

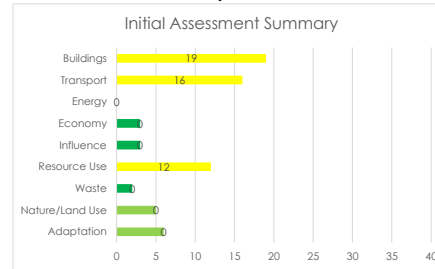
### Climate Change Impact Assessment Summary

|                              |   |                      |                    |
|------------------------------|---|----------------------|--------------------|
| <b>Project/Proposal Name</b> | Sheffield Flood Programme               | <b>Portfolio</b>     | Place              |
| <b>Decision Type</b>         |   | <b>Lead Member</b>   |                    |
| <b>One Year Plan Area</b>    | Climate Change, Economy and Development | <b>Lead Officer</b>  | Tom Finnegan-Smith |
| <b>Date CIA Completed</b>    |   | <b>CIA Author</b>    | James Mead         |
|                              |   | <b>Sign Off/Date</b> |                    |

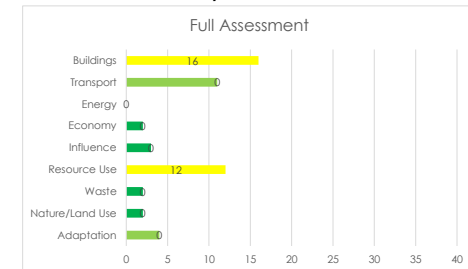
|   |   |
|---|---|
| <b>Project Description and CIA Assessment Summary</b> | Sheffield's Flood and Water Programme's primary objectives are to reduce risk to people and property and enable sustainable development across the city. Several of the schemes entail heavy civil engineering works which in themselves will have a short-term carbon impact, which we will look to mitigate through best practice and by a focus on "soft" over hard engineering solutions where possible. The reduction in flood damages from flood risk reduction should however significantly outweigh the carbon costs of construction. Beyond the heavy engineering of the major schemes the flood programme will have wide ranging carbon benefits in habitat improvements (including re-naturalising water courses, tree planting, moorland restoration), place making, amenity and sustainable transport improvements and increased community awareness and resilience to climate change. |
|---|---|

|                                     |   |                        |     |
|-------------------------------------|---|------------------------|-----|
| <b>Rapid Assessment</b>             | Does the project or proposal have an impact in the following areas? Select all those that apply. Only complete the sections you have selected here in the assessment. |                        |     |
| <b>Buildings and Infrastructure</b> | Yes   | <b>Influence</b>       | Yes |
| <b>Transport</b>                    | Yes   | <b>Resource Use</b>    | Yes |
| <b>Energy</b>                       | No  | <b>Waste</b>           | Yes |
| <b>Economy</b>                      | Yes   | <b>Nature/Land Use</b> | Yes |
|                                     |   | <b>Adaptation</b>      | Yes |

### Initial Assessment Summary



### Full Assessment Summary



|                |   |
|----------------|---|
| <b>&gt;=27</b> | The project will increase the amount of CO2e released compared to before.             |
| <b>21-26</b>   | The project will maintain similar levels of CO2e emissions compared to before.        |
| <b>12-20</b>   | The project will achieve a moderate decrease in CO2e emissions compared to before.    |
| <b>3-11</b>    | The project will achieve a significant decrease in CO2e emissions compared to before. |
| <b>0-2</b>     | The project can be considered to achieve net zero CO2e emissions.                     |

Initial Assessment

| Category                     | Impact                  | Description of Project Impact  | Score |
|------------------------------|-------------------------|--|-------|
| Buildings and Infrastructure | Construction            | Some elements involve heavy civils work. Concrete and masonry walls, steel piling etc. Individual projects will be assessed to minimise impacts, and offset by environmental improvements, but carbon impact of construction will be | 10    |
|                              | Use                     | Hard defences negligible carbon impact in use, softer defences net reduction in Carbon, overall would expect this to be moderately better than before  | 5     |
|                              | Land use in development | Some new habitats and environmental benefit though scheme delivery   | 4     |

|           |                              |   |    |
|-----------|------------------------------|---|----|
| Transport | Demand Reduction             | Some improvements to local amenities may have localised impacts                                     | 5  |
|           | Decarbonisation of Transport | No impact   | NA |
|           | Public Transport             | Protecting transport routes from flooding and maintaining services should prevent increased car use | 7  |
|           | Increasing Active Travel     | Use of river corridors and public open space for active travel will be encouraged by interventions  | 4  |

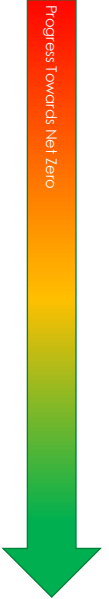
|        |   |  |    |
|--------|---|--|----|
| Energy | Decarbonisation of Fuel                             |  | NA |
|        | Demand Reduction/Efficiency Improvements            |  | NA |
|        | Increasing infrastructure for renewables generation |  | NA |

|         |  |   |    |
|---------|--|---|----|
| Economy | Development of low carbon businesses   |   | NA |
|         | Increase in low carbon skills/training | Flood resilience and flood awareness training will be rolled out in parallel with the programme. Being better prepared significantly reduced the impact of flooding on business and greatly improved the time of recovery | 2  |
|         | Improved business sustainability       | Significant reductions in flood risk will be achieved, avoidance of flooding also reduces carbon impact of response and recovery  | 1  |

|  |                           |  |   |
|--|---------------------------|--|---|
|  | Awareness Raising         | Raising flood awareness and flood preparedness is a key part of the programme      | 1 |
|  | Climate Leadership        | Best practice in delivery of flood schemes and catchment wide flood risk reduction | 1 |
|  | Working with Stakeholders | Engagement with communities is a key facet of our programme                        | 1 |

|              |                |  |   |
|--------------|----------------|--|---|
| Resource Use | Water Use      | Better protected properties will reduce water demand in flood clean up | 4 |
|              | Food and Drink | Food waste reduced by avoidance of flood damage                        | 4 |
|              | Products       | Reduced flood clean up will notably reduce demand                      | 2 |
|              | Services       | Reduced flood clean up will notably reduce demand                      | 2 |

|                 |   |
|-----------------|---|
| 10              | The project will significantly increase the amount of CO2e released compared to before. |
| 9               | The project will increase the amount of CO2e released compared to before.               |
| 8               | The project will maintain similar levels of CO2e emissions compared to before.          |
| 7               |   |
| 6               |   |
| 5               | The project will achieve a moderate decrease in CO2e emissions compared to before.      |
| 4               |   |
| 3               | The project will achieve a significant decrease in CO2e emissions compared to before.   |
| 2               |   |
| 1               |   |
| 0               | The project can be considered to achieve net zero CO2e emissions.                       |
| Carbon Negative | The project is actively removing CO2e from the atmosphere.                              |



|              |                         |  |    |
|--------------|-------------------------|--|----|
| <b>Waste</b> | <b>Waste Reduction</b>  | Less flooding results in less damage property and goods hence reducing waste | 2  |
|              | <b>Waste Hierarchy</b>  |  | NA |
|              | <b>Circular Economy</b> |  | NA |

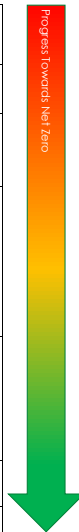
|                        |                         |   |   |
|------------------------|-------------------------|---|---|
| <b>Nature/Land Use</b> | <b>Biodiversity</b>     | The programme will actively encourage deculverting and renaturalisation of watercourses as well as natural flood management interventions wherever possible | 2 |
|                        | <b>Carbon Storage</b>   | The programme will work with partners to actively contribute towards activities with mutual benefits such as tree planting and moorland restoration         | 2 |
|                        | <b>Flood Management</b> | Primary objectives are to reduce flood risk and flood impacts   | 1 |

|                   |   |  |   |
|-------------------|---|--|---|
| <b>Adaptation</b> | <b>Exposure to climate change impacts</b> | Adaptation to future climate change is built in to the programme and a primary objective   | 1 |
|                   | <b>Vulnerable Groups</b>                  | Vulnerable groups can be some of the most seriously affected by flooding. By reducing risk to all vulnerable groups benefit most | 2 |
|                   | <b>Just Transition</b>                    | Flood risk investment is weighted towards residents over commercial and is weighted towards areas of higher deprivation          | 3 |

Full Assessment

| Category                     | Impact  | Description of Project Impact  | Mitigation Measures   | Mitigated Score | Procurement Action Required? | Proposed KPI/Measure  |
|------------------------------|---|--|---|-----------------|------------------------------|---|
| Buildings and Infrastructure | Construction  | Some elements involve heavy civils work. Concrete and masonry walls, steel piling etc. Individual projects will be assessed to minimise impacts, and offset by environmental improvements, but carbon impact of construction will be notable | Minimised energy use and maximise recycling in construction, minimise material movements, reuse materials on site. Preference to wards "soft" engineering solutions over hard wherever possible | 9               | Yes                          | In collaboration with CDS, review hierarchy of design solutions, minimise carbon impact in construction |
|                              | Use   | Hard defences negligible carbon impact in use, softer defences net reduction in Carbon, overall would expect this to be moderately better than before  | Maximise use of soft engineering, minimise operational parts (flood gates etc.)   | 4               | Yes                          | Hierarchy of solutions, passive design, "soft" engineering, whole life carbon costs of solutions        |
|                              | Land use in development                             | Some new habitats and environmental benefit though scheme delivery   | Look to maximise Natural Flood Management opportunities and environmental mitigation. If sufficient areas improved could reduce carbon  | 3               | Yes                          | Areas of improved landscape, habitats created   |
| Transport                    | Demand Reduction                                    | Some improvements to local amenities may have localised impacts  | Maximising improvements to local parks, riverside walks, public open spaces through scheme delivery could have local benefits   | 3               | Yes                          | Measure of areas of amenity space created, length of river open for public access                       |
|                              | Decarbonisation of Transport                        | No impact  | N/A   | N/A             |                              | N/A   |
|                              | Public Transport                                    | Protecting transport routes from flooding and maintaining services should prevent increased car use  | Focusing on keeping key transport routes flood free could help encourage bus use  | 5               | No                           | Lengths of bus routes, rail, tram protected   |
|                              | Increasing Active Travel                            | Use of river corridors and public open space for active travel will be encouraged by interventions   | Maximising opportunities to improve riverside walks and link to wider transport links should encourage cycling and walking  | 3               | No                           | lengths of cycleway and pedestrian routes created and/or protected                                      |
| Energy                       | Decarbonisation of Fuel                             |  |   |                 |                              |   |
|                              | Demand Reduction/Efficiency Improvements            |  |   |                 |                              |   |
|                              | Increasing Infrastructure for renewables generation |  |   |                 |                              |   |
| Economy                      | Development of low carbon businesses                |  |   |                 |                              | N/A   |
|                              | Increase in low carbon skills/training              | Flood resilience and flood awareness training will be rolled out in parallel with the programme. Being better prepared significantly reduced the impact of flooding on business and greatly improved the time of recovery                    | Making awareness and training a key facet of the programme roll out could improve outcomes. Link with Connected by Water and catchment wide working could maximise outcomes                     | 1               | No                           | Measure number of businesses engaged, number of events carried out                                      |
|                              | Improved business sustainability                    | Significant reductions in flood risk will be achieved, avoidance of flooding also reduces carbon impact of response and recovery   | Already scoring well, needs to be keep a focus of the programme   | 1               | No                           | Calculate carbon impact of damages avoided  |
| Influence                    | Awareness Raising                                   | Raising flood awareness and flood preparedness is a key part of the programme  | Already scoring well  | 1               | No                           | Measure community engagement, people engaged, events attended   |
|                              | Climate Leadership                                  | Best practice in delivery of flood schemes and catchment wide flood risk reduction   | Already scoring well  | 1               | No                           |   |
|                              | Working with Stakeholders                           | Engagement with communities is a key facet of our programme  | Already scoring well  | 1               | No                           | Measure community engagement, people engaged, events attended   |
| Resource Use                 | Water Use   | Better protected properties will reduce water demand in flood clean up   | Result of interventions, not a direct focus unlikely we'd be looking at improving on this   | 4               | No                           | Calculate carbon impact of damages avoided  |
|                              | Food and Drink                                      | Food waste reduced by avoidance of flood damage  | Result of interventions, not a direct focus unlikely we'd be looking at improving on this   | 4               | No                           | Calculate carbon impact of damages avoided  |
|                              | Products  | Reduced flood clean up will notably reduce demand  | Result of interventions, not a direct focus unlikely we'd be looking at improving on this   | 2               | No                           | Calculate carbon impact of damages avoided  |
|                              | Services  | Reduced flood clean up will notably reduce demand  | Result of interventions, not a direct focus unlikely we'd be looking at improving on this   | 2               | No                           | Calculate carbon impact of damages avoided  |
| Waste                        | Waste Reduction                                     | Less flooding results in less damage property and goods hence reducing waste   | Result of interventions, not a direct focus unlikely we'd be looking at improving on this   | 2               | No                           | Calculate carbon impact of damages avoided  |
|                              | Waste Hierarchy                                     |  |   |                 |                              | N/A   |
|                              | Circular Economy                                    |  |   |                 |                              | N/A   |

|                 |   |
|-----------------|---|
| 10              | The project will significantly increase the amount of CO2e released compared to before. |
| 9               | The project will increase the amount of CO2e released compared to before.               |
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| 2               | The project will achieve a significant decrease in CO2e emissions compared to before.   |
| 1               |   |
| 0               | The project can be considered to achieve net zero CO2e emissions.                       |
| Carbon Negative | The project is actively removing CO2e from the atmosphere.                              |



|                        |                         |   |   |   |     |   |
|------------------------|-------------------------|---|---|---|-----|---|
| <b>Nature/Land Use</b> | <b>Biodiversity</b>     | The programme will actively encourage deculverting and renaturalisation of watercourses as well as natural flood management interventions wherever possible | If enough is achieved in partnership could provide notable reductions in Carbon | 0 | Yes | Hectares created/protected, already a required measure in EA business cases   |
|                        | <b>Carbon Storage</b>   | The programme will work with partners to actively contribute towards activities with mutual benefits such as tree planting and moorland restoration         | If enough is achieved in partnership could provide notable reductions in Carbon | 0 | Yes | Hectares created/protected, should be able to translate from habitats created |
|                        | <b>Flood Management</b> | Primary objectives are to reduce flood risk and flood impacts   |   | 2 | No  |   |

|                   |   |  |   |   |    |   |
|-------------------|---|--|---|---|----|---|
| <b>Adaptation</b> | <b>Exposure to climate change impacts</b> | Adaptation to future climate change is built in to the programme and a primary objective   |   | 1 | No |   |
|                   | <b>Vulnerable Groups</b>                  | Vulnerable groups can be some of the most seriously affected by flooding. By reducing risk to all vulnerable groups benefit most | Community focus in delivery could improve outcomes, work with LACs etc. | 1 | No | EIA work looks at demographic of areas benefiting |
|                   | <b>Just Transition</b>                    | Flood risk investment is weighted towards residents over commercial and is weighted towards areas of higher deprivation          | Community focus in delivery could improve outcomes, work with LACs etc. | 2 | No | EIA work looks at demographic of areas benefiting |

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