

## Questions and Answers relating to the Overall Scheme

Question	Response
Perhaps an explanation on why/how certain designs were discounted	Further information on what has been discounted and why the designs have been chosen is detailed on the scheme website. Through greater understanding and continued development we have discounted some options for a variety of reasons including buildability, affordability or practicality. Further information can be found on the following pages: <a href="https://www.grangemouthfloodscheme.com/preferred-scheme">https://www.grangemouthfloodscheme.com/preferred-scheme</a> <a href="https://www.grangemouthfloodscheme.com/consultation-event-no-1">https://www.grangemouthfloodscheme.com/consultation-event-no-1</a> <a href="https://www.grangemouthfloodscheme.com/consultation-event-no-1">https://www.grangemouthfloodscheme.com/consultation-event-no-1</a>
There was quite a lot of jargon and unfamiliar language used and I think you might get more out of people if you used some simpler language	We take this on board and recognise going forward that we will where possible try to provide information in a form which is more easily understandable. Unfortunately, there will always be some phrases and terms that are more difficult to simplify and the team are happy to assist in explaining terminology where questions arise.

All questions have been reproduced verbatim

# Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
Updates on consultations and ongoing work/problems. Including good definition maps of areas involved. Timelines for proposed work and specific information of contact details should have a question/query/suggestion.	Further information and updates will continue to be posted to the website. It is important to understand that there is a significant period of time before any construction will start. During this period more information and detail will become available and our engagement will be ongoing throughout. Contact details were displayed at the end of the presentation and are available on the Scheme website. Our preference is to receive an queries/ questions/ suggestions via email: <a href="mailto:grangemouthfps@falkirk.gov.uk">grangemouthfps@falkirk.gov.uk</a> where we can log any enquiries and the response.
More detail as it becomes available. Copies of or links to these presentations as I missed the first half of it and others (neighbours) couldn't attend.	Further information, including the recordings of the June 2021 meetings have now been uploaded to the community sections of the Scheme website.
The EIAR. The website mentioned a publications section, but I couldnt find this. I would like to see the EIAR to see what the biodiverisy and water environment chapters have to say.	The EIAR will be published along with the other Scheme documents when the statutory approval process starts. Currently this is scheduled to commence in late 2022.

# Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
<p>The time order in which the cells will be developed.</p> <p>The timescale for when any concerned owners will receive a detailed plan of what trees must be removed and the exact placement of their wall.</p> <p>The process for objecting if the council's detailed plan for a property overrules the owner's concerns.</p>	<p>The potential timing of the works will be considered as the scheme develops. When this information is available it will be shared with all who have registered on the website or by other means. It is important to understand that its likely to be approximately 5 years before any works will be constructed. During this period, more information and detail will become available. Our engagement will be ongoing throughout and will include further information on the final location of the defences and any vegetation to be removed. Some of this information may not be finalised for as long as 10 years for those areas towards the end of the construction period. However, we will have developed plans during that time and will have the proposed location and areas of vegetation which are likely to be affected, with all of this information shared well in advance.</p>
<p>Wardlaw Place-the proposed wall across the field at the bottom of our gardens is unacceptable. Redesign around the field perimeter. This isn't a cost exercise, this is detrimental to our properties and the potential future sales. There are alternatives around the edge of field - use it.</p>	<p>The field you refer to is already part of the natural flood plain. The scheme seeks to retain natural flood plains where possible in line with good flood management techniques. The proposed flood defences are located along the northern perimeter of the field, offset from the property boundaries and are lower in height than the perimeter fencing to the rear of your property.</p>

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Question	Response
I like the idea of public art. Presumably, a local theme will be used, e.g. Carron Ironworks. You will need to consider how to maintain it - I am thinking of the inevitable graffiti and vandalism.	Further details on public art and community facilities will be developed as the project progresses and we would hope gain further feedback on these. Falkirk Council will be responsible for coordinating ongoing inspection and maintenance of the scheme when built.
I think there is an opportunity here to contribute to biodiversity, on river bank areas, dead zones between walls, floodplains, urban green spaces and gardens. There are lots of good value ways to promote biodiversity - bat and birds boxes, invertebrate hotels, pollinator friendly habitat such as fruit trees and hedgerows, dead wood in dead zones, compensatory planting . I should imagine any wildlife enthusiast would like to see the scheme really maximise on this. Hard engineering doesn't mean there should be no biodiversity gain.	This scheme isn't just a hard engineering project. We will be looking to implement a range of items or biodiversity schemes, like you have identified with the aim of improving the biodiversity of the areas we will be working in.

## Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
Thank you very much for taking the time to share this information with us. I can't help but feel that some of the big oil businesses should be paying their fair share, particularly as we will eventually be moving away from hydrocarbon based energy. Given that Scotland is committed to achieving net zero in 2045 it seems a retrograde step to use tax payers money to entirely fund the scheme. The GFPS should know how this land will be decommissioned and what it is likely to be used for when the refineries are no longer required.	<p>The precise funding mechanism for the Grangemouth Flood Protection Scheme hasn't yet been finalised and is subject to ongoing discussions with Scottish Government. However, given the significant estimated costs it is anticipated that contributions will be sought from multiple sources, including third parties where appropriate.</p> <p>Falkirk Council is currently working alongside Government and other strategic partners to prioritise and coordinate cross-cutting decarbonisation projects across the Grangemouth industrial cluster as part of a Just Transition towards Net Zero economy. The Grangemouth Future Industry Board is a newly established group that is working to align public sector initiatives, focusing on this critical hub of industrial and economic activity that is vital to Scotland's economy, designed to ensure that the region maintains and develops its competitiveness now and in our net-zero future. Funding arrangements for the delivery of any new infrastructure required to support the future of the Grangemouth community and the industrial cluster is still to be determined and will be developed in conjunction with businesses and the UK and Scottish Governments</p> <p>The GFPS team is also working collaboratively with various other Council departments involved in the future of the Grangemouth area and we will continue to seek additional funding opportunities as appropriate.</p>
By "stone" I'm assuming you mean something that looks like a drystone dyke, since I no longer see photo examples on the website?	<p>The form of the stone is yet to be decided i.e. type and colour. Examples of flood defence finishes are still on the website (<a href="https://www.grangemouthfloodscheme.com/examples">https://www.grangemouthfloodscheme.com/examples</a>)</p>

# Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
<p>Feedback has been requested from those at the online meeting. However, the only names I recognised will not even have a wall on their property -- why should their vote on the wall type influence the appearance of what is constructed in someone's garden ?</p> <p>Where the wall is constructed in a private garden the scheme must provide an onsite consultation with the owner to establish the best way to place the wall to minimise damage to mature trees and natural habitats. I feel this was glossed over in the discussion and on the website.</p>	<p>As noted, the decision on the placement of the flood defences e.g. on the property boundary or offset from the boundary has yet to be finalised. Any individual requests received from householders will be part of the decision making process. Other aspects will also need to be considered in determining the final finish of the flood defences e.g. height, cost, conservation area, future maintenance etc</p>
<p>Many residents along the Carron will be concerned about the removal of large mature bushes/trees from the rear of their property to allow access . When will individual conversations happen with those residents so that they can highlight their concerns and work with the scheme to limit the vegetation damage on their land ? Online chat or emails will be insufficient to tackle the feedback you seem to want for the wall design for properties which bound the river.</p>	<p>We anticipate being in a position to meet individuals later this year. If individual residents wish to discuss the proposals we would ask that they either email <a href="mailto:grangemouthfps@falkirk.gov.uk">grangemouthfps@falkirk.gov.uk</a>. At this stage in the project, the detailed design has yet to be completed and may not be completed for several years. Therefore it may not be possible to provide all answers at this stage.</p>
<p>What happens to decking built at the rear of properties and go onto the existing river embankment?</p>	<p>The reinstatement of gardens would be discussed and agreed with individual property owners. This is not likely to happen until nearer construction.</p>

# Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
You mentioned STEM events etc and engagement with the community - What does your Community Benefits and Community Engagement delivery plan look like? Does it have a full employment and skills plan and What budget is allocated to the community engagement element? Spend to support the households that are directly impacted?	Community benefits is an important consideration within public sector procurement. Details of community benefits and opportunities will not be finalised until nearer construction as requirements are constantly being reviewed. We are currently finalising our Engagement plans to ensure that we engage in the best possible way with residents businesses and interested parties alongside statutory bodies. A STEM education programme is currently being finalised and will be rolled out in primary schools in 2022.
I've been told by FPS that the top of the wall will be 1 metre above the level of our back garden . We all already have a 30 cm flood bund behind the lawned garden. Why has adding 70 cm to the top of this bund (to 1 metre total), not been considered as a far cheaper,quicker and less destructive solution ?	A bund 1m high would have an overall width of 7-8m and when combined with the working space necessary for the construction equipment could impact a corridor some 13-15m wide, with all the vegetation in this corridor being affected, whereas a wall has a much narrower footprint and would affect less land. Constructing a bund is also very weather dependent and cannot be constructed when it is raining whereas a wall construction can progress in the rain.
The path along the side of the chapel burn regularly has a significant puddle on it during wet weather. With a wall preventing the drainage of water this puddle may get even bigger would it be possible to have this resolved as part of the upgrade.	It is likely the path will be completely reconstructed as part of the flood defences and new drainage installed.

## Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
Will there be access points down to the river? There are often people fishing at the bit where chapel burn and the river meets.	This has yet to be decided. In our experience there is usually mixed feelings about providing access with some people keen to have access to the river and others less so. We would welcome any feedback on this issue.
Is there opportunities for tree planting upstream to slow the water joining the river	Given the size of the River Carron, tree planting would have a negligible impact on reducing flood risk. This type of flood management is more suited to small watercourses. That said we will be considering tree planting upstream as part of a strategy to offset the carbon impact of the project.
How long would you anticipate each section of the wall would take? and how long will the residents with property along the riverbank be subject to noise, vibration and disruption	The overall length of construction for the entire scheme is currently estimated to be 5-10 years. However works will not be undertaken in all areas at the same time. Works will progress along the watercourses and be completed in phases.
Will the fence on top of the wall have wide slats to maintain privacy (as we currently have), especially considering that a lot of existing vegetation cover may be lost as part of your development ? Unsightly steel fences don't appeal.	Essentially yes. The reinstatement of private gardens would be discussed and agreed with individual property owners.



# Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
What are the implications for house insurance and property value?	The council have no remit in terms of insurance and property value so cannot say with any certainty what the impact of the scheme would be on these matters. We would envisage that being able to obtain insurance should be easier and more cost effective but that is a matter for the insurance industry. Similarly property values depend on a number of factors and fluctuate due to market conditions. We would hope that the completion of the flood defences would have a positive impact on property prices.
Larbert high students created art for the Carron dams, perhaps it would be nice to have something similar on sections of the wall that are more visible to the public.	We would welcome any suggestions on public art that could be incorporated into the scheme. We will develop our plans for art in the years ahead as the scheme progresses.
I feel that the issues of wildlife disturbance were not really addressed fully.	The impacts on wildlife disturbance are being considered in detail by the project team. We have been collating information on the species present over the last 3-4 years and in 2021 we undertook further surveys focussed on bats. The impacts will be considered in the Environmental Impact Assessment Report as well as the proposed mitigation where impacts are identified.

## Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
<p>Hi, I was unable to attend on the day but have watched the informative 3d video and the recording. We live on the river at Halket crescent and would be keen to understand what the potential impact of defences along the banking may have on our property. Concerned that defences elsewhere may impact on those which are adjacent e.g. at Gilfillan. In recent years any flooding has occurred on the opposite side from our property and therefore we have felt fairly protected. Slightly concerned that we may be now be exposed by changing the course of natural flooding.</p>	<p>No flood defences are proposed to the rear of Halket Crescent. Defences are proposed upstream from Halket Crescent, from Rae Court and follow the River Carron and Chapel Burn and downstream from Halket Crescent flood defences are required to the south of Gilfillan Place and Wardlaw Place round to Dock Street. Flood defences are not required behind Halket Crescent as the existing ground levels are above the flood water level. We are trying to retain as much of the natural flood plain as possible to allow these areas to continue to flood.</p>

## Questions and Answers relating to the Carron/ Carronshore Event

Question	Response
<p>There is a wide variety of indigenous animals, insects and birds on the river banks including kingfishers, golden eye, merganser, swans, deer, foxes, many species of bees, butterflies and many more we are concerned about the impact on these. Also as our property is very close to the proposed wall we are concerned about the requirement to dig down, piling and rerouting of water and the impact vibration may have on the property. We have a decking and the disturbance of this. We would also like to know how where the works access will be along the bank and how long we will be expected to put up with this disturbance. Also for security will it be made possible for people to walk along the wall and gain access to our property this way as at present this is secure.</p>	<p>The impacts on wildlife disturbance are being considered in detail by the project team. We have been collating information on the species present over the last 3-4 years and in 2021 we undertook further surveys focussed on bats. The impacts will be considered in the Environmental Impact Assessment Report as well as the proposed mitigation where impacts are identified.</p> <p>We will be discussing the potential impacts with individual property owners. However based on your address there are no flood defences proposed in the vicinity of your property. Further details on the location of flood defences can be found on the community pages on the Scheme website. Issues of noise and vibration have been answered in previous questions.</p> <p>We will incorporate measures to deter people from walking along the walls.</p>

# Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
Can you not deepen existing channel to dimensions the height of a wall would be? Is extra depth below ground not the same as height above ground?	No, this wouldn't provide the same protection. The volume of water above ground is considerably greater than the volume of water created by deepening the existing channel - the distance between the flood defence walls is much greater than the distance between the current edges of the Grange Burn. In addition, the risk in this area is from extreme tide levels and surges. Excavating below the tide is not going to reduce the water level of the sea.
Walls invite graffiti, which will lower the attraction of a currently desirable area. How will this be controlled and who will maintain, monitor and ensure wall is upkept?	Falkirk Council will be responsible for the maintenance of flood defences.
If piling will have such an impact on trees on Park Road, my property is directly across from this - so 10 ft..... surely this will have a negative impact on on properties too?	The impact on trees is due to roots being cut through or crushed while defences are put in place, not from noise and vibration. Piling can be carried out using many different methods, depending on the ground conditions (e.g. hard or soft ground), location of adjacent buildings and other infrastructure. The most suitable method will be adopted for each individual area of the scheme and could include the use of silent piling which presses piles into the ground using hydraulics. Irrespective of what method is adopted, processes and procedures including pre and post condition surveys of buildings and structures, monitoring of noise and vibration etc will be carried out.

## Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
<p>What was the audience size of the original feedback group who these plans have all been made around?</p>	<p>This information can be found in the feedback reports available on our website, following the public consultation events in 2018 and 2019. The solution presented at the online events in June was not only based on the opinion of those that provided feedback at the previous events, but was also a result of a comprehensive review of the potential options that took place from 2017 to 2019 taking into account multiple constraints.</p>
<p>Option of moving the wall creates issues ONLY with the existing proposal. Will you consider looking at further options to save trees? If not, basically our feedback will make no difference.</p>	<p>As noted, the solution presented follows several years of considering alternative options and two previous public consultation events. We are aware of the sensitivity surrounding the trees and have taken steps wherever possible, to re-position the location of the flood defence wall within Zetland Park to allow the retention of one the avenues of mature trees from what was considered several years ago . If there was an option that could retain all the trees that was feasible then we would be progressing with that option. Unfortunately, we will never be able to develop a solution that everyone agrees with and at times difficult decisions have to be made. The location of Grangemouth which has flood risks from both tidal and river flooding is a very complex matter requiring a robust solution that considers the impacts from both sources of flooding</p>

## Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
<p>While indicative heights of the walls on Abbots Road are useful, the current wall height is consistent so having an idea of how much higher the new walls will be would help in visualising the scheme. Were bunds considered within the park area in stead of a wall possibly meaning that more trees could be retained?</p>	<p>The wall height plans have now been published on the website which will allow you to look at any specific location. Bunds were considered for within the park but were discounted as these have a much greater footprint than a wall which in turn would have actually resulted in the need to fell even more trees. A bund has been proposed at the southern end of the defences in Zetland Park where there are fewer trees and therefore sufficient space to provide a bund.</p>

## Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
<p>I have to say the presentation was very professional and informative. The visualisations were very helpful.</p> <p>More information on the new tree types and the size to which they will grow and the years for this to happen would be helpful.</p> <p>It would also be helpful to read the technical papers on the volume of fluvial waters which have advised the Scheme that Flood Gates would be more problematic due to build up waters from the braes directed down the Grange Burn</p>	<p>The final decision on the types of trees to be installed is unlikely to be made in the near future. As we have stated the trees to be planted will be large specimens (4-5m in height). We will engage further with those groups and individuals with an interest in Zetland Park on the types of trees.</p> <p>The provision of a tidal barrier at the mouth of the Grange Burn would require adequate storage of waters coming down the Grange Burn, Almond Pow and from surface water drainage of roofs, roads and paved areas that all need to be stored when the barrier is closed. The barrier would need to be closed based on a forecast of tides and surges and forecasts can change hour by hour so there is a potential that the barrier would be closed unnecessarily. This could have a significant adverse impact if the water that was stored during this false closure could not be drained quickly enough and if the next tidal event resulted in an actual extreme tide requiring the barrier to be closed but the capacity behind the barrier was already partially used. This could mean there could be inadequate storage to deal with any flows in the burns and drains and could result in more severe flooding than simply not having a barrier. This high operational risk has resulted in this option being discounted with a more passive solution being favoured. The option with the barrier that was previously considered also included flood defences in the area between Zetland Park and the Port.</p>

# Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
I missed the start of the presentation but was changing the course of the Grange burn (or any other burn ) considered?	Changing the course of the Grange Burn north of Zetland Park would have no impact as the risk in this area is from tidal flooding with the roads and houses all lying lower than the extreme tidal flood levels. Re-aligning the River Carron was considered, more so to simplify construction, but this was shown to offer very little benefit in reducing flood risk. The current proposal to divert more water from the Grange Burn into the flood relief channel provides the benefit that no flood defences are required on the Grange Burn between Rannoch Park and Zetland Park
Would like to know what is happening along at Dalratho Bridge.	Further information can be found on the scheme website including plans, 3d visualisations and artists impressions. If your query relates directly to the bridge itself, we will be looking at options of strengthening or a replacement of the bridge
As our tree lined park is being renewed then it should become a feature in itself eg rows of cherry blossom (akin to Dollar burn) I'd also like to see the old willow tree protected with crutches from the trees. I'd also like to future proof whilst digging - ie electric cables for car charging - could be good payoff for houses right beside work	The many enhancement opportunities associated with the flood defences will be subject to further consultation and community engagement.



# Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
<p>A very clear presentation I thought.</p> <p>I think I heard that underground pipes (oil-related?) are restricting options in some areas. Could these be moved?</p> <p>What is the oil industry's role?</p> <p>A 1 in 200 event seems very low risk.</p>	<p>Underground pipes and cables have indeed influenced whether some options were feasible or not. For example, on the River Carron we had considered the construction of two large flood storage areas. However the presence of major accident hazard pipelines within very close proximity meant these storage areas were not feasible as the pipelines could not practically be relocated due to the many constraints associated with them.</p> <p>As with residents and small businesses within the scheme area Falkirk Council will engage and consult where necessary throughout the scheme development to ensure views and operational needs are accounted for as the scheme develops. Falkirk Council are responsible for progressing the Scheme with grant assistance from the Scottish Government.</p> <p>A 1 in 200 year event (0.5% chance of occurrence in any year) is typically the standard or protection provided by a flood protection scheme. With some exceptions for important infrastructure, any new development in flood risk areas generally needs to have protection against the 1 in 200 year event taking account of climate change. The Bo'ness FPS which protects the town of Bo'ness from risk of flooding from the Forth Estuary was also constructed to provide a 1 in 200 year standard of protection.</p>

# Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
<p>Very disappointed to see that this whole plan has been constructed based on just 66 votes! That equates to 0.4% of the 16,240 population of Grangemouth.</p> <p>Of those 66 votes, 48% of those opted for Option C (Flood Storage Area at Westquarter Burn)</p> <p>23% selected the None of the proposed options, therefore, why have Options A &amp; B been taken forward??</p> <p>Such a monumental decision should not have been based on a pitiful number of 66 people and smacks of trying to sneak this through without the knowledge of 99% of the town!</p>	<p>The current option that has been presented is not entirely the result of previous public votes. In fact far from it, an extensive appraisal of alternative options was carried out considering the pros and cons from a technical, cost, environmental and social perspective with the public consultation forming an important part of that exercise. 12,000 households and businesses have been notified of the scheme at various stages in the process.</p> <p>Neither option A or B have been taken forward. Options A and B involved almost continuous flood defences from Rannoch Park to the Port with the main difference between these being the alignment of defences in Zetland Park. What is being proposed is very similar to Option C i.e. no defences between Rannoch Park and Zetland Park. This has been achieved by diverting more water from the Grange Burn into the flood relief channel and increasing the height of defences along the flood relief channel rather than the implementation of the Westquarter storage area. Option C still required significant lengths of flood defences between Zetland Park and the Port.</p> <p>It is never the projects intention to "sneak" anything through. As noted in other responses we have written to over 12,000 households and businesses at various stages from 2018 informing them of the Scheme, up and coming consultation events, inviting comments and feedback, holding consultation events and publishing all of this on the Scheme website.</p>
<p>Would a wall option as shown in video be better than Gates on Dalratho road bridge?</p>	<p>We are currently considering options for Dalratho Road bridge, including the potential replacement of the bridge.</p>

# Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
How long will the construction take when it all starts?	The overall length of construction for the entire Scheme is currently estimated to be 5-10years. However works will not be undertaken in all areas at the same time. Works will progress along the watercourses and be completed in phases.
How much disruption to residents living alongside the burn?	The construction of flood defences is a major engineering project and will involve the use of various types of construction equipment including excavators, dump trucks, concrete trucks, piling equipment etc. In addition due to close proximity to roads, there will need to be road and lane closures to enable the works to be carried out. Controls will be put in place to reduce the impacts as far as possible e.g. working hours, noise barriers, type of equipment that can be used
There is a culvert into the Grange Burn at Orchard Street - how does that affect the proposals?	The inflow from the Almond Pow has been taken into account. We are currently reviewing flood risk along the Almond Pow to determine what measures may be incorporated into the scheme to reduce flood risk.
Where will you store equipment	Construction related equipment will be stored within secure site compounds. The location of the site compounds has not been finalised at this stage.
Regarding the tree removal and replacement, whilst I generally agree with your proposals, has this been accepted by the relevant authorities - SEPA, Planners etc??	The scheme has been developed with the input of many stakeholders including SEPA, NatureScot (formerly SNH) and all the relevant council departments. Any issues raised have been addressed as the scheme has developed and we believe the relevant authorities are in agreement with the current proposals.

## Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
Do you see this scheme being carried out as one contract and, if so, how long do you anticipate this may take to complete?	We anticipate the scheme will be carried out over multiple contracts. The potential phasing is currently being assessed.
My house shakes when a lorry trundles down, what affect will piling have.	There are many different methods of installing piles including methods referred to as silent piling where the piles are effectively pushed into the ground. The choice of piling method will vary across the scheme taking into account the ground conditions and proximity to buildings and structures. In addition there will be tight controls on noise and vibration that need to be adhered to. Buildings and structures will be surveyed/ inspected prior to construction works being undertaken and repeated on completion. In the unlikely event that any damage is caused this will be repaired.
Wood could be used as planters for the schools	Great idea. We welcome any suggestions people have on the re-use of any of the felled trees.
Is there a risk that the pathway created on the east side of the burn within the park, will become a dark space bounded by the retaining wall and mature trees? Was an embankment considered as a less enclosed space?	The final design has yet to be completed and this will be assessed as part of the design. If this was deemed to be an issue there is the potential to install lighting. An embankment was considered but due to its significantly larger footprint, which would affect more trees, it was discounted in favour of a wall.
what plans do you have in place for flooding during construction?	Contingency plans will be developed during the construction phase to address the possibility of a flood event and may include the erection of temporary flood defences.

## Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
Talbot street has only one access in and out from Abbots Road, houses also require access, what has been suggested for here	Access will be maintained to properties during construction of the flood defences. The details of any traffic management will be carried out in the future as part of the construction phase.
Obviously this is a massive scheme and will take years to build as your programme suggests, is there a way to ensure that having built one section of the defense, it does not impact other areas during a flooding event?	Flood risk will be a key consideration when looking at the order and sequencing of the construction phases. In addition it is possible that temporary flood defences will be erected during the construction phase.
Are there opportunities for integrating say active travel routes alongside parts of the scheme?	We are currently considering the opportunities for active travel to be delivered in tandem or alongside the scheme. We would welcome feedback on whether this is something the public would want.
There are large areas of open ground in Grangemouth in the parks, adjacent to much of the works will these be worked into the scheme as resources of last resort for overflow?	Plans showing the locations of the flood defences are available on the project website. There are currently no plans to carry out any other flood defence works within Zetland Park

## Questions and Answers relating to the Zetland Park/ Park Road Event

Question	Response
<p>Are the bridges going to be raised</p>	<p>We are currently considering the different options at each bridge. It is unlikely that the vehicle bridges will be raised as this would require adjacent roads, footpaths, junctions and entrances into homes and businesses to be raised for a considerable distance either side of the bridge to ensure a smooth transition. Work will be undertaken to these bridges to ensure they are strong enough to withstand the water pressure in flood conditions and this may include replacing the parapets on the bridge and/ or installation of flood gates. Pedestrian bridges may be raised and /or have flood gates installed at either end to prevent their use in a flood. It is unlikely that bridges will get washed away as the risk is primarily from tidal flooding and river flooding in the Grange Burn will be reduced by diverting more water into the flood relief channel.</p>

## Questions and Answers relating to the Grangeburn Road Event

Question	Response
I attended the online meeting for the Grangeburn Road area and it was obvious that you had already decided on the “Berlin Wall” protection despite the community involved being under the impression that this isn’t set in stone, so to speak.	As noted during the presentation, there has been an extensive review from 2017 to 2019 on the potential options that could be implemented to manage the flood risk in Grangemouth. In addition two previous public consultation events were held in 2018 and 2019 with the solution presented in June 2021 representing the outcome of this process.
At the meeting you discarded Mumrills as a water holding area because you said it was a site of historical interest. By that I think you meant the Antonine Wall which has been destroyed by road building. It isn’t even mentioned on the Falkirk Council website.	The Antonine Wall is a World Heritage Site ( <a href="https://www.antoninewall.org/">https://www.antoninewall.org/</a> ) and extensive discussions were held with Historic Environment Scotland on the potential to create a flood storage area by the construction of a dam across the river valley. The benefit of this option was the removal of flood defences between Rannoch Park and Zetland Park. This option still required flood defences from Zetland Park to where it meets with the Forth Estuary. The solution presented in June, whilst not involving a dam at Mumrills, achieves the same outcome i.e. avoiding the need for flood defences between Rannoch Park and Zetland Park, by diverting more water from the Grange Burn into the flood relief channel.
You also mentioned that the Grangeburn Road electricity substation would need to be moved but you didn’t elaborate on the the new site and what level of disruption there would be to our power supplies.	The location would be determined by Scottish Power who would be undertaking the works. Any disruption to power supplies would be minimal as the new substation would be constructed in advance of the existing substation being decommissioned.
You didn’t mention whether the pumping station would be demolished also and rebuilt as it’s nearer to the water than the electricity station.	At present the Scottish Water pumping station will be retained with the flood defence wall being constructed around the the pumping station between it and Grange Burn.

## Questions and Answers relating to the Grangeburn Road Event

Question	Response
Then we get to the "proposal" for flood gates over the affected roads. What would be the disruption on Powdrake Road and further back by queuing container lorries and tankers? What would be the disruption to traffic at Kingseat Avenue bridge when Bo'ness Road bridge and Kerse Road bridge get closed to traffic?	Traffic disruption will be very infrequent, only when flood gates are in the closed position and relatively short alternative routes will be available. However, The likely disruption from a flood event when the scheme is constructed would be considerably less than the disruption caused by a flood event when potentially many roads would be under water and impassable to vehicles. It should be noted that the proposal for Bo'ness Rd. bridge is not for flood gates but to tie the flood defences into the bridge and strengthen the parapet walls, meaning the bridge will remain open during flood events.
Consider the level of floodwater that you propose flowing to the closed Bo'ness Road bridge which has solid brick walls. The level of water will rise and overflow onto the roads defeating the purpose of flood protection. Will this bridge be demolished and rebuilt?	The proposal for Bo'ness Rd. bridge is not for flood gates but to tie the flood defences into the bridge and strengthen the parapet walls, meaning the bridge will remain open during flood events.
At the meeting I asked how would you be able to hold back a high tide to allow workers to chop trees, treat the stumps, pile, build walls and replant trees. Your answer was typically evasive.	Flood defences would be constructed behind cofferdams where necessary. Cofferdams are temporary structures, usually formed from interlocking steel piles that allow works below water to be carried out. This is a standard method of construction
You said the existing trees were of poor quality yet how long have they been there? Many decades yet poor quality trees would have fell during winter storms. The trees are of so "poor quality " that you propose to make wooden statues etc to put on sale!	We advised that some of the trees had been graded as poor, some have signs of Ash Dieback disease. It is likely because of this disease these trees would need to be felled at some point in the future irrespective of whether the flood protection scheme was implemented. Any of the timber, if suitable, could be used for community projects and we asked for suggestions for this.



## Questions and Answers relating to the Grangeburn Road Event

Question	Response
Another attendee expressed concerns of damage to the structure of her house caused by the vibration of heavy machinery and lorries should your wall building go ahead. A big concern for all. Will compensation be available?	Where works are proposed within close proximity to any existing buildings or structures, pre-construction condition surveys will be undertaken. In addition, the choice of piling method will be chosen to minimise the risk of any damage and procedures will be implemented to monitor noise and vibration during the construction period with appropriate limits set. Following completion of the work, post-construction condition surveys will be undertaken and any damage identified that is attributable to the flood defence construction works will be repaired.
My opinion is that a series of flood gates could be built similar to what's on canals to hold back run off from the hills while high tide is taking place.	As noted many difference options have been considered over the last 4 years. The management of flood risk is complex in the area due to the many difference sources of flooding. Solutions involving gates and other moveable structures add an extra layer of complexity to the future operation of the scheme and bring significant ongoing risks in relation to either mechanical or human failure, which in turn could lead to flooding being worse as a result of any failures. The scheme we are proposing provides a more 'passive' and reliable solution. Holding back water would have no impact where the primary source is tidal flooding

## Questions and Answers relating to the Grangeburn Road Event

Question	Response
When I received a feed back questionnaire, I was asked "What kind of wall would you like to see?". That compounded my thoughts that you are set to build the wall despite local aversion to it.	As noted many different options have been considered over the last 4 years and subject to previous consultation events in 2018 and 2019. The event in 2019 identified flood defence walls or embankments as the preferred option. It should be noted that all of the options considered included significant lengths of flood walls/ embankments, it is unavoidable for a scheme of this scale and where a significant source of flooding is the sea.
I think other methods of flood protection should be seriously considered before the plan to build walls is finally decided on ;	As noted many different options have been considered over the last 4 years and subject to previous consultation events in 2018 and 2019. The event in 2019 identified flood defence walls as the preferred option. It should be noted that all of the options considered included significant lengths of flood wall, it is unavoidable for a scheme of this scale and where the significant source of flooding is from the sea.
I read in today's paper of water shortages in certain areas, that the east of Scotland has had low levels of rainfall and that we're being asked to use water efficiently. No doubt a week of rain next week will be followed by a flood warning for Grangemouth area. It just doesn't make sense. As I said on my wife's link to the online meeting I have no problem with planning flood defences but I do think that there is an element of hysteria surrounding the whole issue and maybe planners and proposers need to take a step back instead of trying to rush through works that not a lot of people agree with.	The primary risk to the area north of Zetland Park is from extreme tides and surges and is unrelated to rainfall. The need for flood defences has been identified in the National Flood Risk Management Strategy for the Forth Estuary published by SEPA in 2015 and was subject to its own public consultation. Since publication of the strategy the council has spent four years (2015-18) gathering data and appraising different options and the last two years further developing the preferred option identified in 2019 with a target of commencing the statutory approvals process in 2022.

## Questions and Answers relating to the Grangeburn Road Event

Question	Response
<p>I feel the public have not been given near enough information about why the walls, according to the FPS, are going to be built.</p> <p>As I said before, the residents of the immediate streets concerned should be made more aware by either local social media or canvassed with questionnaires through their letter boxes. The time is now to voice concerns and not once any work gets started.</p>	<p>The Scheme website identifies the requirement for the scheme and the options that were discounted following an extensive review. This was all subject to public consultation events in 2018 and 2019. For each of these events, 12,000 letters were hand delivered to both those likely to be directly affected and across a wider neighbouring area. Similarly, we have written to 12,000 residents and businesses in November 2020 and May 2021 providing an update on the scheme and providing contact details and other social media links. these letters also inviting all to attend the events held in June 2021. We completely agree than now is the time to raise any concerns hence why we have made considerable effort to let people know about the scheme and consultation events and we welcome all feedback. the feedback surveys are currently available on the website for others to have their say</p>

## Questions and Answers relating to the Grangeburn Road Event

Question	Response
<p>I attended 2 presentations in the Bowhouse Community Centre. I attended an online meeting and I completed a feedback survey. All of these gave the impression that they would welcome opinions from the public while all along the big plan has been to chop the trees and build the wall despite the fact that the burn flooding is a 200 year event.</p> <p>If and when the burn overflows, it's absolutely doubtful that it'll not be to the levels you showed in your presentation where cars were covered with water up the roofs.</p> <p>A few years ago the burn was at its highest for decades caused by 5 natural events coming together at the same time- high tide, spring tide, storm surge, full moon and run off from the hills. What are the chances of this happening again?</p> <p>You are determined to build this wall and cause many years of unwanted disruption and noise to the community. A community that has already suffered piling and roadworks for years.</p> <p>Questions have been asked but no answers from you are forthcoming.</p>	<p>If you attended the previous events in the Bowhouse Community Centre, you will be aware from the 2019 event that the proposed flood defence for Grangeburn Road was a wall. The depths of flooding illustrated are representative of the depths that would occur in an extreme event and are based on extensive flood modelling, with the flood model being subject to review and verification by the Scottish Environment Protection Agency (SEPA). The high water levels experienced in the last 10 years are not extreme and have a high chance of occurring again in future years. If you are referring to the event in 2015, whilst it was initially predicted that the storm surge and high tide would coincide, this did not occur and, otherwise we suspect Grangemouth would have suffered flooding from this event. Flows in the burn were also low as there had been no significant rainfall. The flood relief channel which forms part of a scheme constructed in the late 1960's played a vital role in diverting flows from the Grange Burn on these occasions. Improvements to this structure are also planned as it will be incorporated into the proposed scheme. The predicted extreme stillwater tide level near the mouth of the Grange Burn is 4.7m above Ordnance Datum (value provided by SEPA/ EA) and parts of Grangeburn Road are at an elevation of 3.2m above Ordnance Datum resulting in a depth of flooding of <math>4.7 - 3.2 = 1.5\text{m}</math> and this is without considering the impact of waves.</p>

## Questions and Answers relating to the Grangeburn Road Event

Question	Response
Given the very limited attendance numbers last night and even worse tonight, I'm not convinced your message is getting to the right audience?	We too are disappointed with the numbers that attended. Many more people registered for the events but did not attend. 12,000 letters were sent advising of the sessions and social media, the website and the press were used to communicate about the events. We would be delighted to hear any ideas you may have for encouraging more people to participate as we are keen to hear the views of many more people.
Not only will the pleasant view from my window be obliterated but there is the effect of heavy machinery on my property. What are you doing to mitigate that?	There are many different methods of constructing flood defences. The choice of method will vary across the scheme taking into account the ground conditions and proximity to buildings and structures. In addition there will be tight controls on noise and vibration that need to be adhered to. Buildings and structures will be surveyed/ inspected prior to construction works being undertaken and repeated on completion. In the unlikely event that any damage is caused this will be repaired.

## Questions and Answers relating to the Rannoch Road Event

Question	Response
<p>Updates on progress of scheme. Timeline for commencing scheme updated as necessary.</p>	<p>Further information will be shared via the scheme website, newsletters and be available on social media as it becomes available. We are many years away still from the scheme being in a construction phase, which is currently scheduled to commence in 2024 at the earliest.</p>

## Questions and Answers relating to the Rannoch Road Event

Question	Response
<p>Definitely more information on the overflow into the park itself, consequences, damage, etc.</p>	<p>We envisage the park would be impacted if a 1 in 50 year event (2% risk of occurrence in any year) were to occur and in this event the depth of flooding in the park would be around 0.3m. For a 1 in 200 year event (0.5% chance of occurrence in any year) the average depth of flooding would be 1-1.5m. We are not anticipating that there would be any significant long term damage to the park as a result of a flood event. In those areas where water would spill out the flood relief channel, the grass will be reinforced to avoid any scour and erosion and additional drainage will be installed to allow the impounded water to drain away quickly. Inch Park and Peffermill Playing fields in Edinburgh are examples of where public parks and playing fields have been used in a similar way to manage the risk of flooding. The pavillion within Rannoch Park will either need to be replaced or provided with its own flood defences and this will be considered further as we work through the programme of the scheme.</p>
<p>Details about the effects the scheme will have on local resident's flood risk ie the reductions it will produce.</p>	<p>If this question relates to reductions in insurance premiums, then we are unable to offer any specific guidance. Insurance companies carry out their own assessment of risk when determining policy</p>

## Questions and Answers relating to the Rannoch Road Event

Question	Response
The presentation was informative but I think more work has to be done with the residents around Rannoch area, many of whom are unaware of such a drastic change which will have a huge impact on their homes and a park that is a well used in the community.	We would welcome any suggestions for getting residents more involved. We have written on several occasions to all 12,000 residents and businesses likely to be affected and to many more inviting them to consultation events and providing links to information on the scheme website, social media and general contact information for the team. It should be note that in the long term, after the construction phase, there will be no impact on day-to-day usage of the park and the landscape surrounding it will re-establish. Flooding of the park will be very rare.
Does the culvert below the Inchyra Road provide a restriction to forward flow further east towards the Avon?	The culvert does provide a restriction but there is very little benefit in increasing its capacity due to other constraints along the flood relief channel. The restriction has been taken into account in the analysis that has been carried out.
What happens to the flood waters that flow over the south embankment and end up in the Rannoch Park?	Flood waters would be contained in the park and when flood levels subside in the flood relief channel the impounded water would drain into channel through a new drainage system that will be installed. At present Rannoch Park is at significant risk of ponding during rainfall events and this secondary drainage will also assist with improving this issue which occurs more frequently.



## Questions and Answers relating to the Rannoch Road Event

Question	Response
<p>Piling causes significant noise and vibration. How will this be mitigated against and how will damage to adjacent houses be prevented?</p>	<p>There are many different methods of installing piles including methods referred to as silent piling where the piles are effectively pushed into the ground. The choice of piling method will vary across the scheme taking into account the ground conditions and proximity to buildings and structures. In addition there will be tight controls on noise and vibration that need to be adhered to. Buildings and structures will be surveyed/ inspected prior to construction works being undertaken and repeated on completion. In the unlikely event that any damage is caused this will be repaired.</p>
<p>Will the Grange Burn be cleared of rubbish and vegetation</p>	<p>The council carry out routine maintenance and monitoring of vegetation along watercourses and the presence of obstructions within the channel. This has been affected by Covid but maintenance activities are starting to resume. If there is any specific problems please contact the council by email to <a href="mailto:flooding@falkirk.gov.uk">flooding@falkirk.gov.uk</a> providing as much information as possible.</p>

## Questions and Answers relating to the Millhall/ Smiddy Brae Event

Question	Response
Progress updates ,expected budget costs, costs to date split out to different elements and % of programme completed.	Further information will be provided at appropriate times. At the present time, the design for this area is evolving and to publish specific costs would be inappropriate when so many issues that will impact on cost are still being discussed and developed. Similarly the overall programme is being developed but is highly dependent on whether a public local inquiry will be required or not. Falkirk Council will continue to liaise and update the Scottish Government of scheme costs and timescales as the scheme develops as they are the main funder.
Feedback from local community engagements - good or bad.	Feedback on previous events has been published on the website. Feedback from the events in June 2021 will also be published in due course.
How will project consider working towards Low or zero Carbon ?	Falkirk Council in line with both local and national policy will work to deliver a scheme which offers a low carbon solution. Once targets have been defined, we will then be considering how we achieve them. This is likely to include the use of lower carbon materials and construction methods where practical e.g. cement replacement in concrete, electric/ hybrid construction equipment, minimising the need for the scheme to be operated e.g. avoiding moving parts through to sequestration by constructing carbon absorbing habitats or potentially purchasing carbon credits.

## Questions and Answers relating to the Millhall/ Smiddy Brae Event

Question	Response
Plans of proposed flood defences could have been clearer / more detail or zoomed into as still not 100% clear on what Jacobs propose at this time.	The proposed defences we presented for the Millhall burn are very new to the project team as well as residents alike and still at an early stage of development. Further refinements and adjustments to this outline design will still be required as we move forward. We felt it necessary to show what the scheme could look like to start engaging with communities.
Has Jacobs considered utilising existing flood defences along Millhall Burn. ie existing 10+ foot high wall ? combined with minimal work in the burn ? By using / repairing existing defences could help to reduce carbon foot print ?	Where practical, we will look at the reuse of existing structures although these will need to be capable of achieving a design life of 100 years and be suitable to act as a flood defence. Many old walls lack structural integrity for the large pressures associated with flood water and often lack any real foundations meaning there is a significant risk of collapse of the structure or water seeping beneath the structure.
Can website show project current carbon / projected foot print monthly?	We do not monitor carbon on a monthly basis so will not be adding this information to the website. We may consider monitoring carbon usage in the future.
Will both sides of the walls be the same materials?	No firm decision has been made at this stage. The finish to the wall, and whether it is applied to one side or both sides will depend on the location of the wall and its visibility from roads and foot paths etc.