C/07. The Operation shall involve demolition and removal of the existing random rubble retaining wall.
- C04** On the left hand bank of the White Cart Water, to the south of 72 – 82 Holmhead Road, construct 40m or thereby of new flood defence wall, varying in height up to 1.1m above existing ground levels, to tie in with high ground to the north of 7 Rhannan Terrace as generally shown on the said plan marked WN/WCWP/C/02 and as typically detailed at Section 4C on the said plan marked WN/WCWP/C/07.

- C05** On the left hand bank of the White Cart Water, from the end of Operation C04, to the east of 82 Holmhead Road, construct 40m or thereby of new flood defence wall, varying in height from 0.8 to 1.1m above existing ground levels as generally shown on the said plan marked WN/WCWP/C/02 and as typically detailed at Section 5C on the said plan marked WN/WCWP/C/08.
- C06** On the left hand bank of the White Cart Water, from the end of Operation C05, along the eastern boundary of the allotments to the east of Berridale Avenue, remove the existing embankment and construct 220m or thereby of new flood defence, comprising an embankment on the river side of the defence and a wall on the allotment side, varying in height from 1.0 to 1.9m above existing allotment ground levels, and as generally shown on the plan marked WN/WCWP/C/03 and at Section 6C on the said plan WN/WCWP/C/08. The said works are to also include the installation of scour protection to the toe of the embankment.
- C07** On the left hand bank of the White Cart Water, from the end of Operation C06, to the east of the commercial buildings forming 3 – 9 Delvin Road, construct 60m or thereby of new flood defence wall in the river channel, varying in height from 0.7 to 0.9m above existing ground levels, to tie in with higher ground adjacent to the upstream parapet of Delvin Road Bridge, and as generally shown on the said plan marked WN/WCWP/C/03 and as detailed at Section 7C on the said plan marked WN/WCWP/C/08. The gap between the gable ends of the commercial buildings and the flood defence wall shall be infilled with suitable material to existing ground levels. A minimum gap of 1m shall be maintained between the gable ends of the commercial buildings and the landward face of new defence wall.
- C08** On the right hand bank of the White Cart Water, along the western property boundaries of 50 – 98 Old Castle Road, construct 235m or thereby of new flood defence wall, varying in height from 0.7 to 1.6m above existing adjacent garden levels, to tie in with the upstream parapet of Delvin Road Bridge, and as generally shown on the said plan marked WN/WCWP/C/03 and as detailed at Sections 6C and 7C on the said plan marked WN/WCWP/C/08. Demolition and removal of part or all of the existing variable construction retaining wall on the right hand bank shall be required.
- C09** On the left hand bank of the White Cart Water, between Cathcart Station and Holmlea Bridge, remove the existing made earth embankment and construct 90m or thereby of new flood defence wall, varying in height from 0.3 to 1.5m above existing ground levels, as generally shown on the said plan marked WN/WCWP/C/04 and as detailed at Section 8C on the said plan marked WN/WCWP/C/08.

- C10** On the left hand bank of the White Cart Water, between 7 Holmhead Crescent and 41 Holmhead Place, construct 115m or thereby of new flood defence embankment on the riverward side of the existing footpath, varying in height up to 0.7m above existing ground levels, to tie in with higher ground outside 7 Holmhead Crescent, and as generally shown on the said plan marked WN/WCWP/C/05 and as detailed at Section 9C on the said plan marked WN/WCWP/C/09.
- C11** On the left hand bank of the White Cart Water, from the end of Operation C10, along the eastern boundary of the Weirs Pumps site at 147 – 149 Newlands Road, construct 310m or thereby of new flood defence wall, varying in height from 0.7 to 1.1m above existing ground levels and as generally shown on the said plans marked WN/WCWP/C/05 and WN/WCWP/C/06 and as detailed at Sections 10C and 11C on the said plans marked WN/WCWP/C/09.
- C12** On the right hand bank of the White Cart Water, along Spean Street adjacent to Holmlea Primary School, construct 75m or thereby of new flood defence embankment, varying in height up to 1.6m above existing ground levels and as generally shown on the said plan marked WN/WCWP/C/05 and as detailed at Section 9C on the said plan marked WN/WCWP/C/09.
- C13** On the right hand bank of the White Cart Water, from the end of Operation C12, construct 295m or thereby of new flood defence wall, varying in height from 1.0 to 1.6m above existing ground levels, as shown on the said plans marked WN/WCWP/C/05 and WN/WCWP/C/06 and as detailed at Sections 10C and 11C on the said plans marked WN/WCWP/C/09.
- C14** Raise the level of the existing footbridge linking Weir Pumps Works to Spean Street by 800mm as generally shown on the said plan marked WN/WCWP/C/05 and as detailed at Elevation 12C on the said plan marked WN/WCWP/C/10. Accordingly, on both the Spean Street and Weirs Pumps Workshops sides of the bridge, provide ramped and/or stepped pedestrian access to the bridge deck.
- C15** Raise the level of the existing pedestrian footbridge linking Spean Street with the Cathcart Business Park by 800mm at the Spean Street abutment only, as generally shown on the said plan marked WN/WCWP/C/06 and as detailed at Elevation 13C on the said plan marked WN/WCWP/C/10. Provide a ramped access with maximum gradient of 1 in 12 to enable pedestrians to cross the raised footbridge linking Spean Street with Cathcart Business Park.
- C16** **Not Used.**

- C17** On the right hand bank of the White Cart Water, adjacent to the private car park serving 50 – 52 Old Castle Road, construct an automatically controlled pumping station to discharge excess surface water through the flood defence wall into the White Cart Water. The pumping station shall consist of a wet well (possibly constructed from pre-cast manhole rings up to 2.7m diameter) and valve chamber and shall be constructed entirely underground, with the exception of a small control kiosk situated adjacent to the cover slab of the pumping station, as shown on the said plan marked WN/WCWP/C/03. The discharge pipe shall be fitted with non-return apparatus. Install an electricity supply and telemetry link between the kiosk and pumping station.
- C18** On the right hand bank of the White Cart Water, adjacent to the private car park serving 50 – 52 Old Castle Road, construct an upgraded surface water drainage system with 1 no. outfall of 375mm diameter or thereby as shown on the said plan marked WN/WCWP/C/03. The outfalls shall incorporate flap valves or similar or similar non-return apparatus and shall include brick or reinforced concrete headwalls.
- C19** On the left hand bank of the White Cart Water, adjacent to the Berridale Avenue allotments, construct an upgraded surface water drainage system with 3 no. outfalls of 300 mm diameter or thereby and 1 no. outfall of 450mm diameter or thereby at the locations identified on the said plan marked WN/WCWP/C/03. The outfall shall be equipped with a flap valve or similar non-return apparatus and shall include a brick or reinforced concrete headwall. At the easternmost end of Holmhead Road, lower 20m or thereby of the kerb along the north footpath to be flush with the road surface.
- C20** On the left hand bank of the White Cart Water, in the private car park serving the rear of 1 – 7 Clarkston Road, construct an automatically controlled pumping station to discharge excess surface water through the flood defence wall into the White Cart Water. The pumping station shall consist of a wet well and valve chamber, and shall be constructed entirely underground, with the exception of a small control kiosk situated near the corner of Clarkston Road and the access to the car park, as shown on the said plan marked WN/WCWP/C/04. The discharge pipe shall be fitted with non-return apparatus. Install an electricity supply and telemetry link between the kiosk and pumping station.
- C21** On the left hand bank of the White Cart Water, adjacent to the private car park serving the rear of 1 – 7 Clarkston Road, provide an upgraded surface water drainage system with 1 no. outfall of 375mm diameter or thereby as shown on the said plan marked WN/WCWP/C/04. The outfall shall be equipped with a flap valve or similar non-return apparatus and shall include a brick or reinforced concrete headwall.

- C22** On the left hand bank of the White Cart Water, adjacent to the private car park off Holmhead Crescent, construct an automatically controlled pumping station to discharge excess surface water through the flood defence wall into the White Cart Water. The pumping station shall consist of a wet well and valve chamber and shall be constructed entirely underground, with the exception of a small control kiosk situated adjacent to the cover slab of the pumping station, as shown on the said plan marked WN/WCWP/C/03. The discharge pipe shall be fitted with non-return apparatus. Install an electricity supply and telemetry link between the kiosk and pumping station. Also provide a drain, 120m long or thereby, to the pumping station from low ground within the land occupied by Weir Pumps Workshops at 149 Newlands Road.

## Langside

The Operations to be carried out in terms of the Scheme in Langside are as follows. References to the left or right hand banks of the White Cart Water are related to the viewer looking downstream.

- L01** On the right hand bank of the White Cart Water, from the end of Operation C13, construct 10m or thereby of new flood defence wall, comprising demountable barriers and support posts, across the vehicle access road linking Spean Street to Cathcart Business Park, typically 0.9m above existing ground levels, as shown on the said plan marked WN/WCWP/L/02 and as detailed at Section 1L on the said plan marked WN/WCWP/L/06.
- L02** On the right hand bank of the White Cart Water, from the end of Operation L01, construct 595m or thereby of new flood defence wall along Spean Street, Cartside Quadrant and to the south of the southern property boundaries of 90 – 108 Cartside Street, varying in height from 0.8 to 1.1m above existing ground levels, to tie in with the upstream abutment of the pedestrian footbridge linking Sinclair Drive to Kintore Road as shown on the said plans marked WN/WCWP/L/02 and WN/WCWP/L/03 and at Sections 2L and 3L on the said plans marked WN/WCWP/L/06. Demolish and remove the existing rubble concrete retaining wall south of the Cartside Street properties.
- L03** On the right hand bank of the White Cart Water, from the downstream abutment of the pedestrian footbridge linking Sinclair Drive with Kintore Road, construct 195m or thereby of new flood defence wall to the south of the southern property boundaries of 8 - 86 Cartside Street and to the south and south west of the property boundary of 105 Carmichael Place, varying in height from 0.9 to 1.1m above existing ground levels, and as generally shown on the said plans marked WN/WCWP/L/03 and WN/WCWP/L/04 and at Section 4L on the said plan marked WN/WCWP/L/07. Demolish and remove the existing rubble concrete



retaining wall to the south of the southern property boundaries of 56 – 86 Cartside Street.

- L04** On the right hand bank of the White Cart Water, from the end of Operation L03, along the landward side of the existing Millbrae Walkway, construct 465m or thereby of new flood defence wall adjacent to the riverward property boundaries of 104 Carmichael Place, 43 to 49 Cathkin Road, 27 Ailsa Drive and 2 to 46 Millbrae Crescent, varying in height from 0.7 to 1.9m above existing garden levels and as generally shown on the said plans marked WN/WCWP/L/04 and WN/WCWP/L/05 and at Sections 5L and 6L on the said plans marked WN/WCWP/L/07 and WN/WCWP/L/08. Construct ramped accesses over the flood defence wall to enable pedestrians to access Millbrae Walkway from Carmichael Place and from Ailsa Drive. Demolish the existing property boundary brick walls and replace with the flood defence wall to demarcate the existing riverward property boundary of 104 Carmichael Place, 43 to 49 Cathkin Road and 27 Ailsa Drive. Demolish the existing property boundary brick walls and replace with a new wall, fence or hedge to demarcate the existing riverward property boundaries of 2 to 46 Millbrae Crescent.
- L05** On the right hand bank of the White Cart Water, from the end of Operation L04, adjacent to the south west corner of 2 Millbrae Crescent, construct 40m or thereby of new flood defence wall, typically 1.8m above existing ground levels, to tie in with the upstream abutment of Millbrae Bridge as generally shown on the plan marked WN/WCWP/L/05. Remedial works shall be required to the upstream face of the existing upstream abutment such that the structure is watertight to a level of 22.51m above Ordnance Datum. Construct ramped accesses over the flood defence wall to enable pedestrians to access Millbrae Walkway from Millbrae Road. Install a lockable fire escape type door to enable residents of 2 – 46 Millbrae Crescent to egress from the service path.
- L06** On the right hand bank of the White Cart Water, adjacent to the junction between Spean Street and Garry Street, construct an automatically controlled pumping station to discharge excess surface water through the flood defence wall into the White Cart Water. The pumping station shall consist of a wet well and valve chamber and shall be constructed entirely underground, with the exception of a small control kiosk situated adjacent to the cover slab of the pumping station, as shown on the said plan marked WN/WCWP/L/02. The discharge pipe shall be fitted with non-return apparatus. Install an electricity supply and telemetry link between the kiosk and pumping station.

- L07** On the right hand bank of the White Cart Water, opposite the junction between Cartvale Road and Spean Street, construct an automatically controlled pumping station to discharge excess surface water through the flood defence wall into the White Cart Water. The pumping station shall consist of a wet well and valve chamber and shall be constructed entirely underground, with the exception of a small control kiosk situated on artificially raised ground adjacent to the cover slab of the pumping station, as shown on the said plan marked WN/WCWP/L/02. The discharge pipe shall be fitted with non-return apparatus. Install an electricity supply and telemetry link between the kiosk and pumping station.
- L08** On the right hand bank of the White Cart Water, opposite the junction between Cartvale Road and Spean Street, install an upgraded surface water drainage system with 2 no. outfalls of 375mm diameter or thereby, as shown on the said plan marked WN/WCWP/L/02. The outfalls shall incorporate flap valves or similar non-return apparatus and shall include a brick or reinforced concrete headwall.
- L09** On the right hand bank of the White Cart Water, at the southern end of Sinclair Drive, construct an automatically controlled pumping station to discharge excess surface water through the flood defence wall into the White Cart Water. The pumping station shall consist of a wet well and valve chamber and shall be constructed entirely underground, with the exception of a small control kiosk situated on artificially raised ground adjacent to the cover slab of the pumping station, as shown on the said plan marked WN/WCWP/L/03. The discharge pipe shall be fitted with non-return apparatus. Install an electricity supply and telemetry link between the kiosk and pumping station.
- L10** On the right hand bank of the White Cart Water, at the southern end of Sinclair Drive, install an upgraded surface water drainage system with 1 no. outfall of 375mm diameter or thereby, as shown on the said plan marked WN/WCWP/L/03. The outfalls shall incorporate flap valves or similar non-return apparatus and shall include a brick or reinforced concrete headwall.

- L11** On the right hand bank of the White Cart Water, below the public walkway adjacent to no.2 Millbrae Crescent, construct an automatically controlled pumping station to discharge excess surface water through the flood defence wall into the White Cart Water. The pumping station shall consist of a wet well and valve chamber and shall be constructed entirely underground, with the exception of a small control kiosk situated adjacent to the cover slab of the pumping station, as shown on the said plan marked WN/WCWP/L/05. The discharge pipe shall be fitted with non-return apparatus. Install an electricity supply and telemetry link between the kiosk and pumping station.

## Shawlands

The Operations to be carried out in terms of the Scheme in Shawlands are as follows. References to the left or right hand banks of the White Cart Water are related to the viewer looking downstream.

- S01** On the right hand bank of the White Cart Water, construct 335m or thereby of new flood defence wall, extending from the downstream abutment of Millbrae Bridge, extending to a point adjacent to the south east corner of the property boundary of 47 Woodford Street and varying in height from 1.1 to 1.4m above existing ground levels, as generally shown on the said plans marked WN/WCWP/S/02 and WN/WCWP/S/03 and as detailed at Section 1S on the said plan marked WN/WCWP/S/05. Demolish and remove all existing riverside walls between 490 Tantallon Road and 47 Woodford Street.
- S02** On the right hand bank of the White Cart Water, from the end of Operation S01, construct 20m or thereby of new flood defence wall around the south gable of the tenement building forming 47 Woodford Street, typically 1.5m above existing ground levels and as shown on the said plan marked WN/WCWP/S/03 and as detailed at Section 2S on the said plan marked WN/WCWP/S/05.
- S03** On the right hand bank of the White Cart Water, from the end of Operation S02, demolish and remove the existing brick wall and construct 80m or thereby of new flood defence wall along the southern property boundaries of 47, 79, 87, 95 and 103 Woodford Street, varying in height from 1.4 to 1.5m above existing ground levels and as generally shown on the said plan marked WN/WCWP/S/03 and as detailed at Section 3S on the said plan marked WN/WCWP/S/05.
- S04** On the right hand bank of the White Cart Water, from the end of Operation S03, construct 15m or thereby of new flood defence wall around the gable end of the tenement building forming 103 Woodford Street, typically 1.4m above existing ground levels and as shown on the said plan marked WN/WCWP/S/03 and as detailed at Section 4S on the said plan marked WN/WCWP/S/06.

- S05** On the right hand bank of the White Cart Water, from the end of Operation S04, construct 35m or thereby of new flood defence wall along the end of the western arm of Woodford Street, typically 1.4 to 1.5m above existing ground levels and as generally shown on the plan marked WN/WCWP/S/03 and as detailed at Section 5S on the said plan marked WN/WCWP/S/06.
- S06** On the right hand bank of the White Cart Water, from the end of Operation S05, construct 15m or thereby of new flood defence wall around the gable end of the tenement building forming 52 to 54 Woodford Street, typically 1.5 m above existing ground levels and as generally shown on the said plan marked WN/WCWP/S/03 and as detailed at Section 6S on the said plan marked WN/WCWP/S/06.
- S07** On the right hand bank of the White Cart Water, from the end of Operation S06, construct 25m or thereby of new flood defence wall along the western boundary of 52 to 54 Woodford Street and 43 to 45 Cartha Street, typically 1.6m above existing ground levels and as generally shown on the said plans marked WN/WCWP/S/04 and as detailed at Section 7S on the said plan marked WN/WCWP/S/07. This Operation may require demolition of the existing wall.
- S08** On the right hand bank of the White Cart Water, from the end of Operation S07, construct 15m or thereby of new flood defence wall around the gable end of the tenement forming 43 to 45 Cartha Street, typically 1.5m above existing ground levels and as generally shown on the said plan marked WN/WCWP/S/04 and as detailed at Section 8S on the said plan marked WN/WCWP/S/07.
- S09** On the right hand bank of the White Cart Water, from the end of Operation S08, along the top of the riverbank at the western end of Cartha Street, construct 25m or thereby of new flood defence wall, typically 1.5m above existing ground levels and as shown on the said plan marked WN/WCWP/S/04 and as detailed at Section 9S on the said plan marked WN/WCWP/S/07.
- S10** On the right hand bank of the White Cart Water, from the end of Operation S09, construct 45m or thereby of new flood wall along the western boundary of the existing derelict garage at 10 – 16 Holmbank Avenue, varying in height from 0.8 to 1.5m above existing ground levels and as shown on the said plan marked WN/WCWP/S/04 and as detailed at Section 10S on the said plan marked WN/WCWP/S/08.

**Note:** This Operation may be undertaken by private housing contractor as part of the development of the existing derelict garage site at 10 -16 Holmbank Avenue.

- S11** On the right hand bank of the White Cart Water, from the end of Operation S10, demolish the existing concrete wall and railings and construct 25m or thereby of new flood defence wall, up to 0.9m above existing ground level and tying into higher ground to the south of 3 Holmbank Crescent, as generally shown on the said plan marked WN/WCWP/S/04 and as detailed at Section 11S on the said plan marked WN/WCWP/S/08.
- S12** On the right hand bank of the White Cart Water, at the western end of the western arm of Woodford Street, install an upgraded surface water drainage system with 1 no. outfall of 375mm diameter or thereby, as shown on the said plan marked WN/WCWP/S/03. The outfalls shall incorporate flap valves or similar non-return apparatus and shall include a brick or reinforced concrete headwall.
- S13** On the right hand bank of the White Cart Water, at the western end of Cartha Street, install an upgraded surface water drainage system with 1 no. outfall of 375mm diameter or thereby, as shown on the said plan marked WN/WCWP/S/04. The outfalls shall incorporate flap valves or similar non-return apparatus and shall include a brick or reinforced concrete headwall.

## **Pollokshaws**

The Operations to be carried out in terms of the Scheme in Pollokshaws are as follows. References to the left or right hand banks of the Auldhouse Burn and White Cart Water are related to the viewer looking downstream.

- P01** On the left hand bank of the White Cart Water, adjacent to the northern boundary of the Safeway delivery yard and from higher ground to the north west of Pollok FC Newlandsfield Park, construct 90m or thereby of new flood defence wall, varying in height up to 0.8m and as generally shown on the said plan marked WN/WCWP/P/02 and as detailed at Section 1P on the said plan marked WN/WCWP/P/06. The embankment on the riverside of the existing wall shall be re-profiled to aid drainage back to the river channel following a flood event.

**Note:** The planning, design and construction of this section of the wall may be undertaken separately, as part of Safeway's proposed store extension.

- P02** On the left hand bank of the White Cart Water, from the end of Operation P01, adapt and upgrade the existing blockwork clad reinforced concrete flood defence/retaining wall forming the north-western boundary of Safeway Newlands for a distance of 165m or thereby, to tie in with the existing Riverford Road Bridge parapet and as shown on the said plan marked WN/WCWP/P/02 and as detailed at Section 2P on the said plan marked WN/WCWP/P/06. The

embankment on the riverside of the existing wall shall be locally re-profiled to aid drainage back to the river channel following a flood event.

- P03** On the left hand bank of the White Cart Water, raise 30m or thereby of the existing footpath in the North East corner of Auldhouse Park by between 0.1 and 0.3m above the existing footpath level, as generally shown on the said plan marked WN/WCWP/P/03.
- P04** On the right hand bank of the White Cart Water, construct 70m or thereby of new flood defence wall along the south-eastern boundary of the industrial premises at 166 Riverford Road, varying in height from 0.6 to 1.0m above existing ground levels, tying in with the downstream abutment/parapet of Riverford Road Bridge, as generally shown on the said plan marked WN/WCWP/P/03 and as detailed at Section 3P on the said plan marked WN/WCWP/P/06. Demolish and remove the existing riverside masonry retaining wall.
- P05** On the right hand bank of the White Cart Water, from the end of Operation P04, construct 45m or thereby of new flood defence wall along the south-eastern boundary of 166 Riverford Road, immediately adjacent to the warehousing facilities, varying in height from 0.8 to 1.0m above existing ground levels and as shown on the said plan marked WN/WCWP/P/03 and as detailed at Section 4P on the said plan marked WN/WCWP/P/07. A minimum gap of 1m shall be maintained between the landward face of the defence and the said warehouse wall to allow access for maintenance. Demolish and remove the existing riverside flood defence structure.
- P06** On the right hand bank of the White Cart Water, from the end of Operation P05, construct 385m or thereby of new flood defence wall along the south-eastern and western boundaries of 166 Riverford Road, varying in height from 0.3 to 0.8m above existing ground levels, tying in with the downstream abutment of the pedestrian footbridge linking 166 Riverford Road to 137 Shawbridge Street, and as shown on the said plan marked WN/WCWP/P/03 and as detailed at Section 5P on the said plan marked WN/WCWP/P/07. Demolish the existing riverside flood defence structure.
- P07** On the right hand bank of the White Cart Water, from the downstream abutment of the pedestrian footbridge linking 166 Riverford Road to 137 Shawbridge Street, construct 25m or thereby of new flood defence wall, typically 0.8m above existing ground levels, to tie in with higher ground forming the southern boundary of the garage and car service centre at 10 Riverbank Street, as shown on the said plan marked WN/WCWP/P/03 and as detailed at Section 6P on the said plan marked WN/WCWP/P/07.

- P08** On the left hand banks of the Auldhouse Burn and White Cart Water, from the downstream abutment of the bridge carrying Nether Auldhouse Road across the Auldhouse Burn, construct 320m or thereby of new flood defence wall, varying in height up to 1.2m above existing ground levels, to tie in with higher ground next to the warehousing facilities at 137 Shawbridge Street, as shown on the said plans marked WN/WCWP/P/03 and WN/WCWP/P/04 and as detailed at Section 7P on the said plan marked WN/WCWP/P/08. The existing embankment between the new flood defence wall and the Auldhouse Burn and White Cart Water shall be re-profiled to aid drainage back to the watercourse following a flood event.
- P09** On the left hand bank of the White Cart Water, from 10m or thereby upstream of the pedestrian bridge connecting the warehousing facilities at 137 Shawbridge Street with SCA Packaging at 166 Riverford Road, construct 80m or thereby of new flood defence wall, varying in height up to 1.5m above existing ground levels and as shown on the said plan marked WN/WCWP/P/03 and WN/WCWP/P/05 and as detailed at Sections 6P on the said plan marked WN/WCWP/P/07.
- P10** On the left hand bank of the White Cart Water, from the end of Operation P09, construct 65m or thereby of new flood defence wall adjacent to the premises at 133 Shawbridge Street, varying in height from 0.3 to 0.9m above existing ground levels, as shown on the said plan marked WN/WCWP/P/05 and as detailed at Section 8P on the said plan marked WN/WCWP/P/08.
- P11** On the right hand bank of the Auldhouse Burn, along the southern boundary of Auldhouse Park, and from the south eastern end of the downstream abutment of the bridge carrying Nether Auldhouse Road across the Auldhouse Burn, construct 235m or thereby of new flood defence wall, varying in height up to 0.4m above existing ground levels, and tying in to higher ground opposite 131 Auldhouse Road as generally shown on the said plans marked WN/WCWP/P/04 and as typically detailed at Section 7P on the said plan marked WN/WCWP/P/08.
- P12** On the right hand bank of the White Cart Water, construct 75m or thereby of new flood defence wall to the south of the flats forming 142 Shawbridge Street, varying in height up to 0.8m above existing ground levels and tying in with high ground near the downstream abutment of the bridge carrying Shawbridge Street across the White Cart Water as shown on the plan marked WN/WCWP/P/05 and as detailed at Section 9P on the said plan marked WN/WCWP/P/08.
- P13** On the right hand bank of the White Cart Water, from the end of Operation P12, construct 100m or thereby of new flood defence embankment along the southern edge of the footpath linking Shawbridge Street to Pollokshaws Road, varying in

height up to 0.8m above existing ground levels and tying in with higher ground near the bridge carrying Pollokshaws Road across the White Cart Water, as shown on the said plan marked WN/WCWP/P/05 and as detailed on Section 10P on the said plan marked WN/WCWP/P/09.

- P14** On the right hand bank of the White Cart Water, from the end of Operation P13, install for a length of 95m or thereby a ground water cut-off (at or slightly below existing ground level), to prevent flood waters seeping through the upper strata of the soil profile and inundating the adjacent Shawbridge Nursery School, as shown on the said plan marked WN/WCWP/P/05 and as detailed at Section 11P on the said plan marked WN/WCWP/P/09.

## **Pollok**

The Operations to be carried out in terms of the Scheme in Pollok are as follows. References to the left and right hand banks or flood plains of the White Cart Water are related to the viewer looking downstream.

- PK01** On the left hand flood plain of the White Cart Water, approximately 1km south of the White Cart Water, construct 80m or thereby of new flood defence embankment, from higher ground approximately 200m north east of the junction between Barrhead Road and Boydstone Road to extend along the southern, western and northern edge of the access track to the Hippingstones terraced properties, and to tie in with higher ground adjacent to the western boundary of Pollok Golf Course, varying in height up to 1.5m above existing ground levels, as generally shown on the said plan marked WN/WCWP/PK/02 and as detailed at Section 1PK on the said plan marked WN/WCWP/PK/06. Construct vehicle access ramps to the embankment with maximum gradient 1 in 10. Block up the existing culvert with mass concrete and make watertight to design flood level of 16.67m aOD.
- PK02** On the left hand flood plain of the White Cart Water, divert the un-named tributary of the White Cart Water around the western and northern edges of the flood defence embankment for a distance of 100m or thereby, as shown on the said plan marked WN/WCWP/PK/02.
- PK03** On the left hand flood plain of the White Cart Water, construct 10m or thereby of new culvert to convey the diverted un-named small tributary of the White Cart Water beneath the vehicle access track to the Hippingstones properties, as shown on the said plan marked WN/WCWP/PK/02.
- PK04** On the left hand bank of the White Cart Water, construct 45m or thereby of new flood defence wall from higher ground to the south east of St. Edmund's Primary



School at 160 Damshot Crecent, to the north east corner of the school grounds, varying in height up to 1.4m above existing ground levels, as generally shown on the said plan marked WN/WCWP/PK/03 and as detailed at Section 3PK on the said plan marked WN/WCWP/PK/06. Part of the Operation shall require demolition and removal of an existing brickwork wall.

- PK05** On the left hand bank of the White Cart Water, from the end of Operation PK04, construct 100m or thereby of new flood defence embankment along the crest of the existing strip of higher ground to the north of St. Edmund's Primary School, varying in height up to 0.4m above existing ground levels, as generally shown on the said plan marked WN/WCWP/PK/03 and as detailed at Section 4PK on the said plan marked WN/WCWP/PK/06.
- PK06** On the left hand bank of the White Cart Water, from the end of Operation PK05, construct 50m or thereby of new flood defence wall to tie in with higher ground within the boundary of the Church of Jesus Christ and Latter Day Saints, varying in height up to 1.6m above existing ground levels as shown on the plan marked WN/WCWP/PK/03 and as detailed at Section 5PK on the said plan marked WN/WCWP/PK/07.
- PK07** On the left hand bank of the White Cart Water, construct 405m or thereby of new flood defence embankment from higher ground opposite 41 Lochar Crescent to higher ground near the river bank in front of 91 Linthaugh Road, varying in height up to 0.9m above existing ground levels as generally shown on the said plans marked WN/WCWP/PK/04 and WN/WCWP/PK/05 and as detailed at Sections 6PK and 7PK on the said plan marked WN/WCWP/PK/07. Pedestrian ramps with a maximum gradient of 1 in 12 shall be provided for access to Lochar Park.
- PK08** On the left hand flood plain of the White Cart Water, adjacent to the Hippingstones properties, install an upgraded surface water drainage system with 1 no. outfall of 375mm diameter or thereby, as shown on the said plan marked WN/WCWP/PK/02. The outfalls shall incorporate flap valves or similar non-return apparatus and shall include a brick or reinforced concrete headwall.
- PK09** On the left hand flood plain of the White Cart Water, adjacent to the Hippingstones properties, construct 75m or thereby of new flood defence wall, from higher ground to the east of Hippingstones to tie in with the works described in Operation PK01, varying in height up to 1.5m above existing ground levels, as shown on the said plan marked WN/WCWP/PK/02.

## Auldhouse Burn

The Operations to be carried out in terms of the Scheme along the Auldhouse Burn are as follows. References to the left or right hand banks of the Auldhouse Burn are related to the viewer looking downstream.

- A01** On the left hand bank of the Auldhouse Burn, construct 85m or thereby of new flood defence wall, from higher ground south of Carnwadric Road to tie in with the existing parapet of the bridge carrying Carnwadric Road across the Auldhouse Burn, varying in height up to 1.2m above existing ground levels, as generally shown on the said plan marked WN/WCWP/A/02 and as detailed at Section 1A on the said plan marked WN/WCWP/A/11.
- A02** On the right hand bank of the Auldhouse Burn, construct 270m or thereby of new flood defence wall, extending from higher ground to the south of the East Renfrewshire Council Depot at 190 Carnwadric Road to tie in with the existing parapet of the bridge carrying Carnwadric Road across the Auldhouse Burn, varying in height up to 1.3m above existing ground levels, as generally shown on the said plan marked WN/WCWP/A/02 and as detailed at Section 1A on the said plan marked WN/WCWP/A/11.
- A03** Execute remedial works to both existing upstream and downstream parapets of the bridge carrying Carnwadric Road across the Auldhouse Burn such that the parapet walls are made watertight to a level of 25.75m OD and structurally connect with the works described in Operations A01, A02, A04 and A05. The said works are shown on the said plans marked WN/WCWP/A/02 and WN/WCWP/A/03 and as detailed at Elevation 2A on the said plan marked WN/WCWP/A/11.
- A04** On the right hand bank of the Auldhouse Burn, demolish and remove the existing brick and concrete flood defence walls protecting the properties between 44 and 64 Crebar Street and construct 160m or thereby of new flood defence wall, extending from the northern parapet of the bridge carrying Carnwadric Road across the Auldhouse Burn to the southern entrance of the culvert conveying the Auldhouse burn beneath St Vincent's RC Primary School at 40 Crebar Street, varying in height up to 3.6m above existing ground levels and as generally shown on the said plan marked WN/WCWP/A/03 and as detailed at Section 3A on the said plan marked WN/WCWP/A/11.

- A05** On the left hand bank of the Auldhouse Burn, remove the existing railings to the east of the properties between 49 and 61 Hopeman Street and construct 150m or thereby of new flood defence wall, extending from the northern parapet of the bridge carrying Carnwadric Road across the Auldhouse Burn to the southern entrance of the culvert conveying the Auldhouse Burn beneath St Vincent's RC Primary School at 40 Crebar Street, varying in height up to 2.6m above existing ground levels and as generally shown on the said plan marked WN/WCWP/A/03 and as detailed at Section 3A on the said plan marked WN/WCWP/A/11.
- A06** On the right hand bank of the Auldhouse Burn, construct 260m or thereby of new flood defence embankment, extending from higher ground at the southern end of Viking Way to higher ground to the rear of 15 Brent Avenue, varying in height up to 0.5m above existing ground levels, as generally shown on the plan marked WN/WCWP/A/05 and WN/WCWP/A/06 and as detailed at Section 4A on the said plan marked WN/WCWP/A/12. Security chainlink fencing or similar shall be erected along the embankment crest.
- A07** On the left hand bank of the Auldhouse Burn, construct 140m or thereby of new flood defence wall, extending from higher ground to the south of no. 66 Kennishead Avenue to higher ground to the north north east of no.76 Kennishead Avenue, varying in height up to 0.9m above existing ground levels, as generally shown on the plan marked WN/WCWP/A/06 and as detailed at Section 5A on the said plan marked WN/WCWP/A/12.
- A08** Along the eastern edge of the Hutcheson Grammar School playing fields, to protect against flooding from the Bagabout Burn (tributary of the Auldhouse Burn), construct 395m or thereby of new flood defence wall around the existing Hutcheson Grammar playing fields and sports pavilion, varying in height up to 1.8m above existing ground levels and to tie in with high ground adjacent to Eastwood Cemetery as generally shown on the said plan marked WN/WCWP/A/07 and as detailed at Section 6A on the said plan marked WN/WCWP/A/12. Ramps and steps shall be provided for access to the playing fields from the pavilion.
- A09** On the right hand bank of the Auldhouse Burn, from higher ground to the south of 74 Stoneside Drive, construct 230m or thereby of new flood defence wall around the western property boundary of 74 Stoneside Drive and along the northern property boundaries of 28 - 74 Stoneside Drive, varying in height up to 0.5m above existing ground levels, to tie in with high ground to the east of 28 Stoneside Drive as shown on the said plan marked WN/WCWP/A/09 and as detailed at Section 7A on the said plan marked WN/WCWP/A/13.

- A10** On the left hand bank of the Auldhouse Burn, from higher ground to the west of 74 Auldburn Road, construct 265m or thereby of new flood defence wall to the south of Auldburn Road, varying in height up to 1.2m above existing ground levels and to tie in with higher ground adjacent to the electricity substation west of 7 Auldburn Place and as generally shown on the said plan marked WN/WCWP/A/09 and at Section 7A on the said plan marked WN/WCWP/A/13.
- A11** On the left hand bank of the Auldhouse Burn, from higher ground adjacent to the junction of Harriet Place and Thornliebank Road, construct 40m or thereby of new flood defence embankment to the west of Harriet Place, varying in height up to 0.2m above existing ground levels, to tie in with higher ground opposite 10 Harriet Place as generally shown on the said plan marked WN/WCWP/A/10 and as detailed at Section 8A on the said plan marked WN/WCWP/A/13.
- A12** On the left hand bank of the Auldhouse Burn, from higher ground to the north west of the Shaws Filling Station at 265 Nether Auldhouse Road, construct 15m or thereby of new flood defence embankment through re-grading the existing ground profile, to tie in with the Shaws Filling Station brick boundary wall up to 0.2m above existing ground levels, and as generally shown on the said plan marked WN/WCWP/A/10.
- A13** On the left hand bank of the Auldhouse Burn, construct 170m or thereby of new flood defence wall to the south of Nether Auldhouse Road, varying in height up to 0.6m above existing ground levels, to tie in with higher ground due north west of the bridge carrying Nether Auldhouse Road across the Auldhouse Burn, and as shown on the said plan marked WN/WCWP/A/10 and as detailed at Sections 9A and 10A on the said plans marked WN/WCWP/A/13 and WN/WCWP/A/14 respectively. Provide ramps with a maximum gradient of 1 in 12 either side of the wall for pedestrian access to Auldhouse Park from Nether Auldhouse Road.
- A14** On the right hand bank of the Auldhouse Burn, from higher ground to the north east of 4 Auldhouse Gardens, adapt and upgrade the existing reinforced concrete wall for a distance of 50m or thereby, around the northern and eastern boundaries of the Army Cadets Centre at 30 Auldhouse Road, varying in height from 1.0 to 1.7m above existing ground levels and as shown on the said plan marked WN/WCWP/A/10 and as detailed at Section 9A on the said plan marked WN/WCWP/A/13. Security fencing shall be erected on top of the wall such that the overall height of the flood defence wall plus fence equals the height of existing security fence height along the southern edge of the property.

- A15** On the right hand bank of the Auldhouse Burn, from the end of Operation A14, construct 145m or thereby of new flood defence wall along the southern boundary of Auldhouse Park, varying in height up to 0.9m above existing ground levels, to tie in with the upstream parapet of the bridge carrying Nether Auldhouse Road across the Auldhouse Burn and as shown on the said plan marked WN/WCWP/A/10 and as detailed at Section 10A on the said plan WN/WCWP/A/14. Provide ramps with a maximum gradient of 1 in 12 either side of the wall for pedestrian and vehicle access to Auldhouse Park.
- A16** On the right hand bank of the Auldhouse Burn, to the north of 44 Crebar Street, construct a pumping station to discharge excess surface water through the flood defence wall into the Auldhouse Burn. The pumping station shall consist of a wet well and valve chamber (possibly constructed from pre-cast manhole rings, up to 2.7m diameter or thereby) and shall be constructed entirely underground, with the exception of a small control kiosk situated adjacent to the proposed pumping station, as shown on the said plan marked WN/WCWP/A/03.
- A17** On the right hand bank of the Auldhouse Burn, adjacent to 44 Crebar Street, install a surface water drainage system with 1 no. outfall of 450 mm diameter or thereby, at the locations identified on the said plan marked WN/WCWP/A/03. The outfall shall incorporate a flap valve or similar non-return apparatus and shall include a brick or reinforced concrete headwall. The discharge pipe shall be fitted with non-return apparatus. Install an electricity supply and telemetry link between the kiosk and pumping station.

## **Blackhouse**

The Operations to be carried out in terms of the Scheme to form a flood storage area at Blackhouse are as follows. References to the left or right hand banks of the Earn Water are related to the viewer looking downstream

- BLA01** Construct an earth embankment across the Earn Water, 250m or thereby upstream of the vehicle access bridge to Blackhouse Farm from Titwood Road. The crest of the embankment shall be 350m long or thereby and 3m wide or thereby, varying in height from 161.00m to 163.00m above Ordnance Datum (OD), corresponding to a maximum height above existing ground levels of approximately 15m where the embankment crosses the Earn Water. The embankment crest shall incorporate a tied concrete block spillway, 135m long or thereby, with a spill level of 161.00m OD. The variable width tied concrete block spillway shall extend along the surface of the downstream face of the embankment and onto the flood plain to the north east of the embankment. The embankment shall be constructed with an impermeable central core formed partially from reinforced concrete and partially from ground improvement works,

and part or all of the embankment shoulders shall be constructed with suitable material excavated from within the land on which entry is required for the purposes of carrying out the Operations and of executing temporary works. Construct erosion protection to the downstream toe of the embankment through provision of a cutoff wall, 200m or thereby in length. All works as generally shown on the said plans marked WN/WCWP/BLA/01 and WN/WCWP/BLA/02 and as detailed at Sections 1BLA, 2BLA and 3BLA on the said plan marked WN/WCWP/BLA/03.

**BLA02** On the upstream slope of the embankment described in Operation BLA01, construct a new reinforced concrete inlet structure, varying in width between 8 and 18m or thereby, and varying in height from 1.5m to 9.3m or thereby above existing river bed levels. The inlet structure shall incorporate a Hydrobrake™ or similar flow control device and debris/security screens, as generally shown on the said plan marked WN/WCWP/BLA/02 and as detailed at Section 1BLA, on the said plan marked WN/WCWP/BLA/03.

**BLA03** Generally following the existing course of the Earn Water, construct a new reinforced concrete culvert to convey the Earn Water beneath the embankment described in Operation BLA01. The culvert shall be 41m long or thereby and shall have internal dimensions of 5m wide by 3m high or thereby, as generally shown on the said plan marked WN/WCWP/BLA/02 and as typically detailed at Sections 1BLA, and 3BLA on the said plans marked WN/WCWP/BLA/03. Provide raised walkways through the culvert for authorised personnel and mammals and, where possible, maintain the natural profile of the existing river bed.

**BLA04** On the downstream slope of the embankment described in Operation BLA01, construct a new reinforced concrete outlet structure, varying in width from 5.0m to 6.0m or thereby (widest at downstream end) and varying in height from 1.0m to 6.0m or thereby above existing river bed levels, and as generally shown on the said plan marked WN/WCWP/BLA/02 and as typically detailed at Section 1BLA on the said plan marked WN/WCWP/BLA/03. Provide lockable hinged screens to prevent unauthorised access to the culvert.

**BLA05** On the left and right hand banks of the Earn Water, for a distance of 500m or thereby upstream of the embankment described in Operation BLA01, create the potential for establishing a new area of wetland by lowering the existing river banks and land adjacent to them by a maximum depth of 1.0m, extending away from the river for a maximum distance of 45m or thereby from the left hand bank and for a maximum distance of 50m or thereby from the right hand bank. The works are as generally shown on the said plan marked WN/WCWP/BLA/01.

**BLA06** 25m or thereby upstream of the embankment described in Operation BLA01, divert and train the Earn Water by gradually deviating the channel from its original course and gradually widening the channel to 8.0m or thereby in order to accommodate the new inlet structure as shown on the said plan marked WN/WCWP/BLA/02. Erosion protection shall be provided on both river banks at the location of the diversion. The works are shown on the said plans marked WN/WCWP/BLA/01 and WN/WCWP/BLA/02 and as detailed at Section 3BLA on the said plan marked WN/WCWP/BLA/03.

## **Kirkland Bridge**

The Operations to be carried out in terms of the Scheme to form a flood storage area at Kirkland Bridge are as follows. References to the left or right hand banks of the White Cart Water and Polnoon Water are related to the viewer looking downstream.

**KIR01** Construct an earth embankment across the White Cart Water, 150m or thereby upstream of the bridge carrying the B764 Eaglesham to East Kilbride road across the White Cart Water. The crest of the embankment shall be 150m long or thereby and 3m wide or thereby, varying in height from 132.00m to 134.00m above Ordnance Datum (OD), corresponding to a maximum height above existing ground levels of approximately 9.0m where the embankment crosses the White Cart Water. The embankment crest shall incorporate two tied concrete block spillways, the western spillway being 85m long or thereby, the eastern spillway being 50m long or thereby, both with a spill level of 132.00m OD. The tied concrete block spillways shall extend along the downstream face of the embankment. The embankment shall be constructed from suitable material excavated from within the land on which entry is required for the purposes of carrying out the Operations and of executing temporary works. All works are as generally shown on the said plans marked WN/WCWP/KIR/01 and WN/WCWP/KIR/02 and as detailed at Sections 1KIR, 2KIR and 3KIR on the said plan marked WN/WCWP/KIR/04.

**KIR02** On the upstream slope of the embankment described in Operation KIR01, construct a new reinforced concrete inlet structure, approximately 20m wide and varying in height from 1.5m to 8.3m or thereby above existing ground levels. The inlet structure shall incorporate three Hydrobrake™ or similar flow control devices with debris/security screens, as generally shown on the said plan marked WN/WCWP/KIR/02 and as detailed at Section 1KIR on the said plan marked WN/WCWP/KIR/04.

**KIR03** Generally following the existing course of the existing river channel, construct a new reinforced concrete culvert to convey the White Cart Water beneath the new embankment described in Operation KIR01. The culvert shall extend for 25m or

thereby and shall have internal dimensions of 8m wide by 4m high or thereby, as generally shown on the said plan marked WN/WCWP/KIR/02 and as detailed at Sections 1KIR and 3KIR on the said plan marked WN/WCWP/KIR/04. Provide raised walkways through the culvert for authorised personnel and mammals and, where possible, maintain the natural profile of the existing river bed.

- KIR04** On the downstream slope of the new embankment described in Operation KIR01, construct a new reinforced concrete outlet structure, varying in width from 9.0m to 11.5m (widest at downstream end) or thereby and varying in height from 1.0m to 5.7m or thereby above existing river bed levels, and as generally shown on the said plan marked WN/WCWP/KIR/02 and as detailed at Sections 1KIR, on the said plan marked WN/WCWP/KIR/04. Provide lockable hinged screens to prevent unauthorised access to the culvert and ledges for authorised personnel and mammal access through the culvert.
- KIR05** At the point where the downstream toe of the spillways intersect the existing ground profile, construct stepped gabion basket or tied concrete block channels to convey spilled flood water back to the White Cart Water channel. The channel draining the eastern spillway increases in width from 4.0m at its upstream end to 12.0m at its downstream end, and the western spillway increases in width from 4.0m at its upstream end to 24.0m at its downstream end, as generally shown on the said plan marked WN/WCWP/KIR/02 and as detailed at Section 2KIR, on the said plan marked WN/WCWP/KIR/04.
- KIR06** 50m or thereby upstream of the embankment described in Operation KIR01, divert the White Cart Water by progressively deviating the channel from its original course and gradually widening the channel to 15.0m or thereby in order to accommodate the new inlet structure as shown on the said plan marked WN/WCWP/BLA/02. Erosion protection shall be provided on both river banks at the location of the diversion. The works are shown on the said plans marked WN/WCWP/KIR/01 and WN/WCWP/KIR/02 and as detailed at Section 3KIR on the said plan marked WN/WCWP/KIR/04.
- KIR07** On the left and right hand banks of both the White Cart Water and Polnoon Water, for a total distance of 750m or thereby upstream from the embankment described in Operation KIR01, create the potential for establishing a wetland area by lowering stretches of the right and left hand banks of the White Cart Water and Polnoon Water and land adjacent to them by a maximum of 1.0m. Augment the wetland feature with the possible re-meandering of the Polnoon Water over a distance of 700m or thereby upstream of the confluence with the White Cart Water. The works are as shown on the said plan marked WN/WCWP/KIR/01 and as detailed at Sections 4KIR, 5KIR and 6KIR on the said plan marked WN/WCWP/KIR/05.



- KIR08** Around the northern, western and southern boundaries of the Mains Farm holdings, from the downstream parapets of the bridge carrying the access road to Mains Farm across the Polnoon Water, construct 275m or thereby of new flood defence wall, varying in height up to 1.5m above existing ground levels as shown on the said plans marked WN/WCWP/KIR/01 and WN/WCWP/KIR/03 and as detailed at Sections 4KIR, 5KIR and 6KIR on the said plan marked WN/WCWP/KIR/05.
- KIR09** Construct a new raised access bridge across the Polnoon Water to Mains Farm. Correspondingly raise the level of the approach roads to the bridge by up to 0.6m. The Operation is shown on the said plan marked WN/WCWP/KIR/03 and is detailed on Section KIR04 on the said plan marked WN/WCWP/KIR/05.

## **Kittoch Bridge**

The Operations to be carried out in terms of the Scheme to form a flood storage area at Kittoch Bridge are as follows. References to the left or right hand banks of the Kittoch Water are related to the viewer looking downstream.

- KIT01** Construct an earth embankment across the Kittoch Water, 250m or thereby upstream of the bridge carrying the B759 Busby to Carmunnock road across the Kittoch Water. The crest of the embankment shall be 300m long or thereby and 3m wide or thereby, varying in height from 95.00m to 97.00m above Ordnance Datum (OD), corresponding to a maximum height above existing ground levels of approximately 15.0m where the embankment crosses the Kittoch Water. The embankment crest shall incorporate two tied concrete block spillways, the western spillway being 75m long or thereby, the eastern spillway being 165m long or thereby, both with a spill level of 95.00m OD. The tied concrete block spillways shall extend along the downstream face of the embankment. The embankment shall be constructed from suitable material excavated from within the land on which entry is required for the purposes of carrying out the Operations and of executing temporary works. All works are as generally shown on the said plans marked WN/WCWP/KIT/01 and WN/WCWP/KIT/02 and as detailed at Sections 1KIT, 2KIT and 3KIT on the said plan marked WN/WCWP/KIT/03.
- KIT02** On the upstream slope of the embankment described in Operation KIT01, construct a new reinforced concrete inlet structure, typically 10m wide and varying in height from 1.5 to 8.4m above existing river bed levels. The inlet structure shall incorporate a Hydrobrake™ or similar flow control device with debris / security screens, as generally shown on the said plan marked WN/WCWP/KIT/02 and as detailed at Section 1KIT on the said plan marked WN/WCWP/KIT/03.

- KIT03** Generally following the existing course of the existing river channel, construct a new reinforced concrete culvert to convey the Kittoch Water beneath the new embankment described in Operation KIT01. The culvert shall extend for 53m or thereby and shall have internal dimensions of 5.0m wide by 3.0m high, as generally shown on the said plan marked WN/WCWP/KIT/01 and as detailed at Sections 1KIT and 3KIT on the said plan marked WN/WCWP/KIT/03. Provide raised walkways through the culvert for authorised personnel and mammals and, where possible, maintain the natural profile of the existing river bed.
- KIT04** On the downstream slope of the embankment described in Operation KIT01, construct a new reinforced concrete outlet structure, varying in width from 6.0m to 9.0m (widest at downstream end) and varying in height from 1.0m to 6.4m above existing river bed levels, as generally shown on the said plan marked WN/WCWP/KIT/02 and as detailed at Sections 1KIT and 3KIT on the said plans marked WN/WCWP/KIT/03. Provide lockable hinged screens to prevent unauthorised access to the culvert and ledges for mammal and authorised personnel access through the culvert.
- KIT05** At the point where the downstream toes of the spillways intersect the existing ground profile, construct stepped gabion basket or tied concrete block channels to convey spilled flood water from the central and western portions of the spillway back to the Kittoch Water channel. The channel draining the majority of the eastern spillway is to increase in width from 4.0m at its upstream end to 22.0m at its downstream end, and the channel draining the western spillway is to increase in width from 4.0m at its upstream end to 14.5m at its downstream end, as generally shown on the plan marked WN/WCWP/KIT/02 and on Section 2KIT on the said plan marked WN/WCWP/KIT/03. Backfill the channels and landscape to minimise the visual impact of the structure on the surrounding area. Also construct a second reinforced grass drainage channel to convey spilled flood water from the eastern end of the spillway back to the main Kittoch Water channel via the route shown on the said plan marked WN/WCWP/KIT/02.
- KIT06** 30m or thereby upstream of the toe of the proposed embankment, divert the Kittoch Water by progressively deviating the channel from its original course and gradually widen to 8.0m or thereby in order to accommodate the new inlet structure. Erosion protection shall be provided on both river banks at the location of the diversion. The works are shown on the said plans marked WN/WCWP/KIT/01 and WN/WCWP/KIT/02 and as detailed at Section 3KIT on the said plan marked WN/WCWP/KIT/03.
- KIT07** On the right hand bank of the Kittoch Water, for a distance of 170m or thereby upstream from the embankment described in Operation KIR01, create the potential for establishing a wet grassland area by lowering the right hand bank

and land adjacent to the said river bank by a maximum depth of 1.0m. The works are as shown on the said plans marked WN/WCWP/KIT/01.

**KIT08** On the left hand bank of the Kittoch Water, for a distance of 200m or thereby, 180m upstream from the embankment described in Operation KIR01, create the potential for establishing a wet grassland area by lowering the left hand bank and land adjacent to the said river bank by a maximum depth of 1.0m. The works are as shown on the said plans marked WN/WCWP/KIT/01.

## **5. LAND**

The land which will be affected by the Operations and the land which will be affected by the Operations and upon which entry is required for the purpose of carrying out the Operations is as shown on the said plans listed in Paragraph 3 of this document.

The limits of deviation are defined in the First Schedule to the Act and are shown on the said plans listed in Section 3 of this document.

## **6a. ANCILLARY OPERATIONS – Busby, Cathcart, Langside, Shawlands, Pollokshaws, Pollok and Auldhouse Burn**

The following general ancillary Operations shall be undertaken:

- i. Any electricity supply or telecommunication cables which may be affected by the carrying out of the Operations are to be diverted or otherwise protected as may be reasonably required by the service provider.
- ii. Any gas apparatus which may be affected by the carrying out of the Operations are to be diverted or otherwise protected as may be reasonably required by Transco.
- iii. Any apparatus belonging to Scottish Water, other than watermains or sewers, which may be affected by the carrying out of the Operations are to be diverted or otherwise protected as may be reasonably required by Scottish Water.
- iv. Implement within the limits of land affected by the Operations and upon which entry is required for the purpose of carrying out the Operations a scheme of planting and landscaping to the approval of the relevant Planning Authority.
- v. Within the limits of land affected by the Operations and upon which entry is required for the purpose of carrying out the Operations, on the landward side

of the flood defence, install surface water drainage systems immediately adjacent to the flood defence, with outfalls not exceeding 300mm in diameter provided at various locations to discharge the said surface water into the White Cart Water and Auldhouse Burn. The outfalls shall be equipped with flap valves or similar non-return apparatus and shall, where applicable, incorporate brickwork or reinforced concrete headwalls.

- vi. Where required, install flap valves or other similar equipment to prevent floodwater backing up any otherwise unprotected existing combined sewer outfall, overflow or other pipe, conduit or culvert discharging into the White Cart Water or Auldhouse Burn.

## **Cathcart**

**C(A)01** The Scottish Water sewer (diameter unknown) through the allotments to the east of Berridale Avenue as shown on the said plan marked WN/WCWP/C/03 is to be diverted or otherwise protected by, or with the approval of, Scottish Water.

**C(A)02** The 225 mm diameter vitreous clay Scottish Water sewer through the back gardens of 50 - 98 Old Castle Road as shown on the said plan marked WN/WCWP/C/03 is required to be diverted or otherwise protected by, or with the approval, of Scottish Water.

## **Langside**

**L(A)01** The Scottish Water sewer (diameter and material type unknown) as shown on the said plans marked WN/WCWP/L/04 and WN/WCWP/L/05 is required to be diverted or otherwise protected by, or with the authority of, Scottish Water.

**L(A)02** Remove the existing resident's accesses to Millbrae Walkway for 2 to 46 Millbrae Crescent and replace with a dedicated service path as shown on Section 6L on the said plan marked WN/WCWP/L/08.

**L(A)03** Subject to confirmation on site, locate and remove the eight or thereby, existing buried manhole covers to the Scottish Water sewer passing through the Albert Park Recreation ground and replace with watertight screw down covers as generally shown on the said plan marked WN/WCWP/L/03, WN/WCWP/L/04 and WN/WCWP/L/05.

## **Pollokshaws**

**P(A)01** Subject to confirmation on site, remove the one or thereby existing buried manhole cover to the Scottish Water sewer passing through Auldhouse Park and

replace with a watertight screw down cover as generally shown on the said plan marked WN/WCWP/P/04.

## **Pollok**

No Ancillary Operations

## **Auldhouse Burn**

**A(A)01** The Scottish Water sewer (dimension and material type unknown) along the eastern boundary of the King George's Playing Fields as shown on the said plans marked WN/WCWP/A/05 and WN/WCWP/A/06 is required to be diverted or otherwise protected by, or with the approval of, Scottish Water.

**A(A)02** Subject to confirmation on site, remove the nineteen or thereby existing buried manhole covers to the Scottish Water sewer passing through King George Playing Fields and replace with watertight screw down covers as generally shown on the said plans marked WN/WCWP/A/04, WN/WCWP/A/05 and WN/WCWP/A/06.

**A(A)03** Subject to confirmation on site, remove the nineteen or thereby existing manhole covers to the Scottish Water sewers passing through the grassed area to the north and north east of the Hutcheson Grammar playing fields and replace with watertight screw down covers as generally shown on the said plans marked WN/WCWP/A/07 and WN/WCWP/A/08.

**A(A)04** The Scottish Water surface water drainage (dimension and material type unknown) at Harriet Place as shown on the plan marked WN/WCWP/A/10 is required to be diverted or otherwise protected by, or with the approval of, Scottish Water.

## **6b. ANCILLARY OPERATIONS – Blackhouse, Kirkland Bridge, Kittoch Bridge**

The following general ancillary Operations shall also be undertaken:

- i. Within the limit of land on which entry is required for the purposes of the Scheme, remove any fences, dykes, walls, hedges where necessary for carrying out the Operations or for the executing of temporary works and erect new fences, dykes, walls or hedges for the protection of persons or animals.

- ii. Implement within the limits of land on which entry is required for the carrying out the Operations, a scheme of planting and landscaping to the approval of the relevant Planning Authority(ies).
- iii. Any electricity supply or telecommunication cables which may be affected by the carrying out of the Operations or of executing the temporary works are to be diverted or otherwise protected as may be reasonably required by the owner.

## **Blackhouse**

**BLA(A)01** Reinstate any land damaged by the carrying out of the Operations or the execution of temporary works in accordance with a scheme of reinstatement where required by the local Planning Authority, or otherwise to the reasonable satisfaction of the land owner concerned.

**BLA(A)02** Construct a new 3.0m wide or thereby maintenance/access track, surfaced in non-bituminous material, extending from the junction with the single track access road to Blackhouse Farm at the south eastern end of the embankment crest to a turning area located adjacent to the proposed inlet structure and as generally shown on the said plans marked WN/WCWP/BLA/01 and WN/WCWP/BLA/02. The junction between the access road to Blackhouse farm and the maintenance/access track shall be surfaced in tarmacadam.

**BLA(A)03** Re-grade and realign the private access track from Titwood Road to Blackhouse Farm to accommodate the footprint of the new embankment described in BLA01 as generally shown on the said plan marked WN/WCWP/BLA/01.

## **Kirkland Bridge**

**KIR(A)01** Reinstate any land damaged by the carrying out of the Operations or the execution of temporary works in accordance with a scheme of reinstatement where required by the local Planning Authorities, or otherwise to the reasonable satisfaction of the land owner concerned.

**KIR(A)02** For the purposes of maintaining and monitoring the storage area, construct a new 3.0m or thereby wide vehicular access road, surfaced in non-bituminous material, extending from the western end of the embankment crest to join the B764 at a point west of the existing Kirkland Bridge, as shown on the said plan

marked WN/WCWP/KIR/01. Install a lockable gate across the access track near the junction with the B764 to prevent unauthorised access to the site.

**KIR(A)03** Construct a new 3.0m wide maintenance/access track, surfaced in non-bituminous material, extending from the north western end of the embankment crest to a turning area located adjacent to the proposed inlet structure and as generally shown on the said plans marked WN/WCWP/KIR/01 and WN/WCWP/KIR/02. The junction between the B764 and the maintenance/access track shall be surfaced in tarmacadam.

## **Kittoch Bridge**

**KIT(A)01** Reinstate any land damaged by the carrying out of the Operations or the execution of temporary works in accordance with a scheme of reinstatement where required by the local Planning Authorities, or otherwise to the reasonable satisfaction of the land owner concerned.

**KIT(A)02** For the purposes of maintaining and monitoring the storage area, construct a new 3.0m or thereby wide vehicular access road and turning area, surfaced in non-bituminous material, extending from the western end of the embankment crest to join the B759 at a point west of the existing Kittoch Bridge, as shown on the said plan marked WN/WCWP/KIT/01. Install a lockable gate across the access track near the junction with the B759 to prevent unauthorised access to the site.

**KIT(A)03** Construct a new 3.0m or thereby wide maintenance/access track, surfaced in non-bituminous material, extending from the western end of the embankment crest to a turning area located adjacent to the proposed inlet structure and as generally shown on the said plans marked WN/WCWP/KIT/01 and WN/WCWP/KIT/02.

**KIT(A)04** An elevated gravity sewer crosses the Kittoch Water approximately 350m upstream of the embankment described in Operation KIT01 and becomes submerged during the design flood event. Undertake remedial work to the holding down straps which fix the 863mm O.D steel tube sewer pipework to its support piers.

## **7. POWERS, ETC.**

The provisions of the First Schedule to the Act are hereby incorporated.

**8. COST**

The estimated cost of the said Operations is **£29,500,000** (Twenty Nine Million Five Hundred Thousand Pounds)

Made by Glasgow City Council on the 26 day of August 2004 and signed by George Black, a Proper Officer of Glasgow City Council authorised to sign documents on its behalf.

George Black

.....(Signature)



The Scottish Ministers in exercise of the powers conferred to them by section 4 of, and paragraph 7 of the Second Schedule to, the Flood Prevention (Scotland) Act 1961, and of all other powers enabling them in that behalf, hereby confirm the foregoing Flood Prevention Scheme.

Subscribed by Philip Wright .....(Signature)

Head of Air, Climate and Engineering Division  
in the Scottish Executive Environment and Rural Affairs Department at Edinburgh on

.....

before this witness:

Gordon Petrie .....(Signature)