

**Application by City of Edinburgh Council
at**

**Water Of Leith Flood Defence Scheme, Adjacent To
The Water Of Leith, Between Bonnington And
Longstone, Adjacent To Murray Burn Between
Longstone Road And The Confluence With The
Water Of Leith, Harlaw Reservoir And Threipmuir
Reservoir**

**Development Quality Sub-Committee
of the Planning Committee**

9 June 2004

Proposal: Development required as part of the Water of Leith flood defence scheme; flood defence structures, including the construction of embankments and walls and modifications to existing walls, modifications to bridges, new channels through spillways at Harlaw and Threipmuir Reservoirs, additional pump stations and modifications to access arrangements.

Applicant: City Development Department

Reference No: 03/04204/CEC

1 Purpose of report

To recommend that the application be **APPROVED**

Conditions

1. The application shall be referred to the Scottish Ministers prior to determination.
2. Before the development commences, a finalised Environmental Action Plan (EAP), based on the table of actions already submitted in table 23.2 of the Environmental Statement, shall be prepared in consultation with the Head of Planning and Strategy, SEPA, and Scottish Natural Heritage, and shall be adhered to throughout the construction and mitigation stages of the development.

3. As part of the Environmental Action Plan (EAP) for the works, the contractor will provide method statements for each site for carrying out specific activities, including;
In-river construction, stream diversion, removal of soil and materials from sites, importing of materials into the sites, routes to sites, hours of operation, road closures, road and footpath diversions/closures, and piling and ground improvement operations (with particular regard to protecting residential amenity and the structure of sensitive buildings). These method statements, along with the EAP, will set out in detail the measures proposed to protect the environment during implementation of the works. In addition a Site Emergency Action Plan will be produced, agreed in writing by the Head of Planning and Strategy and disseminated to all site staff, before the development commences.
4. Sample/s of the proposed facing materials and copes for all walls and other structures shall be submitted to and approved in writing by the Head of Planning & Strategy before work commences on site.
5. No development shall take place within any the proposed sites until the applicant has secured the implementation of a programme of archaeological work, in accordance with a written scheme of investigation which has been submitted to and approved in writing by the Head of Planning & Strategy, having first been agreed by the City Archaeologist.
6. Prior to the demolition of the walls at Warriston Crescent and those between Bell Place and Reid Terrace (Stockbridge Colonies), the applicants shall construct a three metre trial section at each location in an agreed position to demonstrate that materials, coursing, surface finish and pointing and finishing details are to the satisfaction of the Head of Planning and Strategy.
7. The replacement bridge at Bell Place shall not be hereby approved in detail. The details of this shall be reserved matters, which are to be submitted to the Council within three years of the grant of this consent.
8. The detailed design for all floodgates shall be submitted to and approved by the Head of Planning prior to the commencement of works on site. Decorative panels shall be commissioned for floodgates at Warriston Road, Murrayfield Stadium, and Riversdale Crescent to Baird Drive.
9. The details of the abutments for the repositioned footbridge at Well Court/Hawthornbank Lane shall be submitted to and approved by the Head of Planning prior to works commencing within this area. The existing stonework shall be retained, and reused in a similar form as existing in the revised position.

Reasons

1. In order to accord with the statutory requirements of the Town and Country Planning (Scotland) Acts.
 2. In order to ensure ecological impacts are minimised and managed to protect against the impacts of the construction and post construction phases of the development.
 3. To ensure adequate protection is given to the amenity of neighbours and to protect local wildlife and habitats, and in the interests of road safety and traffic management.
 4. In order to enable the Head of Planning & Strategy to consider this/these matter/s in detail.
 5. In order to safeguard the interests of archaeological heritage.
 6. In order to retain and/or protect important elements of the existing character and amenity of the site.
 7. So that the detailed design of this bridge may be considered further.
 8. In order to enable the Head of Planning & Strategy to consider this/these matter/s in detail.
 9. In order to safeguard the character of the conservation area.
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2 Main report

Site description

The site is the Water of Leith watercourse from Harperrig Reservoir to a point at the crossing of Newhaven Road. There is a section within West Lothian, which is being considered by that Authority.

The source of the Water of Leith is in the Pentland Hills to the south-west of Edinburgh. It flows north-east through the city of Edinburgh from its source to the Firth of Forth at Leith Docks. A plan of the catchment is included in Appendix B (Figure 1).

The Water of Leith catchment is 117km², of which approximately 70% is rural and 30% urban. The upstream catchment is rural, with agricultural practices mainly comprising livestock grazing. 29% of the whole catchment drains to the three reservoirs located in the Pentland Hills at Harperrig, Threipmuir and Harlaw (see Appendix B, Figure 2). Harperrig is on the line of the Water of Leith (refer to 2.3.3.4), and Threipmuir and Harlaw drain to the Bavelaw Burn, which joins the Water of Leith at Balerno. The reservoirs were constructed in the mid-nineteenth century to provide a continuous flow to numerous mills, which relied on the river for industrial output.

From the Pentland Hills, the river flows to the north-east, and then meets the urban environment at Balerno. Downstream of Balerno, the immediate surroundings are preserved as amenity parkland over most of its length, with occasional wooded areas. It continues through the outlying areas of Currie and Juniper Green, under the City Bypass and into Edinburgh. The Murray Burn tributary joins the Water of Leith at Longstone. The Water of Leith Walkway runs alongside, which connects into foot and cycle paths, and provides links to other major green spaces. Within the City, the river passes through residential and industrial areas. Downstream of Murrayfield, the majority of the river is canalised. The river then flows into Leith Docks, where water levels are retained in the dock to maintain sufficient draft for ships, before finally being discharged through a series of locks and sluice gates into the Firth of Forth.

Specific Site descriptions

Note, throughout this report the sides of the river are referred to as left or right bank. This is taken from a view facing downstream.

Harperrig Reservoir - WEST LOTHIAN COUNCIL

Situated 8 kilometres west of Balerno, and 6 km south of Livingston in the Pentland Hills Regional Park, at a height of 274.42 metres AOD. This man made reservoir is one of Edinburgh's compensation reservoirs. It was constructed in 1860 and the dam was raised in 1890. It has a capacity of 4087 million litres, and an area of 96 hectares. The dam height is 15.4 metres with a crest length of 150 metres. The maximum water depth is 13.3 metres.

Thriepmuir Reservoir

Situated 2 kilometres south of Balerno in the Pentland Hills Regional Park, at a height of 254.66 metres AOD. It is divided into 4 sections by causeways. Section 1, west of Redford Bridge contains the Bavelaw Marsh area; east of the bridge is section 2, between Redford Bridge and the causeway access to Easter Bavelaw; section 3, east of the causeway is the main water body; and section 4 is the far eastern tip, known as the Black Springs. The dam and reservoir were constructed in 1844. It has a capacity of 2359 million litres, and an area of 87.6 hectares. The dam height is 9.5 metres with a crest length of 400 metres. The maximum water depth is 5.2 metres.

Harlaw Reservoir

Situated immediately north of Thriepmuir reservoir, just south of Balerno in the Pentland Hills Regional Park, at a height of 246.89 metres AOD. It was constructed in 1848. It has a capacity of 727 million litres, and an area of 12.3 hectares. The dam height is 21.3 metres with a crest length of 157 metres. The maximum water depth is 17.5 metres.

These three reservoirs are used to provide a compensation flow of 34.38 Ml/day to replace the natural flows in the watercourse from abstractions from the upper catchment area. They are owned and operated by

Scottish Water. Both Harperrig and Thriepmuir are designated wildlife refuges, and Thriepmuir is a designated SSSI.

Haughhead Ford

Small crossing of Water of Leith 2.5 kilometres west of Balerno, 600 metres south of the A70.

Longstone

This area extends from the Lanark Road Bridge in the east to the Longstone Inn to the west, at the convergence with the Murray Burn. The river passes beneath the Union canal aqueduct and a railway viaduct, both listed buildings, and then is bordered by industrial units, and retail warehouses. The final section runs hard up against the wall to Longstone Road. On the right bank there is the Water of Leith Visitor Centre and Walkway. There are also allotment gardens and then Saughton Cemetery at the downstream, west end of this section, in the bend of the river.

Murrayburn

Murray Burn converges with the Water of Leith at Longstone Inn. This section stretches from Longstone Inn in the east to where the burn emerges from a culvert at Longstone Road Bridge in the west. The left bank comprises of residential properties at the west end, with amenity grassland, owned by the Scottish Prison Service (SPS) and Saughton Prison further downstream. At the east end, the footpath, described as running along the southern boundary of Saughton Prison in section 5.13, crosses the burn at a footbridge next to Longstone Inn. On the right bank, there are retail properties with residential flats above next to Longstone Inn, with a car park to the side, adjacent to the river. Further west, a storage depot lies next to the burn, before the riverbank widens to an area of amenity grassland, which is again owned by the SPS. A small footpath runs between Longstone Road roundabout and the Prison, and is carried across the burn via a concrete slab. Beyond the footpath is the building and car park of a social club. Flood defences are planned on the right bank only.

Saughton

The Saughton section comprises the area from the bridge over the river at Gorgie Road in the north to the south-western edge of the Stenhouse Industrial Estate, on the left bank. At the southern end of the industrial estate a footpath runs from the adjacent streets along the southern boundary of Saughton Prison. Between the industrial estate and the river is a wooded area.

On the right bank is a factory on Gorgie Road and, until the footbridge, gardens of residential properties. Beyond the footbridge, the riverbank is again wooded, with the Water of Leith Walkway running alongside. There is also an area of allotments.

Gorgie Road

This section covers the area from the footbridge across the river into Saughton Park in the east, to the water pipe that crosses the river to the west. On the right bank, Gorgie Road runs adjacent to the river, and beyond a weir in the river, Ford's Road continues along the riverside for a section. Then the riverbank separates from the road, and a residential property and Home for the Aged lie adjacent to the river. Once past the Ford's Road Bridge (footbridge), the properties lining the bank are commercial and retail. On the left bank, Saughton Park lies adjacent to the river until Ford's Road Bridge, where on the downstream side there is a residential property. Upstream of the bridge is an area of amenity grassland, which the Water of Leith Walkway passes through. There is also a Children's Centre at the south-west end of the section. Defences are planned on the right bank from the weir to the pipe-bridge, and on the left hand side from the large wall of Saughton Public Park to the Children's Centre.

Balgreen

The Balgreen section covers the length of the river from the Glasgow-Edinburgh railway line to the north-east to the road bridge across the river at Balgreen Road to the south-west. At the north-east end there is a strip of vacant land that runs adjacent to the railway line. This land is safeguarded in the development plans for future public transport schemes. This is now the intended tram line route. On the right bank is an industrial estate, with a former bus depot adjacent to the river. Further along are the gardens of the houses along Stevenson Avenue, which then continue to Balgreen Road. On the left bank, the Water of Leith walkway runs through a wooded area, with allotment gardens, bowling greens and Balgreen Nursery and Primary Schools beyond. Across Balgreen Road lies Saughton Park, with a car park adjacent to the bridge and river.

Murrayfield

- a) The area of Murrayfield South runs from the Ice Rink in the north-east to the Glasgow-Edinburgh railway line in the south. It takes in the Murrayfield training playing fields to the east, and the residential housing of Baird Grove to the west. There are road and footbridges across the river at Saughtonhall Avenue and Baird Drive, which provide emergency exit routes for the stadium. The Water of Leith Walkway runs along the left bank of the river, and the footpath splits at the Baird Drive Bridge. The main walkway crosses over the Baird Drive Bridge to the left bank, then continues under the railway bridge, and a secondary footpath continues on the right bank.
- b) The Murrayfield north area covers the river section from the New Roseburn Bridge on Corstorphine Road to the north-east to the Ice Rink at the south-west. At the Corstorphine Road end, there are buildings located adjacent to the river, with retirement flats, a chiropractor clinic, architect's offices and a residential house on the right bank, and a car showroom, garage service centre (Kwik-Fit) and housing on the left bank.

The riverbank is heavily wooded in this section. Further upstream, the land on the right bank opens up into Roseburn Public Park, with the Ice Rink to the south, adjacent to Murrayfield Stadium. There are public park buildings adjacent to the river, housing a small kiosk, changing rooms and toilets. The Water of Leith Walkway runs alongside the river through the park. Beyond the park is Roseburn Crescent, with housing and a nursing home adjacent. On the left bank, gardens for housing on Corstorphine Road back onto the river, with a short frontage, in the middle, where the river is adjacent to the road. Further downstream Riversdale Crescent runs alongside the river. There is a road bridge and footbridge from Riversdale Crescent across the river providing access to the Ice Rink and Stadium. The Stank Burn emerges from a culvert and joins the Water of Leith between these bridges.

Coltbridge

The Coltbridge section runs from a disused railway bridge in the north-east to the Old Roseburn Bridge (footbridge) in the south-west. On the left bank, the properties consist of mostly residential apartments, with the exception of the building at the railway bridge, which is used by an Architectural Practice. There are also some private garages that abut the river. On the right bank is the Water of Leith walkway, and a vegetated embankment, with residential properties at the top of the embankment.

Belford Bridge

The Belford Bridge site is within the Dean Conservation Area and the World Heritage Site. There is a sports club and a large hotel adjacent to the site on the left bank. There is a potential housing development site at Bells Mills between these two commercial uses. It is a heavily wooded area, and there are many footpaths through the park areas.

Damside

The whole of the Damside area is within the Dean conservation area and the World Heritage Site. The areas adjacent to the river are mainly residential. It is a heavily wooded area, and there are many footpaths through the park areas.

Veitch's Square

The Veitch's Square section extends from Falshaw Bridge to Stock Bridge. To the north-east, the river is bounded by the gardens of the properties along Saxe-Coburg Place. To the east and south-east, on the right bank, the buildings that face onto the river are a mixture of residential and commercial properties, mainly flats and offices, on Dean Bank Lane. To the west on the left bank, the Water of Leith walkway borders the river, and the properties beyond are mainly residential properties with gardens. There is a block of sheltered housing in the centre of the site, on Veitch's Square.

The Stockbridge Colonies

The Stockbridge Colonies section extends from Tanfield House Access Bridge upstream to Falshaw Bridge.

The site is within the Inverleith Conservation Area. Land use is mainly residential on the right bank and greenspace/woodland on the left bank. The Bell Place Footbridge provides access across the river from Bell Place to the Water of Leith walkway, which runs through the woodland on the left bank.

The Stockbridge Colonies comprise Grade B listed residential two-storey terraced flats with gardens, built originally to house mill workers. The gable ends of some of the terraces abut the river with brick garden walls between the terraces. The existing buildings are mostly of stone construction with slate roofs.

There are modern apartment blocks at Liddesdale Place and Ettrickdale Place fronting the Water of Leith. There is currently a brick wall with railings between the flats and the river. Bell Place Footbridge has a cast iron "humpback" frame, with a timber deck and handrail, and is in a state of disrepair.

Warriston

The Warriston section covers the stretch of river from the disused Warriston Viaduct upstream to the access bridge to Tanfield House. The right bank is bounded by Warriston Road and Brandon Terrace. Between Warriston Viaduct and Canonmills Bridge, the left bank is bounded by the gardens to the rear of the properties on Warriston Crescent. The properties on Warriston Crescent are Category A listed .

Upstream of Canonmills Bridge the left bank is bounded by the gable end wall and garden wall of the tenement on Howard Street. Although the area is predominantly residential, there are retail and restaurant premises at Canonmills. This site is within the Inverleith Conservation Area.

St Mark's Park/Powderhall

The St. Mark's Park/Powderhall section extends from the old footbridge in St. Mark's Park at the east end, to the disused Warriston railway viaduct at the west end. St. Mark's Bridge crosses the river in the middle of this stretch. Downstream of St Mark's Bridge, St Mark's Public Park is located on the left bank and a new residential development on the right bank on the site of the former Powderhall Stadium. Upstream of the road bridge, Warriston Cemetery is located on the left bank and the right bank is bounded by Warriston Road with a variety of light industrial properties. The Water of Leith Walkway runs along Warriston Road and through St Mark's Park.

Bonnington

The Bonnington section covers the stretch of river from Bonnington Paper Mills in the north-east, extending upstream to the rear of no.25 Redbraes Place to the south-east. The section is located on a bend in the river with boundary walls on both sides over much of its length. The river passes under Newhaven Bridge, which is located, immediately upstream of the Bonnington Business Centre. Land use is mainly commercial to the east of Newhaven Bridge and residential on both banks immediately to the west of the bridge. Further upstream, towards the bend in the river the left bank is predominantly green space with allotment gardens. Residential properties continue on the right bank round the bend in the river. The river flows over a weir at the upstream end of the section.

East of Newhaven Bridge, a new footbridge constructed as part of the Water of Leith walkway connects the right bank to the left. The walkway continues along the right bank to the east.

Site history

There have been a number of smaller works carried out on and around the Water of Leith in the interest of flood mitigation. These have not required planning permission. These include drawdown on the reservoirs, wall improvements at Warriston Road/Crescent, and minor channel/culvert improvements.

There are 11 concurrent planning applications for listed building consent for the Water of Leith flood scheme.

31/03/04 - Proposals approved for flood prevention scheme along the Braidburn (03/03925/FUL). Currently awaiting First Minister determination.

13/04/04 - Consent was granted by West Lothian Council for "Modifications to reservoir spillway, dredging and creation of landscaping bunds to maintain/protect Gull Island and modifications to access in relation to Water of Leith Flood Prevention Scheme" at Harperrig Reservoir, Kirknewton (WLC ref: 1266/2003).

History of flooding

There is a long history of flooding in the Water of Leith catchment. An historical review (Arup, 2002) identified references to severe flood events affecting property along the Water of Leith as far back as the 14th century. As the City of Edinburgh has grown, the number of properties in areas potentially at risk of flooding has risen. Severe flooding occurred in November 1984, November 1990, and April 2000 with the April 2000 flood being the most severe of these events. The river flooded Bonnington, Warriston, Stockbridge, Coltbridge, Murrayfield, Roseburn and Longstone. In addition, Murrayfield Stadium and Murrayfield Ice Rink were inundated. Further flooding occurred in November 2000.

To help place the April 2000 flood in a wider context, the historical review culminated in a qualitative assessment of the relative magnitude of past events, identifying some 36, which have occurred from the present day to as far back as 1358.

The results of this study, in which an attempt was made to rank floods using data obtained from rainfall records, newspaper articles and archive information on floods dating back to 1801, are summarised in the table below.

Table 2: Ranking of historical flood events in the Water of Leith Catchment.

Rank/Date/Impact of flood events assessed at Roseburn

- 1= 26 Apr 2000, Severe
- 1= 13 Aug 1948, Severe
- 1= 18 Aug 1920, Severe
- 1= circa 1877/79, Severe (but prior to raising of Harperrig & Threipmuir)
- 5= 11 Oct 1832, Severe (but prior to construction of reservoirs)
- 6= 6 Oct 1990, Significant
- 6= 3 Nov 1984, Significant
- 6= 22 Sep 1927, Significant
- 6= 8 Aug 1920, Significant
- 6= 5 Oct 1907, Significant
- 11= 29 Sep 1846, Significant (but prior to construction of reservoirs)

This information implies that floods of a similar scale to those that occurred in April 2000 have occurred on at least three further occasions in the last 200 years. Only one of these events (1877/79) occurred before construction of the three reservoirs.

Some further conclusions from the study are:

- Seasonally: Severe and significant floods on the Water of Leith often occur outside of the winter period.
- The role of the reservoirs: The reservoirs play a crucial role in the moderation of floods on the Water of Leith. The actual frequency of flooding is heavily dependent on the water levels in the reservoirs before the storm occurs.

The role of antecedent conditions: In the last century, minor flooding preceded three major flood events by 5, 7 and 10 days. This emphasises the importance of drawing the reservoirs down as soon as possible following any flood event which uses up the available storage.

Areas Flooded in the April 2000 Flood Event

Information given in following order - Site/Flooding mechanism/Max depth of flooding.

Bonnington - Seepage under river wall; wall breached at Ladehead/Subsequently impounded flood water behind the river wall caused it to breach towards the river upstream of the Bonnington Bridge. /0.85m.

St.Mark's/Powderhall/River wall overtopped, subsequently collapsing over a 5m length upstream of St Mark's Bridge/Water trapped in Beaverhall Rd by bund in stadium site.

Warriston/Through commercial basement windows at the Canonmills bridge/River wall overtopped on left-hand side, with subsequent collapse of dividing garden walls.

Stockbridge Colonies/Wall flooded through gaps and gates at Liddesdale and Ettrickdale Place/Flooding through backing up of drains, bypass flow around footbridge abutment. Walls collapsed at Bell Place and Kemp Place. Balmoral Place and Collins Place backing up of drains and overtopping of wall. / 0.6m above GL, Colville Pl, 1.2m Balmoral Pl, Collins Pl., Veitch's Square / Low ground and gap in the wall. Seepage under wall into gardens. Flooding through air vents on right hand side.

Damside / No flooding occurred.

Belford Bridge / Low ground level.

Coltbridge / Overtopped brick wall / 0.85m

Murrayfield Much overbank flooding. Park weir overtopped at Roseburn Crescent. / Floodwall in playground (west end of park wall) collapsed.

Flooding bypassed defences by flowing through the pedestrian arch through the railway bridge upstream of Baird Drive.

Surcharging of drainage / 1.2m, Roseburn Cresc, 0.3m, Riversdale Cresc, 0.45m, Ice Rink

Balgreen / Flooding of gardens occurred following the collapse of garden wall upstream of sharp river bend. / Flooding of industrial estate following overbank flooding upstream of Railway bridge / 0.3m deep (garage at Westfield Ave.)

Gorgie Road / Flooding occurred over low ground.

Saughton / Brick wall collapsed in industrial estate. Flooding occurred over low ground. / Overbank flooding from Longstone allotments and cemetery / 1.0m (industrial estate)

Longstone / Seepage through floodwalls and drainage. Overbank flooding through the allotments and cemetery. / Direct flooding through Longstone Inn doorway

Murray Burn / Backing up from the Water of Leith.

Development

The proposals are for a comprehensive flood prevention scheme for the Water of Leith.

During the scheme development, a number of options were considered. From an early phase in the project there were two options which were deemed to be viable as well as practical to promote and construct. These options were:

Option A: The construction of walls and embankments along the Water of Leith corridor to contain the floodwater, complemented by additional storage of storm water at Threipmuir, Harlaw and Harperrig reservoirs.

Option B: The construction of higher walls and embankments along the Water of Leith corridor to contain the floodwater, without the use of reservoir storage.

Option A was selected as the preferred option. Despite being more complex than Option B, it provided a more sustainable approach to flood prevention and required lower flood defence structures along the length of the Water of Leith.

Reservoir works

Modifications are to be made to the spillways at the three reservoirs to ensure that the water levels are drawn-down to the required levels of 0.9 metres for Harlaw and Harperrig and 0.6 metres for Threipmuir. The modifications at Harlaw and Harperrig will comprise new low-level weirs constructed in the existing spillways. At Threipmuir, a culvert will be constructed through the embankment north of the dam, adjacent to the low-level weir. These low-level weirs and culvert will automatically control the water levels in each of the reservoirs to the new reduced levels. However, in addition to these new features, the existing draw-off valves will be refurbished and/or modified as necessary as they will be used to help reduce the water level more rapidly following a storm event and thus maximise the available storage for a follow-on storm event. The draw-off valves will therefore have a dual function both for flood storage and compensation flow into the river and will switch between these roles at the new reduced water level.

Maximising downstream storage

In addition to the storage at the reservoirs, the opportunity to maximise storage has been developed most noticeably at Murrayfield and Roseburn, but also at Saughton (Fords Road Park) and around Stenhouse/Longstone around Saughton Prison.

Physical barriers

1. Floodwalls, floodgates and embankments

The scheme will essentially comprise floodwalls, floodgates and embankments. In constructing the defences it is likely that there will be a number of service diversions. These include:

- Diversion of 33kv cables under footway along Riversdale Crescent
- The 12" gas main under the footway of Longstone Road

- Replacement of the 840 dia. combined sewer to north of the Colonies.
- Realignment of the 450 / 510 dia. foul sewer through Coltbridge.

2. Existing Structures

The flood defences are designed to maximise the use of existing river walls and building structures by incorporating them, where possible, into the defences. However this incorporation is fairly limited, as most of the existing river walls are often random rubble garden walls with shallow foundations. Some building walls are being used and where necessary will be strengthened to resist the water pressures. The use of some of the existing river walls and building structures through strengthening will give marginal savings on construction costs and will help reduce disruption as a result of the reduced extent of the works.

Bridge Raising and Strengthening Works

There are a number of bridges along the Water of Leith that will require remedial works or replacement to ensure that they are able to withstand the design flood event. The required works are summarised in the table below.

Environmental Mitigation, Improvement Works and Environmental Monitoring

1. Along the Watercourse

There are a number of mitigation measures and improvement works that will be implemented during scheme development and construction. They are presently summarised in Appendix I - Water of Leith Environmental Action Plan and identified in the Environmental Statement.

2. At the Reservoirs

The proposed channels in the spillways will have a minor impact on the visual appearance of these structures. The reduced water levels in the reservoirs resulting from these channels are the main source of environmental concern, particularly at Threipmuir. This is because of the potential for the marsh areas that have developed at Bavelaw and Black Springs to dry-out. To mitigate this effect, the measures outlined below are to be undertaken to retain water in these areas to the previous top water level.

At the Black Springs Bund, a sluice gate is to be fitted to the existing culvert and a new culvert constructed at a higher level through the embankment such that its upstream invert level will match the existing Threipmuir top water level.

At Redford Bridge, a horseshoe weir will be constructed upstream of the bridge and causeway, within the SSSI site. This structure will allow Threipmuir reservoir to be drawn-down to the required level while maintaining the existing water level in Bavelaw Marshes. A low-level sluice gate will be provided to drain the Marsh, if required. Both fish and eel passes will be included in the structure and, although it is currently proposed to use a step-pool pass for the fish, other options will be explored and discussed with the anglers and the Scottish Executive Fisheries Committee.

Fishing activities at the reservoirs will be impacted upon both during and after construction. In mitigation, pontoons/jetties will be provided to enable access to boats across the exposed reservoir edges, and assistance will be given during the construction period to ease the re-stocking process.

Maintenance arrangements

Maintain new flood defences - The new flood defences on the Water of Leith will require a degree of maintenance during their lifetime. New floodwalls will need very little maintenance, as the structures are very robust; perhaps needing an annual inspection and some minor repair works to surface facings. Embankments will have to be inspected at regular intervals and any deterioration in the surface will have to be repaired. Inspection and CCTV of filter drains will be required periodically. Flap valves and floodgates will similarly require periodic inspection and routine maintenance, but should not need to be replaced during the design life of the flood scheme. Mechanical and electrical equipment will have to be tested at regular intervals and replaced at appropriate periods.

Periodic inspections after large flood events (those of annual probability less than 4.0%) have been included in the maintenance costs.

Channel clearance - The Council will continue to remove obstacles and clear major debris from the river in accordance with the protection inspection/maintenance regime for the city as a whole.

Standard of Defence

The scheme will provide an anticipated minimum of 0.5% annual probability standard of protection in 60 years time (allowing for anticipated climate change). An assessment of the potential effects of climate change has been carried out and an allowance has been made for the potential change.

SITE BY SITE PROPOSALS

Harperrig Reservoir - WEST Lothian Council

This site is being dealt with by West Lothian Council, and is included here for information only.

Gull Island - Dredging is to take place around the west side of the island. The shoreline will be graded to a 1 in 15 slope. The resultant spoil will be placed in embankments further to the west.

Spillway - A new low level weir is to be constructed in the spillway, incorporating an ice baffle. New steps will be constructed from level ground to the spillway for maintenance.

Dam - Remedial work will be carried out to dam crest, and to upstream face of dam embankment. Existing reservoir draw off pipes and valves will be refurbished or replaced.

The reservoir will be permanently operated at a level that will be 900mm lower than existing. Fences and walls will be repaired to restrict access to enable establishment of waterside vegetation.

Thriepmuir reservoir

1. Redford Bridge - A 1.3 metre high horseshoe weir is to be installed on the upstream side of the stone bridge. A fish ladder will be incorporated through the centre. The construction materials will be steel, concrete and stone. An existing culvert to the south of the bridge will be infilled. The upstream facing slope of the embankment to the south side of the bridge will be repaired, with a seepage cut-off installed.

Two parking bays for anglers were originally to be provided to the north of the bridge, but these have now been deleted following local objection.

2. Spillway - A new culvert is proposed through the embankment with an ice baffle and debris screen at the inlet. This culvert turns 90 degrees in a large chamber and outflows beneath the existing spillway. Remedial works will be carried out to the dam embankment crest, and to the upstream face of the dam embankment. A new cycleway/footpath will be constructed around the spillway, to the north, to a new footbridge over the bypass channel.

3. Black Springs - A new 600mm pipe will be constructed through the existing bund, with a sluice gate at the upstream end. There will be repairs carried out to the pitching of the embankment.

The reservoir will be permanently operated at a level that will be 600mm lower than existing. During the construction period, Bavelaw Marsh will be dry, but will return to its original level afterwards.

Harlaw Reservoir

Spillway - A new low-level weir channel will be installed in the existing spillway, which will incorporate an ice baffle. The existing pedestrian bridge is to be replaced by a new 2 metre wide metal bridge. A new vehicular crossing will be created through the new channel.

Dam - Repairs and reinforcements will be carried out to the upstream face of the dam. Remedial work will be carried out on the dam crest.

The reservoir will be permanently operated at a level that will be 900mm lower than existing. Fences and walls will be repaired to restrict access to enable establishment of waterside vegetation.

Haughhead Ford

The replacement of existing culverts with 2 pre-cast box culverts. The road level will be raised by up to 0.5 metres over an 80-metre length. There will be concrete wing walls to tie the raised road into the culvert. A flap valve will be fitted to the existing field drain outfall.

Murrayburn

A reinforced concrete floodwall of up to 1100mm will run from the Longstone Road bridge abutment to the burn crossing. The existing burn crossing is only a temporary one for works to the prison, and will be required until 2014. The bridge proposed on the plans is therefore only a temporary one and is already under construction. The existing small pedestrian crossing will be retained. From this point eastward for 140 metres, there will be a 1140mm high flood embankment. It will then revert to a floodwall which ties into high ground. The floodwall begins again to the rear of 62 Longstone Road past the leisure club and around the Longstone Inn at a height of up to 630mm. These will be topped with a handrail. A pump station will be located beneath the road at the Longstone Inn. The footbridge at the Longstone Inn will be maintained and a steel plate added to the upstream side.

Longstone

On the left bank of the river, a flood wall will continue at up to 930mm high to the east of the Longstone Inn to a point just west of B&Q and this will then revert to a flood embankment up to 840mm high to the east end of the retail warehouse. Then it will return to a 740mm high floodwall passing through the span of the viaduct, and tying into high ground before the aqueduct.

On the right bank of the river opposite the Longstone Inn, a floodwall wraps around the allotments and eastwards past Saughton Cemetery at a height of up to 1440mm, tying into high ground at the east end of the cemetery.

Floodwalls will be a beige coloured pigmented textured concrete finish.

Saughton

On the left bank of the river a floodwall extends around the industrial estate at Stenhouse Mill, to the side of the Arnold Clark premises on Gorgie Road, where it ties into high ground. There is a ramped access through the north end of the wall for the existing footpath. This wall will start at a height of 3650mm on the outside bend of the river, although this is only 610mm above existing wall levels. Further north the wall height falls to 370mm with a handrail adjacent to the walkway.

On the right bank of the river there is a length of wall around the electricity sub-station at the east end of the allotments, with a ramped access to the north side for the Water of Leith Walkway where the footbridge lands. Then there is a further floodwall from the rear of 38 Chesser Grove which ties into the south bridge abutment on Gorgie Road.

New pumping stations will be constructed, two in Chesser Grove and two in Stenhouse Mill Wynd, and one to either side of the bridge at Gorgie Road.

Gorgie Road - Chesser

On the left bank of the river, a 1300mm-flood wall wraps around the children's centre, and ties into a new 1500mm flood embankment which extends across the public park to Fords Road bridge. A 5-metre wide access ramp is provided into the park over the embankment. East of the bridge, a 1000mm-flood wall skirts Saughton Public Park, and ties into the large park boundary wall.

On the Right Bank of the river, a 790mm floodwall extends from behind 536 Gorgie Road, past the rear of Chesser House to a height of 1360mm, and ties into Fords Road Bridge. The floodwall is built out to accommodate a fire escape from Chesser House. East of the bridge the wall continues at 1490mm, dropping to 1310mm around the old peoples home down to the junction with Fords Road and Gorgie Road, where part of the existing stone wall will act as the floodwall. Because of the height of the floodwall, a raised platform and seating area will be created for the old people's home.

Further east at the junction of Gorgie Road and Balgreen Road, the pavement is to be raised 100mm at the entrance to the park, and the boundary to Balgreen Road is to be protected with a 200mm floodwall. There will be a pumping station beneath the road.

Walls will generally be a concrete finish, but will be clad in brick around the old peoples home and children's centre.

Balgreen

A low, 440mm floodwall with existing railing fitted to the top, will be constructed along the riverward side of the pavement to the west of the roundabout junction and into the public park entrance. There will be a ramped access to the car park. Modifications will be made to the bridge parapets. East of the bridge there will be a floodwall of up to 1490mm to either side of the river eventually tying into the railway embankment on both sides. On the left side, by the bowling greens at Pansy Walk, the floodwall turns to an embankment through the allotments.

The Balgreen Road bridge parapets have now been repaired, and the original plans to alter the parapet has been amended to a scheme to retain the parapet as it is and to fix a steel plate to the outside of the bridge.

There will be a pumping station within the former First Bus, bus depot.

To the rear of Stevenson Avenue the floodwall will be clad in stone to the side facing the houses, and will be textured concrete to the riverside. The walls to the north side will be brick clad on both sides.

Murrayfield

On the left bank of the river, a 1570mm floodwall extends from the railway embankment to the bridge at the end of Baird Drive where floodgates are to be installed. This ties into a 650mm embankment which runs from 87 to 11 Baird Grove. It then returns to a 650mm floodwall, which continues as far as 43 Riverside Road, where the height on the landside reaches 1370mm. Here it crosses the twin bridges opposite Saughtonhall Avenue, where twin floodgates are to be installed, along with minor modifications to bridge parapets. The wall then ties into an embankment at 700mm high, which extends to 12b Riversdale Crescent. It then reverts to a 1000mm to 1570mm floodwall eventually tying into high ground just east of 37 Corstorphine Road. The wall commences again at 21 Corstorphine Road at a riverside height of 2270mm and ties into high ground at the main road bridge at Roseburn at a height of 330mm. Floodgates are to be fitted to all bridges along this stretch.

On the right bank of the river, the wall extends from the railway embankment around the south and east side of the playing fields at a height of 1600mm, with several 5 metre wide floodgates providing access to the playing fields from the stadium area. The wall skirts around the west side of the ice rink, with a further five 5 metre floodgates. It continues around the north of the building at 1150mm and ties into a proposed flood embankment running down the west side of Roseburn Park. The flood defence reverts to a 2040mm floodwall along the south boundary to the main footpath that crosses the park. This will be ramped over the defences. This again reverts to a flood embankment around the small playground area which then ties into the existing floodwalls along Roseburn Crescent which are to be modified and raised to 1490mm. This wall continues around the east of the park, along the rivers edge and ties into the south abutment of the main road bridge in Roseburn.

On the left bank, walls will be clad in brown brick from Baird Drive to Riversdale Road, then concrete to Riverside Crescent, and then stone to Corstorphine Road. The final section to Roseburn will be ribbed concrete.

On the right bank, walls will be ribbed concrete (possibly with embossed SRU emblems) around the playing fields south and east boundary. There will be a brown brick clad section opposite in front of the ice rink. There will then be a ribbed concrete finish to Roseburn Park, and at Roseburn Crescent cladding will be cast stone. Thereafter it will be pigmented textured concrete.

At the rear of the tennis club, where the Stank Burn enters the river, a pumping station is to be erected. This will be housed in a unit which may be up to 2 metres in height, with a footprint of 8.2 by 6.2 metres.

Small sub-surface pumping stations will be located at Riversdale Road and the east end of Roseburn Park.

Coltbridge

All works are to the left bank. From the old bridge abutment, a floodwall extends to a point just short of the viaduct. Initially there will be a new 1420mm high wall. Further downstream, the existing retaining wall will be supplemented by a 780mm section to the top. Beyond Waterside Court the new wall goes back up to 1970mm and then drops back to 970mm just before the architect's practice, where the existing timber veranda is reconstructed to incorporate a concrete floodwall.

The initial wall section from the old bridge will be clad in stone. The short section adjacent to the lock up garages will be concrete, and then matching brick will be used past Coltbridge Millside and Waterside Court to the architect's practice. This final section will be concrete.

A sub-surface pumping station will be installed at the west end of the architect's practice.

Belford Bridge

On the left bank, a floodwall is proposed around the Edinburgh Sports Club to replace the existing one, tying into high ground to either side. This will be stone clad to the riverside and textured concrete to the landside. Height will be up to 1140mm on the landside and 2040mm on the riverside.

The wall commences again at Bells Mills House and continues along the left bank around the hotel tying into Belford Bridge. This wall is very low, ranging from 380mm to 690mm. Downstream from the bridge, the existing wall to Sunbury Place is 2620mm, and this will be repaired/strengthened as necessary. The new wall will be concrete, however stone will be used for the final section that ties into the Belford Bridge abutment.

The existing footbridge near Bells Mills will be raised by 1 metre, and new steps and a ramp will be provided. Steps will also be provided from the Water of Leith Walkway into the hotel car park.

Damside

A small section of 1800mm floodwall replaces the existing wall at Upper Damside to the left bank of the river. This ties into an existing boundary wall downstream. At the access to the footbridge to Hawthornbank Lane, the existing wall will be raised by 150mm, and a floodgate will be installed, tying into the Well Court retaining wall. The existing footbridge here will be turned about 28 degrees on its north abutment so that it lands 9 metres further east on the right bank. It will also be raised by 800mm. The Well's Court retaining wall will form the flood defence with weep holes being fitted with flap valves.

Veitch's Square

A floodwall is proposed along the entire length between Stockbridge and Falshaw Bridge. Wall heights range from 1475mm to 2350mm. All cladding will be stone. Initially the landward side of the wall facing the modern sheltered housing at Veitch's Square was to be brick, but this was amended to stone following objections.

The building façade of Malta House will be modified and strengthened on the riverward side.

Remedial works and strengthening will be carried out to the building facades of 1 to 15 Dean Bank Lane and 5 Hamilton Place. This is likely to be carried out by developers of this site, and some work is already being carried out.

At Falshaw Bridge it was originally intended that a 700mm high, 10mm thick steel plate should be fitted to the upstream side of the bridge to tie into a short wall on the right bank. This is to be modified to bridge strengthening works including the fitting of a secondary stone parapet to the outside of the bridge. A floodgate will be adjacent to the bridge on the left bank, giving access to the walkway.

Stockbridge Colonies

A floodwall is proposed along the right bank from Bridge Place to Liddesdale Place. The first 16-metre section will replace an existing wall of the same height. To the rear of Reid Terrace the wall height above ground level will be about 850mm, dropping to 700mm at Hugh Miller Place. The height then rises to 1600mm at Colville Place, and 1800mm at Teviotdale Place. From this point downstream the wall is 1600mm high. The final 24-metre section is an existing wall. From Falshaw Bridge to Rintoul Place the wall shall be stone clad to both sides. From Rintoul Place to Bell Place the wall shall be stone clad to the riverside, and will be clad in mottled brick to the landward side. To the front of Glenogle Terrace the wall will be clad in stone to both sides. At Ettrickdale and Liddesdale Place the wall will be clad in brown brick.

The riverside face of the wall will appear much higher and will be 2600mm for much of its length.

The downstream side of Falshaw Bridge is to be treated as per the upstream side, as amended (see above).

There will be stepped access over the floodwall to the rear of Reid Terrace. This section of floodwall will be topped with a wrought iron railing. Access to the riverbank will be provided at the end of the streets either side of Hugh Miller Place. A pumping station will be formed in the small grassed area on the left bank at the bend in Arboretum Avenue, where the Inverleith Burn joins the river.

From Rintoul Place to Bell Place the wall will be offset towards the river and will be clear from the gables of the colonies (the existing wall ties in with the gables).

Where there are ground floor windows obscured by the new wall, cut out sections will be provided with toughened glass panels. In the case of the house at 15 Avondale Place, where there are three windows, demountable aluminium panels are proposed.

In order to provide some break in the new wall and to allow some riverside habitat to exist, there will be a 1900mm shelf with a stone retainer, which will be infilled with soil to provide a plant bed. There will be crosswalls every 10 metres to prevent the soil being washed out. Beneath this shelf will be a fish ledge and further planting.

Bell Place Bridge is to be replaced by a lifting bridge. A detailed design has been submitted, however this may change and so details will be a reserved matter. There will be level access from Rocheid Path (left bank). On the submitted scheme it would not be possible to provide level access from Bell Place due to the lack of space for a ramp, however it is being anticipated that the revised design will allow ramped access from both sides.

There are some minor works proposed around Tanfield House to existing walls. A wall to the west of the building is to be raised by 100mm, and on the right bank, the top section of the existing wall is to be removed and replaced with a new wall. These sections will be stone clad.

Warriston

To the west of Canonmills Bridge, some strengthening works are to be carried out to the existing wall to Tanfield House. A new floodwall then runs along the boundary of the garden of 1 Howard Street, behind the existing wall and 400mm higher. This ties into the gable of the tenement. The tenement has three windows which are beneath flood defence level, and hinged metal shutters will be provided which will be closed over the openings during a flood event. A raised walkway and detachable ladder to Canonmills Bridge will be provided to enable the shutters to be accessed so they can be closed.

To the east of the bridge, on the left bank of the river, a new floodwall will replace existing stone boundary walls to the rear of 1 to 33 Warriston Crescent. This will range in height on the landward side, from 1190mm at 5 Warriston Crescent to 2190mm at number 33. On the riverward side the heights will be 2000mm and 2400mm respectively. The wall will be clad in natural stone on both sides. The wall ties into Canonmills Bridge to the west and the Warriston Viaduct to the east.

On the right bank, there will be strengthening works required to the gable of 1 to 6 Huntly Street (trading as Dyonica), and the existing windows will be replaced with toughened glass panels. The wall to the car park of this property will be replaced with a floodwall clad in natural stone. Beyond this car park the existing wall that runs along Warriston Road will be replaced by a floodwall as far as 1 Boat Green. The wall will be 1600 to 1800mm high and clad in stone to the roadside and high quality textured concrete to the riverward side. At 1 Boat Green a floodgate is to be provided across Warriston Road and will tie into the high ground towards Boat Green.

Another similar floodgate will be installed just west of the viaduct, where a stone clad floodwall will be provided at a height of 2.4 metres, to tie in with the viaduct. This will be 3.6 metres high on the riverward side. Between the two floodgates the wall will remain as it is at present. Weep holes will be introduced to the wall between the gates to allow easy passage of water and to relieve flood pressure on the existing wall.

A pumping station will be installed to the landward side of the floodgate, within Warriston Road at the entrance to Boat Green.

St Mark's Park

To the east of the viaduct, the floodwall is tied into the viaduct and continues past the Lady Haig's Poppy Factory. Opposite the sub-station, the wall becomes a raised walkway and continues to a point 15 metres from St Mark's Bridge. Here the floodwall ties into the bridge abutment. The raised walkway will have a maximum overall height of 2.6 metres, of which 1.1 metres is the wall above walkway level. There will be a metal railing to the roadside. The walkway will have two passing bays for people with prams or wheelchairs to pass, and these will also be usable as viewing points. The overall width of the structure is 2100mm, and the width of the walkway is 1450mm.

Along this stretch of wall the landward side will be clad in stone and the riverward side will be clad in high quality textured concrete.

There will be a pumping station under Warriston Road in front of the B&Q retail warehouse.

Powderhall

East of St Marks Bridge, on the left bank, there will be 50 metres of floodwall extending around 15 Warriston Road. The existing steps here will be replaced by a ramp.

On the right bank, there will be a floodwall tied into the bridge abutment and extending 90 metres to the second block of flats at the former stadium site. Beyond the new timber footbridge another 80 metres of wall extends to and ties into a steep embankment which carries a public footpath.

Bonnington

A floodwall is proposed along the right bank, starting at 25 Redbraes Place where it ties into high ground. This rises to 500mm just before it turns towards Ladehead where there is a lockable ramped vehicular access for the Council, for maintenance purposes. The wall rises to 1.7 metres at 21 Ladehead and then ties into the remnants of a railway bridge abutment. There is a second railway bridge abutment 30 metres further downstream, which the wall (now 1300mm) again ties into. The wall continues 70 metres to a third former railway bridge abutment at Milnacre.

The floodwall then continues to tie in with Newhaven Bridge. East of Newhaven Bridge the wall continues for about 100 metres dropping from about 1300mm to 500mm in height, and eventually it ties into high ground. Around the car park there will be a railing on top of the wall. Stepped access to the riverside will be maintained.

Between Ladehead and Bleachfield, a two stage channel will be constructed in front of the floodwall to re-establish native vegetation.

The wall will be predominantly clad in stone on the landward side with textured concrete to the riverside. The exceptions being; a 30 metre section downstream from the third railway bridge abutment where the wall will be stone to both sides; a 40 metre section upstream from Newhaven Bridge where brick cladding is proposed to both sides (as the existing wall is already brick); a 30 metre section downstream from Newhaven Bridge where stone cladding is proposed to both sides; and the final 65 metres which is smooth concrete to both sides.

At 1 to 5 Bonnington Avenue on the left bank immediately before Newhaven Bridge, new windows will be installed, the lower portion of which will be a fixed toughened glass section (this may not be necessary). The walls will be strengthened internally.

Two pumping stations are proposed, one to the rear of 15-20 Ladehead, and one to the south west of Newhaven Bridge.

Amendments

During the public consultation there has been ongoing discussions which have lead to some minor amendments. These are:

Warriston Road - The raised walkway at Warriston Road, opposite the end of Logie Green Road has been amended to include an extra passing bay, bringing the total to three.

Veitch's Square - the wall to the front of the sheltered housing is to be natural stone to both sides.

Well Court - Disabled access ramps are to be provided to either side of the repositioned footbridge.

Flood Prevention Order

The proposed flood defence scheme for the Water of Leith has been the subject of a Flood Prevention Order. Any proposed new flood defence measures are required to be promoted as a Flood Prevention Order (FPO) under the Flood Prevention (Scotland) Act 1961. The FPO for the Water of Leith scheme has been undertaken in advance and in parallel with the preparation of the planning applications.

The promotion of a FPO follows a formalised process under the recommendations of the Act. A range of documents must be submitted to the Scottish Executive

The process involves the submission of FPO drawings showing the proposed flood defences, the area of land which will be affected by the works and descriptive text cross referenced to the drawings, describing the work activities proposed.

In addition to the FPO drawings, a Project Appraisal Report is required. This Report notes the flood defence options considered leading to a preferred option to which a benefit/cost analysis is applied. This benefit/cost analysis, under the requirements of the Scottish Executive is to be greater than unity.

The FPO drawings and accompanying text are issued to the affected public, to statutory consultees, and to other interested bodies (e.g. Community Councils, Residents' Associations) for a three-month consultation period. Any comments, objections received during this period are answered with the view to nullifying any objections to the scheme. Any outstanding objections after the consultation period are passed onto the Scottish Executive for review.

The FPO drawings, accompanying text and the Project Appraisal Report are all submitted to the Scottish Executive for approval for funding. Prior to April 2004, the Scottish Executive funded 50% of the cost of the flood prevention scheme. Since April 2004 this apportionment of funding is likely to change and is currently under review.

The Scottish Executive review/assess the submission and either approve the Scheme for funding or call a Public Inquiry on the strength of the objections received. In effect, one objection is sufficient to precipitate an Inquiry.

The Scottish Executive has now confirmed that there will be a public inquiry relating to the Flood Prevention Order.

Consultations

SEPA

Overall, the Environmental Statement (ES) presents a comprehensive coverage of the environmental issues relating to the proposals and it is encouraging to note that many of the comments SEPA made at the pre consultation and at the scoping stage are reflected in the ES report.

It is clear that there has been a comprehensive appraisal of the options looking at the flooding issue on a catchment scale. I can confirm that SEPA has assessed the ES preferred Option 5, in terms of the Water Framework Directive (WFD) implications, and is satisfied that overall, this is the Best Environmental Option, providing all the mitigating measures are put in place. SEPA is also satisfied that the scheme does not compromise SEPA's interim duty, before the introduction of new regulatory controls (under the Water Environment and Water Services Act (Scotland) 2003), to ensure the protection of Ecological Status in all of Scotland's Rivers, Lochs and Coastal Waters.

SEPA therefore does not object in principle to the proposed scheme, however, the following comments should be taken into consideration in determining this application.

Flood Defence Design and Construction

[1] Page 90 paragraph 9.5.8 of the Environmental Statement refers to the proposal to upgrade the Magdala Crescent combined sewer overflow (CSO). It is understood that the Council and Scottish Water (SW) are working on a legal agreement and that upgrading works may take place towards the end of 2004 (*this will now be May 2005*).

[2] Whilst SEPA is encouraged and supportive of this, it should be emphasised that SEPA's approval to the flood defence scheme (FDS) is on the understanding that the CSO upgrading work must take place either in advance or in parallel with the FDS. If for whatever reason this CSO upgrading is ruled out, SEPA would object to the proposed development.

In view of the above, SEPA would request that a planning condition is set, with suggested wording as follows:

'To ensure that there is no deterioration in the water quality of the Water of Leith, the combined sewer overflow at Magdala Crescent must be upgraded either in advance or in parallel with the proposed flood defence scheme'

[3] SEPA supports the statements made in paragraph 9.6.3 in relation to construction management, and reference to adherence to SEPA's pollution prevention guidelines PPG 5 & 6 is welcomed. SEPA would however, request that a planning condition is set requiring a method statement for each stage of the construction phase be submitted to SEPA for approval, in advance of work commencement.

[4] In terms of the design of the flood defences it is not clear whether the River Restoration Centre (RRC) were consulted in the process. However, it is important that where possible, flood defences are designed and constructed to be environmentally sensitive as possible. SEPA would therefore request to be consulted on the specific design details of the flood defences before construction works take place on site. Suggested wording for a planning condition would be

'To ensure that, where possible, flood defences are designed and constructed to be environmentally sensitive as possible, specific design details must be submitted to the planning authority for approval in consultation with SEPA'

[5] SEPA is supportive of the proposal to maintain flood plain storage areas as part of the proposed scheme. In particular, SEPA commends the Council's strong position in ensuring the flood plain storage is maintained for the Murrayfield Roseburn Park area.

[6] As indicated at the scoping stage it is important there is no intention to construct concrete river beds, and every opportunity should be taken to remove existing structures of this nature (e.g. at Murrayfield Bridge and Warriston) and to restore these sites with a natural river bed. A planning condition to this effect would be welcomed.

[7] In terms of the proposed work immediately upstream of Roseburn Bridge, it should be noted that access must be maintained to SEPA's Murrayfield gauging station.

Ecology

[8] Page 74 and 75, paragraphs 8.5.2.3 and 8.5.2.4 of the ES deal with post construction management and habitat compensation and enhancement. SEPA supports the principle for what is proposed, although it is important to establish who is responsible for this work and to ensure that it is a requirement of planning permission for on going monitoring and contingency for habitat compensation and enhancement to be carried out in agreement with the Council, Scottish Natural Heritage, SEPA and other interested parties such as local Wildlife Trust and the fishery interest for the Water of Leith.

[9] SEPA welcomes the commitment to maximising the width of the river channel by setting the floodwalls back as far a riparian development will allow. This will allow more room for the river to establish a more varied morphology with associated biodiversity benefits.

[10] Notwithstanding the comments in paragraphs [1] to [3] above, the proposed draw down of the reservoirs and lowering of compensation flows on the Water of Leith will create a more natural flow regime for the river, which is beneficial in ecological terms.

[11] It should be noted that those carrying out the control of invasive species through herbicide use will require to make a formal application to SEPA, and SEPA will confirm its approval in writing.

Reservoir Proposals

[12] I can confirm that SEPA does not take particular issue with the reservoir proposals. The comments in paragraphs [3] and [8] of this letter would apply.

Contaminated Land

[13] Section 10 deals ground contamination issues and contamination, and highlights areas of potential sources of contamination. SEPA therefore expects that the Council will require further site investigation and where necessary a risk assessment to be carried out for areas identified as contaminated. It is anticipated that your authority's environmental health department will be commenting on the proposals and may have requested more information from the consultants. SEPA would wish to be consulted on any remediation strategy to ensure that there is adequate protection of ground and surface waters.

Waste Management

[14] The importation or removal of waste material such as soil for landscaping or any other purpose, must be in accordance with the Waste Management Licensing Amendment (Scotland) Regulations 2. The applicants and their contractors should also be fully aware of the relevant requirements relating to:

- (i) the transport of controlled waste by registered carriers
- (ii) the furnishing and keeping of duty of care waste transfer notes

[15] The efficient use of resources in construction is also important, and the reuse and recycling of construction materials is to be encouraged. A planning condition requiring the applicant to submit detail on how they proposed to address this issue would also be welcomed.

Joint Submission by Balerno Community Council and Currie Community Council

A significant part of the proposed Flood Prevention measures will be in the BCC and CCC areas. These Community Councils are statutory consultees. Based on the information now to hand the following are the Objections of BCC and CCC. Additional objections may follow as a result of further detailed consideration.

We appreciate the seriousness of this problem, particularly as it may affect people downstream. The evidence substantiating these objections is being compiled. As it stands we believe this Application is flawed and we outline why it will not achieve its objective - to prevent flooding. Both CEC and Arup admit in their Application, that the Scheme will not prevent flooding.

Objections: -

1. It would appear that the major part of the scheme will relate to down stream Flood Defences (Walls and Embankments) not upstream Flood Prevention measures. It is important to differentiate between these two technologies. Flood defences aim to prevent flooding downstream. Unfortunately experience worldwide demonstrates that this technology is insufficient on its own. It is now generally accepted that flooding downstream can only be prevented by retaining the rain where it falls, using Rain Retention Schemes. If heavy storm rain is retained where it falls it cannot cause flooding downstream.

2. BCC and CCC have adopted an holistic approach to flood prevention. The Water of Leith Catchment Area can be divided into three areas, approximately thus: (1) The area above the reservoir weirs - 30%, (2) The rural area below these weirs and upstream of the City Bypass -40%, and (3) The urban area downstream of the City Bypass - 30%. We believe that to prevent flooding, the storm rain falling above the reservoir weirs (area 1) should be retained above these weirs by increasing the height of the dams. It is interesting to note that in the recent past, flooding downstream has only occurred when water overflows these weirs.

We believe the storm rain falling in areas (1) and (2) should be retained where it falls by developing Rain Retention Schemes. Our contention is that all but a small percentage of the highest urban storm rainfall falling in area (3) is directed into the City's extensive sewer network and so storm rain falling in area (3) does not of itself contribute in any significant way to flooding. We think it would be illogical for the major expenditure to take place in area (3) which contributes little to the flood risk, and spend hardly anything in areas (1) and (2) which have the largest catchment area and consequently are the only significant contributors to flood risk. We believe this also has very important implications for the discharge of water from developments in areas (1) and (2).

3. Furthermore we believe that the technology of Flood and Drought Prevention (i.e., the provision of compensation water for the Water of Leith) has significant advantages over Flood Prevention alone and should be adopted by CEC.

4. BCC and CCC believe the application may represent inappropriate expenditure of Public Funds.

5. BCC and CCC object to major permanent reduction in the normal level of the water in the reservoirs as this would detract from the environmental beauty and public enjoyment of these amenities.

5.1 We believe that Threipmuir is by far the largest area of fresh water in Edinburgh. Its potential for amenity and recreational purposes is immense. We understand that Scottish Water would be pleased to transfer ownership to CEC and we believe CEC should take this opportunity to acquire ownership of this extremely valuable asset.

5.2 Any permanent reduction in the level of Threipmuir would severely detract from its beauty, its fishing potential, its use by geese and other birds - some very rare - and the public's enjoyment of it.

5.3 The same applies to a lesser extent to Harlaw, but Harlaw is more picturesque.

5.4 Harperrig is in West Lothian and outwith our area, but what we say about Threipmuir and Harlaw is also applicable to Harperrig.

6. No obvious consideration appears to have been given to the areas in Balerno and Currie at risk of flooding as indicated in the IOH 100 year Flood Risk Map. Both Community Councils are concerned at the way CEC appears to be: -

6.1 Ignoring NPP7 and SPP7 by granting planning consent in their areas adjacent to the Water of Leith, which we understand from historical data and SEPA, are at risk of flooding, as indicated in the IOH 100 year Flood Risk Map. Examples include the Kestrel site at Balerno, the Kinleith Mill site in Currie and the Inglis Grainmill site in Juniper Green.

6.2 Approving the use of gabions for retaining riverside banking in spite of the fact that they have been undermined and circumnavigated by the Water of Leith elsewhere, notably near the City Bypass.

6.3 Approving the use of large and multiple gabions knowing that metal retaining wire baskets may fail as early as 15 years after installation, even though they have been identified as requiring replacement in some "at risk" areas in the Arup proposals.

7. The Community Councils accept that to do nothing is not an option and that limited works may be necessary downstream. However they believe that more consideration should be given to all the measures recommended in the Babbie, ICE and the Environment Agencies Agriculture and Natural Resources Reports, in particular Rain Retention Schemes, Soft Engineering and Flood Attenuation options, and Changes in Land Use and agrees that "... sustainable flood risk management can only be achieved by working with the natural response of the river basin and providing the necessary storage, flow reduction and discharge capacity."

7.1 With reference to Appendix 1 "code c", the Babbie Report recommended: -

Page 40 Line 19 - "the alternative areas in the upstream catchment could be developed as flood storage basins." We think they should be.

Page 40 Line 22 - "Another alternative.... Is to raise the levels of the current ESW dams." We think they should be raised, as if they were raised by the same amount as the CEC proposed draw down levels, substantially more storage would be achieved than in the CEC Scheme and at rather less cost.

7.2 BCC and CCC were surprised to see the statement at 2.4.3 that "afforestation has very little impact". For example the Community Councils understand that when the Forestry Commission was initially planting fir trees in Scotland they improved drainage to protect the young trees and in so doing dramatically increased runoff.

7.3 BCC and CCC feel that ultimately the effects of global warming can only be countered by progressively improved land use both in the short term, with for example, contour ploughing, and in the longer term, with improved urban, agricultural and rural practices, to retain the rain where it falls.

8. BCC and CCC consider that the Application may not be in the best interests of the community either from the point of view of financial outlay or in terms of flood prevention.

8.1 Capital Expenditure: It is understood the predicted expenditure on the CEC's proposed measures for Flood Prevention would be about £28m. BCC and CCC have been led to believe that the same flood event protection could be achieved by building one new "Flow Restriction" dam for about 20% of the cost of the proposed scheme.

8.2 Maintenance: The cost of proper and reliable maintenance of several miles of flood walls and embankments down the Water of Leith, and litigation should they fail, could cost £millions, which would be an ongoing charge on the public purse. This should be contrasted against the minimal cost of maintaining about 500 metres of a "Flow Restriction" dam constructed to withstand a 1000 year flood which only comes into operation during flooding conditions and remains empty at all other times so that the ground it contains can be used for agriculture.

8.3 Failure: Failure of Flood Walls and Embankments may occur due to Overtopping, Tension, Subsoil Flow, Erosion, Poor and inadequate Design and imperfect Maintenance, and Increasing River Height through artificially constraining its width. BCC and CCC wish to know what steps CEC plan to take to prevent any of these occurring in the foreseeable future and what financial provisions have been made to carry this out.

As statutory consultees, we would be obliged to be kept informed of any amendments proposed to the Application and given the opportunity to comment on these.

Scottish Natural Heritage

Scottish Natural Heritage is generally supportive of the proposed Flood Defence Scheme and associated mitigation measures. Whilst we recognise that the proposals will involve the loss of some small areas of riverbank habitats, including some mature trees, we appreciate the overriding necessity for the flood defences. Our main area of outstanding concern is the proposed weir at Bavelaw Marsh, part of Balerno Common Site of Special Scientific Interest (SSSI). We do not object to the principle of this weir. However, the EIA does not contain sufficient detail to fully determine the impact of the proposals on the SSSI and any mitigation measures required.

Scottish Natural Heritage therefore objects to this application. This objection may be removed if the following measures are implemented:

- i) Further information is provided, as described below, and conditions are attached to any consent granted, which ensure that the proposed weir at Redford Bridge will not have a significant detrimental effect on the SSSI at Bavelaw Marsh.
- ii) The variety of safeguards and mitigation measures described in the EIA, in relation to the works along the Water of Leith, must be secured through detailed plans and conditions, or reserved matters, before consent is granted.

1. The Bavelaw Marsh Weir

1.1 Further information on the design and operation of the weir

Details on the operation of the weir, its scope to alter water levels, levels that can be achieved (maximum and minimum), ability to achieve full drawdown, who will operate the weir, etc are required. Provision of this information will enable us to assess whether the design and operation of the weir addresses the requirements for proposed SSSI management.

1.2 Further information on the construction of the weir and impacts on the SSSI

Construction details are required for the weir, as this has the potential to impact on a wider area of the SSSI than the weir itself. Details on the likely direct or indirect impact on the SSSI of construction activity, how much construction work and vehicle access will take place on the SSSI, what area will be affected, and likely duration of any water drawdown will be required. This information will help us assess potential impacts on the SSSI from the construction of the weir.

There is not enough detail in the EIA to fully address these questions and concerns. The Council should require the applicant to fully address these concerns through the production of design plans and management plans which will safeguard the SSSI. SNH would be pleased to advise in this respect. Once these details are forthcoming, the design, construction and future operation of the weir as described should be secured through conditions by the Council. If any significant effects are identified adequate mitigation measures must be secured through conditions or reserved matters attached to any outline planning consent.

As discussed in a letter from SNH to the Council on 9 June 2003, the intention of a weir will be to allow control of the water levels in the marsh, independently from those in the reservoir. This would allow more stable levels to be maintained in the marsh. A copy of this letter, outlining our requirements for the weir in relation to management of the SSSI, is attached.

The construction of the weir should ensure that there is minimal disturbance to the banks and emergent vegetation, which is important to fish, invertebrates and other wildlife. Water contamination should also be minimised. From the results of the bryophyte survey that was carried out for the EIA (bryophytes are 'lower plants' such as mosses and liverworts), it seems unlikely that construction of the weir will have an impact on the nationally important bryophyte populations which occur on the marsh. This will need to be confirmed by analysis of the detailed plans requested. It is noted that the construction of the weir is planned to take place over the autumn/winter to avoid the bird-breeding season. It is also noted that Bavelaw burn is an important spawning ground for trout in the reservoirs and therefore the incorporation of the fish pass in the weir is important.

2. We recommend that conditions are attached to any consent granted to ensure the safeguarding and necessary protection of the natural heritage of the river and its habitats. The proposed works along the Water of Leith will be sensitive in landscape, nature conservation and amenity terms. SNH is therefore of the opinion that works along this location need to be of a high standard in terms of design and implementation in relation to the protection and enhancement of the natural heritage interests.

2.1 Condition to secure production and implementation of an Environmental Action Plan.

Several mitigation recommendations are described in the EIA to protect the watercourse and to provide landscape and environmental mitigation. These are summarised in table 23.2, Schedule of Mitigation Measures. These recommendations are proposed to be incorporated into an Environmental Action Plan (EAP). The production of an Environmental Action Plan, taking forward recommendations of the EIA report and schedule of mitigation, should be secured by conditions in order to safeguard the landscape, natural heritage and amenity interests of the river corridor and reservoirs. We advise the Council that the details and implementation of the plan must be secured prior to the granting of any planning consent.

Measures to protect and maintain habitats and vegetation during construction (of woodland, scrub, marginal and bankside vegetation) should be detailed. Working guidelines and method statements should be in place following more detailed construction methodologies. Planting schemes, habitat restoration and enhancement, species protection, choice of materials for flood defences, etc. will all contribute to the detailing of this plan. These various recommendations are discussed further below.

It is noted that the EIA is based on outline information on working methods and that mitigation may need to be reviewed pending detailed information. The Council should ensure that details are forthcoming and that mitigation recommendations in the EIA are reviewed as necessary and incorporated into the EAP.

2.1.1 Habitat enhancement measures

The EAP should address in detail the habitat enhancement and river restoration measures described in the EIA (7.4:Principles of Development, 8:Ecology), and summarised in the mitigation schedule. We endorse the principles of development (7.4) that are to avoid damage to habitats and enhance the river environment, in terms of habitat diversity, fish access, species mitigation/enhancement, and to improve amenity and wildlife habitat of river corridor. Measures such as the creation of wet ledges and planted steps, where appropriate and where bank habitat is lost, will provide and replace suitable bank habitat for a range of species including waterbirds, invertebrates and small mammals. Other measures including the creation of two-stage channels, vegetation cover, and cobble deflectors will help encourage more natural flows and create fish habitats. Habitat enhancement measures will also help reduce landscape impacts of the works.

It will be important to re-establish vegetation on the new exposed shores of the reservoirs, where there is existing vegetation, in order to reduce landscape impacts and maintain vegetation cover at the water's edge, to benefit fish and other species. Where vegetation does not regenerate naturally then some planting of appropriate species (grass, tree and shrub and marginal species) may be required. This should include some tree planting at the new waters edge to maintain tree cover, particularly in areas where there is existing tree cover. It is also noted that fencing may be required to help vegetation establish and protect from grazing. Mitigation may have to be reviewed as further survey work of aquatic and emergent vegetation at reservoirs has yet to be carried out (21.7.5:Landscape mitigation, 4.4:Scheme description/ reservoirs).

2.1.2 Species enhancement measures.

The EAP should detail the species enhancement measures discussed in the EIA, including: mammal ledges/ otter platforms, bat and bird boxes, dipper nesting holes, duck ramps, perching sites and fish ledges. These, in addition to the habitat improvement measures, will benefit a range of species along the river corridor. We note that a water crowfoot method statement will be in place to protect it during construction or else remove, store and reinstate it where it is affected. (refer to Sections 4:Scheme

description, 4.3:Urban sections, 7.4:Principles of development and 8:Ecology)

2.1.3 Mitigation measures in relation to protected species.

The EAP should make provision for mitigation measures for protected species, as described in the EIA. Method statements should be prepared at the detailed design stage regarding the protection of species and incorporated into the EAP. SNH are happy to provide advice where necessary on species protection issues.

- It should be ensured that clearance work is undertaken outside the bird-breeding season (mid-February to end August). Areas of vegetation to be retained must be cleared marked, or ideally fenced, before any clearance commences. If any clearance is to take place within the breeding season, trees and scrub should be checked for nesting birds prior to cutting.
- Bank nesting birds, kingfishers, dippers and wagtails, will also require safeguarding through survey and mitigation where nests are discovered. The advice of the CEC Ranger Service should be sought in this respect.
- We note that evidence of otter holts were not found during the survey. However, it should be ensured that a further survey is undertaken prior to works to ensure no otter holts or possibly water vole are present. If either are found to be present, then mitigation should be in place and advice sought from SNH.

2.1.4 Suitable replanting scheme

There will be a significant landscape impact in places from loss of trees, as well as some loss of biodiversity. There will also be landscape impacts at the reservoirs from the exposure of new banks due to water drawdown. The successful implementation of landscape works is necessary for the mitigation of impacts arising from the flood defences and for overall contribution to its integration with the wider landscape and general biodiversity enhancement of the area. It will be important to get the species and distribution of planting right, including the planting of species on wet shelves and around shorelines at reservoirs.

Where there are adverse impacts on landscape and Water of Leith Walkway, it is recommended that planting is with larger stock. Pollarding or coppicing, rather than tree removal, should be encouraged where possible, and tree replacement with a 2:1 ratio supported. Trees to be retained should be protected during construction, should adhere to measures outlined by British Standard, including methods to avoid damage to tree roots. Dead wood habitat should be left, if not on the banks, then adjacent to the river (7.4:Principles of development, 8:Ecology and 11:Landscape and visual impacts).

2.1.5 Control of invasive species

As recommended in the EIA (8:Ecology), measures should be taken to ensure that invasive species are not spread as a result of works along the river and at the reservoirs and that attempts should be made to control these species. These measures should be incorporated into the EAP.

2.1.6 Monitoring

Monitoring will be required both during and after the construction phase of the project. An Environmental Clerk of Works should be appointed to ensure that measures such as the marking of retained vegetation, timing of vegetation clearance, mitigation for bank nesting birds, etc. are carried out as described in the detailed plans.

We also recommend that monitoring is carried out as described in the EIA and summarised in Section 24: Post Control Monitoring. These monitoring measures will assess the re-establishment of vegetation, success of planting schemes in landscape mitigation, and success of habitat and species enhancement measures along the corridor and at the reservoirs. We recommend that SEPA are consulted and advice taken over the monitoring of any impacts on fish, water quality, and effectiveness of river restoration methods. Further monitoring of the reservoirs is detailed in section 21.6.4 (reservoir /ecology/ monitoring). We are happy to advise on monitoring requirements.

We would also welcome monitoring of siltation levels in Bavelaw Marsh (21.6.3 SSSI and siltation). It is unclear whether siltation is an issue at the marsh and some general monitoring of silt levels would be useful to help inform this debate and help guide future management. There is also the issue raised of whether the weir will itself affect siltation, although it is thought unlikely. The recommendation to open the sluice periodically to flush out any sediment immediately upstream may be acceptable but further details on how this would affect the water levels in the marsh should be forthcoming. The proposal to install monitoring posts at key locations within the SSSI should also be discussed further, with details on locations and responsibilities for monitoring.

2.2 Condition to secure implementation of proposed public access provision

We endorse the principles of development (7.4), to improve access to and along of the Water of Leith Walkway and to improve the aesthetics, amenity and wildlife habitat of the river corridor. We also support the proposals for the reservoirs, including a new cycleway footpath with disabled access at Threipmuir and replacement of pedestrian crossings allowing disabled access at Harlaw.

Provision of public access as described in the EIA (7.4:Principles of development, 4.3: Scheme description, 16:Transportation and access, 21.10:Reservoirs/ access for recreation), including improved paths for all abilities (pedestrians, cyclists and disabled), and new access points to the river and walkway, should be detailed and secured by the Council.

Access improvements will be important where floodwalls block views of the river and therefore raised walkways will be important in maintaining the amenity value of the walkway. It will also be important to maintain access to the walkway with provision of ramped access for all users, and the use of floodgates, where appropriate. Upgrading paths for wheelchair or cyclist use and the replacement of footbridges with improved pedestrian/cycle access is to be encouraged. These improvements will help promote access and recreation along the Water of Leith Walkway. Reference should be made to the Edinburgh Access Strategy and local access officer in order to promote access links with other areas.

The upgrading of paths or provision of new paths for disabled access at the reservoirs is to be welcomed. It is suggested in the EIA that interpretation boards could be provided here, as well as improved signage, although no details are outlined. Path construction should follow CEC guidelines and the Lowland Path Construction manual.

2.3 Other recommendations

We would also recommend that measures are in place to protect the watercourse and reservoirs from construction activities such as pollution and sedimentation. We suggest that advice is taken from SEPA with working practice following SEPA guidelines. SEPA advice should also be sought in relation to the protection of the riverbed, river restoration and fish mitigation, including use of cofferdams during construction and the success of the fish ladder at Redford Bridge.

Culture and Leisure - Archaeological Service

This application should be considered under following planning policies issued by the Secretary of State for Scotland; National Planning Policy Guidance 18: Planning and the Historic environment (NPPG 18), 1999, and National Planning Policy Guidance 5: Planning and Archaeology (NPPG 5) and its the accompanying Planning Advice Note 42 (PAN 42), 1994. The aim should be to preserve archaeological remains in situ as a first option, but alternatively where this is not possible, archaeological excavation or an appropriate level of recording may be an acceptable alternative.

Firstly I can confirm that the submitted heritage reports meet with the minimum requirements for undertaking this work, indeed the archaeological DBA and reporting by CFA (see Vol 12 & 21) was originally undertaken and managed by myself on behalf of the council.

Further, I can also confirm that the proposed mitigation strategies stated in both section 12.5 (p163-4) and 21.11.4 (p280) of this EIA reflect those put forward in CFA's original report undertaken for this office. I therefore recommended that these mitigation strategies be adopted in order that they form the basis of an agreed programme of archaeological works for this scheme.

Accordingly if consent is granted it is recommended that this programme of archaeological works be secured using a condition based upon the model condition stated in PAN 42 Planning and Archaeology (para 34), as follows;

'No development shall take place on the site until the applicant has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved by the Planning Authority.'

The work must be carried out by a professional archaeological organisation, either working to a brief prepared by CECAS or through a written scheme of investigation submitted to and agreed by CECAS for the site. Responsibility for the execution and resourcing of the programme of archaeological works and for the archiving and appropriate level of publication of the results lies with the applicant.

Historic Scotland - Historic Buildings Inspectorate

The Area Historic Buildings Inspector informed the case officer that the Historic Buildings Inspectorate had been kept informed about the development of the flood defence scheme by the agent, Arups, and had offered comments at various points. In general, the Inspectorate had indicated its appreciation of the care taken by the engineers to try to match materials for the defence walls to their location. It had suggested that long stretches of the proposed defences were likely to be problem free but pointed out that some locations would be particularly sensitive, such as Warriston, the Stockbridge Colonies and the Dean Village.

The Area Historic Buildings Inspector and the case officer studied the submitted plans relating to some of the areas which might require careful treatment and were disappointed to find that the level of information provided on the drawings did not always permit a meaningful assessment of the suitability of the proposed works for the specific location. The Councils landscape planner, who was briefly involved in the meeting, pointed out perceived inadequacies in some of the details submitted. The case officer undertook to seek further information and revisions in such instances.

In conclusion, the Inspectorate suggests that great care will have to be taken at certain locations along the length of the proposed defences to ensure that materials, details and junctions are appropriately handled. With this in mind, it further suggests that in several instances the material submitted with the application will require augmentation. Where there is doubt about the adequacy of submitted information or the appropriateness of the proposed works, the Inspectorate will be pleased to offer further comment if requested.

The current submission is for planning permission. Where the proposed works directly impact upon a listed building or structure, there will of course be a requirement for listed building consent. The Inspectorate hopes that a fuller set of detailed drawings and specifications than accompany the present submission will be attached to the consent applications.

RSPB

The RSPB concurs with the rationale behind the adopted scheme to use upstream reservoirs for temporary storage of water to even out peaks of storm flow and hence reduce the need for higher flood defences downstream to protect property. In this instance, the unfavourable topography of the catchment and the presence of high-value assets in the lower part of the floodplain preclude reliance on a wholly "soft" engineering solution.

Paragraph 8.5.1.11 of the EIA states "Clearance of trees would be carried outside of the period during which birds are most likely to breed (May to August inclusive)". Many birds breed in April and some waterbirds such as mallard and dipper start in March or earlier. Any planning condition relating to this activity should prevent tree clearance between mid-March and mid-August.

Balerno Common SSSI and Black Springs Wildlife Refuge are of conservation importance and I am pleased to see that these areas are to be protected from what would otherwise be a water regime detrimental to their interests.

I regret that lack of time means that I am unable to comment in more detail on this aspects of this application, in particular the details of measures to be taken for flood protection in lower stretches of the river.

Scottish Water

Scottish Water has been closely involved in the development of the Flood Prevention Scheme to date and have made various comments to City of Edinburgh Council at meetings and in correspondence.

We are continuing to work closely with City of Edinburgh Council and will make further comments when more detailed information is available.

British Waterways Scotland

I confirm that pre application discussions have occurred between ourselves and the applicant's consulting engineers. We are satisfied that the scheme as currently designed has no adverse impact on our operations or property and that we have no objection.

JMP - Scottish Executive Trunk Road Network Management Division

The development is likely to have minimal environmental impact on the trunk road network. On this basis there are no specific trunk road comments.