

Appendix I

Full Business Case

Scheme: ASEA Infrastructure Phase 2 Flood Defence and Ecology Mitigation

		Originated	Reviewed	Authorised	Date
1	Version 1.0	GW	BS		11/01/2018
2	Version 2.0	Jacobs	ASEA Delivery Board	IS	30/7/2018
3					
4					
5					

Executive Summary

The project comprises delivery of significant flood defence and ecological assets designed to unlock and safeguard development at Avonmouth-Sevenside Enterprise Area (ASEA), located between the Bristol Channel and the City of Bristol and spanning South Gloucestershire (SGC) and Bristol City Council (BCC). The flood defence element of the project will primarily enhance and upgrade existing flood defence infrastructure along a 17km stretch. The infrastructure will provide flood risk management to a 1 in 200-year (0.5% Annual Exceedance Probability [AEP]) Standard of Protection (SOP), based on hybrid 2076 and 2098 design levels (i.e. taking into account climate change, coastal change and sea level rise). The 2098 design level will be provided south of Binn Wall to maximise protection of existing and future development in ASEA. The 2076 design level will be delivered north of Binn Wall, where flood risk to ASEA is lower. The ecological mitigation element of the project comprises the provision of at least 85 ha of wetland habitat creation, in line with the recommendations of the Cresswell Study¹.

The project rationale is underpinned by local and sub-regional economic development and planning aspirations to unlock the full economic potential of ASEA. Flood defence investment is required to ensure that future development at ASEA benefits from the Environment Agency's (EA) recommended SoP for new developments, i.e. 1 in 200 years (0.5% AEP). The ecological mitigation is required to ensure that the statutory environmental impacts of ASEA development are managed to satisfy the requirements of the Cresswell Study. By satisfying the EA and Cresswell Study regulations, full development at ASEA is more likely to be acceptable in planning terms thus bringing forward desirable economic growth for the region.

The rationale for public sector investment in the project is predicated on the presence of market failure at ASEA as well as the proposed flood defence infrastructure and ecological assets acting in the general public interest. From a market failure perspective, the presence of the 1957/58 planning consent creates imperfect competition conditions at ASEA. The planning consent allows development in the 1957/58 planning envelope to proceed based on legacy planning consents, without requirement for appropriate investment in strategic flood or ecological mitigation. As such, the financial burden of delivering these assets would be passed onto development plots lying outside the 1957/58 planning envelope or public authorities holding statutory responsibility for the measures, impacting on the financial viability of such sites and therefore the ability to bring forward the development. These conditions confer competitive advantage on sites within the 1957/58 envelope. Development viability is also a concern in the absence of strategic flood defence infrastructure, as localised land raising (which has been pursued at some development sites to date), would become increasingly expensive over time as higher levels of land raising are required to mitigate against climate change effects. This will erode development viability by increasing land raising costs and reducing the scale of development area. From a public good perspective, the flood defence element of the scheme will also help to safeguard existing economic activity already located in ASEA as well as safeguarding properties from flood events.

¹ Identified by the Severnside and Avonmouth Wetland Habitat Project (Stage 1 & 2) and referred to as the Cresswell Study

The economic appraisal demonstrates that the project will represent excellent value for money. The present value (2016) of project benefits are estimated at £3.9 billion, based on the following benefit streams:

- Construction stage impacts - £63.1m;
- Operational stage: safeguarding existing activity impacts - £251.7m;
- Operational stage: unlocking/safeguarding future/recent development impacts - £3.6bn.

Compared against present value of costs estimated at £87.9 million (2016), this scale of project benefits results in a BCR of 44:1. The project has a total cost of £98.6 million, which will be funded by the Local Enterprise Partnership (£65.8 million, of which £1.9 million has already been spent) and the EA (contribution of up to £32.95 million, of which £32.8 million is currently forecast to be required).

In terms of commercial and management considerations, SGC and BCC will act as promoters for the project. EA will act as delivery partners, with responsibility for procurement via existing mechanisms such as WEM Framework (Lot 4: Asset Delivery). The LEP will act as key funding partners. Within this context, SGC, BCC, EA and the Local Enterprise Partnership will all have representation on the governance structures that will oversee project development and implementation. These include the Strategic Directors Board (SDB), who will provide overarching authority for the ASEA programme and the Delivery Board who will help realise the agreed outcomes and benefits for the ASEA development area. Both governance structures are committed to unlocking the significant full economic potential of ASEA through implementation of the flood defence and ecological mitigation assets that form this project.

1 Strategic Case

1.1 State Aid Considerations

The Department for Business Energy and Industrial Strategy (BEIS) suggest that State Aid can be given to support a wide variety of activities including environmental protection and where intervention is needed to deliver growth and other important objectives. By providing flood protection (alongside ecological mitigation) to unlock economic growth and development, the main objectives of the project are closely aligned to the types of activities that can benefit from State Aid.

Further, paragraph 203 of the Official Journal of the European Union (OJEU) C262/44 states that infrastructure for activities that the state normally performs in the exercise of its public powers (e.g. flood protection) fall outside of the scope of State Aid rules.

The Department for Business Innovation and Skills (the predecessor to BEIS) established the following series of questions, to help determine whether funding would represent a violation of State Aid rules:

1. Is the assistance granted by the state or through state resources?

Funding is provided via state resources, routed via public sector bodies such as the Environment Agency (EA) and voluntary organisations between business and local authorities such as the LEP.

2. Does the assistance give an advantage to one or more undertakings over others?

The proposed assets represent appropriate public infrastructure, acting as a public good and benefiting all existing and potential future residential and commercial properties in the area. The project will not benefit one developer or landowner exclusively, it will be of further benefit to the public in general and the wider economy across the West of England.

3. Does the assistance distort or have the potential to distort competition?

The project will deliver assets where there is no direct competition to provide similar infrastructure, therefore competition will not be distorted. Replication of the infrastructure would be uneconomical, meaning that the proposed assets represent a natural monopoly. Further, the infrastructure acts as a public good, providing benefits to society at large.

4. Does the assistance affect trade between Member States?

Occupants of the existing and proposed residential and commercial properties at Avonmouth Severnside Enterprise Area (ASEA) could feasibly originate or be based in any member state.

Given the responses to these questions, public sector funding for the project is considered to comply with State Aid regulations.

1.2 Project Description

The project seeks to deliver a strategic flood defence solution and associated ecological mitigation to unlock and safeguard development of the ASEA. The flood defence element of the project seeks to provide a 1 in 200-year (0.5% AEP) standard of protection (SoP) to a hybrid 2076/2098 design level. This will reduce flood risk from tidal flooding to the ASEA development area in Bristol and South Gloucestershire. The project is located between Bristol and the Severn Estuary, immediately adjacent to the M4, M5 and M49 motorways as demonstrated in Figure 1. It includes upgrading of key tidal defences on the Severn Estuary and associated works to discharge fluvial flows to the Estuary. The project area, including ASEA, is almost entirely within a single tidal flood cell, protected by around 17 km of defences or raised railway embankment, including sea walls, revetments, embankments and tidal outfalls.

Existing defences are generally in good condition, though at some locations they require refurbishment and there are low spots. Furthermore, there are longer term implications of coastal change, climate change and the consequential sea level rise predicted. The scope of upgrading is principally determined by the requirements of new areas of employment-led development. This brings

additional opportunity for cost-effective improvements in flood risk for existing properties across the existing flood plain.

The ecological mitigation element of the project involves wetland habitat creation. Wetland habitat creation is included within the project to ensure that supporting habitats to the Natura 2000 Severn Estuary site are maintained after the industrial development takes place. The requirement for wetland habitat creation is not directly contingent on upgrading of flood defences; rather it is required to compensate for the existing development at ASEA as well as unlocked development at the site. Compensation for coastal squeeze on the tidal defences has been provided through completed projects in Somerset and the Forest of Dean. Further, a Habitat Regulations Assessment is currently in progress to identify any additional ecological mitigation required to offset construction stage impacts.

The project comprises work in five defined areas, three areas of flood defence works and two areas of ecological mitigation in the form of wetland habitat creation, as shown in Figure 1.1.:

- Area 1: Severnside – Old Passage to Binn Wall, representing the northern section of flood defence works.
- Area 2: Avonmouth Docks – Bristol Port to the River Avon, up to the proposed Portway P&R site. Representing the southern and riverine sections of flood defence works.
- Area 3: Chittening Warth – Station Road to Chittening Warth Industrial Estate, alongside the route of the Severn Beach Railway Line and representing the central section of flood defence works.
- Area 4: Hallen Marsh – 100 ha of agricultural land north east of Avonmouth Docks, bounded to the east by M49 and south by a railway line.
- Area 5: Northwick – 85 ha of agricultural land to the West of Area 1, bounded to the north by M48 and south by M4.

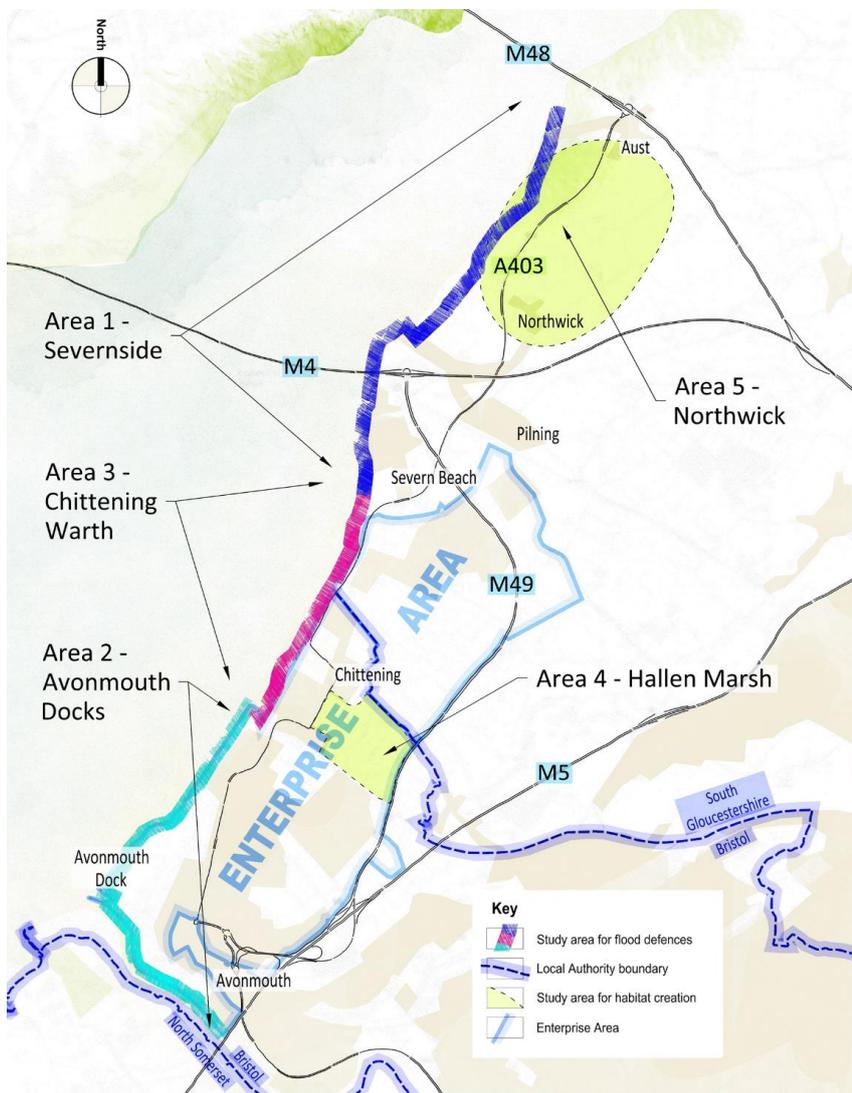


Figure 1.1. Project Overview

1.3 Project Objectives and Case for Change

The primary project objectives are listed in Table 1.1.

Table 1.1. Overall Strategic Objectives

Source: CH2M

Objective Theme	Objective Description
Unlocking economic development	Ensure the flood defences and ecological mitigation in ASEA are adequate for the lifetime of the proposed industrial development, to support business growth.
Providing ecological mitigation	Ensure the environmental impacts that result from the proposed industrial development will be mitigated such that the development plans will be legally compliant.

Adhering to statutory planning and other regulations	Discharge requirements identified within the 'review of consent' of Severnside planning permission under Regulation 63 of the Habitat Regulations 2010.
Safeguarding existing economic activity and settlements	Ensure the flood defence improvements required for new development are of benefit to the existing properties and the area as a whole.

The case for change can be understood in terms of the key issues affecting the ASEA development area, which the project should seek to leverage from or address:

- Strong economic and market demand drivers for employment-led development in the West of England;
- Supply-side constraints around supply of suitable industrial/warehousing premises;
- ASEA's significance and role as a key current and future employment destination in the sub-region, which heightens the importance of realising the full economic potential of the area to support the region's growth aspirations;
- ASEA's role in contributing to the Growth Incentive element of the City Deal. The Growth Incentive means that development at key enterprise zones and areas in the West of England should be promoted to facilitate business rate growth, which can be recycled into wider infrastructure investment and economic development throughout the West of England via the Economic Development Fund;
- Development at ASEA is laden with a significant infrastructure burden that the private sector may struggle to meet alone. Coordinated delivery of infrastructure is essential to ensure that ASEA can maximise its development and economic potential. Failure to do so could result in restricted development, leading to loss of additional economic output. Equally, there is a danger that the City Deal's business rate forecasts are not met, jeopardising economic development across the West of England;
- The need to provide strategic ecological mitigation (as identified by the Severnside and Avonmouth Wetland Habitat Project [Stage 1 and 2], hereafter referred to as the Cresswell Study) in order for planning consent to be granted at many future developments within ASEA.

In the event that the project does not materialise, further development of ASEA is likely to be limited, delayed or stalled indefinitely, meaning the full economic potential of the area would not be realised. Existing economic activity would be subject to increasing flood risk too thus potentially reducing the attractiveness to employment below current levels.

1.4 Rationale for Public Intervention

At a strategic level, public investment is required to address flood risk issues and to deliver ecological mitigation to compensate for the environmental impacts of employment-led development. Existing flood defences in the area provide a variety of standards of protection ranging from 1 in 10 years to 1 in 200 years. The EA's recommended standard of protection for new development to be safe from tidal flooding is 1 in 200 years plus. Therefore, the existing flood defences do not provide the recommended level of protection for the proposed industrial and warehousing development at ASEA.

Drawing upon findings of the Cresswell Study, there is a requirement for ecological mitigation to address the environmental impacts of economic development. Specifically, future development outside of the 1957/58 extant planning consent area at ASEA would be constrained without provision of new wetland habitat to satisfy the requirements of the Cresswell Study. Effectively, any proposed development plots promoted outside the 1957/58 area would be expected to provide extensive and prohibitively expensive ecological mitigation in order to maintain legal and planning compliance.

Further to the strategic rationale outlined above, public sector investment can also be justified on the basis of market failure. Market failure in the context of ASEA is two-fold:

- Development viability considerations affecting all of ASEA's future development land, but plots outside of the consented 1957/58 envelope in particular.
- Imperfect competition allowing the 57/58 extant planning permission areas to avoid any statutory infrastructure cost burden relating to ecological mitigation or strategic flood defence.

Market failures such as these act to delay or indefinitely stall development. Public sector delivery of a strategic flood defence solution and associated ecological mitigation works would address these market failures.

It would reduce the infrastructure burden on developers, and public authorities, reducing development viability concerns (particularly for plots outside the consented 1957/58 envelope). For example, in the absence of public sector funding, the project costs of £94 million could be passed onto development outside the 1957/58 envelope. Such development represents around 75 ha of developable area, therefore planning obligations of £1 million per hectare could be levied on development thus eroding financial viability. Further, whilst localised land raising has progressed at some sites within the 1957/58 planning envelope to date, land raising costs for sites outside of the envelope is estimated at £41.1 million to meet the same standard of protection to that provided by the strategic flood defence infrastructure. This would increase development costs across sites outside of the 1957/58 envelope by more than £500,000 per hectare (notwithstanding the additional ecological mitigation costs that would also be levied on such developments). Simultaneously, land raising would also act to reduce the net lettable area for commercial premises as plot areas decrease to allow for embankments and landscaping associated with land raising. The reduction of net lettable area would be in the region of 40,000 sq m across ASEA, reducing site-wide rental receipts by £3.4 million per annum. This would further erode development viability. Public sector investment in the project removes these development viability issues.

Public sector support would also remove the market imperfection that proffers competitive advantage to development within the 57/58 envelope to the detriment of non-57/58 plots. It would also make recent and future development acceptable in planning terms. In light of the onerous high-level cost estimates for delivering such flood defence and ecological assets, the private sector is unable to address these market failures. Hence, public sector support is required and appropriate to remove these specific barriers to development.

The project also warrants public support because it will provide public good assets. This is because the flood defence and ecological infrastructure represent assets that the market will have difficulty supplying without public sector intervention. Further, the assets will help to safeguard significant existing economic activity already present in ASEA (and further afield). Major employment sites

including Avonmouth Docks, Central Park (occupiers include Tesco, Next and Royal Mail) and Access 18 (occupiers include Antalis, Nisbet, Budget Greetings Cards; Richard Austin Alloys, Flexipads World Class Ltd and New Earth Solutions) are already operational in the ASEA area and support a large number of jobs and economic output.

1.5 Strategic Fit

The strategy is closely aligned to a range of national, sub-regional and local economic and planning policy. At a national level, the project fits well with the National Planning Policy Framework which seeks to promote sustainable economic growth and reduce environmental threats posed by issues such as coastal flooding and climate change. At a sub-regional level, ASEA is highlighted as one of the LEP's most important economic development opportunities within the Strategic Economic Plan. However, flood risk is acknowledged as a key constraint to development, alongside the presence of internationally important habitat. Development at ASEA is also considered as a strategic priority in the draft West of England Joint Spatial Plan and the existing and emerging Local Plan's for South Gloucestershire Council (SGC) and Bristol City Council (BCC). The suite of local planning policy documents also recognises the significant environmental, flood risk and infrastructure constraints that could hinder development at ASEA.

The project follows on from a large body of earlier work related to unlocking development at ASEA. This includes the Integrated Development, Infrastructure and Flood Risk Management Study² which sets out potential mechanisms to address the identified constraints at the site and the Outline Development Strategy³ which establishes the significant economic potential of unlocking development at ASEA.

The project and its resulting economic impacts (i.e. the unlocking of the full economic potential of ASEA), are also a critical element of the Growth Incentive element of the City Region Deal. As a result, there is a significant financial incentive to promote development at ASEA by removing constraints associated with flood risk and ecological/environmental issues. This will allow the West of England to capture business rate growth to cover the capital cost of the implementing the project and support its wider economic development aspirations.

1.6 Options Appraisal

The preferred intervention option for the flood defence element of the project was identified through the Avonmouth-Sevenside Flood Management Optioneering Technical Report⁴ which recommended improvement to existing tidal defences. The report estimated a cost of between £31m and £70m for delivery and identified a strong economic and funding case to pursue the design and delivery of a strategic flood defence solution.

Subsequently, the Severn Estuary FRM Strategy considered a large number of options. The recommended option was hold the line with upgrading to mitigate for sea level rise. For most locations, the preferred alignment of flood defences follows the line of existing defences, except for the Severn Beach railway section. Here, a new defence line set back from the railway on the landward side is currently proposed to avoid building within the environmentally sensitive RAMSAR site on the seaward side and affecting the railway embankment. Defences will primarily consist of earth

² White Young Green (February 2012)

³ Amion Consulting/White Young Green (April 2012)

⁴ Atkins (November 2013)

embankments with some flood walls proposed in specific locations where available land is constrained.

At a strategic level, the short list of options considered for the project are shown in Tables 1.2 and 1.3. For the EA, the minimum requirement to remove planning conditions on development is to provide 1 in 200-year (0.5% AEP) SoP for 60 years, up to 2076 (i.e Option 4A). Options appraisal considers also the case for extending the 1 in 200-year (0.5% AEP) SoP for 100 years (up to 2116) by either building higher defences as part of the project (Option 4C) or in future, in response to sea level rise (Option 4B).

Option	Description	Target SoP	Benefits delivered / Issues involved	Reason for short-list
1	Do Nothing	No target. SoP quickly fails – regular breaches	Flood risk increases quickly as defences deteriorate, breaches are not repaired, and sea levels rise.	Baseline for economics
2	Do Minimum (Environment Agency and private owners maintain defences)	Current 5% SoP, falling over time due to sea level rise – currently 1,050 homes at significant and moderate risk (none at very significant); within 100 years 1,195 homes at very significant risk.	Continued mitigation against present risk. Current annual O&M cost ~£160k. Flood risk increases as defences deteriorate and sea level rise. Development continues to be permitted using ground raising, using up storage for others.	Baseline for EA's Partnership Funding Calculator as part of FDGiA business cases
3	Improved Tidal Defences: deliver FRM strategic policy for phased implementation; primarily FDGiA and PF funded; Environment Agency working alone.	0.5% SoP over 100 years (to 2116)	Reduced flood risk to Avonmouth-Sevenside area; mitigates for sea level rise. Extra O&M cost of £11.7M (PV cost over 60 years). Potential for significant impacts including designated sites, landscape and public.	Phased delivery approach primarily to suit EA requirements, rather than wider LEP economic development objectives
4	Improved Tidal Defences: aimed at economic development; short term implementation; primarily ASEA LEP and FDGiA funded.	Option 4A: 0.5% SoP to end of 60-year planning period (falling to 2% SoP by 2116) Option 4B: 0.5% SoP to end of 60-year planning period then upgrade to extend 0.5% SoP to 2116 Option 4C: 0.5% SoP over 100 years (to 2116)		Immediate delivery approach to suite wider LEP economic development objectives.

Table 1.3. Shortlist of Strategic options

Source: Severn Estuary FRM Strategy, FDGiA OBC

Option	Assessment process – options to improve tidal defences
Do Nothing (Option 1)	Baseline option against which all other options are measured. The Do Nothing option is used as a baseline economic reference case; this being the walk away option under which all operation and maintenance activities would cease. Under this option, once any part of the defence fails or breaches it would be left in that state indefinitely, quickly leading to an unacceptably high and progressively increasing level of flood risk.
Do Minimum, reactive maintenance (Option 2)	Continued current activities for existing assets by the Environment Agency and private owners. This option includes essential refurbishment and like-for-like replacement of assets, including the tidal defences and outfalls, and also to the assets on the fluvial (rhyne) system that drains floodwater from behind the tidal defences into the estuary. This option increases flood risk as problems would not be addressed in advance, leading to unacceptably high and progressively increasing level of flood risk.
Improve Tidal Defences (Options 3, 4)	The extent and scale of the flood defence works depends on the height of existing defences and ground levels along the length of the scheme (Aust to Avonmouth) and the target SoP – this differs depending on the option (3, 4A, 4B and 4C). Some sections of existing defences do not require raising in the short term – this applies to Binn Wall and Avonmouth Dock. Other sections of low lying land require defence works to be undertaken sooner – this applies to Aust and New Passage.

Options 1 and 2 were rejected as they did not contribute to the realisation of SGC, BCC and the LEP’s wider economic development objectives. Option 3 was also rejected on the basis that a phased approach to delivery over a number of years would not align with SGC, BCC and the LEP’s goal to promote economic development at ASEA now.

The preferred option selected was a hybrid version of Option 4A, which provides a 1 in 200 (0.5% AEP) SoP based on a combination of 2076/2098 design levels. The 2098 design level will be provided south of Binn Wall (i.e. Areas 2 and 3 in Figure 1.1) to maximise protection of existing and future development in ASEA. The 2076 design level will be delivered north of Binn Wall (i.e. Area 1 in Figure 1.1), where flood risk to ASEA is lower. This option is preferred on the basis that it is the most appropriate and acceptable design level from a planning perspective, providing sixty years of protection to ASEA from the conclusion of the City Deal period (2038).

Also note that the Strategic Director’s Board confirmed in Summer 2017 that options promoting 2076 design levels (i.e. Option 4a) were preferred over options promoting 2116 design levels (i.e. Option 4b and 4c). This view was informed by the analysis undertaken by CH2M that the costs of delivering 2116 design levels would be significantly higher than 2076. At the same time, the increase in benefits would be negligible as 2076 design levels unlock/safeguard development across the whole of ASEA; no additional development at ASEA is unlocked by 2116 design levels. As a result, whilst costs increase significantly, benefits increase only marginally for the 2116 design levels (Options 4b and 4c), which would reduce benefit/cost ratios. The decision to select a 2076/2098 hybrid option (Option 4a) merely reflects the opportunity to maximise protection of existing, recent and future development in ASEA south of Binn Wall. The supporting analysis justifying this position is provided in Appendices A and B.

The specification of the resulting flood defence works required to support Option 4a are outlined in

Table 1.4.

Table 1.4. Preferred option – flood defence works required

Source: FDGiA OBC

Flood defences	Location	Flood defence type	Scale of Defence to achieve 0.5% SoP to 2076/2098
Avonmouth docks (7km defence)	Park and Ride site	New sheet pile flood wall adjacent to railway line	0.8m high
	River Avon	New RC flood wall to replace existing bank	1.2m high
	Avonmouth docks	New RC flood wall to replace tidal bank along dock edge	2.2m high
	North of Avonmouth docks	Replace existing defences with RC wall	1.7-2.7m high
Severnside railway to Severn Beach	Chittinging Industrial Estate	Raise tidal flood bank	Raise by 1.6m
	Severn Beach railway line	New sheet pile flood wall on landward side	1.1m high
	South of Severn Beach	Raise existing tidal bank; carries Severn Way path	Raise by 1.2m
	South of Station Road	Raise existing bank; form new footpath	Raise by 1.2m
	South of Station Road	New RC wall; form new footpath	Raise by 0.6m
	Binn Wall (north)	No raising of FDL needed, only repairs to flood wall	Repairs only
	New Passage	New sheet pile flood wall and glass panels; coast side of Severn Way path	1.4m high
Severnside, north	North of Chestle Pill	Raise tidal flood bank	Raise by 2.6m
	Northwick Warth	Raise tidal flood bank; carries Severn Way path	Raise by 2.6m
	Old Passage: new flood wall	Raise tidal flood bank; form flood ramp in road; or direct property level protection if more appropriate/acceptable	Raise by 1.6m

Further detail on the optioneering process is also provided in Appendix C.

The preferred intervention options for the ecological mitigation element of the project relate to operational considerations rather than spatial considerations, given that the areas identified for ecological mitigation were limited to Hallen Marsh and Northwick. At both locations, three operational approaches to providing a minimum of 85 ha of wetland habitat to meet the requirements of the Cresswell Study were identified:

- Do Nothing: no compensatory habitat would be created at Hallen Marsh and Northwick, meaning alternative provision of compensatory habitat would be required elsewhere to allow future development in ASEA to come forward.
- Multiple, Connected Habitat Areas: creation of an open, diverse mosaic of new wetland habitat. Utilising site-wide management of the rhines and removal of some of the hedgerows.

- Single Habitat Area: focus on creating specific habitats, e.g. one area of wet grassland and a separate area of open water habitat, which could be managed independently.

The Do Nothing scenario was rejected on the basis that five other sites had already discounted from delivering compensatory habitat prior to consideration of Northwick. The 'multiple, connected habitat area' approach was identified as the preferred approach because:

- It maximises available habitat, therefore unlocking the maximum quantum of employment-led development in ASEA.
- It will provide more ecologically diverse and functional habitat.
- Enable the rhine systems and associated ditches to be managed holistically, minimising flood risk.
- It will provide a more sustainable scheme, which can be constructed and managed more holistically than development of separate, potentially isolated habitat units.

1.7 Environmental Sustainability Considerations

Environmental sustainability underpins the project, which combines the delivery of strategic flood defence infrastructure to safeguard and unlock economic activity in ASEA alongside ecological assets to provide mitigation against employment-led development in ASEA. The strategic flood defence infrastructure will reduce flood risk to existing and future development in the area, linking environmental sustainability to economic growth and vitality. Simultaneously, the provision of ecological assets to meet the requirements set out in the Cresswell Study to provide appropriate habitat for wetland birds, will allow the full extent of proposed development in ASEA to come forward in a timely manner. Again, this demonstrates the linkages between environmental sustainability and economic growth and development that are central to the project.

The preferred options highlighted above reflect the most sustainable options for delivering the proposed flood defence and ecological assets. For example, the preferred alignment option for flood defence predominantly builds on existing structures, minimising demand for materials and maintenance requirements. Similarly, the preferred operational approach to ecological mitigation proposes to follow the 'multiple, connected habitat area' approach, which involves simpler and more sustainable construction and management. Further, there is potential to reuse some of the waste material generated in creating the ecological assets as part of flood defence works (e.g. bunds and embankments).

1.8 Equality and Diversity Impact Assessment

It is a requirement that all schemes coming through for funding produce an Equality and Diversity Impact Assessment and to draw up a plan of action to address equality and diversity issues relevant to the scheme.

The project directly assists in facilitating the Strategic Economic Plan's overall vision, underpinned by five strategic objectives:

1. Create the right conditions for business to thrive. Give confidence and certainty to our investors to attract and retain investment to stimulate and incentivise growth;
2. Enhance & protect our natural & built environmental assets to build our resilience to climate change;

3. Create places where people want to live and work, through delivery of essential infrastructure including transport and housing to unlock suitable locations for economic growth;
4. Shape the local workforce to provide people with skills that businesses need to succeed and that will provide them with job opportunities; and
5. Ensure all our communities share in the prosperity, health and well-being and reduce the inequality gap.

The project will directly contribute to the achievement of objectives 1, 2 and 3. In addition, by providing necessary infrastructure to unlock land, it will also help indirectly to deliver objectives 4 and 5.

The approach to the Equality and Diversity Impact Assessment follows the standard format of other Assessments for projects within the area. The framework below was adapted to highlight how the project recognises that delivering excellence in Equality & Diversity is intrinsically linked to the successful achievement of the WoE 2030 Vision.



Figure 1.2. Achievement of the WoE 2030 Vision

Equality and Diversity and the ASEA Scheme

The project seeks to provide a 1:200 (0.5% AEP) standard of protection (SoP) from tidal flooding to the Avonmouth and Severnside Enterprise area in Bristol and South Gloucestershire. Wetland creation is included within the project to ensure that supporting habitats to the Natura 2000 Severn Estuary site are provided in order to mitigate the impact of industrial development.

The ASEA is expected to contribute significantly to achieving employment and economic growth over the next few decades. As well as safeguarding existing employment sites, developments within ASEA is expected to create close to 14,000 new jobs over the next 25 years, of which at least 6,000 new jobs are envisaged to be created in the next decade. However, the growth potential of the area is currently

hindered by the ecological and environmental issues, which limit the scale of area available for development purposes within the ASEA. As such, investment in critical infrastructure to unlock development at ASEA is essential.

Appendix 1 of the West of England Guidance Note advises that it is important to recognise that equality and diversity will be more or less relevant to a Scheme depending on the aims of the Scheme in question. As the Scheme is primarily for flood defence works, equality & diversity issues are less relevant. Although the scheme intends to unlock land for future employment, this assessment can only consider jobs that relate solely to the Scheme. As such, equality and diversity issues will apply to construction jobs and the scheme once operational (primarily in relation to footpaths and accessibility).

It is clear that this project will contribute to the maximisation of impact in relation to the LEP identified Drivers of Growth – through specifically contributing in the area of ‘Place & Infrastructure’ and through indirectly impacting on the delivery of significant growth in respect of the “People – Knowledge, Economic, Skills and Social Inclusion” Driver of Growth; enabling the continuation of the development of skills to meet the requirements of employers in the West of England.

The LEP is clear on its strategic focus for Equality & Diversity and this Scheme complements and will contribute to the achievement of these strategic objectives:

Table 1.5. LEP Equality and Diversity Impact Assessment Strategic Objectives

Source: LEP Strategic Economic Plan

Strategic objectives	Scheme Contribution
Driver of Growth: “Place & Infrastructure”	
- The removal of particular local barriers to work through our People and Skills Driver of Growth.	
- The use of inclusive design principles to meet the key components of successful neighbourhoods which include: Resident empowerment, Access and connectivity, Services and amenities, Built and natural environments, Social networks/well-being, Housing.	✓
- Supporting the diversity of employment opportunities which is a critical component of success.	
Driver of Growth: “People – Knowledge, Economic, Skills and Social Inclusion”	
- Ensure the needs of all social groups are met through wide-ranging activities to improve employability.	✓

By unlocking the site for a range of employment development, the project will make a strong but indirect contribution to promoting equality and diversity. Development will create new opportunities on site for access to employment opportunities and open space. It will play a fundamental part in improving accessibility for the residents living within the area, parts of which contain pockets of long-standing deprivation and significant minority ethnic populations.

Aims, Objectives and Outcomes

The overall aim is to ensure that equality & diversity principles and values are applied across the project, and actions proactively taken which contribute to maximising success in delivering the ASEA scheme. No negative impacts have been identified in relation to any equalities groups.

Table 1.6. Impact assessment – objectives and outcomes

Source: CH2M

Objectives	Key Actions	Intended Impact
To ensure that consultation in relation to the scheme design is appropriate and impacts upon the scheme design where appropriate.	Consultation with local communities and representative groups, will identify any required design modifications required to meet the needs of these groups. For example, path diversions and the impacts on disabled people and older people.	The scheme design is successful in maximising accessibility for all, for example, taking into account the needs of disabled residents and visitors.
To ensure that best practice in inclusive design forms an integral and central part of the project design.	All aspects of the scheme design will be reviewed to ensure compliance with best practice in inclusive design.	The scheme design is successful in maximising accessibility for all, for example, taking into account the balanced needs of disabled residents and visitors.
To ensure that equality & diversity questions are specifically built-in to procurement activity in relation to construction contracts.	Appropriate checks within the procurement process will be utilised.	The successful construction contractors have in place policy and practice which demonstrate the importance of embedding equality & diversity into all aspects of business life.

The above objectives will be continuously monitored to understand both progress and the impact of these actions on the achievement of our project objectives.

2 Economic Case

2.1 Economic Appraisal

An economic appraisal has been undertaken based on guidance provided in the following documents:

- West of England LEP One Front Door Programme – Support Manual (including the ‘Impact Guidance Note’).
- Joint Defra/EA FCERM R&D programme’s (project FD2662) ‘Flood and coastal erosion risk management and the local economy’.
- HM Treasury ‘The Green Book’.
- Homes and Communities Agency ‘Additionality Guide’ and ‘Employment Densities Guide’.

Further, sections of the analysis (particularly in relation to future economic development unlocked) pivot from the existing Amion Model established in 2012/13 to support the Growth Incentive element of the City Deal.

Within this context, the package of benefits associated with the scheme arise through three primary routes:

- Construction phase job creation and GVA uplift associated with implementation of construction works;
- Safeguarding current economic activity in the form of jobs and GVA at existing businesses that will benefit from reduced flood risk;
- Unlocking/Safeguarding land subject to future/recent development resulting in job creation and GVA uplift.

A summary of the economic analysis results is presented below. More detail on the methodological approach and outputs generated by the economic analysis are presented in Appendix D.

Construction Phase Impacts

The main economic impacts generated in the construction phase relate to direct and indirect employment creation and gross value added (GVA) generation. The direct effects capture the change in employment and economic output attributable to the design and build process itself. The indirect effects capture the knock-on implications for the supply chain that supports construction industries and benefits from increased expenditure within that industry.

Direct GVA impacts: Direct GVA impacts are calculated through the application of best-practice turnover-to-GVA ratios provided in the West of England LEP's Support Manual. The Support Manual recommends a range of ratios between 0.37 and 0.43 to convert turnover to GVA. A midpoint ratio of 0.4 has been utilised. Applying this ratio to the scheme turnover of £83.0m (capital expenditure only), suggests a total GVA impact of £33.2m.

Direct Employment Impacts: Direct employment impact is calculated through the application of best-practice 'cost-per-job' benchmarks listed in the Support Manual. The guidance indicates that £90,000 (2014 prices)⁵ of infrastructure investment is required to sustain one full-time equivalent (FTE) employee. Given that the estimated turnover equates to £83.0m, this level of investment could support 910 gross direct FTEs.

Indirect GVA Impacts: It is likely that much of the construction contractors' supply chain requirement will be met in the local area. Most expenditure will therefore be locally based and support local firms, so the upper-end of the multiplier range suggested by the Support Manual guidance has been used. Applying a multiplier of 1.9 to the direct GVA impact noted above results in a total direct and indirect GVA impact of £63.1m during the construction phase.

Indirect Employment Impacts: Similarly, to supply chain requirements, it is likely that much of the construction contractors' employment requirement will be met in the local area. Hence, the upper-end of the multiplier range in the guidance was therefore used. Applying the multiplier 2.0 to the direct employment impact noted above results in a total direct and indirect employment impact of 1,819 FTE employment opportunities created during the construction phase.

Operational Phase Impacts

⁵ Note that this benchmark has been converted to 2016 prices for consistency with other price bases used in the analysis. Therefore, the benchmark used is actually £91,263 of infrastructure investment per employee.

Existing Economic Activity: The scheme will act as a public good to safeguard the following scale of floorspace, employment and GVA across ASEA based on a 100-year appraisal period:

- Around 575,000 sq m of employment floorspace will benefit from reduced flood risk relative to the Do Nothing scenario;
- Around 13,500 jobs will benefit from less disruption and temporary/permanent closure as a result of reduced flood risk relative to the Do Nothing scenario
- GVA safeguarded in the region of £252m relative to the Do Nothing scenario.

Future and Recent Economic Development: The scheme will address market failure related to: imperfect competition, development viability and the planning and environmental requirement to provide flood defence and ecological mitigation, to safeguard and/or unlock the following scale of recent and future economic development across ASEA by the end of the City Deal (2038):

- **Safeguarded:** at recent development in Avonmouth
 - 377,000 sq m of employment floorspace;
 - 5,900 gross jobs;
 - £3.1 billion in gross GVA.
- **Unlocked:** at future development sites across ASEA
 - 87,000 sq m of employment floorspace.
 - 1,400 gross jobs;
 - £492m in gross GVA.
- **Accelerated:** at future development sites within the 1957/58 planning envelope in Severnside
 - £211m in gross GVA.
- **Total:** Combining the outputs derived across various themes
 - 464,000 sq m of employment floorspace safeguarded or unlocked at future/recent development across ASEA;
 - 7,300 net jobs safeguarded or unlocked at future/recent development across ASEA.
 - £3.8 billion in net GVA safeguarded or unlocked at future/recent development across ASEA.

Net Impacts: Following the application of appropriate factors of additionality (e.g. deadweight, leakage, displacement, substitution and multiplier effects), the gross impacts outlined above translate to the following net additional impacts:

- **Safeguarded:** at recent development in Avonmouth
 - 5,900 net job;
 - £2.9 billion in net safeguarded GVA.
- **Unlocked:** at future development sites across ASEA
 - 1,200 net additional jobs;
 - £470m in net additional GVA.
- **Accelerated:** at future development sites within the 1957/58 planning envelope in Severnside
 - £201m in net additional GVA.
- **Total:** Combining the outputs derived across various themes
 - 6,400 net jobs safeguarded or unlocked at future/recent development across ASEA.
 - £3.6 billion in net GVA safeguarded or unlocked at future/recent development across ASEA.

Reduction in Capital Damages to Existing Properties

The project will also reduce flood risk associated with existing commercial and residential properties, resulting in lower anticipated capital damages to buildings. As the monetised benefits associated with this impact of the project are reported in the FDGiA outline business case, they are not incorporated into the value for money assessment outlined below. That said, the monetised values are reported below for completeness:

- PV benefits of £591m over a 60-year appraisal period (based on Option 4a, in Appendix D, Table 5 of FDGiA OBC).
- Provides protection to residences, reducing the quantum of households at risk by 3,150.
- These outputs/outcomes support £32.95m in FDGiA (EA) funding for the flood defence element of the project.

Business Rates Growth

Based on the quantum of development anticipated at ASEA, the development area is assumed to generate £599m in business rates in the reference case, increasing to over £1 billion in the intervention case. The full scale of business rates generated in the reference and intervention cases is well above the baseline business rate value of £147m generated at ASEA until the end of the City Deal. This suggests that ASEA could contribute some £452m in business rates, above and beyond the baseline value, in the reference case. This contribution could increase to £891m in the intervention case.

These metrics imply gross additional business rates of £439m (constant prices) in the intervention case. When discounted and converted to net additional business rates as a result of intervention, the scale of business rate uplift is equivalent to £294m across the appraisal period. This is above the level of future capital funding required from the West of England LEP to deliver the project (approximately £63.9 million), indicating the grant funding from LEP can be 'repaid' through the economic and financial externalities enabled by the project.

Note that the above analysis is only included to demonstrate that the project will be a net contributor to the City Region's Growth Incentive and related Economic Development Fund. The business rate growth is not incorporated into the value for money analysis below. More detail on the generation of business rates is provided in Appendix D, alongside the rest of the detailed economic analysis.

2.2 Value for Money Statement

The monetisable scheme benefits outlined above can be summarised as follows:

- Construction stage impacts - £63.1m;
- Operational stage: safeguarding existing activity impacts - £251.7m;
- Operational stage: unlocking, safeguarding and accelerating future and recent development sites - £3.6bn.

Combining these various benefit streams, the total scheme benefits amount to £3.9bn (PV) from an economic development perspective. Compared to total scheme costs to £87.9m (PV), this scale of benefits generates a BCR in the region of 44:1. This suggests the project represents very good value for money.

Table 2.1. Value for Money Assessment

Source: CH2M

<i>Total project cost</i>	<p>£1.9 million expenditure to date</p> <p>£2.1 million confirmed expenditure in 2018/19</p> <p>£83.0 million additional capital expenditure</p> <p>£11.6 million maintenance cost</p> <p>£98.6 million total project cost</p>
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	£96.7 million future project cost (excluding £1.9 million expenditure to date)
<i>Grant sought (EDF/LGF/RIF)</i>	£63.9 million (further to £1.9 million expenditure to date)
<i>Net Quantified Benefits</i>	Construction Stage Employment: 1,819 full-time equivalent jobs during the construction stage (direct and indirect) Construction Stage GVA: £63.1 million (PV) Safeguarded Employment at existing development: 13,500 full-time equivalent jobs benefitting from reduced business downtime Safeguarded GVA at existing development: £251.7 million (PV) Net Unlocked/Safeguarded Employment at Future and Recent Development Sites: 6,400 full-time equivalent jobs Net Unlocked/Safeguarded/Accelerated GVA at Future and Recent Development Sites: £3.6 billion (PV)
<i>VfM indicator*</i>	<i>PV of GVA: £3.9 billion</i> <i>PV of Costs: £87.9 million (excluding expenditure to date)</i> <i>BCR: 44:1</i> <i>Cost per operational stage job created: £13,800</i> <i>GVA per £ spent: £44</i>

Table 2.2. Summary Table of Assumptions

Source: CH2M

<i>Criterion of assessment</i>	<i>Assumption</i>
<i>Jobs</i>	Calculated as follows: <ul style="list-style-type: none"> • Construction stage employment: based on cost per job benchmarks provided in the LEP's 'Impact Guidance Note' • Safeguarded employment and unlocked employment: based on floorspace data provided by SGC and BCC, converted to full-time equivalent jobs using the HCA's Employment Densities Guide
<i>GVA</i>	Calculated as follows: <ul style="list-style-type: none"> • Construction stage GVA: based on GVA/Turnover ratio benchmarks provided in the LEP's 'Impact Guidance Note' • Safeguarded GVA and unlocked GVA: based on GVA per Employee benchmarks sourced from the Annual Business Survey, weighted by ONS sub-regional productivity data to suit the specific West of England context.

Please see Appendix D for further details on the assumptions, methodological framework and calculations underpinning the economic analysis presented above.

3 Financial Case

3.1 Chief Financial Officer sign off

Comment [WG1]: Ian – have we got this to include following your meetings last week?

Appendix X presents the Section 151 Office sign-off letter from the Chief Financial Officers of SGC and BCC stating:

- All relevant financial approvals are in place to deliver the project as set out in the Full Business Case.
- All appropriate financial due diligence will have been undertaken in respect of the Full Business Case.
- Recognition that they are responsible and accountable for ensuring that the project delivers good value for money in the use of public resources, that being the suitability and effectiveness of the project as well as the economic growth and wider societal outcomes achieved in return for the public resources received.

3.2 Scheme Cost

The projected costs for the project are given in Table 3.1. Note that this FBC submission precedes the outcome of the tender process, which is scheduled for Summer 2018. As such, the cost and budget profile information reported here is based on best current estimates based on the designs submitted for planning. A more definitive view on costs and budget profile will be available following the tender returns in September 2018; it may be possible to incorporate the details of this process into the FBC prior to final approval. The tender process will also provide greater detail on construction programme and process. This will inform greater certainty on the 'other scheme costs' cost category, which are currently underpinned by initial views on likely construction programme and process. Greater detail on the financial model for the current analysis is provided in Appendix E.

Optimism Bias and other risk budgets are calculated using a Monte Carlo analysis, following a risk workshop at which all the key partners were represented, including SGC, BCC, EA and the WEM Lot 3 and WEM Lot 4 suppliers. The risk budget set is realistic for the levels of project risk involved. In particular, EA Guidance on risk quantification was used to derive a risk figure of 50% (using the fifty-percentile risk from MonteCarlo analysis and a weighted optimism bias of 26%), which has been applied to the construction costs for each Area

The cost figures presented in Table 3.1, with the funding profile provided in Tables 3.2 to 3.4 are subject to change in line with an increasingly refined cost model as the project moves through the tender process, with the construction cost subject to more detailed pricing and programming as part of that process. Please see Appendix E for more details.

Table 3.1. Cost Elements

Source: CH2M

Cost Heading	Total projected eligible expenditure (£'000s)	Amount to be claimed (£ '000s)
Expenditure to date		
<i>Business Case Development</i>	£1,900	£1,900
Expenditure to date Sub-Total	£1,900	£1,900
Future Expenditure		
Committed expenditure in 2018/19	£2,050	£2,050

	<i>Of which:</i>	
<i>Land purchase at Tan House Farm</i>	<i>£1,200</i>	<i>£1,200</i>
<i>Land purchase at Severnside</i>	<i>£600</i>	<i>£600</i>
<i>Land purchase at Hallen Marsh</i>	<i>£250</i>	<i>£250</i>
Maintenance (60 years)	£11,599	£11,599
Initial construction cost:	£45,379	£27,470
	<i>Of which:</i>	
<i>Area 1: Northwick Defences</i>	<i>£10,567</i>	<i>£6,397</i>
<i>Area 2: Avonmouth Defences</i>	<i>£18,847</i>	<i>£11,409</i>
<i>Area 3: Outfalls and Railway</i>	<i>£11,627</i>	<i>£7,038</i>
<i>Area 4: Hallen Marsh Habitat</i>	<i>£804</i>	<i>£487</i>
<i>Area 5: Northwick Habitat</i>	<i>£1,157</i>	<i>£700</i>
<i>Landscape costs for Areas 1-3</i>	<i>£748</i>	<i>£453</i>
<i>Landscape costs for Areas 4-5</i>	<i>£331</i>	<i>£200</i>
<i>Environmental mitigation: Areas 1-3</i>	<i>£770</i>	<i>£466</i>
<i>Environmental mitigation: Areas 4-5</i>	<i>£528</i>	<i>£320</i>
Overhead and profit (15%)	£6,807	£4,120
Optimism Bias/Risk	£25,019	£15,145
Other scheme costs	£5,808	£3,516
	<i>Of which:</i>	
<i>Estates / compensation</i>	<i>£800</i>	<i>£484</i>
<i>SGC / BCC management costs</i>	<i>£772</i>	<i>£467</i>
<i>EA management costs</i>	<i>£772</i>	<i>£467</i>
<i>Detailed design (either D&B or consultant design will incur design costs)</i>	<i>£2,000</i>	<i>£1,211</i>
<i>Construction contract procurement and administration</i>	<i>£600</i>	<i>£363</i>
<i>Site supervision</i>	<i>£864</i>	<i>£523</i>
Future Expenditure Sub-Total	£96,662	£63,900
Overall Total	£98,562	£65,800

It is assumed that potential LEP funding is capped at £65.8 million. In total, £1.9 million of LEP funding has already been spent to date. Future LEP funding will incorporate an £11.6 million commuted sum towards the present value of maintenance costs for the flood defence element of the project across a

sixty-year appraisal period. Detail on the components and profile of maintenance expenditure are provided in Appendix E (see 'O&M' tab). This commuted sum will be ringfenced for use on the ASEA flood defence and ecological mitigation project only. Although EA will be responsible for operation and maintenance of the infrastructure, the structure of EA's FDGiA funding process means that the commuted sum for maintenance is required from the LEP in order to maximise EA's overall financial contribution to capital expenditure.

Also note that post-construction maintenance costs for ecological mitigation is incorporated for five years under the 'Environmental Mitigation for Areas 4&5' line item in Table 3.1. After that point, maintenance costs for ecological mitigation will be dependent on what kind of management plan is implemented by the SGC and BCC. At this point, it is understood that a bridging payment covering five years (and captured above) would later be replaced by environment stewardship funding.

The residual LEP funding allocation (£52.3 million) will contribute towards advanced purchase of land in Severnside, Tan House Farm and Hallen Marsh (£2.1 million committed in 2018/19) and capital expenditure related to flood defence and ecological infrastructure (£50.3 million). Note that land purchase at Severnside, Tan House Farm and Hallen Marsh has been informed by SGC's Property Services Team, who undertook a full asset valuation exercise for land purchases informed by HM Treasury's Red Book principles (see Appendix J).

EA funding via the FDGiA process allows a maximum grant of £32.95 million. An Outline Business Case for FDGiA funding was submitted earlier this year and is currently awaiting review by the EA's Large Project Review Group (expected mid-summer). It is estimated that £32.8 million of EA funding will be required to cover the shortfall in capital costs once LEP funding is allocated. The residual funding available from the EA via the FDGiA process (£0.19 million) will be safeguarded to provide contingency and head room for any cost overruns or unforeseen costs.

This suggests that there is significant scope for the project costs to be kept within the budget envelope provided by the various funding streams. Further, ongoing cost engineering, refinement of the cost model and risk management through the tender process is expected to see project costs fall further as the FBC progresses.

3.3 Spend Profile and Funding Sources

At this stage, and in advance of the tender process anticipated to conclude in September 2018, the expenditure profile for the project is assumed to mirror the anticipated budget profiles established by SGC and BCC. Future capital expenditure therefore extends over five years between 2018/19 to 2022/23. A more definitive view capital expenditure profile will be available at the end of the tender process in September 2018; it should be possible to incorporate the details of this process into the FBC prior to final approval.

Revenue spending is profiled from 2018/19 for a period of sixty years, in line with EA requirements. The revenue spending is broadly linear across the period. It is expected that a commuted sum will be provided from LEP funding. More detail on the profile of maintenance costs is provided in Appendix E (see 'O&M' tab).

Table 3.2. Capital Spend (£'000s)

Source: CH2M

	Pre-2018	18/19	19/20	20/21	21/22	22/23	Total
LEP	£1,900	£9,064	£8,534	£10,206	£8,528	£15,969	£54,201

<i>EA/ FDGiA</i>		£500	£1,200	£6,000	£8,500	£16,562	£32,762
<i>Total</i>	£1,900	£9,564	£9,734	£16,206	£17,028	£32,530	£86,963

Table 3.3. Revenue Spend (£'000s)

Source: CH2M

	<i>Pre-2018</i>	<i>18/19</i>	<i>19/20</i>	<i>20/21</i>	<i>21/22</i>	<i>22/23+</i>	<i>Total</i>
<i>LEP</i>	£0	£399	£402	£372	£360	£10,066	£11,599
<i>EA/ FDGiA</i>	£0	£0	£0	£0	£0	£0	£0
<i>Total</i>	£0	£399	£402	£372	£360	£10,066	£11,599

Table 3.4. Total Spend (£'000s)

Source: CH2M

	<i>Pre-2018</i>	<i>18/19</i>	<i>19/20</i>	<i>20/21</i>	<i>21/22</i>	<i>22/23+</i>	<i>Total</i>
<i>LEP</i>	£1,900	£9,463	£8,937	£10,579	£8,887	£26,035	£65,800
<i>EA/ FDGiA</i>	£0	£500	£1,200	£6,000	£8,500	£16,562	£32,762
<i>Total</i>	£1,900	£9,963	£10,137	£16,579	£17,387	£42,596	£98,562

4 Commercial Case

4.1 Procurement

The recommendation of the ASEA Strategic Directors Board is that the EA should act as project delivery lead for the design and build stage of the project. The main basis for the recommendation relates to the operational experience gained through delivery of EA flood risk programme. The intent is that EA will take on the employer project management function to include responsibility for procurement and project/contract management. The procurement exercises for the required works and services would be delivered in line with the EA Financial Scheme of Delegation ensuring value for money and OJEU compliance. It is proposed that EA procure the construction contract through their Water and Environment Management (WEM) Framework (Lot 4: Asset Delivery).

The WEM Framework provides access to the best suppliers in flood and coastal risk management. It is a commercial agreement between the Environment Agency, consultants and contractors ('suppliers') with agreed terms for the award of individual contracts to deliver projects for Flood and Coastal Risk Management (FCRM). Lot 4 covers construction works, coastal works (e.g. beach nourishment, dredging and coastal structures) and design and build. The Framework is deemed appropriate for adoption on this project for the following reasons:

- The Framework was established to be the UK's primary vehicle for delivery of significant flood risk management projects. Lot 4 was specifically set up to deliver large scale flood defence construction schemes.
- The Framework has already been through a full open tender process to identify the best suppliers to deliver large scale flood mitigation projects.
- The successful contractor would be awarded via a mini-competition process with five suppliers.
- Framework use aligns to the UK Government Construction Strategy.
- Neither SGC nor BCC have an equivalent WEM Framework. WEM is therefore a more efficient, tried and tested route to market.
- The Framework has been procured in accordance with EU regulations, including supply chain management and engagement with locally-based SMEs.
- EA has statutory powers of entry available for much of the land associated with the ASEA project. EA is unable to transfer such powers to SGC or BCC commissioned contractors without significant legal process and agreement.

The WEM Lot 4 design and build contract will be awarded under a NEC3 ECC Option C target cost contract with activity schedule. The principal suppliers for appraisal and outline design of the project are:

- CH2M (WEM Lot 3): modelling, appraisal, outline design, OBC report and tender pack design and build contract; and for the ecology project also the detailed design
- BMM JV (WEM Lot 4): ESE contractor services to develop the works methodology, confirm buildability and provide practical site investigation advice and input into costing of options, risks register and construction programme.
- Arcadis: cost and risk management services.

In accordance with the procurement strategy a competitive tender process involving WEM Lot 4 suppliers in bidding for one contract is scheduled from April to October 2018. Following approval of the FDGiA FBC the contract will be let to the preferred WEM Lot 4 supplier.

On return of tenders, the project team will undertake a detailed cost review of the tenders against each other and also against a Project Cost Tool (PCT) pre-tender estimate to establish the most economically advantageous offer. The project team will also undertake a detailed quality review of each of the tenders to establish the best quality offer. The project team will then recommend to the Flood Defence and Ecology Group the preferred WEM Lot 4 supplier.

The procurement timescales are given below. Following construction of the works a minimum two-year defects liability period is scheduled, which is necessary to accommodate the landscaping works and planting establishment period.

Table 4.1. Procurement Timescales

Source: CH2M

Procurement task	Start	Complete
Pre-procurement engagement	February 2018	March 2018
FDGiA OBC approval – OGC Gateway 2	April 2018	June 2018
Preparation of tender pack (incl. Works Information)	April 2018	July 2018
Tender issue	July 2018	July 2018
Tender return	October 2018	October 2018
Tender evaluation	October 2018	November 2018
Award recommendation / approvals	December 2018	December 2018
FDGiA FBC approval – OGC Gateway 3	December 2018	December 2018
Contract award – commence design only	December 2018	December 2018
Instruction to commence construction	December 2018	December 2018

4.2 Operation and Financial Viability

The flood defence element of the project will be operated and maintained by the EA as part of their statutory responsibility to manage flood risk and maintain flood defence assets. Maintenance responsibility may be devolved to organisations such as Bristol Port and Network Rail where assets exist on their land and impinge on operations. Where possible, maintenance will be managed using the EA’s existing processes, such as the Flood and Coastal Risk Management Operational Framework.

Operation and maintenance of the flood defence element of the project will be funded through a commuted sum contribution from the LEP towards scheme costs (Section 3.2). The Financial Case demonstrates that LEP funding will primarily fund capital works too, with EA funding via FDGiA covering any residual capital cost requirement. This approach maximises the EA’s overall financial contribution to the project based on the structure of their FDGiA funding process.

Operation and maintenance of the ecological mitigation element of the scheme is covered by a combination of LEP and EA funding for five years under the ‘Environmental Mitigation for Areas 4&5’ line item in Table 3.1. After that point, operation and maintenance costs for ecological elements of the project will be dependent on what kind of management plan is implemented by the two Councils (e.g. responsibility contracted out to tenant farmers, management organisation). At this stage, it is believed that any bridging payment made during the first five years will be replaced by environment stewardship funding at a later date.

The financial viability of the future LEP funding grant of £63.9 million is demonstrated through anticipated net additional business rate uplift of £294 million (Section 2.1). This demonstrates that LEP funding will generate a significant increase in revenue to the West of England LEP as part of the Growth Incentive element of the City Deal. This revenue stream can be recycled as part of the Economic Development Fund to allow investment in other economic development priorities across the wider West of England area.

4.3 Social Value Act

The Social Value Act requires people who commission public services to think about how they can also secure wider social, economic and environmental benefits. Such Social Value benefits are expected to be factored into the pre-procurement phase of project development, allowing the issues to be embedded into project design. Within the context of the current project, factors such as the potential social, environmental and economic impacts of the scheme have been appraised from the outset of Full Business Case development. Considerable consultation and engagement has also been undertaken throughout the process to ensure opportunities for Social Value benefits from the project are maximised.

SGC's Social Value Policy defines Social Value as the "the additional benefit to the community from a commissioning/procurement process over and above the direct purchasing of goods, services and outcomes". The project is well-aligned and supports SGC's Social Value Policy. Specific Social Value benefits that the project could support include:

- Creating skills and training opportunities e.g. apprenticeships – the project could help deliver this Social Value benefit by providing employment, skills and training opportunities for local people during the construction stage.
- Promoting and supporting local innovation to enhance local productivity and enable local businesses to adapt to global changes that may affect competitiveness – the project could support this Social Value benefit by reducing flood risk for existing businesses and provide the conditions for growth and enhanced productivity at new businesses.
- Improving market diversity – the project could help achieve this Social Value benefit by providing commercial premises for a range of businesses.
- Providing additional opportunities for individuals or groups facing greater social or economic barriers – the project could support this benefit by enabling significant job creation, which will improve employment opportunities for residents across the West of England.
- Ensuring all council led projects, plans and programmes make a positive contribution to the creation, protection, enhancement and management of green infrastructure – the project will help deliver extensive green infrastructure in the form of 85 ha of wetland habitat.

5 Management Case

5.1 Promoter and Delivery Arrangements

The project is being jointly promoted by the two local authorities in which ASEA lies: SGC and BCC. The EA are delivery partners for the project, performing the employer project management function to include responsibility for procurement and project/contract management (as outlined in Section 4.1). The intent is that project oversight will be via the three existing project partners (SGC, BCC and EA) although a new Collaborative Agreement will be required to outline the basis of the arrangements (this will be set in place in time for the full application). It is envisaged that a draft version of the Collaborative Agreement will be developed over the summer and may be available prior to final approval.

As outlined above, delivery arrangements for the current stage of the project involves the following principal suppliers for appraisal and outline design:

- CH2M (WEM Lot 3): modelling, appraisal, outline design, OBC report and tender pack design and build contract; and for the ecology project also the detailed design.
- BMM JV (WEM Lot 4): ESE contractor services to develop the works methodology, confirm buildability and provide practical site investigation advice and input into costing of options, risks register and construction programme.
- Arcadis: cost and risk management services.

Delivery arrangements for the construction stage, including detail on the preferred contractor, will be available towards the end of 2018, after submission of this FBC.

5.2 Project Governance and Delivery

This project is a partnership between SGC, BCC and EA. The project will help to unlock the economic potential of ASEA and protect the existing communities from flooding. The governance structure comprises the Strategic Directors Board (SDB) and Delivery Board.

The Strategic Directors Board (SDB) comprises members of SGC, BCC, West of England LEP and the EA. Its role is to provide strategic guidance; programme prioritisation and decision-making via bi-monthly meetings. The SDB will provide overarching authority for the ASEA programme. The SDB will need to make decisions regarding investment and ensure on-going overall alignment of the programme. Some of the duties and responsibility of the SDB include:

- Authorise the organisational strategic direction against which the programme is to deliver.
- Provide and ensure the continuing organisational context for the programme.
- Authorise funding support for the programme.
- Resolve strategic and directional issues between projects, which need the input and agreement of senior stakeholders to ensure the progress of the programme (and any change requirements therein).
- Authorise the progress of the programme and projects against strategic objectives.
- Provide continued commitment and endorsement in support of the programme objectives at executive and communications events.
- Provide advice and support to the Senior Responsible Officer (SRO).
- Ensure the work of projects and sub-groups is coordinated and to provide appropriate advice and guidance.
- Co-ordinate and monitor effectiveness of resources deployed to develop ASEA.

- Co-opt additional members from time to time and shall invite any number of persons as are required to inform the Board and attend to business on meeting agenda.

The Delivery Board consolidates various related bodies including the Flood Defence and Ecology Groups and the ASEA Growth Board and consists of representatives from SGC, BCC and the EA. The purpose of the Delivery Board is to help realise the agreed outcomes and benefits for the ASEA programme area. The Delivery Board signed off this draft LEP FBC at the monthly meeting on 25th January 2018. Some of the duties and responsibility of the Delivery Board include:

- Provide resource and specific commitment to support the SRO, accountable for successful delivery of the programme.
- Define the acceptable risk profile and risk thresholds for the programme and its constituent projects including project tolerances for exception reporting with respect to costs, risks, issues and dependencies.
- Receive and comment upon exception reports from all projects associated to the Board.
- Seek to resolve strategic and directional issues between projects.
- Develop and make available to each project, generic document templates e.g. risk and issues register, project business case etc.

All other stakeholders (e.g. Natural England) lie outside the formal governance structure, but provide useful support and insight into project development.

Further guidance on project governance and delivery is outlined in the Collaborative Agreement provided in Appendix F.

5.3 Programme Plan

Note that this FBC submission precedes the tender process, which is scheduled for Summer 2018. As such, the Programme Plan reported here provides an indicative overview of anticipated milestones for the project only. A more definitive view on the programme plan will be available at the end of the tender process in September 2018; it should be possible to incorporate the details of this process into the FBC prior to final approval. Also note that programme changes following the tender process could have implications on the 'other scheme costs' cost category, given that the cost of some of the other scheme costs will be driven by the timing, scale and location of construction activities determined by the programme. Again, it is expected that more specific information derived from the tender process can be incorporated into the FBC prior to final approval.

Table 5.1. Programme Plan

Source: CH2M

Milestone completion dates	Baseline
	month/year
Draft Full Business Case Submission	Feb 2018
Final Full Business Case Submission	Oct 2018
Contract Award	Nov 2018
Construction Start	Dec 2018
Readiness for Service	Aug 2023
Construction Finish	Aug 2023
Contract Completion	Feb 2024
Project Closure	Aug 2024

5.4 Risks, Constraints and Dependencies

The main risks and risk mitigation measures associated with the project are defined as:

- Design flood defence levels: The outline designs are based on the current estimates of extreme water levels and wave / water level joint probabilities for the Severn Estuary. Design levels have considered both forthcoming guidance on uncertainty allowances and the more conservative approach of the National Planning Policy guidance. Future update of these estimates may come through before detailed design that possibly necessitate a change in flood defence levels. If this situation arises prior to award of design and build contract, a Project Board meeting will be convened to provide guidance to the project team on the way forward.
- Communication with partners: Communication needs to be clear and unambiguous to ensure aims and objectives are fully understood. From the outset, in developing the scheme the key partners (South Gloucestershire Council, Bristol City Council and Environment Agency) have worked closely together and with key stakeholders, including the Lower Severn Internal Drainage Board, Natural England, Highways England and Network Rail, and the public. Further consultation is planned so that feedback can help shape the detailed design.
- Consents and approvals; notably Natural England and planning permission: The project team continue to work closely with partner organisations to mitigate this. A Habitats Regulations Assessment (HRA) has been completed and approved in principle by Natural England. The project team are drawing on our experience of delivering similar projects that required a HRA (e.g. Exeter flood defences) to plan for and manage these risks.
- Working on linear, constrained sites (e.g. Avonmouth docks): This is likely to result in disruption to the docklands, businesses and the public. The project team will work closely with the preferred design and build supplier to understand and minimise the likelihood and impact of any disruption particularly during detailed design.

To date, the project team have managed some significant project risks, including:

- Availability of information relating to contaminated ground, unfavourable ground conditions and presence of UXO (unexploded ordnance) – the project team have undertaken geotechnical investigations that identified variation in soil strength and settlement parameters and for this reason the risk budget includes provision for greater than expected settlement.
- Construction programme: drafted by the ESE contractor (BMM JV) to inform the milestones outlined in this OBC, which allows for expected environmental constraints related to working close to the Severn Estuary SPA and likely poor ground conditions during wet winter periods. The actual construction programme will be determined by constraints to manage environmental risks and the requirements of Bristol Port Company in particular, as the construction works need to be managed flexibly to avoid disruption.

Project risks have been identified by the project team and management actions for the key risks have been assigned to the relevant organisation within the team. The risks are regularly reviewed and the progress against the management actions monitored. The key project risks are given in Table 5.2.

Table 5.2. Key Project Risks and Ownership

Source: ABS, ONS, CH2M

Key Risks	H/M/L	Owner	Mitigation
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1	Potential solutions involve land operated by protected undertakers	H	BCC, SGC, EA	Appraisal and implementation is staged with likely phased business cases to mitigate risk to whole project. Consultation with protected undertakers carried out to ensure support of proposed solutions.
2	Aligning funding streams from Councils and Environment Agency	H	BCC, SGC, EA	Ensure procurement approach does not rely on achieving a specific programme. Aim to have both Lot 3 and Lot 4 WEM suppliers under contract early in the process to make it easier to adapt.
3	Dealing with inland drainage	H	BCC, SGC, EA	Continue to engage with the Lower Severn IDB to ensure they support the proposals. We have established that outfall capacity is more than adequate except there might be issues at Cotteralls outfall (to consider further).
4	Other infrastructure being built within ASEA	H	BCC, SGC, EA	We will have to keep abreast of other development, notably a new junction on M49 that might impact on drainage and topography and a new high voltage connection project for Hinkley Point C around the Hallen Marsh site – to be managed by change control rather than contingency.
5	Differing political drivers, local elections etc	H	BCC, SGC, EA	Draft legal agreement between EA, SGC and BCC acknowledges that each organisation works to own rules and instructions. Any differences will be escalated early to the ASEA Strategic Directors Board. Allow time for organisations to sign-off.
6	Major Flood during project development changing political drivers. Could put extra strain on resources.	H	BCC, SGC, EA	We have 3 organisations within which to share additional work. But there remains a risk requiring contingency planning and knowledge of where additional resources could be provided.
7	Construction risks: Unforeseen ground conditions, including soft ground, particularly in the coastal floodplain, and hard ground or obstructions affecting piling works.	H	BCC, SGC, EA	We have considerable ground investigation from previous projects which has been added to. We anticipate further specific ground investigation and innovative ground works at detailed design stage.
8	Construction risks:	H	BCC,	We are designing defences around what

	Unsuitability of site-won soil for reuse in construction or need for soil treatment.		SGC, EA	material is available locally, however, the requirement for import of material is still likely.
9	Environmental risks: discovery of significant archaeology.	H	BCC, SGC, EA	We have carried out a geophysical investigation and allowed time for D&B contractor to undertake more fieldwork.
10	Environmental risks: discovery of unexpected rare species, unforeseen invasive species; Natural England/NGOs may require inter-tidal compensation.	H	BCC, SGC, EA	We have identified 1ha of new inter-tidal area at Cake Pill that can be created for general ecological mitigation. We are addressing estimated losses of intertidal habitat due to coastal squeeze through provision of like-for-like habitat at Steart, Alvington & Plusterwine. We will limit risks associated with rare / invasive species and potential for temporary incursions within N2K sites at construction stage through the Construction Environmental Management Plan and supervision by Ecological Clerk of Works.
11	Discovery of contaminated land in the port and other historic industrial areas of the project, landfill areas, together with contamination on or on adjacent to railway land. Contaminants (eg. asbestos, hydrocarbons) in areas proposed for piling or excavation works	H	SGC BCC EA	Treat on site or remove to licensed tip
12	Discovery of unknown services affecting scheme design and/or injury to personnel	M	SGC BCC EA	Develop a single combined services record. Geophysical survey of potential clashes and positive identification of services prior to detailed design
13	Adverse Weather Conditions delaying scheme construction - prolonged wet or cold conditions.	H	SGC BCC EA	Aim to construct earthworks in dryer months. Allow for reduced productivity in programme and budget
14	Flooding over the working area, but less than a 1:10 probability event, which is covered by Major Risk B7-2- Loss of material, degradation, replacement and clean-up	M	SGC BCC EA	Maintain capacity of existing viewed rhines and outfalls. Ensure ESE contractor and tendering permanent works contractors understand the requirements of the scheme. Allow for downtime in programme and budget
15	Need for maintaining current	M	SGC	Ensure ESE contractor and tendering

	SoP during construction phase not properly understood. Damage to completed flood defences after contractual completion but prior to establishment of vegetation		BCC EA	permanent works contractors understand the requirements of the scheme. Allow for reduced productivity in programme and budget
16	Influential stakeholder(s) object to scheme proposals	H	SGC BCC EA	Clarify uncertainties & scheme details with NE, SGC, BCC, HE, IDB and others, prior to submitting formal planning application. Implement a staged or iterative design approach
17	Stakeholder feedback during detailed design requires incorporation of more expensive defence-types, habitat types or accommodation works in order to gain approvals and consents	M	SGC BCC EA	Clarify uncertainties & scheme details with NE, SGC, BCC, HE, IDB and others, prior to commencing detailed design.
18	Need for extensive rock armour	M	SGC BCC EA	Allow for additional design and consenting costs. Also allow for cost of more expensive defences at embankments.
19	Project is required to install piles from the railway due to environmental constraints. NR object to scheme proposals. Approval to work on NR land is initially refused	M	SGC BCC EA	Clarify uncertainties & scheme details with NR, NE, SGC, BCC, HE, IDB and others, prior to submitting formal planning application
20	Land access difficulties including Bristol Port (access to works and procurement of site compounds).	M	SGC BCC EA	Early liaison with landowners. Issue notice of entry. Make risk budget allowance for additional temporary/permanent access routes and reduced productivity

Risks ownership has been allocated to the party best placed to manage a given risk. A detailed project risk register, produced by the WEM Lot 3 supplier following a risk workshop involving South Gloucestershire Council, Bristol City Council, Environment Agency, ESE contractor and NEAS, provides more comprehensive detail on the current approach to risk management (see Appendix G).

Risks are apportioned between parties, covering those that arise in planning, design, implementation, construction and any residual risks. The general principle followed is that risk is passed to the party best able to manage them, subject to value for money. Table 5.3 sets out a proposed risk allocation matrix for the flood defence project. For some shared risks, the majority of the risk will be allocated to the supplier.

Table 5.3. Risk Transfer Matrix – Potential Allocation

Source: CH2M

Risk item	EA	SGC/BCC	Supplier	Shared
Design risk	√	√	√	√
Construction / development risk	√	√	√	√
Transition and implementation risk	√	√	√	√
Availability and performance risk	√	√	√	√
Operating risk: post scheme	√	√		
Termination risks	√	√		
Technology / obsolescence risks				√
Residual value risks	√	√		
Financing risks	√	√		
Legislative risks	√	√		

For the main design risk of unknown ground conditions in the project area, at tender stage, tenderers will be provided with geotechnical assumptions to base their price upon. This will enable all tenderers to price the flood defence works based on the same assumptions and therefore the tenders can be evaluated on an equal basis.

5.5 Land Acquisition, Planning and Other Consents

SGC have confirmed that all land required to implement the project has either been purchased in advance of this FBC submission, or is at an advanced stage of the transaction process. There is a high level of confidence that the transactions will be finalised without any issues. As above, note that land purchase at Severnside, Tan House Farm and Hallen Marsh has been informed by SGC's Property Services Team, who undertook a full asset valuation exercise for land purchases informed by HM Treasury's Red Book principles (see Appendix J).

A planning application was submitted in May 2018. The application is currently being considered. The application's status will not be determined prior to submission of this document; it may be possible to incorporate the details of the planning application process and any related consents into the FBC prior to final approval. The planning application can be found on the South Gloucestershire planning portal.

5.6 Service Diversions

A list of major service diversions required as part of the project are listed below. The costs associated with managing these diversions is incorporated into the cost estimates provided in the Section 3. As Cat 3/4 statutory undertaking enquiries are typically valid for three months, to avoid abortive work, such information will be collated in summer 2018 to ensure validity at the time of FBC approval in Autumn 2018.

Table 5.4. Service Diversion Summary

Source: CH2M

Location	Description
Chestle Pill	LV Power Supply to Penstocks may clash with proposed RC defence wall
A403 (South of New Pill)	Water supply, HV electric and BT all present in the verge next to the road and at least one of these is likely to require diversion to enable piling. Assume twin HV needs diversion for costing

Chittening Warth, north of Stupp Pill	Twin HV cables alongside railway may clash with embankment
Northern Harbour Arm - Dock Entrance	Telecom cable alongside harbour arm may clash with RC wall
Avon Frontage - within port	Telecom cable at port boundary may clash with RC wall
Lamplighters Marsh	Optical Fibre Telecom cable next to railway may clash with sheet piles, but probably within railway boundary and not affected. Assume sheet piles could be diverted to avoid cable if necessary.

5.7 Engagement and Consultation

The project team have engaged with statutory and non-statutory stakeholders, operators, businesses, landowners, the public and EA, SGC and BCC internal teams.

As part of the engagement process, a number of stakeholder sub-groups have been established and approached at key project stages. Two stakeholder meetings and a round of public exhibitions and roadshows have also been held. Feedback from the engagement process has helped to shape the preferred options developed during the appraisal stage. A summary of feedback from the engagement process is provided in Appendix H alongside a recent project newsletter published as part of the engagement and consultation effort.

The Preliminary Environmental Information Report (PEIR) has been consulted on internally and externally. The project team have engaged with Natural England on the Habitats Regulations Assessment. The Water Framework Directive assessment has been through an internal Environmental Agency engagement process with relevant specialists.

The project team will continue this engagement as it works through the detailed design phase of the project as there is opportunity for partners and the local community to shape the final design.

5.8 Project Assurance

The full programme of works within ASEA comes under the assurance of the Councils involved – SGC and BCC. From an EA perspective, the Large Project Review Group (LPRG) will assure the business case for the flood defence elements to satisfy requirements of FDGiA.

The project programme includes sufficient time allowance to gain approvals as required from the governance groups involved in the project. This includes the Strategic Directors Board and Delivery Board. Note that the Delivery Board approved this draft version of the LEP FBC during their meeting on 25th January 2018.

5.9 Monitoring and Evaluation

Scheme: ASEA Ecology Mitigation and Flood Defence

1. Scheme background and context

- Provide a short description of the scheme, including costs, the delivery timeframe and an explanation of the wider delivery context.

The project will deliver an integrated flood defence solution and ecological assets that will help to unlock the development potential of ASEA. The flood defence solution represents a hybrid scheme providing protection to a 1 in 200-year (0.5% AEP) SoP based on a 2076 or 2098 design level in different locations. EA regulations state that the minimum level of flood protection should meet a 1 in 200-year (0.5% AEP) SoP; therefore, the project meets (and in some locations exceeds) this requirement. A 2098 design level will be provided south of Binn Wall, where enhanced defence would maximise protection of ASEA. North of Binn Wall, a 2076 design level will be sufficient and help to control costs and reflect the reduced threat of flooding from this area affecting ASEA.

Ecological assets will be provided in the form of wetland habitat at two locations within the locality (Hallen Marsh and Northwick). The 'multiple, connected habitat area' approach to wetland creation will be adopted. The ecological assets are required to compensate for loss of habitat as a result of encroachment from employment-led development on ASEA, rather than construction of flood defence infrastructure directly.

Milestone completion dates	Baseline month/year	Actual completion
Draft Full Business Case Submission	Feb 2018	
Final Full Business Case Submission	Oct 2018	
Contract Award	Nov 2018	
Construction Start	Dec 2018	
Readiness for Service	Aug 2023	
Construction Finish	Aug 2023	
Contract Completion	Feb 2024	
Project Closure	Aug 2024	

2. Logic Model

- Complete a logic model to reflect the project scope i.e. all the activities covered by the investment. Ensure also that there is a clear progression between the steps in your logic model.
- State assumptions between the investment and the predicted outcomes and impacts.
- For outcomes relating to direct jobs creation, please provide an annual profile of jobs created and clearly state the time period over which net additional jobs and GVA will be created.
- Please define the impact area of the intervention ie West of England or other geographical scale. (indicative 350 words)

Logic Model

Context and Rationale					
Objectives	Resources/ Input	Activities	Outputs	Direct & Indirect Outcomes	Impact
<p>The strategy is closely aligned to a range of national, sub-regional and local economic and planning policy. The National Planning Policy Framework seeks to promote sustainable economic growth and reduce environmental threats posed by issues such as coastal flooding and climate change. ASEA is highlighted as one of the LEP's most important economic development opportunities within the Strategic Economic Plan. However, flood risk is acknowledged as a key constraint to development, alongside the presence of internationally important habitat. Development at ASEA is also considered as a strategic priority in the draft West of England Joint Spatial Plan and the emerging Local Plan's for SGC and BCC. The suite of local planning policy documents also recognises the significant environmental, flood risk and infrastructure constraints that could hinder development at ASEA. Market failure exists in the form of development viability and imperfect competition that arise partly because of the 1957/58 planning consents. These consents allow some development in ASEA to proceed based on a legacy planning approval that excludes any requirement to meet current flood defence and ecological standards. Therefore, the financial burden of flood defence and ecological mitigation would fall disproportionately on development sites outside of the 1957/58 planning envelope, eroding development viability and constraining development of the site. Further, the project will provide public assets which will act as a public good, protecting existing commercial and residential properties from flood risk.</p>					
<p><i>The aims/ objectives of the scheme are: (Ensure that <u>all aims/objectives are SMART</u>)</i></p>	<p><i>In order to achieve the set of activities to fulfil these aims/ objectives we need the following: (Resources should not be limited to money e.g. grant, match funding, in-kind, project team, specialist support, etc. The inputs define the scope of the project being considered in the logic model)</i></p>	<p><i>In order to address the aims and objectives we will accomplish the following activities: (What will the money be used for? e.g. construction, project management, equipment/fit out, etc):</i></p>	<p><i>We expect that, once accomplished these activities will produce the following deliverables: (Provide measurable outputs e.g. length of new road/cycle path, m² of space constructed/refurbished, number of businesses supported, learners engaged, etc)</i></p>	<p><i>We expect that if accomplished these outputs will lead to the following <u>change</u> e.g. new products or services, skills, behaviour, new business/contracts, etc: (Ensure that <u>all outcomes are SMART and relevant</u> to the aims/objectives to allow for <u>attribution</u>, distinguish between direct and indirect outcomes)</i></p>	<p><i>We expect that if accomplished these activities will lead to the following changes in service, organisation or community: (quantitative economic impacts e.g. indirect jobs and/or GVA to be <u>cross-referenced</u> with FBC as appropriate)</i></p>
<ul style="list-style-type: none"> Unlocking/safeguarding economic development at future/recent development sites 	<ul style="list-style-type: none"> Capital expenditure of £83.0 million. Operational expenditure of £11.6 million (commuted sum to be paid by LEP, based on present value of maintenance costs over a sixty-year appraisal). Total project expenditure of £98.6 (including £1.9m expenditure to date and £2.1m committed in 2018/19). Grant funding from LEP amounting to £63.9 million; Grant funding from EA amounting to up to £32.95 million; Specialist ongoing consultant support for detailed design and other works and construction contractors. The project will be overseen by Ian Steele, Economic Development Project Manager at SGC. He will report to the Strategic Directors Board (comprising members of SGC, BCC, EA and West of England LEP) and the Delivery Board (consolidating the Flood Defence and Ecology Group, ASEA Growth Board plus members from SGC, BCC and EA). 	<ul style="list-style-type: none"> £1.9 million has already been spent on Phase 1 (business case development) Future grant funding from LEP will be used for the following activities: <ul style="list-style-type: none"> £63.9 million towards flood defence and ecological mitigation; Of which, £2.1 million is allocated for expenditure in 2018/19 on: <ul style="list-style-type: none"> Specific construction activities covered by the £63.9 include contributions to: <ul style="list-style-type: none"> Advanced purchase of land in Severnside; Hallen Marsh and Tan House Farm (£2.1 million) Construction of Northwick Defences (£10.6 million) Construction of Avonmouth Defences (£18.8 million) Work at Outfalls and Railway (£10.7 million) Habitat works at Hallen Marsh (£898k) Habitat works at Northwick (£1,157k) Landscape costs at Areas 1-3 (£743k) and Areas 4-5 (£331k) Environmental mitigation at Areas 1-3 (£770k) and Areas 4-5 (£528k) Other Scheme Costs (valued at £5.8 million) Committed sum to cover maintenance costs valued at £11.6 million. 	<ul style="list-style-type: none"> 404,000 sq m of net floorspace at future/recent developments (328,000 sq m safeguarded, 76,000 sq m unlocked) 17 km of new or enhanced flood defence infrastructure. Wetland habitat at Hallen Marsh and Northwick measuring at least 85 ha in total. Reduced risk of flooding for commercial properties, covering 575,000 sq m. 	<ul style="list-style-type: none"> New or expanded businesses. Increased economic activity and output in ASEA. Statutory flood defence and environmental requirements are met ensuring planning compliance for future development and allowing full development potential of ASEA to be realised. Reduced frequency and severity of flood events, leading to reduced business closures (temporary and permanent). 	<ul style="list-style-type: none"> 6,400 net jobs (5,200 safeguarded) £3.6 billion net GVA (£2.9bn safeguarded, £470m unlocked, £201m accelerated) £294 million net additional business rates 1,819 construction stage jobs (910 direct, 910 indirect). £63.1 million construction stage GVA (£33.2 million direct, £29.9 million indirect). 13,000 jobs safeguarded through reduced flood-related business downtime. £252 million GVA safeguarded through reduced flood-related business downtime.
<ul style="list-style-type: none"> Providing a strategic flood defence solution and ecological mitigation 					
<ul style="list-style-type: none"> Safeguarding existing economic activity and settlements 					

3. Evaluation design and methodologies

The key evaluation questions will include:

- Have the objectives and targets been met?
- Have the economic impacts (e.g. safeguarded jobs, GVA) materialised at existing commercial properties?
- Has the scale economic impacts safeguarded/unlocked/accelerated (e.g. net jobs, GVA, business rate growth) materialised at ASEA's recent and future development sites?
- Do the assets meet planning and environmental requirements (i.e. at least 0.5% SoP flood defence levels to 2076 and at least 85 ha of wetland habitat creation)?
- Was the project delivered to agreed timescales and budget?

Evaluation will follow both the process and outcome/impact evaluation approach. Process evaluation will relate to establishing whether the project was delivered to timescales and budget. The process evaluation methodology will focus on comparing actual to expected expenditure over time based on contract details, receipts and invoices. This will take the form of a quarterly and annual review. Actual and expected timescales will be compared against the milestones outlined under Section 1 'Scheme Background and Context'. Timescale monitoring will be an ongoing process.

The outcome/impact evaluation process will involve monitoring of planning approvals, floorspace, job creation and GVA data over time. This will help to establish whether existing economic activity was protected and new economic activity was attracted as a result of the scheme. Attribution of the new economic activity to the project will be assessed by reviewing what development within ASEA proceeds outside of the consented 1957/58 planning envelope, as such development is heavily constrained in the absence of the project. Systematic review will take place 1,3 and 10 years following project completion to provide short and medium-to-long term perspectives on the realisation of outcomes and impacts. Further, targeted interviews will take place with industry leaders, key business stakeholders/occupiers, landowners, developers, property agents and local officers responsible for economic development at ASEA (i.e. SGC/BCC economic development project managers). These interviews and discussions will help determine the extent to which the project is responsible for realising economic outputs and outcomes at ASEA; for example, targeted questioning will be used to ascertain whether business relocation/growth and business' continued operation can be attributed to the project. This will aid with identifying whether the project generated the impacts that have been estimated in this FBC.

The evaluation process will be designed to assure the LEP that grant funding of around £66 million represented value for money, as well as an efficient and effective use of public funds. LEPs are particularly interested in how their investments support economic development, therefore the outcome/impact evaluation will focus on how key economic development indicators (e.g. jobs/GVA) will be safeguarded or enabled as a result of the scheme.

The scheme beneficiaries, including business and firms locating in ASEA, will be easily identifiable and accessible through stakeholder engagement processes and business surveys.

4. Data requirements

4.1 For schemes fully or part-funded via the Local Growth Fund only

- *Relevant performance indicators will be provided for each scheme when a draft logic model is shared at, or prior to, submission of a Full Business Case for approval.*

n/a

4.2 Data collection methods

- *Provide an overview of the data collection approaches including timing and frequency of data collection.*

Data collection for process evaluation will utilise data collected by the project team (e.g. actual versus expected expenditure profile, milestone completion). Budget monitoring and evaluation could take place on a quarterly or annual basis. Timescale monitoring and evaluation could take place on an ongoing basis (as/when milestones are reached).

Data collection for output/impact evaluation will utilise small-area job and GVA data that is publicly available from ONS (e.g. the Business Register and Employment Survey, Sub-Regional Productivity, Inter-Departmental Business Register). This could be supplemented by business surveys of ASEA occupiers. Such surveys could qualitatively inform the actual level of net additional impacts, by asking for feedback on the importance of the project on business' locational choices. Further, targeted interviews and stakeholder discussions will also take place with industry leaders, key business stakeholders/occupiers, landowners, developers, property agents and local officers responsible for economic development at ASEA (i.e. SGC/BCC economic development project managers). This will inform the evaluation process by trying to highlight attributable impact of the project. The review and analysis could take place 1, 3 and 10 years following project delivery.

4.3 Data collection and establishing the baseline

• Refer to the scheme logic model to help structure the baseline data collection and reporting activities.

Metric (inc. Target)	Unit	Frequency	Data source (& Responsibility)	Baseline date	Reporting to?
Inputs					
Future LEP Expenditure of £63.9 million	£, by source	Quarterly or Annual	Supplier invoices; Quarterly grant claims – Finance Officer	FBC at full approval	Highlight report; Project governance
Outputs					
New-build B2/B8 floorspace – 404,000 sq m net additional	m ²	Annual or Every two years, until the end of the City Deal (2038)	Detailed design plans submitted to local planning authority	FBC at full approval	Project governance, evaluation report every two years
New wetland habitat – minimum of 85 ha in total New/Enhanced flood defence – 17 km	Ha km	Annual or Every two years	Detailed design plans – Main flood defence/environmental/ landscaping contractor	FBC at full approval	Project governance, evaluation report after 1, 3, 10 years
Existing floorspace protected to 0.5% SoP – 575,000 sq m	m ²	Annual or Every two years	Consultant team	FBC at full approval	Project governance, evaluation report after 1, 3, 10 years
Outcomes and impacts					
1,819 construction stage jobs	# FTEs	Annual	Direct FTE numbers from contractor. Indirect FTE numbers calculated using Impact Guidance Note by Project Manager.	Throughout construction stage	Highlight report; Annually throughout construction stage.
£63.1m in construction stage GVA	£	Annual	Contractor expenditure/turnover profile, with project manager applying benchmarks and ratios from Impact Guidance Note to establish direct and indirect impact.	Throughout construction stage	Highlight report; Annually throughout construction stage.
6,400 net additional jobs	# FTEs	Annual or Every two years	Business surveys and/or ONS; plus targeted interviews/discussion with relevant stakeholders.	FBC at full approval	Project governance, evaluation report after 1, 3, 10 years
£3.6 billion net additional GVA	£, GVA	Annual or Every two years	Business surveys and/or ONS; plus targeted interviews/discussion with relevant stakeholders.	FBC at full approval	Project governance, evaluation report after 1, 3, 10 years
£294 million net additional business rates	£, business rates	Annual or Every two years	SGC and BCC finance department, LEP's Growth Incentive	FBC at full approval	Project governance, evaluation report after 1, 3, 10 years
13,000 safeguarded jobs	# FTEs	Annual or Every two	Business surveys and/or ONS; plus targeted	FBC at full approval	Project governance,

5. Delivery plan

This project will be subject the WECA performance management system and evaluation framework. This will include a post implementation review (PIR) and post project evaluation review (PER), which will include a lessons learned workshop to capture and disseminate key learning points, in accordance with best practice. Each evaluation will consider team performance, benefits realisation assessment, better information management, asset performance evaluation, and environmental and other long-term monitoring.

Data collection for the budgetary element of process evaluation will occur on a quarterly basis, reviewing financial records to determine patterns of expenditure on an ongoing basis throughout the construction stage. The findings of the evaluation will be reported on a quarterly basis through a highlights report prepared by the project manager for the LEP. The timescales element of process evaluation will occur on a continual basis, with particular focus around the time of specific milestones.

More specifically, data collection with regard to outputs will rely on planning application and approval data for permitted and completed development sites alongside reports from the main contractors for project works. The EA will need to confirm the quantum of existing development protected by the flood defence scheme as the project progresses, using flood modelling. This information will be reported in Years 1, 3 and 10 post-completion. Baseline data will be recorded at the point the LEP full business case is approved, as development may begin to come forward in advance of completion of the project, based on confidence that the project will be delivered in light of LEP approval. At this stage, it should be noted that 20,000 jobs currently exist in the wider ASEA area (Business Register and Employment Survey, 2016). This figure can act as the baseline value against which future growth and impact evaluation can be measured.

Data relating to outcomes and impacts will be collected from the point of LEP approval also, for similar reasons. Data will be sourced for small area geographies from publicly available datasets where possible (e.g. BRES, IDBR, ONS). This data will be supplemented by data from business survey data and targeted interviews with key stakeholders (including businesses, developers, landowners, property agents and local authority officers). As above, operational stage impacts will be reported after 1, 3 and 10 years following project completion. Construction stage impacts will feature within the project highlights report, on an annual basis.

6. Resourcing and Governance

A monitoring and evaluation budget of £30,000 will be allocated as part of the ongoing project management costs for the project. Project management costs are covered through the LEP grant funding; therefore, the monitoring and evaluation budget will be covered by LEP funding. The budget will cover baseline data collection, development of quarterly highlight reports during the construction stage and the biennial evaluation report. The biennial evaluation report may involve some consultant support.

Risk management and quality checking will be the responsibility of the project manager. Such issues will be minimised by use of SGC's professional services framework to source consultant support.

In the spirit of collaboration on this project, EA processes for evaluation and monitoring will be adopted where appropriate and considered best practice. Similarly, the evaluation process will benefit from drawing on the experience of multiple project partners, including BCC and SGC.

The officer responsible for delivering the plan is Ian Steele at SGC. It is understood that Ian Steele will oversee the M&E Plan, but will utilise SGC's professional services framework to appoint an appropriate consultant team to conduct the Plan. His contact details are below:

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7. Dissemination

The evaluation will be used to determine whether the project represented value for money as well as efficient and effective use of public resources. The process evaluation will highlight whether the project was delivered to time and budget. The process evaluation will be designed to inform the project partners on project progress and financial position. This could provide insight into possible budget efficiencies and process enhancements that could be applied on future major projects, including on collaborative schemes.

The outcome and impact evaluation will be used to determine the economic development effects of implementing the project. This will inform SGC and BCC, and specifically the planning and economic development officers in both organisations, on the scale of development that materialises at ASEA as well as the number of jobs and level of economic activity (measured in terms of GVA) unlocked by the scheme.

Findings from the process evaluation will be presented in quarterly highlight reports for internal use amongst the project partners to inform future programme and project management. Where lessons learned can be applied elsewhere, the highlight reports may be disseminated to a wider public-sector audience. Biennial evaluation reports will be disseminated more widely, including publication on the websites of the project partners. This will allow the public to access information relating to the economic development impacts of the scheme more easily. Again, any lessons learned through the evaluation reports can be shared between the project partners, as well as more widely across the West of England and further afield if appropriate.