

Transport and Environment Committee

10.00am, Thursday, 18 May 2023

Response to Motion by Councillor Osler - Flooding

Executive/routine Wards Council Commitments	Routine All
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1. Recommendations

- 1.1 It is recommended that Transport and Environment Committee notes:
 - 1.1.1 The five identified programmes of work and the projects initially prioritised for investment in 2023/2024; and
 - 1.1.2 That an update will be provided by way of Business Bulletin in May 2024.

Paul Lawrence

Executive Director of Place

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Report

Response to Motion by Councillor Osler - Flooding

2. Executive Summary

- 2.1 This report identifies five programmes of work to be progressed utilising the additional £2m of capital funding allocated for flood prevention measures and with a plan for communications and engagement to be progressed as part of these programmes.

3. Background

- 3.1 The City of Edinburgh Council declared a Climate Emergency in 2019, setting an ambitious target for the city to become net zero by 2030. The most significant climate impacts for Edinburgh include coastal erosion and surface water flooding.
- 3.2 As a result of the construction of the Water of Leith and Braid Burn Flood Protection schemes, the city is well protected from major fluvial flooding from our major watercourses, however fluvial flooding is also acknowledged as a significant climate impact.
- 3.3 This report is in response to a motion by Councillor Osler at Council on [16 March 2023](#) and sets out currently identified priorities and potential sources of funding, and how the extra £2m could be best spent to alleviate flooding concerns within the city.

4. Main report

Programme and Project Identification

- 4.1 The projects selected for investment in 2023/2024 were initially chosen following a workshop held with Scottish Water and SEPA on 8 March 2023, under the Edinburgh and Lothians Strategic Drainage Partnership banner. Various projects were listed based on historic flooding incidents, known high-risk areas and ongoing projects with potential opportunities for enhancement.
- 4.2 Individual meetings were then held to explore additional projects and determine:
- 4.2.1 Does the project fall within a Strategic Green Blue Network area?

- 4.2.2 Does the project fall within a priority Surface Water Management Plan (SWMP) catchment?
 - 4.2.3 Is there an opportunity for matched funding?
 - 4.2.4 Can it be delivered in 2023/2024?
 - 4.2.5 Is there an existing project team in place with resources to deliver enhancements?
- 4.3 The above criteria encompass numerous sub-criteria. For example, selection of Strategic Green Blue Network Areas included consideration of protected areas, deprivation, paths and cycleways, biodiversity, ecosystem services, flood risk, river networks and green space. Priority Surface Water Management Plan (SWMP) Catchments also considered economic damages from flooding, and sustainable drainage opportunities.
- 4.4 Projects were then costed. It was not feasible to fully cost all projects in detail within the timescales for this report, but estimates were made based on previous experience and in the case of existing projects, considered any estimates which had already been determined.
- 4.5 It was acknowledged that it was not feasible to efficiently spend £2m over 10 months and so a two-year programme was developed, with approximate spend being allocated to both 2023/2024 and 2024/2025 financial years. This was done in a 'rolling wave' approach, with more detail and more confidence over 2023/2024 projects. The programmes may need to be extended into a third year depending on the outcome of study work, and progress of ongoing projects.
- 4.6 These projects are complex and require a lot of early analysis to ascertain the right solution before any design or construction can be undertaken. This includes not passing a flooding problem on to another location.
- 4.7 During this exercise five key themes emerged and this formed five programmes of work to be taken forward:
- 4.7.1 Coastal Enhancements;
 - 4.7.2 Surface Water Enhancements;
 - 4.7.3 Parks Sustainable Drainage Enhancements;
 - 4.7.4 Craigleith Catchment Study; and
 - 4.7.5 River Natural Flood Management.
- 4.8 Programmes have been identified to give some flexibility in spend, but also as a framework for which could be used to plan for flood management in future years if regular capital funding is allocated.
- 4.9 Based on the estimated spend over the entire duration of the programmes (including estimated spend not detailed in this report), a nominal allocation of funding was made to each of the five programmes. This has been allocated to guide future project selection within the programmes and may be adjusted throughout the two-year programmes based on other emerging projects.

Staff Resources

- 4.10 The Council's Flood Prevention team has a total of seven posts: comprising a Senior Engineer (Team Leader), two Engineers, one Graduate Engineer and three Transport Technicians. There are currently three vacancies, at a time when the engineering recruitment market is challenging, and Local Authorities across Scotland are struggling to recruit experienced staff into existing Council salary grades and retain these staff as they gain experience.
- 4.11 A new strategic flood risk management team is planned; however it is expected to take at least 12 months to recruit the staff for this team, and additional time for it to become fully efficient. This team will be responsible for progressing future projects like those identified within this report. Recurring capital budget allocation for this type of work will support additional recruitment to improve the delivery efficiency of these projects in subsequent years, and less reliance on external consultants.
- 4.12 The forecast spend for 2023/2024 is based on current staff resources, with the forecast spend in 2024/2025 optimistically relying on filling all vacant posts. It may be necessary to extend the programme into a third year. As this is capital funding, Finance have been confirmed that it is possible to slip any unspent budget into subsequent years.
- 4.13 In January 2022, Committee noted the intention to create a multi-disciplinary team and suggested that this should include provision for regular road sweeping and gully cleaning to minimise build-up of detritus. The responsibility for these activities' rests with Street Cleansing and Road Operations respectively.
- 4.14 A summary of the £2m allocation split and forecast expenditure within 2023/2024 is shown in Figure 1 and Figure 2 respectively.

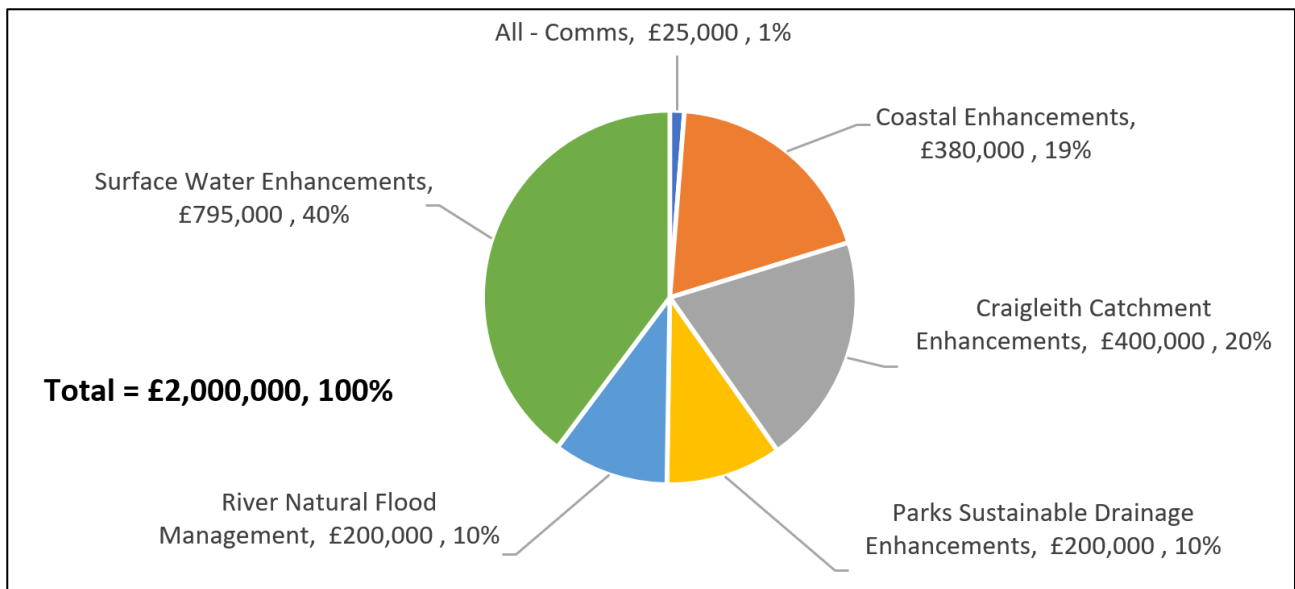


Figure 1 - Allocation split by Programme

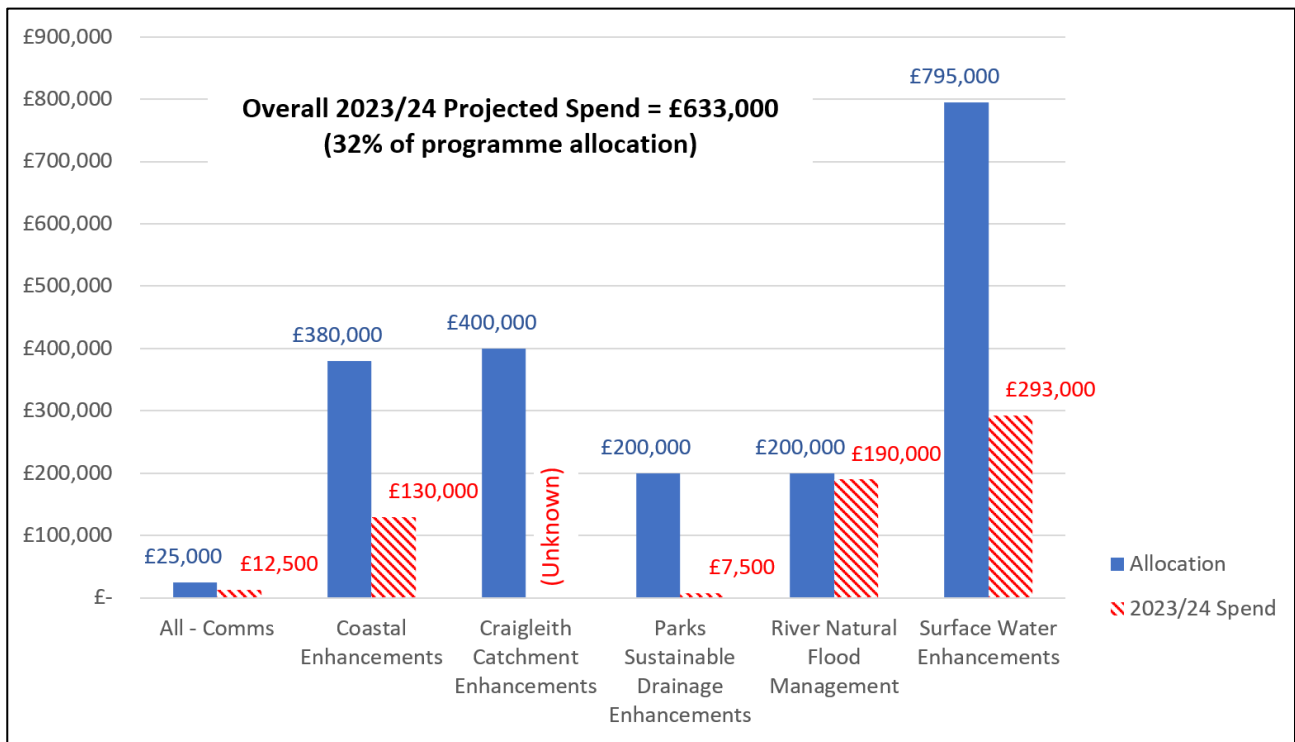


Figure 2 - Forecast 2023/24 spend by Programme

4.15 The following sections detail the ongoing work, potential sources of funding, and signpost the relevant appendices for additional detail on proposed projects within each programme.

Programme 1 - Coastal Enhancements

- 4.16 Edinburgh's coastline mostly comprises hard-engineered defences such as sea walls and revetments, and as a result, has served Edinburgh well in protecting against coastal flooding and erosion. However, there are concerns that climate change could lead to more widespread coastal flooding or erosion resulting from a combination of rising sea levels, increased frequency of storm surges, and rougher sea conditions.
- 4.17 The Council is in the initial stages of developing a Shoreline Management Plan (SMP). This will consider the existing coastal assets together with predicted sea level rise climate projections and develop a plan which will help inform the Council's coastal strategy. This strategy will define where to "hold", "advance" or "retreat" the shoreline – and therefore inform the ongoing maintenance of our coastal assets, and inform future development along the coast. Scottish Government grant funding has been allocated to undertake this study, although there is no indication for future funding to progress and recommendations within the plan or strategy. As the SMP progresses, other coastal consolidation works may be identified for inclusion within this programme.
- 4.18 One of Edinburgh's most important coastal defences is Portobello Beach. Beaches perform an invaluable role in dissipating wave energy and therefore reducing

coastal surges which otherwise cause flooding. Through a natural process called longshore drift, sand moves along coastlines. At Portobello, Council-maintained groynes prevent excessive sand movement from East to West. Inspections undertaken after Storm Arwen damaged Groyne No.4 in November 2021 highlighted that all groynes require full refurbishment.

- 4.19 To a lesser extent, Longcraig Pier, Queensferry also protects movement of sand away from Whitehouse Bay beach and is also in need of consolidation. The Coastal Enhancements Programme would initially encompass these two projects, as detailed in Appendix 1. Works along the coast are strictly regulated, and the timeframes identified for these programmes are subject to SEPA and Marine Scotland licencing.

Programme 2 - Surface Water Enhancements

- 4.20 There are 20,000 homes in Edinburgh at a medium risk of surface water flooding, according to SEPA's National Flood Risk Assessment undertaken in 2018. Whilst Edinburgh's mainly-Victorian sewage network has served the city well, intense storms now being experienced as a result of Climate Change often overwhelm these systems. As a result, surface water flooding is becoming more common, and this is incredibly distressing for residents affected by it.
- 4.21 The Council has a very limited remit when it comes to surface water flooding, and it is generally for residents to take appropriate steps to protect themselves from flooding. This is particularly relevant when storm intensity exceeds all design standard requirements for roads, highway drainage, or sewer infrastructure. Many of the projects proposed are going above and beyond the Council's statutory remit for protecting properties from flooding.
- 4.22 The Council has strict guidance for new developments and as a result, development usually mitigates flood risk. Retrofitting existing infrastructure is much more disruptive, and expensive, and needs to take cognisance of the fact that locally reducing flood risk can increase it elsewhere.
- 4.23 The Council and Scottish Water have been working collaboratively on various initiatives – both strategy/guidance and implementing enhanced sustainable drainage within projects. However, until the allocation of this additional £2m of capital funding, there has not been a reliable source of funding to allow a programme of work to be developed. Furthermore, as this is usually not within the Council's remit, staff resources are not available to progress it. Despite this, successful funding applications have been made for previous and ongoing surface water projects, and contributions have been received from Sustrans, Edinburgh World Heritage, Nature Restoration Fund and SEPA.
- 4.24 The Council is in the process of developing its initial SWMPs, which highlight areas most affected by surface water flooding, and potential for interventions.
- 4.25 The Surface Water Enhancements Programme would initially encompass the projects allocated in Appendix 2. These include projects for which the feasibility/design has already commenced, together with locations which have been

identified as potential, but unconfirmed opportunities. The following steps would be undertaken for each location, with new locations being added in time:

- 4.25.1 Location identified due to historic flood events, positioned within a priority SWMP area, and based on officer experience there is an initial indication that cost-effective measures may be appropriate to reduce flood risk. To keep the programme manageable, no more than eight projects will be under consideration at any time;
 - 4.25.2 A mini-flood study will be undertaken to model the effects of possible interventions. If required, a topographical and/or drainage survey will be undertaken;
 - 4.25.3 A qualitative cost-benefit assessment will be undertaken to determine if the measures necessary to reduce flood risk are cost effective. As the programme develops, a quantitative approach may be taken in future; and
 - 4.25.4 If funding is available a schematic design will be developed, and works will be considered; first exploring any existing ongoing or upcoming projects in which the scope could be enhanced. If no existing projects are available, one of two options will be chosen depending on available staff and funding resources, and qualitative cost-benefit assessment. Either detailed design and works will be undertaken independently, or the schematic design will remain 'on the shelf' for incorporation within another upcoming project.
- 4.26 Appendix 2 details an example at Mid Liberton which has been used as a proof-of-concept for this prioritisation approach.

Programme 3 - Parks Sustainable Drainage Enhancements

- 4.27 Through the Thriving Green Spaces project, and other workstreams, the Council is creating a new vision for the city's green spaces. These projects set out with an original focus on health and wellbeing, active travel, biodiversity, recreation and social cohesion, but in recent years parks have been identified as key opportunities for storing water. An existing example in Edinburgh is Inch Park, which is a fully functioning park for the majority of the time but also serves as flood storage as part of the Braid Burn flood protection scheme.
- 4.28 All Council green spaces projects must take cognisance of the water vision, and many projects are being progressed with some excellent sustainable drainage proposals embedded from the beginning. Often these proposals are focused on reducing localised flooding within the green space, rather than necessarily looking beyond the boundary of the park to explore what opportunities there are for conveying surface water from neighbouring hard standing areas (e.g. roads), into the green area where storm water can be attenuated and then released when the rainfall subsides. There are some excellent examples of this elsewhere in the UK, for example the [Sidmouth Amphitheatre](#) which protects 64 properties in Devon from flooding by intercepting flows on an adjacent road and redirecting them into an amphitheatre space which doubles up as a functional performance space.

- 4.29 The Parks Sustainable Drainage Enhancements Programme would identify existing parks projects which have got existing funding and staff resource, and where there are opportunities to intercept adjacent surface water which currently flows into the combined sewer network. A contribution would then be made towards the relevant projects for the additional costs in designing and constructing the additional infrastructure. Where possible, any contributions would be matched against other funding sources. Recent funding for these types of projects has been received from National Heritage Lottery Fund and National Trust 'Future Parks Accelerator' programme, Greenspace Scotland 'Nature Restoration In Parks' programme and NatureScot 'Nature Restoration' programme.
- 4.30 In exceptional circumstances, the programme would also fund existing projects where there is localised flooding within the park itself, and the scope of the Parks project does not include addressing this. This would only be considered where great benefits can be gained from a small financial investment, and where the flooded region of park provides a thoroughfare to pedestrians with no obvious diversion route, as the focus on the programme will be reducing flooding to properties and essential access routes.
- 4.31 The Parks Sustainable Drainage Enhancements Programme would initially encompass the projects allocated in Appendix 3. Appendix also details an example of where Scottish Water have identified an opportunity to disconnect surface water from the combined sewer network. This is the type of project that would be favourable for investment from this programme.

Programme 4 - Craigleith Catchment Study

- 4.32 In conjunction with Scottish Water and through the SWMPs, the Council have identified three priority areas in Edinburgh where areas affected by flooding also offer opportunities for improvement. The first of these is the Craigleith catchment, and a catchment-wide study is underway entitled the Craigleith 'Thriving Green Blue Neighbourhood' project. This project is currently funded to RIBA Stage 2.
- 4.33 Whilst there are numerous workstreams and opportunities within the existing catchment-wide study, it is currently unclear what the next stages of this project will be, or whether these will be capital in nature. All planning work to date has been revenue in nature and so a capital project will have to be identified and scoped before any funding could be allocated.
- 4.34 Acknowledging the importance of the project and the area, a nominal allocation of funding has been made, but no spend forecast at this time. Appendix 4 details some of the workstreams which may benefit from funding.

Programme 5 – River Natural Flood Management

- 4.35 Natural Flood Management (NFM) is focusing on natural measures to reduce flood risk. Typical NFM measures include large-scale meandering, tree planting and other measures to restore or mimic the natural functions of rivers, floodplains and the wider catchment. Due to the urban character of much of Edinburgh, NFM opportunities are rare, however as part of the Niddrie Burn flood study undertaken

in 2020, a report into possible NFM measures along that watercourse was completed.

- 4.36 Whilst there aren't currently any plans to deliver any of the Niddrie Burn NFM measures identified within that report, due to the timescales that would be required to progress them, other local NFM opportunities have been identified along the Burdiehouse Burn and Water of Leith, as summarised in Appendix 5, and these are ready for construction within this financial year.
- 4.37 These works will take proactive steps to prevent further erosion of the riverbank whilst introducing habitat improvement and increased biodiversity. Protecting the bank will also safeguard valuable riverside paths, and in the case of the Burdiehouse Burn example, subsequently private gardens and properties.
- 4.38 As with all programmes of work identified in this report, the funding allocated to this programme will be used to demonstrate the types of projects that can be delivered, but regular funding allocation is required to develop a rolling programme to continue this type of work over the next five years.

Communications

- 4.39 To support all of these programmes of work, comprehensive and inclusive communication is required, and this supports the Council's Local Flood Risk Management Plan (LFRMP) Cycle 2 action "*Community engagement is to continue to be carried out in the area by the responsible authorities to raise awareness of flood risk*". Through the Edinburgh and Lothians Strategic Drainage Partnership, Scottish Water and the Council have committed to investing a total of £0.1m on communication for joint projects falling within the scope of the partnership (£0.05m each on a matched arrangement). There is no timeframe for this commitment, and it is currently to be contained within the budgets of existing projects.
- 4.40 Some of the communications work will be revenue in nature, but with the allocation of an additional £2m, it is anticipated that around half of the Council's investment will now be relating to capital-funded projects. The following are typical examples which may form part of either revenue or capital projects:
- 4.40.1 Promote the work of the Council in the public (e.g. advertising vinyls) and professional (e.g. presenting at industry events) domain;
 - 4.40.2 Encourage Council projects to incorporate sustainable drainage within designs (e.g. SuDS factsheets); and
 - 4.40.3 Encourage and support public consultation for projects (e.g. by creating a consultation toolkit).
- 4.41 By committing to this investment, the Council can attract matched funding from Scottish Water through their equivalent commitment.

5. Next Steps

- 5.1 Officers will now progress the projects identified for investment within 2023/2024.

- 5.2 An update will be provided to Committee by way of a Business Bulletin in May 2024. This will summarise spend to date and provide an updated forecast for upcoming projects.

6. Financial impact

Capital Expenditure

- 6.1 The Capital costs associated with progressing the projects identified within this report can be fully contained within the additional allocation for flood prevention measures.
- 6.2 The estimated costs of the five programmes are:
- 6.2.1 Coastal Enhancements - allocation of £0.380m and a forecast spend of £0.130m in 2023/2024;
 - 6.2.2 Surface Water Enhancements - £0.795m and a forecast spend of £0.293m in 2023/2024;
 - 6.2.3 Parks Sustainable Drainage Enhancements - allocation of £0.200m and a forecast spend of £0.0075 in 2023/2024;
 - 6.2.4 The Craigleith Catchment Study - allocation of £0.400m and forecast spend in 2023/24 unknown;
 - 6.2.5 River Natural Flood Management – allocation of £0.200m and forecast spend of £0.190m in 2023/2024.
 - 6.2.6 £0.025m to support communications and engagement.
- 6.3 Where forecast costs have been noted against projects, these are solely indicative and will be developed during detailed design and costing. Programmes will be continuously refined over the coming two to three years.
- 6.4 The forecast spend for 2023/2024 is £0.633m. The optimistic upper-bound forecast spend for 2024/2025 is £1.367m although this depends on sufficient staff resources being available, and so it is likely that some of this forecast will slip into 2025/2026. Regular updates will be provided to finance to inform the overall budgeting and forecast process.

Maintenance

- 6.5 Many of the projects identified to be progressed include the construction of new sustainable drainage in the form of new green/blue infrastructure. As with all Council capital projects which introduce new or more complex infrastructure to our city, this requires maintenance. To give an indication of the scale of additional revenue funding required, if 50% of the projects involve new infrastructure; 75% of these projects are either new infrastructure, or infrastructure which is more complex to maintain; and this new or enhanced infrastructure lasts for 50 years, the net present value of annual revenue investment required to maintain these assets is $£2m \times 50\% \times 75\% / 50 \text{ years} = £0.015m$ per year. Whilst a crude estimation, this

highlights the scale of additional revenue budget which will be required to ensure any new measures remain operating effectively. There is currently insufficient revenue funding to sustainably maintain new capital infrastructure.

Future funding

- 6.6 Whilst not detailed in this report, the workshop and follow-up meetings used to identify suitable for projects for this additional funding identified projects totalling over £4m. This is far from an exhaustive list, and there are numerous instances of historic flooding in the city which will not even be considered within these programmes. This list does not consider any major flood protection schemes – funding arrangements for these are detailed further in the business bulletin update presented to this Committee, and as an example, the scale of the flood protection measures which would likely be required for the River Almond are considered further in a separate report to this Committee entitled ‘Flooding in Kirkliston and the wider Almond catchment – Response to Motion by Councillor Lang’.
- 6.7 A regular allocation of capital funding is required to continuously identify and solve flooding issues around Edinburgh. Without this regular funding allocation, it is difficult to recruit suitable qualified and experienced staff to progress projects. Revenue funding must also be allocated to ensure any enhancements are adequately maintained and operate effectively.

7. Stakeholder/Community Impact

- 7.1 Stakeholder and community consultation will be undertaken as required by each project within the five programmes, commensurate with the scale and complexity of each. Extensive stakeholder consultation has already been undertaken for many of the projects identified.
- 7.2 The programmes of work seek to address some of the primary effects of Climate Change in Edinburgh. Care will be taken to ensure that the benefits in reducing flooding are not offset by introducing significant carbon emissions through construction activities.
- 7.3 Projects to mitigate surface water flooding will continue to be progressed under the banner of the Edinburgh and Lothians Strategic Drainage Partnership, realising the benefits this partnership will bring to funding opportunities and collaborative working.

8. Background reading/external references

- 8.1 None.

9. Appendices

- 9.1 Appendix 1 – Coastal Enhancements.

- 9.2 Appendix 2 – Surface Water Enhancements.
- 9.3 Appendix 3 – Parks Sustainable Enhancements.
- 9.4 Appendix 4 – Craigleith Catchment Study.
- 9.5 Appendix 5 – River Natural Flood Management.

Appendix 1 – Coastal Enhancements

	Allocation		Forecast 23/24 spend
	£380,000		£130,000
	19%		

2023/24 Projects

Project name and brief description	2023/24 design spend	2023/24 Construction spend	Future spend
Longcraig Pier: masonry repairs to pier end to retain pier as both coastal flood prevention and amenity for Sea Scouts.	£0	£80,000	n/a
Portobello Groynes: full refurbishment of all groynes; to prevent longshore drift of Portobello Beach – essential coastal flood prevention measure	£5,000	£45,000	£250,000 in 2024/25





Figure 3 - Exploratory works to damaged Portobello Groyne No. 4 following Storm Arwen

All Coastal Enhancements projects will be delivered by the Flood Prevention team with existing staff resource. No additional ongoing Revenue spend.

No matched funding anticipated.

Appendix 2 – Surface Water Enhancements

	Allocation		Forecast 23/24 spend
	£795,000		£293,000
	40%		

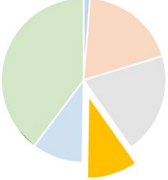

2023/24 Projects

Project name and brief description	2023/24 design spend	2023/24 Construction spend	Future spend
Orchard Park Swale: repurposing of the north-west edge of the park to sustainably drain surface water from Orchard Drive whilst improving placemaking (this project could also be part of the Craigleith Catchment Enhancements, or the Parks Sustainable Drainage Enhancements programmes, and may move to one of those)	£10,000	£140,000	£400,000 in 2024/25*
Easter Drylaw Drive: investigations and mini flood study to identify possible alleviation measures to address flooding in extreme rainfall events	£20,000	£0	Construction works TBC
North Gyle: investigations and mini flood study to identify possible alleviation measures to address flooding in extreme rainfall events	£15,000	£0	Construction works TBC
Royal Crescent: investigations and development of existing World Heritage Site flood study to identify possible alleviation measures to address flooding in extreme rainfall events	£10,000	£0	Construction works TBC
Kirkliston: investigations and mini flood study to identify possible alleviation measures to address road flooding and culvert blockage and The Glebe in extreme rainfall events	£20,000	£0	Construction works TBC
Priestfield / Prestonfield: investment in Roads capital renewal project programmed for 2024/25, to provide enhanced SuDS measures. Will include raingardens and tree pits with a focus on improving biodiversity as well as reducing flood risk.	£3,000	£0	£75,000
Mid Liberton / Goods Corner: investment in Roads capital renewal project programmed for 2023/24. Additional measures will include construction of raised table at entrance to Mid Liberton and re-grading of road around Goods	£0	£75,000	£0

Green/blue infrastructure within the Priestfield / Presonfield project will require additional revenue funding for future maintenance by the Council's Parks team.

Minimal matched funding anticipated.

Appendix 3 – Parks Sustainable Drainage Enhancements

	Allocation		Forecast 23/24 spend
	£200,000		£7,500
	10%		£200,000

2023/24 Projects

Project name and brief description	2023/24 design spend	2023/24 Construction spend	Future spend
3 Parks in Leith: exploring options for incorporating swales within existing projects to improve biodiversity and reduce flood risk	£5,000	£0	TBC
West Pilton Park: potential disconnection of an adjacent surface water drainage system which discharges to the combined sewer. Attenuation within park and reduction of localised park flooding, as part of current masterplan	£2,500	£0	TBC

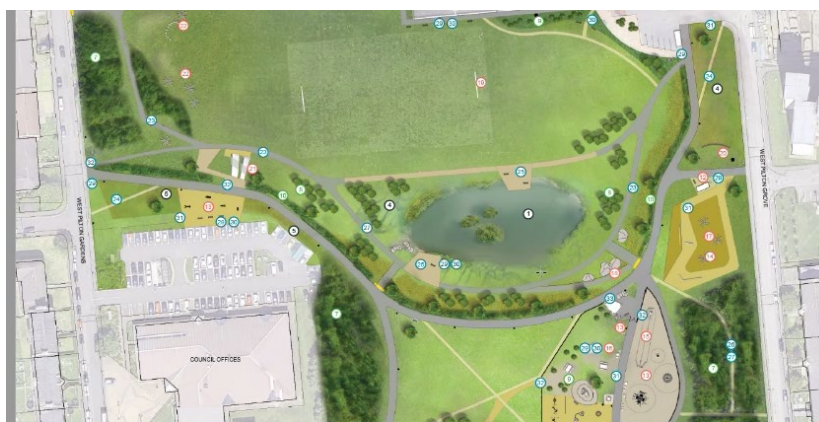


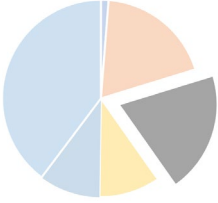

Figure 6 - excerpt from West Pilton park draft masterplan

All work required as part of the Parks Sustainable Drainage Enhancements Programme will be delivered by the Parks team in partnership with external consultants.

Green/blue infrastructure within all projects will require additional revenue funding for future maintenance by the Council’s Parks team.

This programme of work will develop significantly over the coming year but it is anticipated that match funding will be available from various sources for many of the projects within.

Appendix 4 – Craigleith Catchment Enhancements

	Allocation	<p>(Unknown)</p>  <p>£400,000</p>	Forecast 23/24 spend
	£400,000		Unknown
	20%		

Potential Projects – to be confirmed

Project name and brief description
<p>Orchard Park redevelopment: The Orchard Park swale identified within the Surface Water Enhancements Programme is an intermediate step to a possible redevelopment of the park and daylighting of the culvert which runs beneath. There are technical challenges due to the culvert depth but this is a key opportune area of green space within the catchment.</p>
<p>Develop the Thriving Green Blue Neighbourhood project to RIBA Stage 3: This project is being undertaken collaboratively between the Council, Scottish Water and consultants Atkins. It is currently at RIBA Stage 2, supported by Sustrans funding. It is unclear what funding arrangements will be available to develop it to Stage 3 and beyond, and staff resources are currently unavailable for doing so.</p>
<p>Craigleith Active Travel Routes: Some key Active Travel routes have been identified as part of the Thriving Green Blue Neighbourhood project. Subject to Sustrans funding and additional Council staff resources, there is an opportunity to accelerate this aspect to construction stage. Council matched funding will be required.</p>
<p>Craigleith Retail Park: Through the Edinburgh & Lothians Strategic Drainage Partnership, Scottish Water (primarily) have been discussing opportunities for improving the space surrounding Craigleith Retail Park, which would also involve disconnection of surface water from the combined sewer network. However care must be taken not to increase flood risk downstream by simply moving this water to the watercourses.</p>

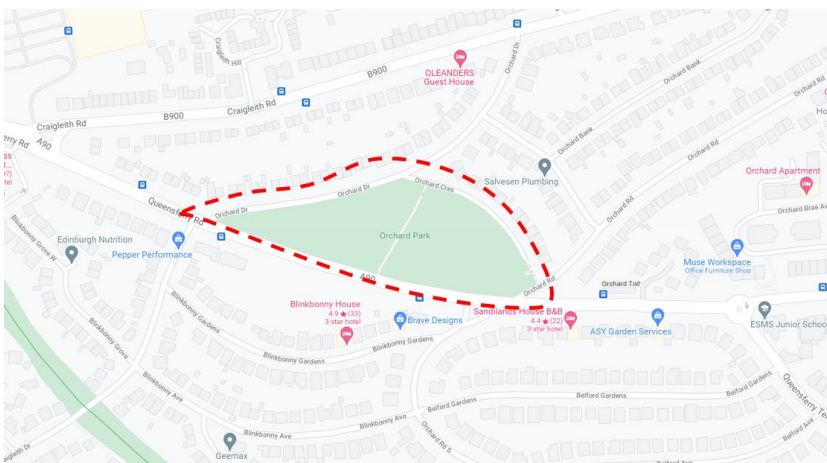


Figure 7 - Orchard Park

It is likely that most work delivered as part of the Craigleith Catchment Enhancements Programme will be delivered by the Flood Prevention and Planning teams in partnership with external consultants.

Green/blue infrastructure within all projects will require additional revenue funding for future maintenance by the Council's Parks team, and possibly others depending on emerging project details.

This programme of work will develop significantly over the coming year but it is anticipated that match funding will be available from various sources for many of the projects within. Craigleith Retail Park is an example where a combination of private and public financing could be used to achieve joint benefits.

Craigleith Hill Avenue

From recent deputations, Committee will be aware of historic flooding in properties at the eastern end of this street. There has been excellent engagement from NHS Lothian staff at Western General Hospital who are finalising CCTV and manhole surveys within the hospital grounds to develop a hydraulic model of the site. This will be integrated into the Craigleith catchment-wide model under development by Scottish Water to explore potential solutions for reducing flooding from the Craigleith Burn during extreme rainfall events. This is an example of an ongoing project which might become part of the programme in future years, however is currently being progressed out with.

Appendix 5 – River Natural Flood Management

	Allocation	 £190,000 £200,000	Forecast 23/24 spend
	£200,000		£190,000
	10%		

2023/24 Projects

Project name and brief description	2023/24 design spend	2023/24 Construction spend	Future spend
Water of Leith - Roseburn Cliff flood alleviation and embankment improvement: Construction of green engineering solutions to protect a 500m embankment stretch along Roseburn Cliff	£0	£150,000	£0
Burdiehouse Burn: 100m river embankment erosion repair at “The Narrows” to prevent collapse of footpath and subsequent private gardens from adjacent properties along the burn	£4,000	£36,000	£0

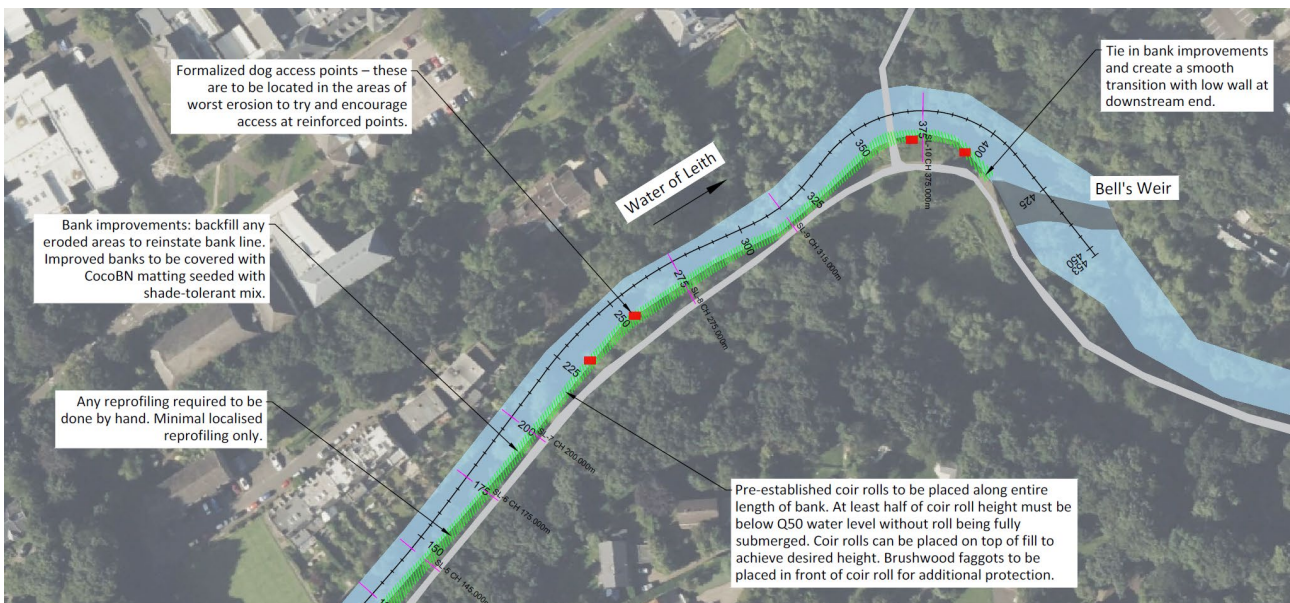


Figure 8 - excerpt from Roseburn Cliff design proposal

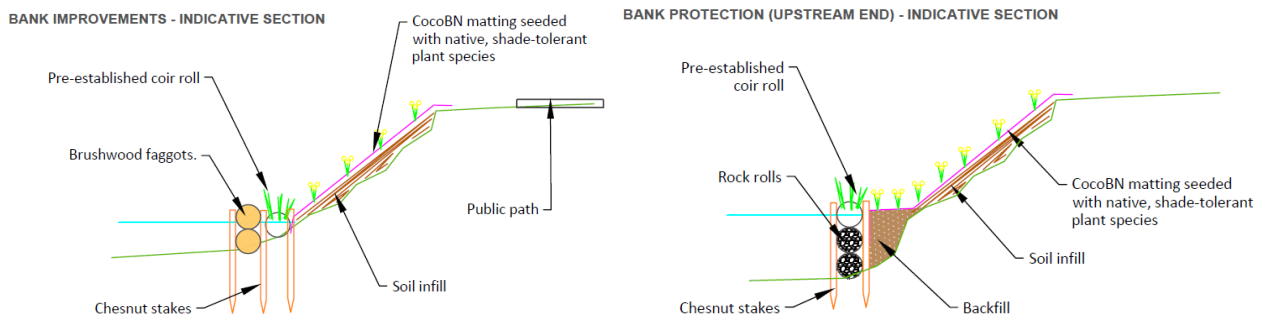


Figure 9 – examples of improvements using natural engineering to protect from erosion and improve biodiversity

All work required as part of the River Natural Flood Management Programme will be delivered by the Parks team (Natural Heritage Officers) in partnership with external consultants.

Matched funding may be available from other sources such as the Nature Restoration Fund. This will be explored and utilised where available.