Musselburgh
Flood Protection

Musselburgh Area Consultation
Whole Town Event

Tuesday 8th March 2022, Brunton Theatre, Musselburgh

Event partners:

Musselburgh Active Toun Project

East Lothian Council Emergency Planning Team

Scottish Flood Forum

SEPA Flood Warning Team

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Jacobs East Lothian Council CPE CONSULTANCY Turner & Townsend

Musselburgh Area Consultation

Musselburgh
Flood Protection

8th March 2022

Welcome to this 'Whole Town' consultation event for Musselburgh Flood Protection Scheme. This event forms part of the Scheme's community consultation programme which began in 2019 and which has included exhibitions, online meetings, local area evenings, newsletters, community information boards, and the project's website.



The project aims to reduce the risk of flooding to Musselburgh from coastal, fluvial and pluvial sources of flooding. The scheme aims to provide protection against a flood event with a 0.5% Annual Exceedance Probability (AEP) (also known as a 1 in 200 year event) plus an allowance for climate change plus a strategy for future flexibility.





The project team has determined that physical defences are an essential part to delivering this reduction in Musselburgh's flood risk. The purpose of today is to enable the community to have an influence on the form of those defences.

In response to questions raised during previous events, information is also provided about the project's governance, programme, options appraisal process, environmental impact assessment, and use of nature-based solutions.



musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Project Governance

Musselburgh Flood Protection

Oversight & decision-making

The organisational structure of the project was established at its outset to provide clear governance and oversight for delivering the flood protection scheme.

Full Council (ELC Elected Members)

Full Council considers reports submitted by Project Board and is ultimately responsible for decisions taken to progress the Scheme

Project Board (ELC Officers)

Project Board provides strategic oversight to the project. It considers recommendations made by its consultants and decides which should be reported to Full Council for approval

Turner & Townsend
Project Management consultant

Turner & Townsend provides project management services which include contract management, stakeholder management, financial management & general administration of the project.

Jacobs
Design consultant

Jacobs provides engineering, scientific and environmental expertise and is responsible for designing the Scheme. They make technical recommendations to the Project Board

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Project Stages and Timeline

Musselburgh Flood Protection

The project is currently in stage 4, and in accordance with its governance, approval of Full Council is required to progress from to the next stage. The graphic on the right highlights selected activities to be completed prior to progressing to stage 5.

Stage Gateways

- Stage 1 Establishment of the Project
- Stage 2 Review of Existing Studies
- Stage 3 Options Appraisal
- Stage 4 Outline Design
- Stage 5 Statutory Approval
- Stage 6 Detailed Design
- Stage 7 Procurement of the Main Contractor
- Stage 8 Construction
- Stage 9 Maintenance

Timeline of next activities in stage 4

- Local Area and Full Town consultation events — Spring 2022
- Review feedback from consultation events so far and develop opportunities register
- Commence outline design activities and establish new programme
- Present ongoing outline design to Full Council to reaffirm the process — Spring /summer 2023
- Public Exhibition no.2 to present the ongoing outline design and seek feedback
- Review feedback from consultation
- Finalise outline design and seek permission from Full Council to publish the Scheme — Winter 2023

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Public Consultation

Musselburgh Flood Protection

The project team considers public consultation to be key to the successful development of the Scheme, and this is actively encouraged by the Scottish Government under the Flood Risk Management (Scotland) Act 2009.

Since the inception of the project in 2016, the project team has engaged widely with members of the public, residents' associations, community groups, businesses, other council departments and statutory stakeholders. The contributions by these parties have already influenced the development of the Scheme and will continue to do so. The project team remains committed to developing the outline design of the Scheme through a consultative framework.

Public events to date

- Public Open Day & Call For Information – February 2019
- Public Exhibition No. 1 – July 2019
- Local Area Consultation: Edinburgh Road Area
- Local Area Consultation: Fisherrow Area
- Local Area Consultation: Mountjoy Area
- Local Area Consultation: Goosegreen Area
- Local Area Consultation: Esksides Area
- Local Area Consultation: Eskmills Area
- Local Area Consultation: Inveresk Area
- Door-to-door 'doorstep consultations
- Consultation on risk and options for the Inveresk Estate
- Local Area Consultation: Esk Corridor
- Local Area Consultation: Coastal Foreshore
- Local Area Consultation: Whole town event

Presentations to community groups & organisations

- Musselburgh & Inveresk Community Council
- Musselburgh Conservation Society
- Inveresk Village Society
- Fisherrow Harbour & Seafront Association
- Esk River Improvement Group
- Esk Valley Trust
- Musselburgh Business Partnership
- Eskmills Business Park
- Buccleuch Estates & Dalkeith Country Park
- Musselburgh Flood Protection Action Group

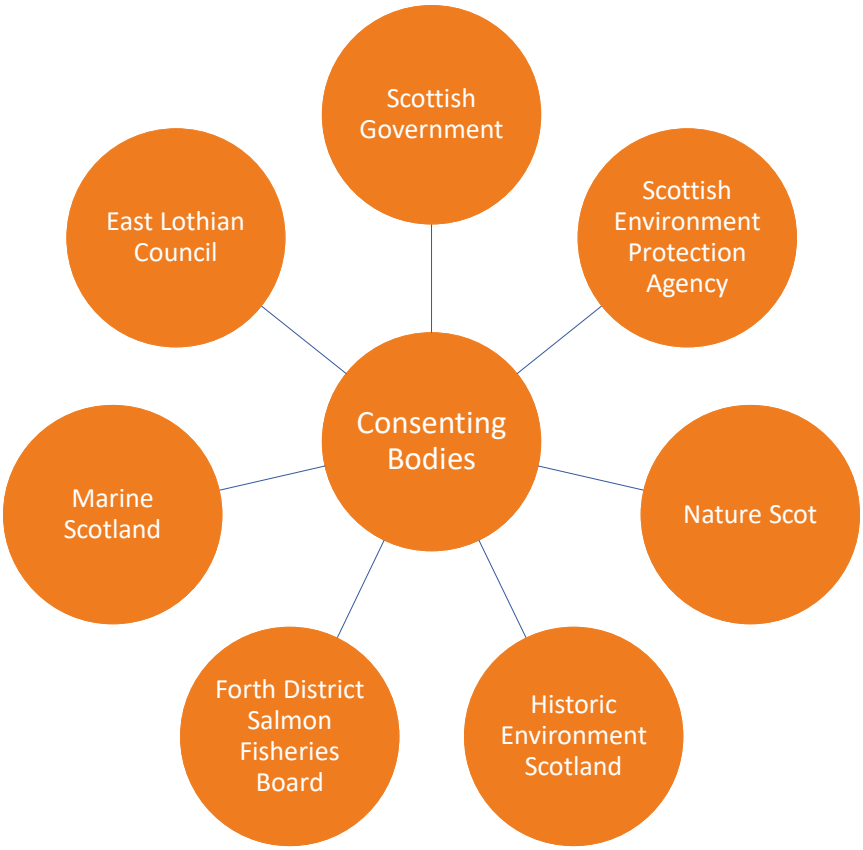
musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Consenting & Statutory Bodies

Musselburgh Flood Protection

While statutory approval of the Scheme is sought under the Flood Risk (Scotland) Act 2009, the Scheme may also require other consents and licenses for certain activities. The project team is engaging with consenting bodies to ensure that the design of the Scheme meets the relevant requirements to obtain those consents and licenses at the appropriate time in the programme.





The project team also established a number of multi-organisation working groups. In doing so, they can seek the advice of technical specialists, statutory representatives and council officers. As the outline design evolves, the working groups help designers identify potentially significant environmental effects and determine what action may be required to avoid or mitigate them.

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

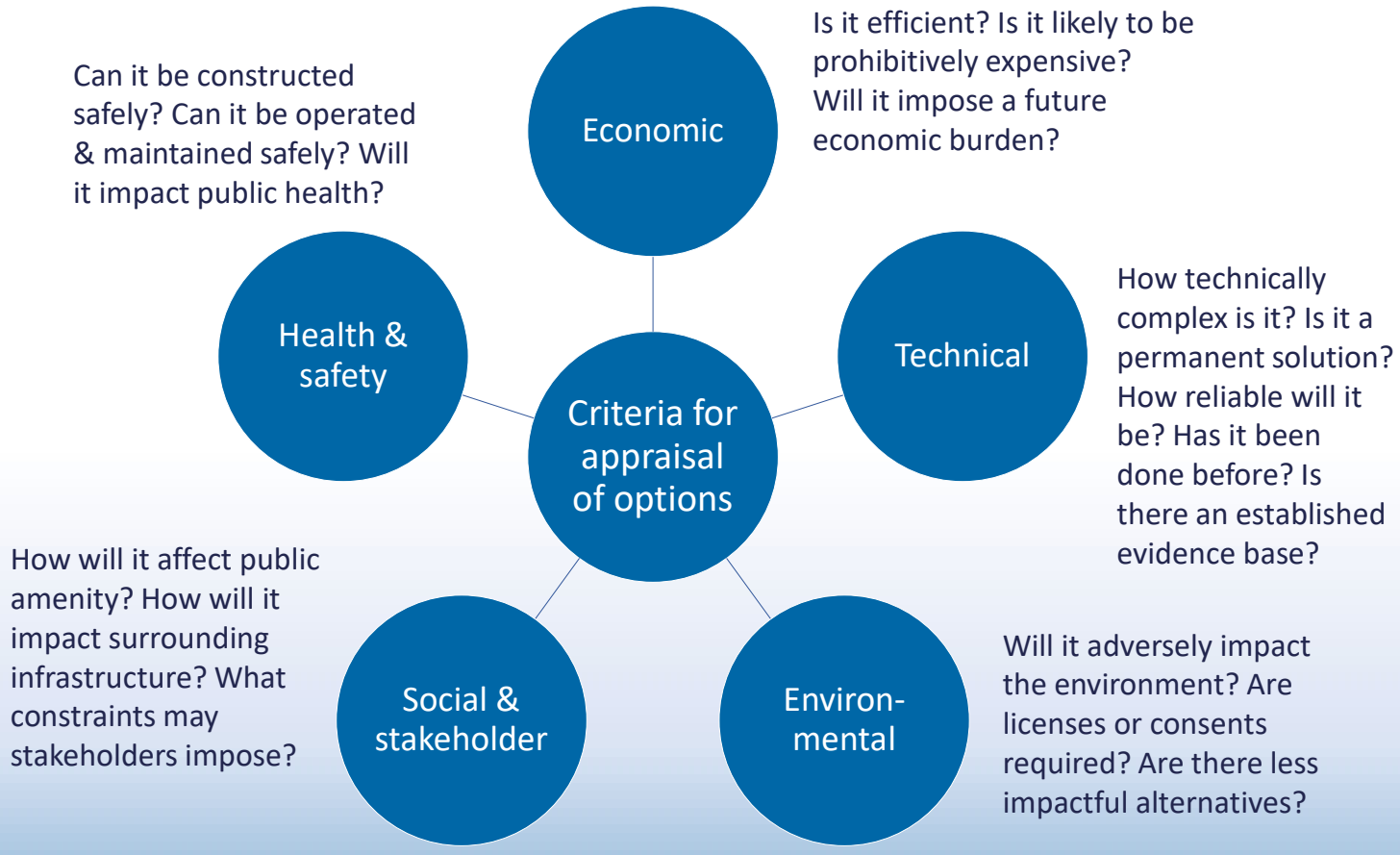
The Options Appraisal Process

Musselburgh Flood Protection

Options appraisal is the process of considering many different ways of achieving a project's objectives. These are identified and evaluated against set criteria to narrow the list down to a manageable number which merit further consideration.

The appraisal process was *qualitative*, meaning it considered subjective characteristics rather than a *quantitative* assessment of numbers and data. For this reason the appraisal was conducted by a variety of specialists, from economists and engineers to ecologists and town planners, who together had the professional knowledge and experience to make an informed judgement. At this stage in a project it would be unmanageable and an inappropriate used of public money to collect, process and evaluate quantitative data on all of the options identified.

The remaining shortlisted options were then used to form a 'Preferred Scheme' or preferred combination of options. The project team is now consulting and engaging with the public and stakeholders to refine variations of those preferred options into an outline design.



musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

The ‘Preferred Scheme’

Musselburgh Flood Protection

The ‘Preferred Scheme’ is a term used to describe the outcome of the Options Appraisal Process. It is a snap-shot in time to demonstrate progress, and more importantly to determine the scope of the next stage – the Outline Design.

The ‘Preferred Scheme’ might be thought of as the assumed best combination of individual flood risk reduction concepts through which to achieve the Project’s Objectives. It was approved by a meeting of the Council’s Cabinet on 21st January 2021.

Approval of the ‘Preferred Scheme’ does not mean that the design has been carried out yet or that it has been approved under the Flood Risk Management (Scotland) Act 2009.

Following the current period of consultation, Jacobs will begin the outline design, using the ‘Preferred Scheme’ as a starting point together with feedback received from the public and other stakeholders.

The Preferred Scheme Components

Attenuation

Sustainable catchment flood management using existing reservoirs to store floodwater and reduce the peak flow in Musselburgh



Debris Management

Sustainable natural flood management to intercept large woody debris and reduce the risk of bridge blockage in Musselburgh



Conveyance Improvement

Replacement of selected bridges to reduce restrictions to the flow of water during a storm



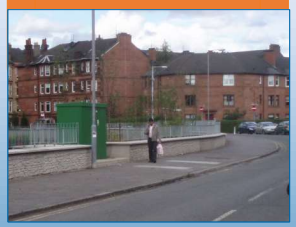
Containment

Direct defences to contain floodwater in the river and to keep out the sea



Surface Water Management

Pumping stations to collect floodwater caught at low points around town and transfer it to the river or sea



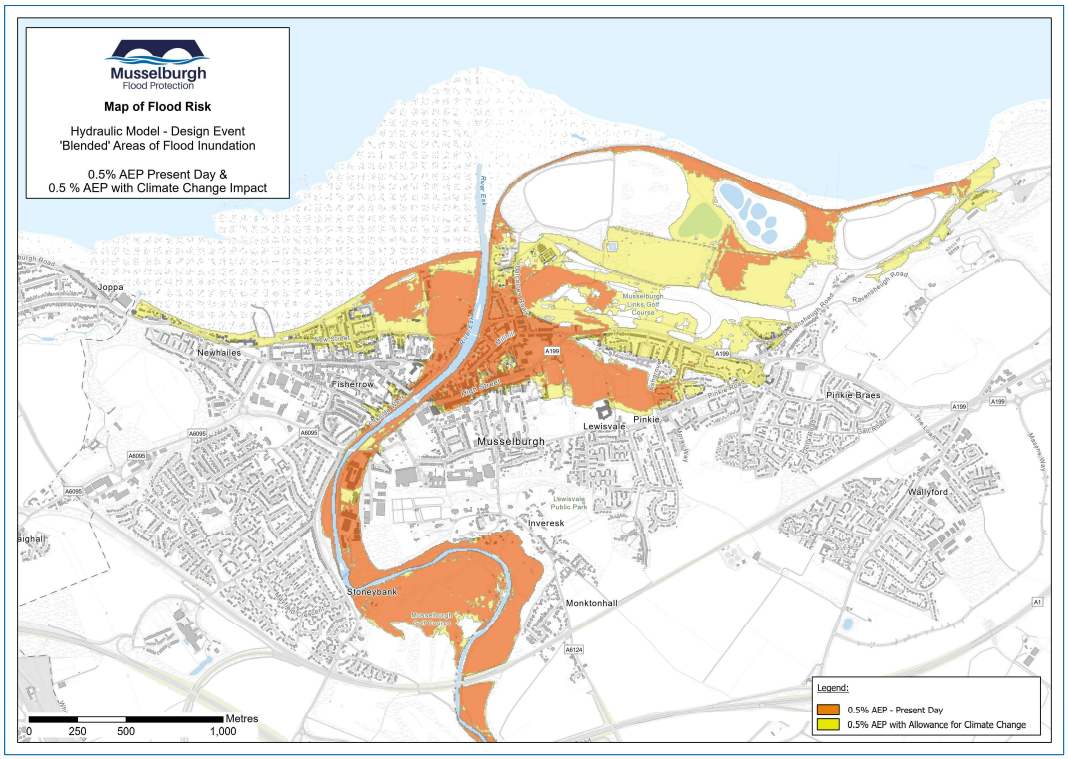
Musselburgh's Flood Risk

Musselburgh
Flood Protection

Present-day risk and the future risk due to climate change

The map below is the result of the hydraulic modelling carried out by Jacobs to determine Musselburgh's flood risk. It closely aligns with flood risk mapping independently carried out by SEPA and which is available to view on their website (www.sepa.org.uk).

The areas shaded orange are those at risk of flooding from a present-day 0.5% AEP event. The areas shaded yellow are the additional areas which could become at risk of flooding due to the effects of climate change during the design life of the Scheme.



The allowance for climate change is based upon the UKCP18 RCP8.5 95 percentile dataset. UKCP18 is the UK's most up-to-date set of climate change projections, published by the Met Office. RCP8.5 is the high emissions scenario, which represents a range of global mean temperature increases of between 3.2 °C. and 5.4°C by 2081 to 2100.

This is the dataset recommended for local authorities by SEPA in its document, *"Climate change allowances for flood risk assessment in land use planning (April 2019)".*

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Environmental Impact Assessment

Musselburgh Flood Protection

Consideration of potential environmental impacts began at the options appraisal stage, with Jacobs' environmental specialists and regulatory stakeholders providing advice on potential environmental opportunities and constraints of each of the options.

The Environmental Impact Assessment (EIA) process and outcomes will be documented in an EIA Report, which will be published at the statutory approvals stage. This will summarise the impact that the Scheme may have, identify any feasible mitigation to avoid or reduce significant effects and list all unavoidable residual effects and applicable monitoring measures.

It also helps identify consenting requirements and how the Scheme might best align with policy objectives such as reducing carbon emissions, achieving net benefits for biodiversity, or protecting cultural assets.

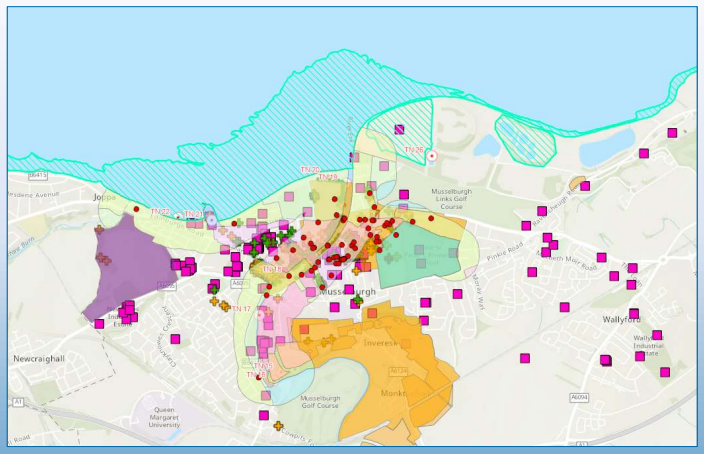
The EIA process therefore facilitates the development of a more environmentally sustainable Scheme for Musselburgh.

The EIA's topics, identified through its screening & scoping stages, will include:

- Population and Human Health
- Biodiversity
- Noise and Vibration
- Landscape and Visual
- Water Environment
- Soils, Geology and Contamination
- Air Quality
- Cultural Heritage
- Traffic and Transportation
- Cumulative Effects







musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Jacobs East Lothian Council CPE CONSULTANCY Turner & Townsend

Net Zero Carbon & Embodied Carbon

Musselburgh Flood Protection

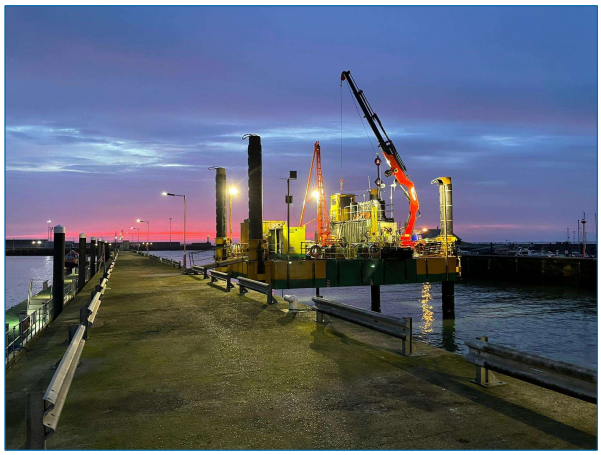
The Scheme's contribution to addressing climate change

Net Zero Carbon means reducing carbon dioxide (CO_2) emissions as far as possible and absorbing the remaining emissions through natural carbon sinks like forests, and new technologies like carbon capture.

Embodied carbon refers to the CO_2 emitted in the process of extracting, processing and transporting raw materials then processing them into a product. It is measured in tonnes of CO_2 equivalent (tCO_2e).

Climate change mitigation means reducing or eliminating society's CO_2 emissions to minimise the increase in global atmospheric temperatures.

Climate change adaptation means changing the way society behaves or is organised in order to live with the impacts of climate change. The Scheme is an example of climate change adaptation, where Musselburgh would be adapted to live in proximity to rising sea levels, increased river flows, and more intense rainfall.





Reducing the Scheme's embodied carbon

The Council recognises that it is not practicable to eliminate embodied carbon whilst also providing climate change adaptation without offsetting or buying carbon credits. There are, however, opportunities to reduce the Scheme's embodied carbon through innovative use of materials and construction methods.

Transportation of materials is a large component of embodied carbon in infrastructure projects. This can be reduced through the use of more locally-available materials. It may also be reduced through forms of construction which use less materials, or materials which have less embodied carbon per tonne.

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Nature-based Solutions

Musselburgh Flood Protection

Use of natural or nature-based features to provide or complement flood risk reduction

The term, ‘nature-based solutions’, can refer to a variety of concepts which deliver multiple benefits such as flood risk reduction, ecological habitat enhancement, or improved social amenity.

Some measures can directly reduce flood risk through attenuating flow in the catchment or reducing wave heights at the coast; others can enhance engineered structures through natural or nature-based features.

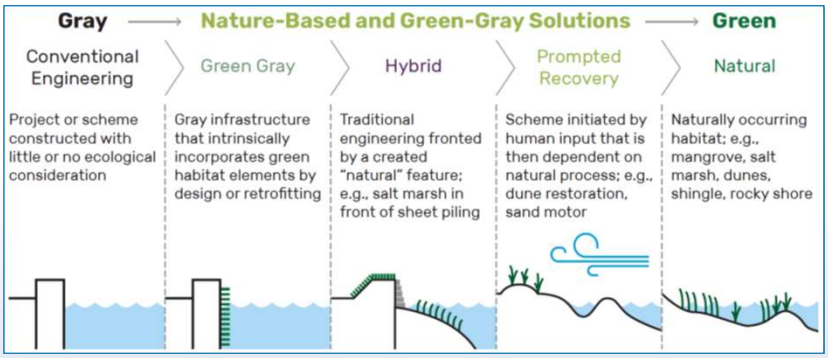
Natural features are those which are, *“created or evolved over time through physical, biological, geological and chemical processes operating in nature”.*

Nature-based features are those which, *“mimic characteristics of natural features but [which] were created by human design, engineering, and construction to provide risk reduction.”*

The project team has determined that nature-based solutions on their own are insufficient to deliver the necessary flood risk reduction to Musselburgh, but that natural and nature-based features in combination with engineering solutions could deliver multiple benefits. These will be developed by Jacobs as part of the outline design.

Sustainable and resilient solutions are likely to include a combination of:

- Structural engineering
- Non-structural measures
- Natural features
- Nature-based features



Continuum of Nature-Based Techniques. Extract from *International Guidelines on Natural and Nature-Based Features for Flood Risk Management (2021).*

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Replacement Bridges

Musselburgh Flood Protection

Improving conveyance, reducing risk, and adding amenity value

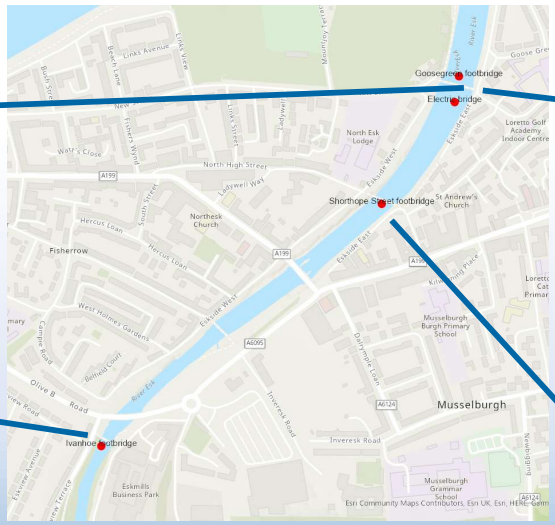
There are several reasons for proposing to replace certain bridges across the River Esk. The existing Shorthope footbridge, Electric bridge and Goosegreen footbridge are all multi-span bridges with low soffits (the underside of the deck). During a major storm their intermediate piers would restrict the flow of water and their soffit would become submerged, further restricting the flow. Finally, the combination of piers and a low soffit increases the risk of debris impact and blockage, resulting in the bridge acting like a dam and preventing its use. Defences on the riverbanks would therefore have to be higher to compensate, with alternative crossing used during a flood.

By replacing these bridges with new single-span structures that would be higher than the flood level, this improves conveyance and reduces the risk of blockage. This also means the defences required on each riverbank are lower.

While the Ivanhoe footbridge is already single-span, it also presents a restriction to flow during the more extreme storms as the floodwater would still reach its soffit. Raising it and possibly relocating it upstream would reduce the height of defences around Eskmills.

A multiple benefit also exists, whereby this Project and the Musselburgh Active Toun project could combine funding streams to deliver wider bridges which better accommodate pedestrians, cyclists and other wheeled users. This would improve active travel around the town and add amenity value beyond just flood risk reduction.











musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

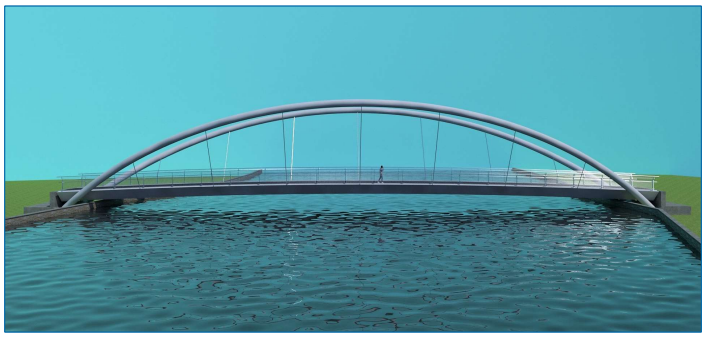
Replacement Bridges

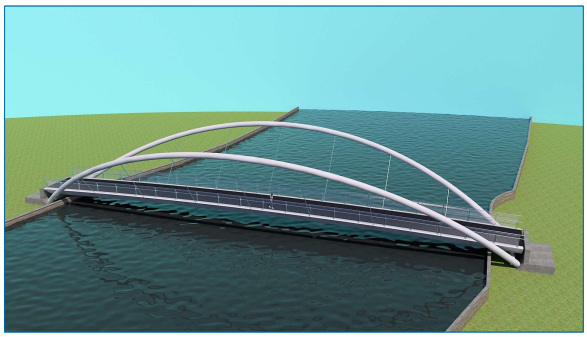
Musselburgh Flood Protection

Possible forms of construction

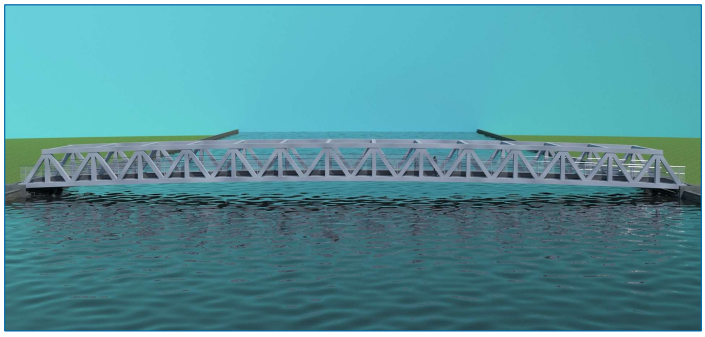
At previous consultation events the public asked to see what replacement footbridges might look like. In response, Jacobs has produced conceptual models of three different forms of footbridge construction which could achieve a single span crossing over the River Esk.

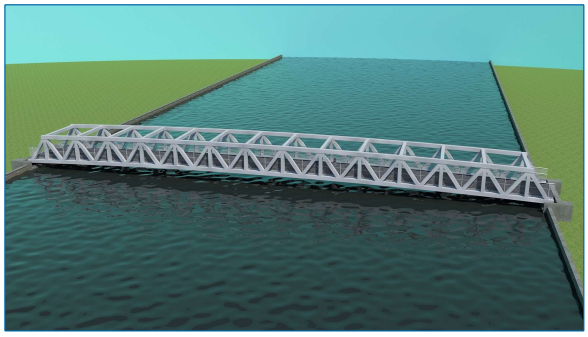
Following feedback from today's event, and in discussion with the planning service, the project team will make recommendations to Project Board with regard to a preferred form of bridge at each location.



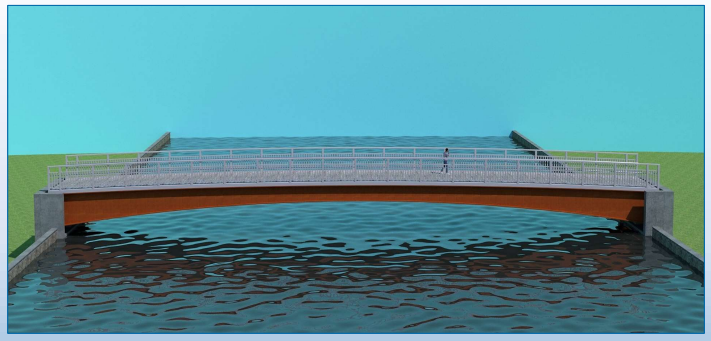


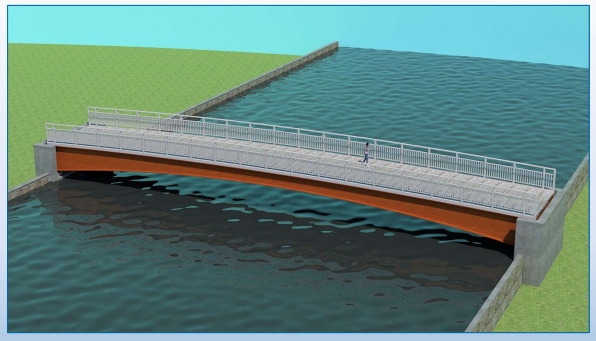
Example of a steel hybrid butterfly arch footbridge





Example of a steel modified warren truss footbridge





Example of a composite timber-weathered steel multi girder footbridge

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Jacobs East Lothian Council CPE CONSULTANCY Turner & Townsend

Possible Forms of Flood Defence

Musselburgh Flood Protection

Sand dunes

These are typically natural coastal formations, which in some cases can also be artificially constructed to provide flood protection.

Advantages

- Can have a more natural appearance than other forms of flood protection.
- Can provide other environmental benefits such as biodiversity enhancement and habitat creation.
- Can be a sustainable solution if there is sufficient natural supply of sediment to replenish the dunes after storms.
- Can be combined with a hard engineered core to ensure continued flood protection in case they are eroded.

Disadvantages

- Requires an enormous quantity of sand. Sourcing this can have adverse environmental impacts.
- Artificial dunes are still an emerging science and there is less certainty about their performance during storms.
- Dunes change shape over time. They need regular inspection and replenishment after erosion. This would be a significant burden on the Council.
- Dunes need to be significantly larger than other forms of defence.



musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Possible Forms of Flood Defence

Musselburgh Flood Protection

Flood embankments

Also known as levees or bunds, these are engineered mounds made from impermeable material such as clay. They may include a concrete or steel sheet pile core.

Advantages

- Can have a more natural appearance than other forms of flood protection
- Can include a footpath on the crest to give the public uninhibited views of the river or coast
- Generally lower cost than other forms of flood protection, but this is dependent on local supply of suitable clay material.
- Very low maintenance throughout their design life

Disadvantages

- Require significantly more space than other forms of flood protection. For example, a 1m high embankment with a 2.5m path on the crest would have at least a 9m wide footprint.
- Coastal embankments have to be higher than flood walls because their shape is less effective at reducing wave overtopping.
- Embankments may not be suitable for areas of poor ground conditions, where long-term settlement may be an issue.





musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Possible Forms of Flood Defence

Musselburgh Flood Protection

Flood walls

These are static flood defences, which are usually made from reinforced concrete or steel sheet piles, and have substantial foundations below ground.

Advantages

- They usually have a smaller footprint than other forms of flood defence, leaving more space for amenity.
- They have no moving parts and require very little maintenance or inspection.
- They can have a variety of finishes such as stone cladding, brick cladding, or patterned concrete. In Musselburgh it is likely that within the conservation area they would have to be stone clad.
- They can include glass panels for improved visibility, or flood gates for accessing the river or coast.

Disadvantages

- Can be more visually intrusive unless designed carefully as part of a wider landscape plan.
- Can have more embodied carbon than other forms of flood defence, although this depends on local supplies of materials.
- They generally have a higher cost than flood embankments due to the time taken to excavate for foundations, fix reinforcement, pour concrete, curing, and cladding.





musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Possible Forms of Flood Defence

Musselburgh Flood Protection

Hybrid embankments with an upstand wall

These are flood embankments with a low-height wall protruding from the crest

Advantages

- They have a smaller footprint than a standard flood embankment and a more natural appearance than a standard flood wall.
- No moving parts and very low maintenance throughout their design life.
- Can include a footpath on the crest like standard flood embankments.
- The upstand wall can include a wave return for coastal locations.
- The upstand could also incorporate demountables, glass panels or flood gates.

Disadvantages

- Higher cost than a standard embankment or standard flood wall due to more complex form of construction.
- While it has a smaller footprint than a standard embankment, it still has a larger footprint than a flood wall or barrier. It is therefore more suited where there is sufficient space available.
- Has similar disadvantages to the standard flood embankment described on a previous board.



David Wright / Humber Flood Defence Bank / CC BY-SA 2.0



Oliver Dixon / Ouse River Wall / CC BY-SA 2.0

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Possible Forms of Flood Defence

Musselburgh Flood Protection

Self-rising barriers

These are manufactured mechanical barriers which rise up out of the ground in response to floodwater, but which are normally hidden from view below ground.

Advantages

- When not in use, these are less visually intrusive than other forms of flood defence. Their housing can be flush with ground level or they can be designed to rise out from a lower fixed flood wall.
- They are designed to deploy automatically in response to rising flood waters. When the water levels recede after a storm, the barrier lowers automatically, thereby avoiding the need for human intervention.

Disadvantages

- Can be significantly more expensive than other forms of flood defence. May be suitable only over shorter lengths where visual impact or access is the critical consideration.
- They require regular inspection, testing and maintenance to keep them working. This would be a significant burden on the Council.
- Repairs and replacement parts could be less readily available in the future if a supplier changes its product range or goes out of business.





musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Possible Forms of Flood Defence

Musselburgh Flood Protection

Demountable barriers

This is a form of temporary flood protection which can be assembled prior to a storm but is normally stored elsewhere when not in use.

Advantages

- Less visually intrusive than other forms of flood protection because they are only put in place when a storm is expected.
- Useful where regular access is required and a fixed defence would not be practical, such as an entrance to a building or across a road.

Disadvantages

- They require a significant number of trained people to deploy them before a storm, and to dismantle them afterwards.
- Generally limited to shorter lengths of defence where a permanent barrier would be impractical.
- They require regular inspection, testing and maintenance to keep them working. This would be a significant burden on the Council.
- When not in use, they require space to be stored, preferably close to where they are deployed.





musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Coastal & Riverside Access

Musselburgh Flood Protection

Providing access for all in a new and improved water environment

Where flood defences are provided next to a river or coastline, it is important to maintain access so the public can continue to use the riverbank, park or beach.

Vehicle access is typically required to maintain these areas, such as grass cutting in parkland or maintenance of beaches.

The project team commits to maintaining access to as many of these areas in Musselburgh as practicable. The form of access will depend on what type of defence is to be crossed and its position relative to the water.

Maintaining or improving 'Access for All' is a key component of the landscape design strategy of the Scheme. Both ramped and stepped access will be provided to cater for pedestrians, cyclists, and other wheeled users where design standards and legislation requires this.



Example of a ramped path over a flood defence embankment



Example of a ramped access to a beach, over a sea wall and promenade



Possible opportunity to improve waterside access through changes to existing riverside structures on Eskside West



Example of a floodgate in a flood wall to maintain beach access for boats

musselburghfps@eastlothian.gov.uk

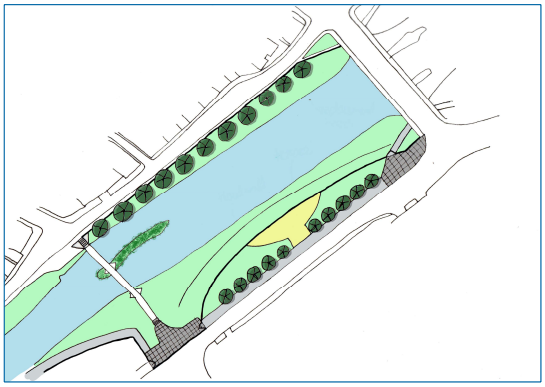
www.musselburghfloodprotection.com

Jacobs East Lothian Council CPE CONSULTANCY Turner & Townsend

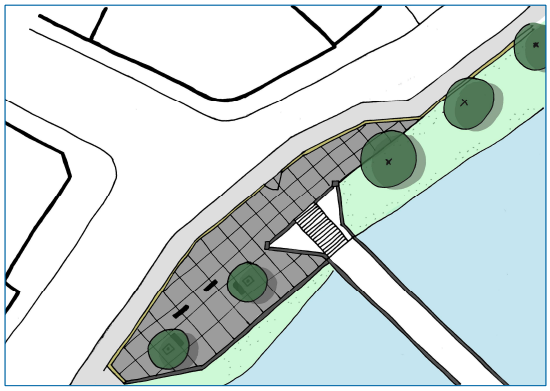
Enhanced Landscape Design

Musselburgh Flood Protection

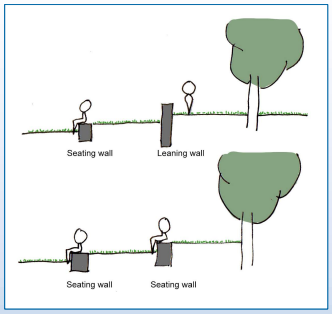
Designing a scheme for the 'Toun' that becomes part of the town



Conceptual sketch of possible landscape design options at Mall Avenue



Conceptual sketch of possible landscape design options north of Roman Bridge



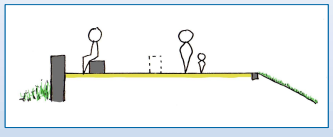
Conceptual sketch of possible landscape design options for riverside areas

For any Scheme to be acceptable, it must work as part of the wider urban environment whilst also providing flood protection. For the majority of its design life, the Scheme will simply be another part of the landscape.

The Council recognises the importance for the design of the Scheme to be sympathetic to the surrounding landscape of Musselburgh. Jacobs' design team comprises landscape architects working alongside engineers to develop a holistic design which meets the operational needs of the Council and the aesthetic aspirations of the community.

A flood protection scheme is a major infrastructure project, and its construction provides many opportunities to put back an improved and enhanced amenity space which is best suited to the needs of the community in the years to come. With match-funding via partner organisations, these opportunities could include enhancement of civic spaces, re-creation of natural habitats, or improvements to transportation links.

Once the form of defences is determined, the design team can begin to explore what landscape design opportunities can be achieved.



Conceptual sketch of possible landscape design options for coastal waterfront

musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Next Steps for the Scheme

Musselburgh Flood Protection

The project team will now collate and reflect on the feedback received during today's event and those of the 8th and 9th February, as well as comments from those who have made contact through other means.

Jacobs will then commence the outline design of the Scheme, taking into consideration the feedback received, together with an understanding of the operational needs of the Council. Jacobs will then make recommendations to the Council for specific solutions at each location. The project team will then return to the Brunton Theatre to update the public on the work in progress.

Key considerations:

- What form of defence is most appropriate at each location in the town?
- What form of replacement bridge is most appropriate at each location?
- What are the main aesthetic, amenity, and environmental factors at each location?

We look forward to meeting you again at the next public consultation event.





musselburghfps@eastlothian.gov.uk

www.musselburghfloodprotection.com

Jacobs East Lothian Council CPE CONSULTANCY Turner & Townsend

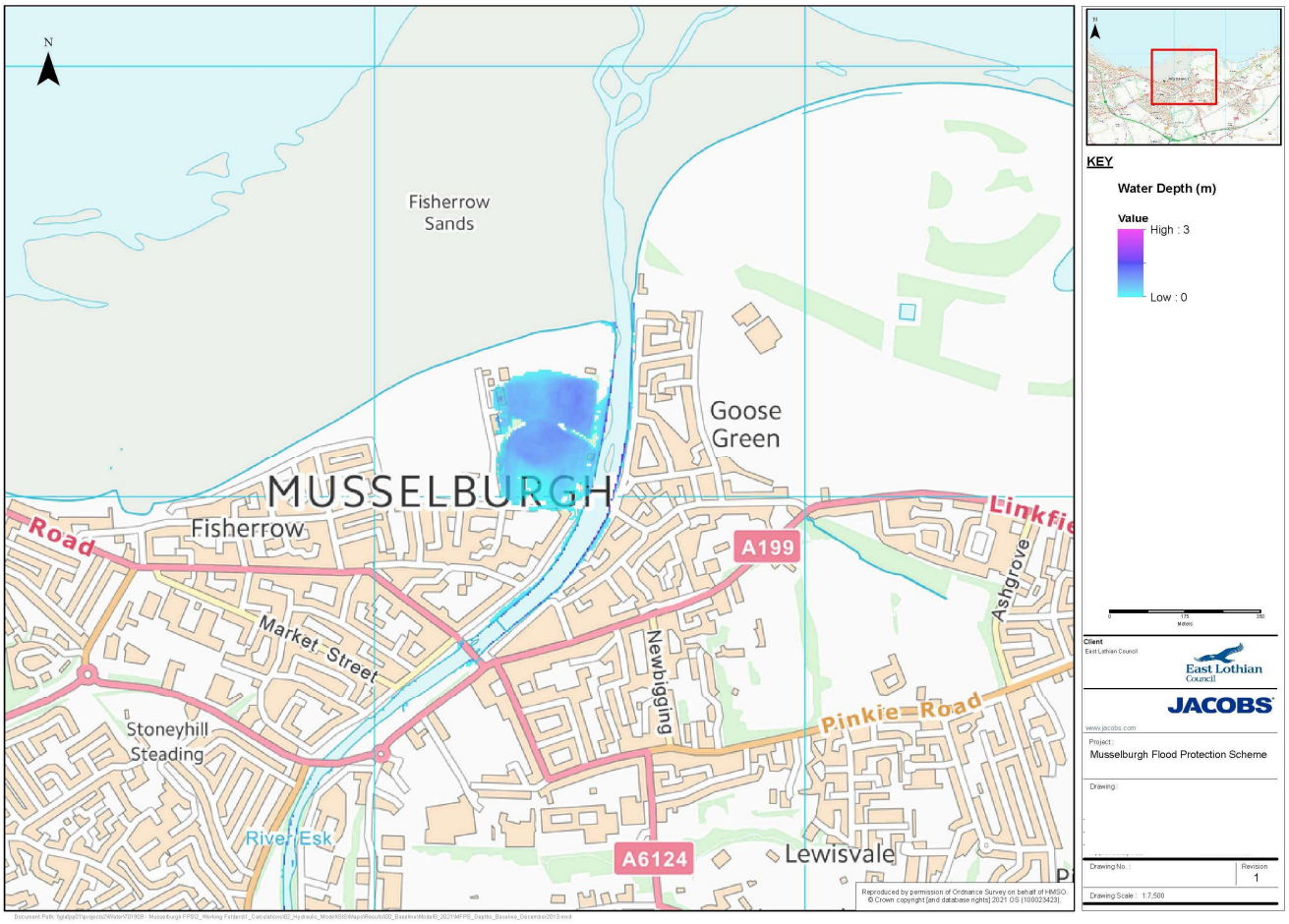
Existing Temporary Defences

Musselburgh Flood Protection

Musselburgh's coastal flood risk stems from the possibility of a high tide coinciding with a storm surge on the Forth Estuary. During such an event flooding would occur first at Eskside West adjacent to the Electric bridge because the ground level there is lower than along Fisherrow and the Links.

East Lothian Council currently has temporary flood defence barriers (red & white plastic barriers stored on the Electric bridge) which can be deployed at this location. Its Emergency Planning Team is responsible for coordinating this effort, and the defences have been deployed on a number of occasions. The map below indicates the area which could have flooded during an event in December 2013 if the temporary barriers had not been successfully deployed by the council.

Whilst these barriers are effective as a short-term measure, they are not a sustainable long-term solution to Musselburgh's coastal flood risk.



musselburghfps@eastlothian.gov.uk

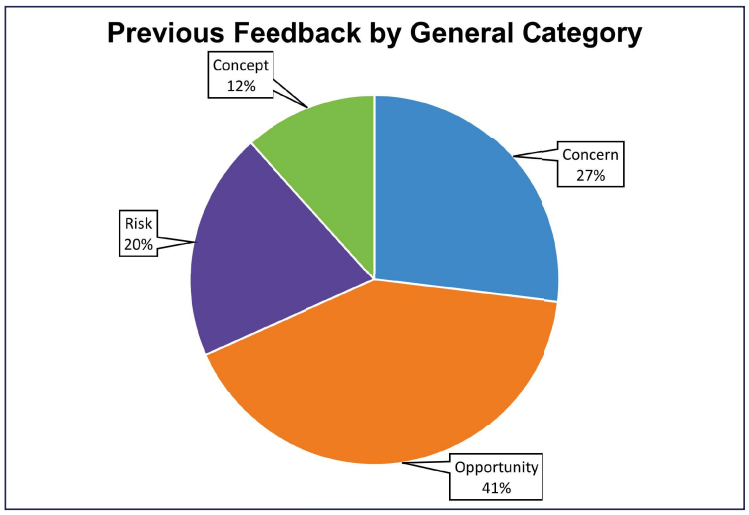
www.musselburghfloodprotection.com

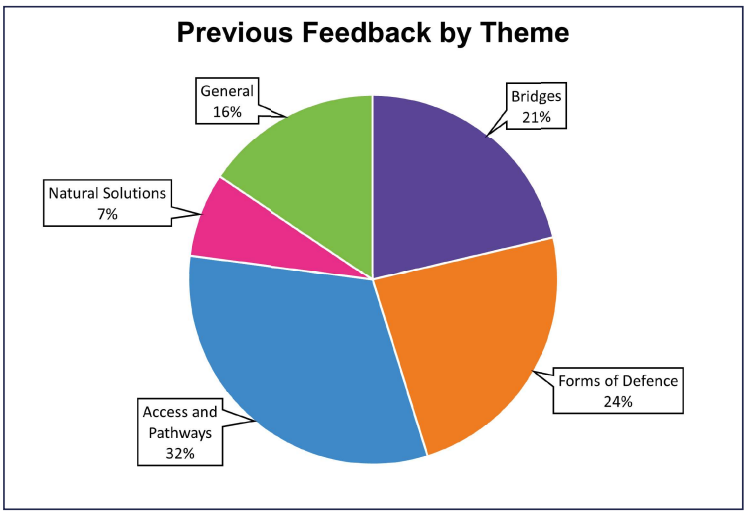
Jacobs East Lothian Council CPE CONSULTANCY Turner & Townsend

Musselburgh
Flood Protection

Consultation Feedback to Date

The following analysis includes questions and comments relating to the Musselburgh Flood Protection Scheme, received by the project team. This information has come from approx. 316 comments from various public consultation sources.





Category

Each question / comment was anonymised and organised into 4 general categories:

Concern: Feedback that expresses a worry about short term or long term impact of the Scheme and / or the changes it may entail.
27% were categorised as a concern.

Opportunity: Suggestions on how to improve the Scheme design, scope or strategy.
41% were categorised as an opportunity.

Risk: Feedback that has the potential to directly or indirectly conflict with proposed outcomes of the Scheme, keeping in mind that Scheme design is still at early stages.
20% were categorised as a risk.

Concept: A question or comment that required further explanation or investigation into a theme related to the Scheme.
12% were categorised as a concept.

Theme

These questions / comments were also organised by theme – what the question or comment was actually referring to, falling into any of the 4 general categories described above. There are 5 themes:

Bridges: **21%** related to bridges.

Forms of Defence: **23%** related to forms of defence.

Access and Pathways: **32%** related to access and pathways.

Natural Solutions: **7%** related to natural solutions.

General Question / Comment: **16%** related to general questions / comments.

Feedback Word Clouds

Concern

The graphics on this board, known as 'word clouds', are an analysis of the frequency of relevant words that occurred in all 316 questions / comments received so far. The comments have been organised by general category (concern, opportunity, risk, and concept) and a word cloud has then be made for each of these categories. The relative size of each word relates to the number of times it has occurred within each of the four categories. The colours are purely aesthetic and do not relate to any categorisation of the data.



Feedback Word Clouds
Opportunities

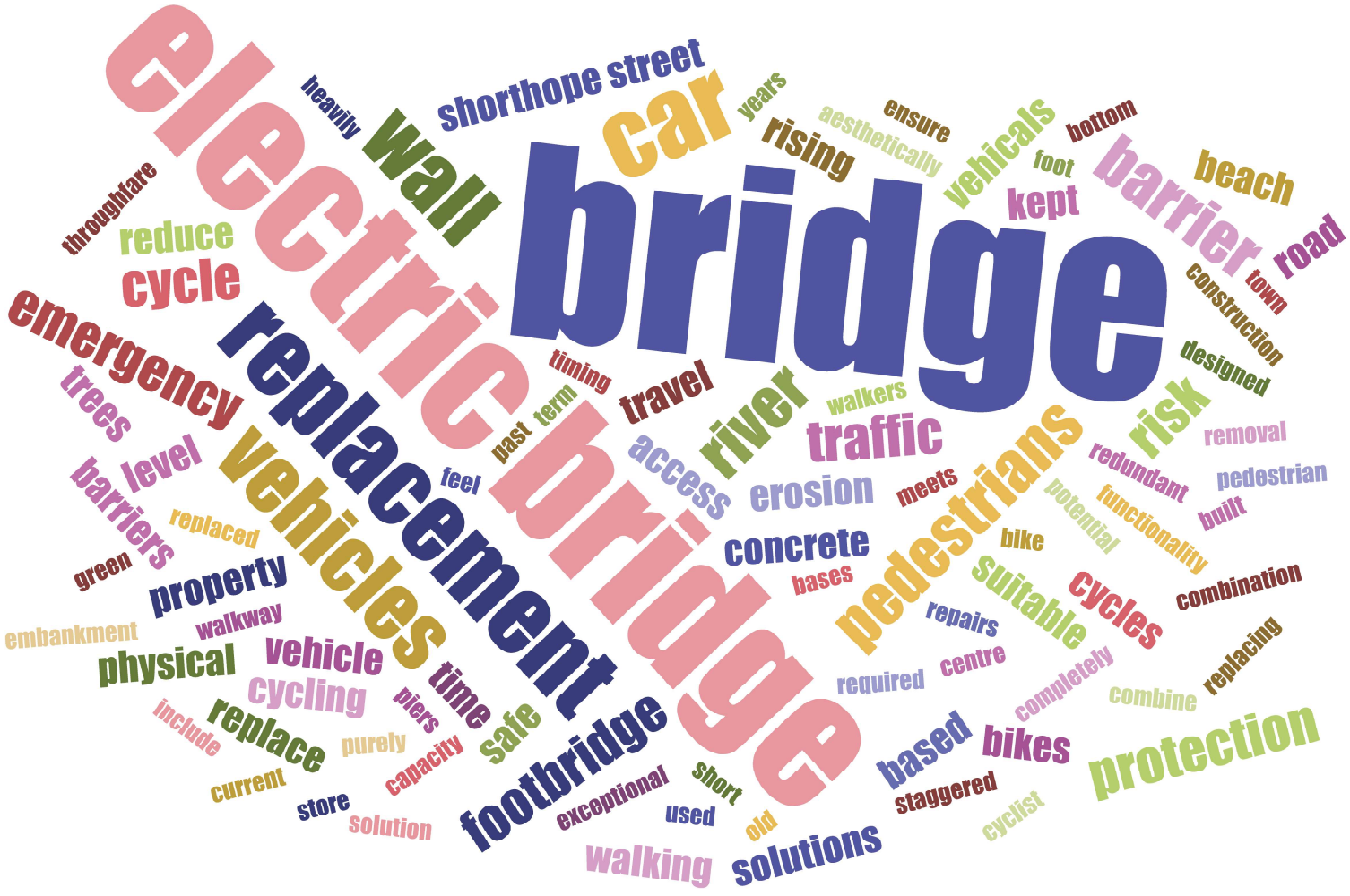
The graphics on this board, known as 'word clouds', are an analysis of the frequency of relevant words that occurred in all 316 questions / comments received so far. The comments have been organised by general category (concern, opportunity, risk, and concept) and a word cloud has then be made for each of these categories. The relative size of each word relates to the number of times it has occurred within each of the four categories. The colours are purely aesthetic and do not relate to any categorisation of the data.



Feedback Word Clouds

Risk

The graphics on this board, known as 'word clouds', are an analysis of the frequency of relevant words that occurred in all 316 questions / comments received so far. The comments have been organised by general category (concern, opportunity, risk, and concept) and a word cloud has then be made for each of these categories. The relative size of each word relates to the number of times it has occurred within each of the four categories. The colours are purely aesthetic and do not relate to any categorisation of the data.



Feedback Word Clouds

Concept

The graphics on this board, known as 'word clouds', are an analysis of the frequency of relevant words that occurred in all 316 questions / comments received so far. The comments have been organised by general category (concern, opportunity, risk, and concept) and a word cloud has then be made for each of these categories. The relative size of each word relates to the number of times it has occurred within each of the four categories. The colours are purely aesthetic and do not relate to any categorisation of the data.

