LANCASTER CITY COUNCIL
DIRECTORATE FOR ECONOMIC GROWTH AND REGENERATION

Summative Assessment Report

for

Caton Road, Lancaster (Phase3) Flood Risk Management Scheme

Project Reference: 19R18P02338

DATE: 05th May 2022

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Version History

Date	Version	Description	Author
05/05/2022	**V1.00**	**Final Submission Version**	**Paul Blakeley Project Engineer Lancaster City Council**

Introduction

Lancaster City Council, supported by the Environment Agency, secured European Structural Investment Funding (ESIF) from the European Regional Development Fund (ERDF), to support the delivery of the Caton Road, Lancaster (Phase 3) Flood Risk Management Scheme along the banks of the River Lune in Lancaster. The project was completed on 29th May 2021 and officially opened on 11th October 2021. It includes construction of 2.8km of flood defence walls and embankments to a maximum height of 1.8m above existing adjacent ground levels. This provides an increased standard of protection against flooding from the River Lune and benefits to businesses, residential properties, critical infrastructure and transport routes, promoting business investment and future economic development in key industrial areas of Lancaster.

This Summative Assessment is an independent review of the project, which assesses the overall performance, effectiveness and impact of the project.

Historically there has been an unacceptably high level of flood risk immediately upstream of Lancaster city centre from the River Lune between Halton Weir to the East (upstream) and Skerton Weir to the West (downstream). Flooding has occurred on various occasions catastrophically affecting the business and employment areas of Riverside Industrial Estate, Lansil Industrial Estate and Caton Road Industrial Park. Most notably, flooding in December 2015 (following Storm Desmond) affected a significant number of industrial/commercial buildings, 20 residential properties and an electrical substation serving 55,000 properties across the Lancaster District as well as rendering critical transport routes through the city impassable. Damages to the individual businesses directly affected were in excess of £4 Million on this occasion, with additional impact on the local and wider economy.

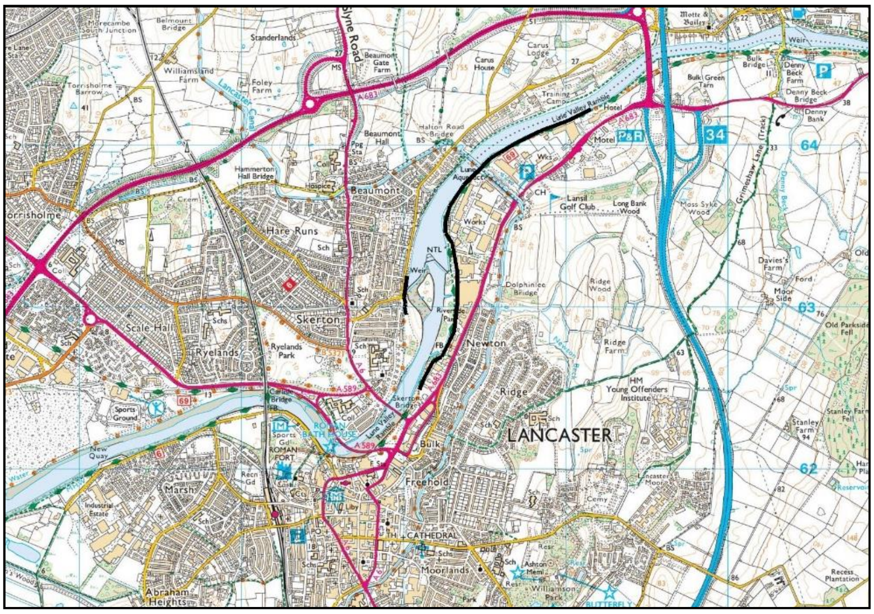

Figure 1: Location Plan

The aim of the project was to construct flood defences to ensure that the Caton Road area remains a key employment centre, providing an increase in flood risk protection to 1174 business properties

across the 3 industrial estates and wider area as well as to residential properties, critical infrastructure and transport routes.

£3.85 Million of ERDF funding was secured to support the delivery of the Caton Road Lancaster Flood Alleviation Scheme. This funding, combined with £3.085 Flood and Coastal Erosion Risk Management Grant in Aid (FDGiA), Local Levy from Regional Flood and Coastal Committee (RFCC) and private contributions, was critical to enable the scheme to be delivered and provide the necessary increased protection against flooding and additional benefits to local SME's, other businesses and the economy.

Capital

Organisation	Funding Type	Private/Public /Other	Total
ERDF	ERDF	Public	**£3,794,478**
Environment Agency (FDGiA)	Opt-in Organisation	Public	**£2,995,464**
Lancaster City Council	Local Authority	Public	**£1,336,000**
RFCC (Local Levy)	Opt-in Organisation	Public	**£1,517,000**
Private	Private Sector	Private	**£270,520**
			£0
Total			**£9,913,462**

Revenue

Organisation	Funding Type	Private/Public/Other	Total
ERDF	ERDF	Public	**£55,522**
Environment Agency	Opt-in Organisation	Public	**£89,536**
Total			**£145,058**

Overall Total			**£10,058,520**

Figure 2: Breakdown of funding contributions

The project was managed in partnership by Lancaster City Council and the Environment Agency with additional support from other partners throughout the delivery process. Volkerstevin, Boskalis Westminster, Atkins Joint Venture (VBA) were responsible for the final design and construction with work commencing on site on 2nd January 2020.

The completed project provides a standard of protection against flooding of 1 in 100 (1% risk of occurrence) - an increase from as low as 1 in 5 (20% risk of occurrence) if the flood defence was not delivered.

This increase in flood protection provides reassurance and increases confidence for businesses to continue to invest in the area, supporting economic growth and providing stability in the supply chain.

Approach to the evaluation

This Summative Assessment report provides an independent assessment of the project performance and progress against anticipated objectives.

The method of the evaluation is quantitative and with reference to Appendix C of the guidance document appendices (ESIF-GN-1-034) and is the Counterfactual Impact Assessment methodology. This will 'Measure Change at the Area Level' and will be achieved by observing change to National Datasets over a predefined area (Table C 1).

The reason for this approach is that the beneficiaries identified in the project are 'Mostly Indirect Beneficiaries' benefitting from an infrastructure project (Table C 2)

The assessment considers the datasets that were used to identify the benefits at the start of the project. Anticipated outputs, outcomes and impacts are compared to actuals where appropriate with explanation of how these have been considered within this assessment report.

The report considers the need for the project, the outcomes provided by the project, the process through delivery and in conclusion will identify and recommend any lessons learned.

This summative assessment focuses on evaluating the project targets as set out in the Summative Assessment Plan ref: ESIF-Form-1-012 and on targets and objectives in respect of project progress, delivery and management as well as the outcomes and impacts.

Structure of the report

The structure of the report will include:

Section 1: Project Overview – provides an overview of the logic model and identifies the key market failures the project seeks to address

Section 2: Project Progress – Process to Final Business Case, considers the context, relevance and consistency against targets

Section 3: Project Delivery and Management – considers the approach to procurement, implementation, the parties involved and Governance

Section 4: Project Outputs, Outcomes and Impacts – considers the benefits that have been delivered relative to the targets/objectives envisaged, including; economic values, ecological improvements and increased amenity benefits, greater stability to the business environment

Section 5: Value for Money – assesses the value of the project against existing metric and benchmarks

Section 6: Conclusion and Lessons Learned – provides observations and clear recommendations for future projects of this nature covering process, administration and project management

Section 1: Project Overview

1.1 Introduction

The Caton Road, Lancaster (Phase 3) Flood Risk Management project is primarily a fluvial defence scheme to provide increased protection to businesses. With increased protection against flood risk, businesses and future investment will be protected, supporting economic growth. Without this project, sustainable businesses investment will be financially unviable at this location. The ERDF funding contribution has enabled this project to be delivered and provide benefits to businesses.

The project has also included funding contributions from Flood and Coastal Erosion Risk Management Grant in Aid (FDGiA) and as such a technical appraisal has been produced to support the business case. The business case for the project has been completed in accordance with the EA guidance, which supports the HM Treasury 5-Case Model.

The appraisal process includes consideration of options from "Do nothing" through to developing a preferred option that can be taken forward for delivery. This considers many aspects, but importantly identifies Outputs Measures (OM1's) as business properties that will benefit from reduced flood risk.

The EA further developed the methodology to identify indirect benefits to business properties alongside this project, in collaboration with DCLG and Local Authorities, and produced the North West PA5 ERDF Revised Methodology for Business Output Criteria (see Appendix A). This was used to identify the numbers of businesses benefitting (Output Reference P6) from this project and identified 1174 businesses as well as 20 residential properties and surrounding infrastructure – including critical transport links.

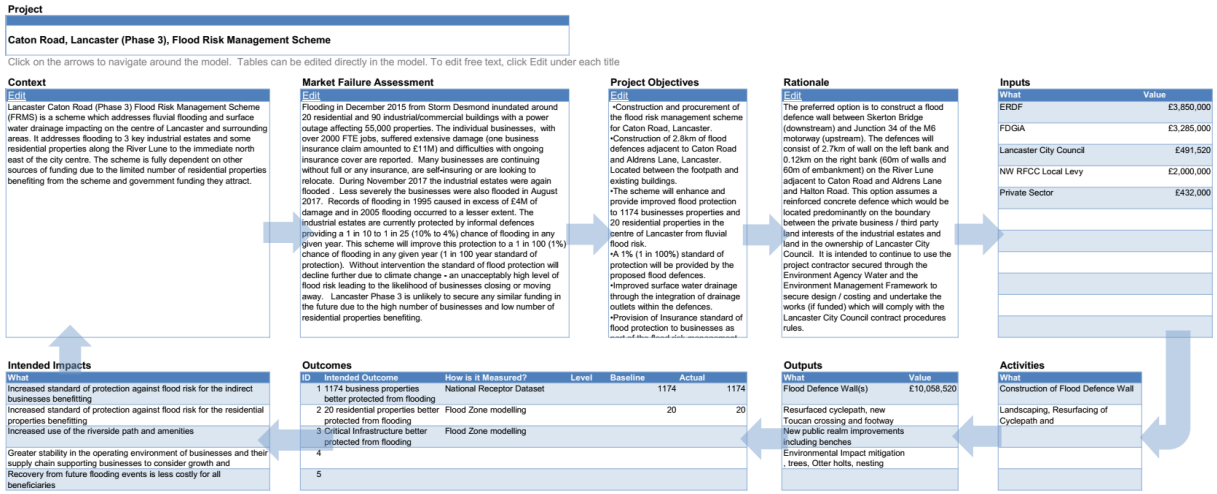

Figure 3: The logic model for the project, demonstrating the link between the market failures and the rationale, aims, objectives, outcomes and outputs for the project.

1.2 Overall Context

Historic flooding is known to have occurred in 1995, 2005, 2015 and twice in 2017. Each time businesses have been affected and have suffered damages and financial loss. In December 2015,

flooding from Storm Demond inundated around 90 industrial/commercial properties, affecting over 2000 FTE's, (as well as around 20 residential properties and an electrical substation that had strategic city-wide impact with some 55,000 properties left without power for many hours overnight). Other critical infrastructure was also affected and transport links through the city were severely impacted by flooding.

The significant risk of flooding means individual businesses at the Caton Road industrial estates have difficulties securing insurance, with some continuing without or self-insuring. Some are looking to relocate and the area would not attract new ventures without some intervention and protection against future flooding. There is clearly a need for investment in flood protection to support and underpin existing business trading and in turn to reinforce wider growth prospects within the local and regional economies.

The objectives of the project align with the aspirations of the National Flood and Coastal Erosion Risk Management Strategy (https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england--2) and the Local Flood Risk Management Strategy for Lancashire; (https://www.lancashire.gov.uk/media/928565/lancashire-flood-risk-management-strategy-2021-2027-final-v2.pdf) to reduce the impact of flooding to communities, to create resilient places and to make the correct investment to secure sustainable growth in response to the impacts of climate change. The flood defences will provide reassurance and confidence for businesses to continue to invest and locate here and thus maintain and improve the local economy.

The project also delivers on aspirations of both Lancashire County Council and Lancaster City Council for supporting economic growth and contributes to achieving on other corporate plans and policy objectives; including contributing to a sustainable District, supporting the development of new enterprises and strengthening the local economy and increasing wellbeing and empowering communities.

Priorities	A Sustainable District	An Inclusive and Prosperous Local Economy	Healthy and Happy Communities	A Co-operative, Kind and Responsible Council
Strategy	**Climate Emergency** | *taking action to meet the challenges of the climate emergency*	**Community Wealth-Building** | *building a sustainable and just local economy that benefits people and organisations*	**Increasing Wellbeing, Reducing Inequality** | *empowering and supporting healthy ways of living, and tackling the causes of inequality*	**Community Engagement, Power and Resilience** | *drawing on the wealth of skills and knowledge in the community, and working in partnership*
Outcomes	net zero carbon by 2030 while supporting other individuals, businesses and organisations across the district to reach the same goal **(Carbon Zero)**	supporting the development of new skills and improved prospects for our residents within an environmentally sustainable local economy **(Sustainable Skills)**	supporting wellbeing and ensuring local communities are active, engaged, involved and connected **(Community Engagement)**	listening to our communities and treating everyone with equal respect, being friendly, honest, and empathetic **(Listening and Empathy)**
	moving towards zero residual waste to landfill and incineration **(Reduced Waste)**	advocating for fair employment and just labour markets that increase prosperity and reduce income inequality **(Fair Work)**	tackling discrimination and reducing inequality **(Reducing Inequality)**	working in partnership with residents, local organisations, anchor institutions and partners recognising the strengths and skills in our community to build a powerful force working for our district **(Partnership)**
	increasing the amount of sustainable energy produced in the district and decreasing the district's energy use **(Sustainable Energy)**	supporting new and existing enterprises in sustainable innovation and the strengthening of local supply networks **(Sustainable Innovation)**	focused on early-intervention approaches and involving our communities in service design and delivery **(Early Intervention)**	investing in developing the strengths and skills of our staff and councillors **(Investing In Our Skills)**
	transitioning to an accessible and inclusive low-carbon and active transport system **(Low Carbon and Active Transport)**	using our land, property, finance and procurement to benefit local communities and encouraging residents, businesses, organisations and anchor institutions to do the same **(Social Use of Resources)**	(re)developing housing to ensure people of all incomes are comfortable, warm and able to maintain their independence **(Access to Quality Housing)**	focused on serving and enabling our residents, local organisations and district **(Enabling)**
	supporting our communities to be resilient to flooding and adapt to the wider effects of climate change **(Climate Resilience)**	securing investment and regeneration across our district **(Investment and Regeneration)**	improving access to and involvement in arts, culture, leisure and recreation, supporting our thriving arts, culture and heritage sector **(Access to Culture and Leisure)**	embracing innovative ways of working to improve service delivery and the operations of the council **(Innovative Public Services)**
	increasing the biodiversity of our district **(Biodiversity)**	Promoting business ownership models that empower the local workforce, such as co-operatives, social enterprises and community ownership **(Inclusive Ownership)**	keeping our district's neighbourhoods, parks, beaches and open space clean, well-maintained and safe **(Quality Public Spaces)**	providing value for money and ensuring that we are financially resilient and sustainable **(Value for Money)**

Figure 4: Lancaster City Council Corporate Plan Priorities for 2030

1.3 Market Failures and Economic Context

The financial risk to individual businesses associated with the response to, and recovery from, flooding mean that future investment will diminish. With SME's not in place there will be a lack of skills and expertise in these fields and market failures here will be inevitable due to lack of business and investment.

A detailed economic appraisal demonstrated that in the "Do-nothing" scenario, damages and future costs would increase as a result of future flooding. Several options for intervention were subsequently considered in line with the 5 Case Business Plan model and the preferred option taken forward.

The final design included hydraulic modelling to identify areas at risk and provide confidence that the design would achieve the desired standard of protection and ensure that the deliverables of the project are appropriate and achievable with the funding that is available.

The project that has now been delivered has a Benefit Cost Ratio (BCR) of 4.7, with estimated benefits of £44,000k over a 100-year period. PV whole life costs are estimated at £9,400k

1.4 Rationale

The employment areas and industrial estates along the banks of the River Lune adjacent to Caton Road have historically suffered from flooding. The project was conceived as a response to the ongoing flood risks, in particular to the flooding in December 2015 and the need to provide effective flood protection to this key employment area of Lancaster to support and encourage the businesses and economic growth.

Options to manage flood risk from the River Lune were considered in line with FCERM Appraisal Guidance (https://www.gov.uk/guidance/flood-and-coastal-erosion-risk-management-appraisal-guidance). This process considered various alternatives, including a "Do-nothing" option, which is the economic baseline all other options are assessed against. The Economic Appraisal of options considers the damages to properties and the benefits that investment in a flood alleviation scheme will deliver. The appraisal also considers employment and development benefits that would be released by the additional protection. A preliminary GVA analysis (undertaken in 2015 by Jacobs) concluded that approximately £37.3m in GVA would be safeguarded each year by a flood risk management scheme. The analysis also suggested that approximately 2100 FTE (full-time equivalent) jobs across the business parks would also be safeguarded.

Costs for the shortlisted options were developed and comparison of PV (present day values) and whole life costs was made. The costs and estimates were in accordance with the HM Treasury "Green Book" (Defra 2003).

The preferred option provided a BCR of 4.7 at this stage and would deliver the objectives of the project by reducing flood risk to people, property and the environment. This option was developed through the business case process and included modelling to support the economic assessment and accurately ascertain the Standard of Protection and extent of the area that would be protected, including the number of properties that would benefit.

In accordance with the EA guidance on assurance and approval stages for FCERM Capital projects, the 5 Case Business Model was compiled and reviewed by the National Projects Approval Board (NPAB).

1.5 Project Objectives

The project objectives are very clearly defined, both in Engineering terms and the protection and benefits this will provide. The objectives were developed through approved and adopted processes, including FDGiA Appraisal, 5 Case Business Case Model and the North West ERDF Revised methodology for business output criteria.

Project objectives identified in the Logic model include:

- 2.8km Flood defence wall providing increased SoP of 1% (1 in 100-year event)
- 1174 business properties better protected against flood risk
- 20 residential properties better protected against flood risk
- Critical infrastructure, including critical transport links, better protected against flood risk
- Environmental and public realm improvements to the riverway path and amenities

The objectives are considered reasonable, achievable and would appear to appropriately address the market failures that have been identified. The procurement and delivery process, described later in this report, ensures that the project delivered these objectives as intended.

The output objectives include delivery of the engineered flood defence walls and embankments, reconstruction of the cycleway, planting of trees and enhancement of the local environment.

Primary outcomes include 1174 business, 20 residential properties and critical infrastructure (including vital transport links/routes) that will benefit from the increased standard of protection against flooding from the River Lune.

The ERDF output reference P6 (1174 Business properties) were identified in accordance with the North West ERDF Revised methodology for business output criteria, that was developed through this project by the EA with support from DCLG and Local Authorities (Appendix A).

The methodology incorporated the EA National Receptor Dataset (NRD) and flood zone 2 and 3 mapping, with a 500m buffer. These datasets (and methodology) have not been updated or changed and therefore the outputs, including number of properties benefiting, remain the same.

On completion, the increased standard of flood protection will provide reassurance to employers and generate confidence for businesses to invest, redressing the market failures that would have otherwise become more apparent. This will also generate greater stability for businesses, attracting new investment and encourage economic growth.

Section 2 – Project Progress

2.1 Introduction and Overview

Following the significant impact from Storm Desmond in December 2015, the need for a Flood Alleviation Scheme (FAS) was clear and the EA commissioned an investigation that included high-level modelling to identify the options for a FDGiA funded project. This produced the Strategic Outline Case (SOC) and was completed in 2016/17, however at this stage it was apparent that additional funding would be required to make a flood defence project viable. Additional private funding contributions were explored as well as a contribution from ERDF ESIF funding. The ERDF funding also provided the opportunity to accelerate the delivery of the project.

As this was principally a flood defence scheme and a substantial element of funding was from the FDGiA, the design and funding process had to comply with statutory guidance and follow the processes set out in the EA memorandum relating to capital grants. This robust process ensured that any project would comply with relevant funding rules, provide the required benefits and be cost beneficial when subjected to economic analysis.

The process included an initial phase to take the findings from the completed SOC, identify the preferred option and develop the Outline Business Case (OBC) for the project. With permissions and consents in place and funding secured, this progressed to the design and delivery phase. Benefits have been delivered now the construction phase has been completed and the flood defences are effective with the increased standard of protection against flooding is in place.

Delivery of the project was secured through the EA Water and Environment Management (WEM) Framework as an established asset delivery vehicle for coastal and flood risk management activities, providing reassurance and confidence to all parties involved.

Throughout the delivery phase, the cost/spend profile stayed relatively close to the projected and forecast budgets. However, the contractor submitted payment claims monthly, based on the activity schedule in the approved Contract Documents, whilst the ERDF deferrals were claimed quarterly, which would account for the variance of the contracted values. This variance is to be expected for a construction project and is considered acceptable and within reasonable tolerance.

The Council submitted one Project Change Request (PCR) to MHCLG (06 November 2019) relating to changes in design of a section of flood defence embankment to include for an alternative Public Right of Way and cycle-route. Additional costs were incurred due to extensive modelling work, ecology surveys and ground investigation surveys, as well as an increase in construction costs to accommodate poor ground conditions. This increased the project value by £800,299 (with no additional call on ERDF funds) and extended the practical completion date from 25th Sept 2020 to 29th May 2021.

2.2 Progress towards objectives, including outputs, outcomes and financial targets

From inception to delivery, there were many key stages and timeframes for completion, including; investigation, modelling and testing of options, business case development and design, planning, funding applications and other approvals that needed to be in place.

These timelines did not necessarily align with the requirements for submission of ERDF and other funding applications that were required. Below demonstrates the timelines associated with the project and those specific to the ERDF requirements.

Project development Timeline

Design and delivery	Date	Funding	Date
Severe Flooding (storm Desmond)	Dec 2015		
Initial Investigation and modelling	Jan 2017		
PSC Design Contract	Feb 2018		
		GIA Approval	May 2018
		ERDF Application	May 2018
		All funding in place awaiting ERDF	Aug 2018
OBC (preferred option) completed	17 Sept 2018		
		ERDF approved	2 April 2019
ECC works Contract (Construction) awarded	29 July 2019		
Construction commenced on site	2 Jan 2020		
		1st ERDF Claim	31 Mar 2019
Completion on Site	29 May 2021		
Official opening	11 Oct 2021		
		Final ERDF Claim	Mar 2022

Figure 5: Project timelines

Key ERDF Milestones

ERDF Milestone	Start date	Completion date
Engineering and Construction Contract (ECC) in place	04 Dec 17	31 Aug 2019
All funding in place	22 May 2018	31 July 2019
Planning consents awarded	01 June 2018	12 Nov 2019
Detailed Design of Flood risk Management Scheme	06 Aug 2018	31 July 2019
PSC Contract works, including ecology surveys	06 Aug 2018	31 Mar 2019
MHCLG Decision point	06 Aug 2018	09 Aug 2018
Lancaster City Cabinet meeting - Approval	15 Jan 2019	31 Jan 2019
Start on Site	02 Jan 2019	29 May 2021
Practical Completion	29 May 2021	29 May 2021
Financial Completion	31 Aug 2021	31 Aug 2021
Official opening	11 Oct 2021	11 Oct 2021

Figure 6: ERDF Milestones

Progress of construction was made in line with the approved programme for the contract, which aligned with the ERDF timeframe and milestone requirements (as amended by the PCR).

2.3 Financial Targets

A total of £3,850,000 of ERDF ESIF funding, which represents 38% of the overall costs of the project, was secured together with all other funding as shown in the table below.

At the time of this evaluation, 100% of the ERDF expenditure has been defrayed, with the final settlement dependant on the completion of the Summative Assessment Report.

Capital

Organisation	Funding Type	Private/Public /Other	2019	2020	2021	Total
ERDF	ERDF	Public	£701,700	£2,770,551	£322,227	**£3,794,478**
Environment Agency	Opt-in Organisation	Public	£830,400	£1,914,401	£250,663	**£2,995,464**
Lancaster City Council	Local Authority	Public	£301,162	£896,502	£138,336	**£1,336,000**
RFCC (Local Levy)	Opt-in Organisation	Public	£0	£1,386,374	£130,626	**£1,517,000**
Private	Private Sector	Private	£0	£270,520	£0	**£270,520**
						£0
Total			**£1,833,262**	**£7,238,348**	**£841,852**	**£9,913,462**

Revenue

Organisation	Funding Type	Private/Public/Other	2019	2020	2021	Total
ERDF	ERDF	Public	£20,033	£26,199	£9,290	**£55,522**
Environment Agency	Opt-in Organisation	Public	£32,306	£42,249	£14,981	**£89,536**
Total			**£52,339**	**£68,448**	**£24,271**	**£145,058**

Overall Total			**£1,885,601**	**£7,306,796**	**£866,123**	**£10,058,520**

Figure 7: Breakdown of funding/expenditure

Throughout the project, financial aspects were well managed and dealt with appropriately. Applications to MHCLG were made using the prescribed e-claims to submit ERDF claims with the supporting reports and documentation included.

Applications to the EA were also completed using the FCERM 3 form for interim payments. Appropriate supporting documentation was also provided where appropriate.

Payments to the Contractor were made in accordance with the NEC suite of documents, utilising appropriate templates and pro forma, and the Contractor and Client Project Managers followed NEC Governance throughout.

2.4 Conclusion

The project has performed well and as anticipated in respect of delivering the outputs and expenditure targets.

At the time of this evaluation, all outstanding ERDF claims have been submitted and targets achieved. Even though there were delays due to Covid and flooding of the site, the project remained on target throughout to spend the allocated budget of ERDF funding (Total £3,850,000).

This project is now complete and all output objectives as noted in the logic model and plan have been achieved within the budget and timeframes allowed. This includes delivery of the engineered flood defence walls and embankments, reconstruction of the cycleway, planting of trees and enhancement of the local environment.

This project has successfully delivered the 2.8km length of fluvial flood defence along the banks of the River Lune to provide a 1% (1 in 100) Standard of Protection to 1174 businesses and 20 residential properties as set out in the design brief.

Section 3: Project Delivery and Management

3.1 Procurement

The delivery of the project was secured through the EA Water and Environment Management (WEM) Framework. The tender was issued by Lancaster City Council on its preferred online tendering portal as a two-stage tender utilising the WEM framework Lot 4 suppliers (Asset Delivery).

Following a restricted Expression of Interest process tenders were issued to 5 of the suppliers and subsequently 3 tenders were returned. The tender was awarded to VBA Joint Venture following a quality/cost tender appraisal, in line with both the WEM and Lancaster City Council quality/cost assessment models.

Stage 1 was awarded as a Professional Services Contract (NEC3:PSC) to take the findings from the completed SOC, identify the preferred option and develop the Outline Business Case (OBC) for the project. With assurance and approvals being already in place, this progressed to stage 2 with the VBA Joint Venture including design and delivery utilising the Engineering and Construction Contract (NEC3:ECC).

This approach is consistent with industry good practice for flood alleviation projects using a combination of investigation and analysis to develop the business case, progressing to the design and delivery. The WEM framework has been established to bring industry leading specialists in the relevant flood related areas together so that Risk Management Authorities have reassurance that they are engaged with the expertise they need.

All funding was secured and with all contracts and agreements in place, construction was able to start on site on 2nd January 2020.

3.2 Project Management Arrangements and Governance

Lancaster City Council were the Lead Organisation responsible for overall administration and delivery of the project, working in partnership with the EA, the Contractor and other key stakeholders where appropriate.

The project was managed in accordance with PRINCE2 principles, with a robust project structure and governance in place. The Project Board included high-level representation, responsible for managing the delivery of the project; including funding, overall outcomes, monitoring progress against the risk register and action logs, as well as signing-off grant applications.

The construction phase of the project was delivered through the EA WEM Framework, an NEC3:ECC type contract, typical for engineering construction projects and used for many flood defence projects that are delivered using Flood Defence Grant in Aid funding. This type of contract promotes a partnership approach to delivery between Client and Contractor.

During the delivery of this project, the NEC3:ECC type contract has promoted close working between client, contractor and Project Manager on site and excellent relationships were established, contributing to the efficient management of construction.

The Project Team included the Principal Designer (in accordance with the Construction, Design and Management Regulations 2015) and was responsible for managing the delivery phase of the project as directed by the Project Board.

Various project partners and stakeholders were involved at key milestones throughout the project.

3.3 Project Delivery

The construction phase has been well managed and the Engineering works have been successfully delivered.

The project has been completed on schedule and within budget tolerances, although during construction these did change to accommodate requirements where minor re-design was required and overcome constraints due to Covid restrictions etc. Throughout the project these adjustments were considered and approved by the Project Board and where additional funding was required, it was secured from sources other than ERDF.

There have been regular meetings to ensure effective communications from Project Board to the delivery team and the delivery team worked closely on site to overcome any issues and ensure daily progress, most notably during February 2020 following flooding to the construction site and also in response to Covid restrictions.

Representation from the EA Asset Performance and Field Teams, as “end users” were included on the delivery team to ensure that any potential problems are identified and resolved before completion. This effectively reduced the issues that could have been identified as problems requiring consideration on completion of the project.

The main issues during construction were mainly relating to uncertainties associated with ground conditions, additional surveys and investigations that were required. Additional (increased) spend was necessary due to unforeseen ground conditions, dealing with contaminated excavated material and redesign of sections of the defence.

There were also additional measures necessary to allow work to continue during the pandemic. Additional requirements due to the impact of Covid had an impact on the timescale of the project, extending the anticipated completion date by 6 weeks. It should be noted that the support from the workforce, local contractors, supply chain and the team involved with delivery of this project enabled the project to continue with minimum impact under these circumstances.

Additional costs associated with these impacts was funded from sources other than ERDF.

Throughout the project, the intention was to include for regular communication with the local community and actively engage with businesses. However, the outbreak of Covid and the restrictions imposed by Government during the project delivery period meant this was not possible. Engagement was still undertaken when appropriate and necessary (adhering to Government guidance), and a number of breakfast meetings with the businesses did take place early on, in advance of the construction and before Covid restrictions were imposed. As the project progressed, communication was in the form of newsletter updates, which were also provided on the FloodHub website.

Communication for a project like this is crucial to success, however the local community were engaged at a very early stage and were fully supportive and understanding. This has been demonstrated by the contributions that have been received, both during and after construction.

3.4 Integration of Horizontal Principles

The ethos of all parties involved in delivering the project support the integration of horizontal principles, promoting equality and non-discrimination, sustainability, biodiversity, opportunities for environmental improvement, and reduction of carbon.

Lancaster City Council, the Environment Agency and VBS all incorporate this in their decision-making process at all levels, which can be seen in the relevant policies relating to core values of the individual organisations and that are also embedded within this project.

Lancaster City Council Equality and Diversity Policy reinforces their responsibility under the Equality Act 2010 and promotes opportunities and flexibility across the organisation. These objectives are incorporated into the Corporate Plan and associated action plans.

Figure 8: Snapshot of Lancaster City "Our Values"

Sustainability and Carbon reduction are also a key requirement of WEM framework contract and there is an obligation to demonstrate carbon reduction as requirement of FDGiA. The project team populated and maintained an EA carbon calculator to demonstrate that this was appropriately considered at the delivery stage.

This requires a whole life approach and considers how materials are sourced, used, demolished and disposed. The carbon associated with supply and delivery of materials, including transportation, was taken into consideration and influenced sources of materials, including pre-cast wall units, to ensure savings in this respect. Whilst the project necessitated a substantial amount of concrete to provide robust engineered flood defence wall, this was limited as much as possible, incorporating more sustainable methods (including sections of earth embankment) where possible. These measures helped manage the capital and whole life carbon impact associated with the project.

Lancaster City Council (LCiC), the Environment Agency and VBA all have targets associated with carbon reduction and improving the environment. LCiC has declared a climate emergency and has produced a Carbon Zero+ Action Plan, with targets to achieve net zero by 2030. All parties have promoted environmental improvements and efficiencies through the delivery of this project, working closely to minimise waste and reduce carbon impacts.

The project was framed to be as ecologically aware as possible, and to offset any negative impacts. This has included the provision of 3 trees for each one that has been removed, resulting in an additional 5000 trees being planted.

The project has also employed local work-force, benefitting the local community and bringing small benefits with reduced travelling.

Section 4: Project Outputs, Outcomes and Impacts

4.1 Overview

The project has now been completed with an official opening event taking place on 11th October 2021. All objectives (outcomes and impacts) as noted in the Logic Model and Plan have been achieved within the allowable budget and timescales.

Project objectives and outputs identified in the Logic model include:

- 2.8km Flood defence wall providing increased SoP of 1% (1 in 100-year event)
- 1174 business properties better protected against flood risk
- 20 residential properties better protected against flood risk
- Critical infrastructure, including critical transport links, better protected against flood risk
- Environmental and public realm improvements to the riverway path and amenities

The project delivered engineered flood defence walls and embankments, reconstruction of the cycleway, planting of trees and enhancement of the local environment. 1174 business and 20 residential properties now benefit from the increased standard of protection against flooding from the River Lune. The transport links to the M6 motorway and routes into and around Lancaster City Centre also benefit from the flood protection provided by this project, in turn bringing greater stability to the businesses and local economy, supporting growth and future investment.

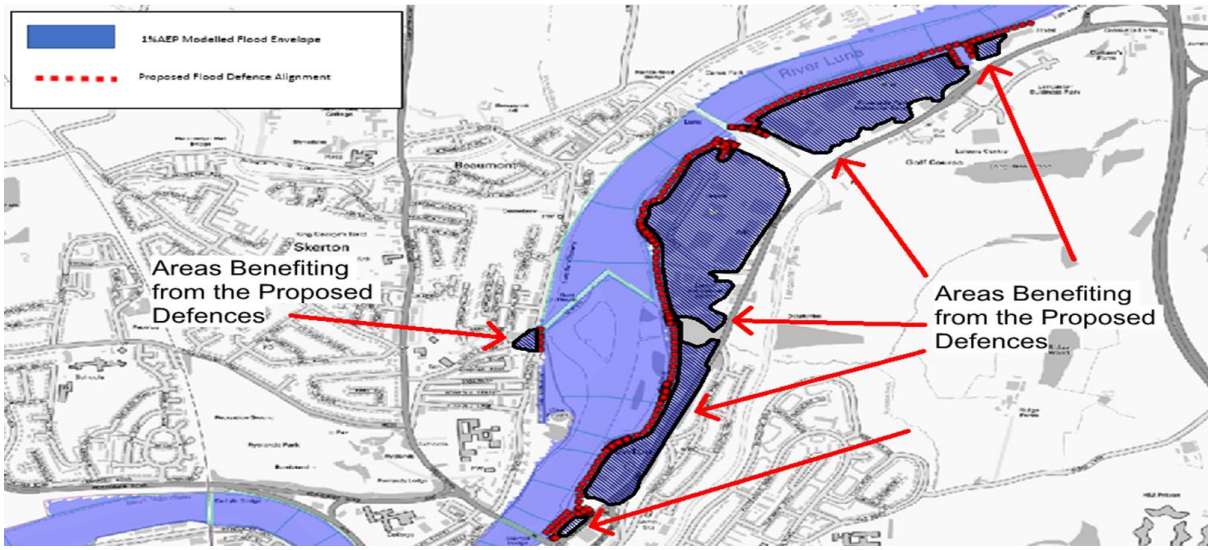

Figure 9: showing flood zone and area protected from 1% exceedance probability – areas with direct benefit

The 1174 business property beneficiaries (Output Reference P6) identified through the North West PA5 ERDF Revised Methodology for Business Output Criteria are 'Mostly Indirect Beneficiaries' benefitting from an infrastructure project.

The datasets used to identify these beneficiaries included the EA flood risk maps (identifying the extent of flood risk in flood zones 2 and flood zones 3), and the EA National Receptor Dataset (NRD) (identifying properties within these flood zones – and relevant buffer strip) that would be affected by flooding and thus benefit from any flood alleviation scheme.

In revisiting this process for this Summative Assessment, we found that there have been no updates or changes to the datasets used and therefore the outputs remain the same as anticipated. The flood risk maps, and buffer strip outline, identify the same area and the NRD returns the same properties within this area. These are shown in the table of indirect benefits – EA Raw Data Businesses Caton Road.

It is reasonable to assume that there have been some changes to these figures in real terms, especially considering the impact that the pandemic has had on businesses and the economy, however this 'trend' will be widespread and not necessarily a consequence of this project.

4.2 Economic Benefits

The Economic impact of the project was considered within the business case process and an appraisal undertaken which considered risk, damages, impacts, costs and benefits in accordance with EA guidance and Treasury rules.

For the purpose of completing the Economic Appraisal and assessing the viability of the Flood Alleviation Scheme (to secure FDGiA funding), 120 business and 20 residential properties were identified (using the EA Flood maps and NRD datasets) that would directly benefit from the defences. The actual benefits can be considered to be significantly more than this, and include indirect benefits identified through the agreed PA5 ERDF Methodology.

Estimated benefits from the Economic Appraisal are £44,000k over a 100-year period. Project Value (PV) whole life costs are estimated at £9,400k and the project that has now been delivered has a Benefit Cost Ratio (BCR) of 4.7.

Employment and development benefits would also be released and a preliminary GVA analysis concluded that approximately £37.3m in GVA would be safeguarded each year by the flood alleviation scheme, protecting approximately 2000 FTE jobs across the industrial estates alongside Caton Road. Revised figures indicate that the scheme will deliver £55m in GVA.

There will also additional economic benefits to the wider geographical area as critical transport routes have been protected.

4.3 Contributions

The majority of funding for the project was from public sources, including ERDF and FDGiA, however additional private match funding contributions from businesses to a value of £270,520, has been secured.

The initial indicative private contribution was estimated to be £744,221 (underwritten by Lancaster City Council), however this was revised following further flooding (during delivery) and measures/restrictions required associated with Covid and considering the financial impact that this had on businesses. The value of the indicative private contribution was amended at the time of the PCR and identified £270,520 of private contribution, which has subsequently been secured.

Private contributions were considered through the project development process and were recognised as significant in partnership terms, demonstrating support from those that will benefit from the project, and ensuring that the project was viable.

4.4 Other Impacts and Additional Benefits

With the flood defences in place, the business areas and industrial units benefit from increased protection against flooding from the River Lune, in turn bringing confidence to businesses and helping to strengthen the local economy in Lancaster.

Since the project has been completed, there has been increased interest and investment in the industrial sites, including:

- a planning application to the Local Planning Authority (LPA) for a new business venture that will employ an additional 248 people on the industrial site, including manufacturing units, storage facility, offices and other associated buildings.
- a further application has been submitted for development of a battery storage facility in the area previously at most risk of flooding.
- an industrial unit out of commission since storm events and flooding events in 2017 has been brought back in to use.

Additionally, the transport links along the A589 Caton Road are better protected, which is a critical transport route through the City and also provides vital local link for emergency response vehicles in and out of the city centre as well as critical links to and from the M6 motorway.

The project has also delivered mitigation in the way of environmental improvements that provide enhanced biodiversity benefits (including bat-boxes, otter holts, 5:1 tree replacement) along the river corridor for the local community to enjoy, providing a more attractive route for pedestrians and cyclists through the Millennium Park (Public open space alongside the River Lune). This enhancement to the social aspect of the area also contributes to improving people's health and well-being.

Section 5: Value for Money

5.1 Value for Money

The value of this project is in the protection against flooding that has been provided to businesses that would otherwise flood. The costs these businesses would incur associated with insurance premiums, recovery and business continuity have been avoided with the additional protection that is now in place. This has been robustly analysed through economic appraisal and it has been demonstrated that the scheme will provide value for money, evidenced by a project BCR of 4.7.

Investment in this project will also provide estimated benefits of £44,000k over a 100-year appraisal period and a preliminary Gross Value Added (GVA) analysis (undertaken by Jacobs in 2015) concluded that approximately £37.3m in GVA would be safeguarded each year by a flood defence scheme. This also identified that approximately 2100 FTE jobs across the three business parks would be safeguarded.

The protection against flooding has provided increased confidence to businesses and encouraged investment in the area, supporting the local economy. The areas that have been protected are already attracting new business development and investment evident by the planning applications that have been received by the Local Planning Authority.

There is also the value associated with the enhancement of the local environment through the Millennium Park. This has contributed to an improved walking and cycling network, promoting health and wellbeing as well as social opportunities for local residents and commuters.

Private match funding contributions to the value of £270,520 have been achieved, contributing to the overall value of the project.

Section 6: Conclusion and Lessons learned

6.1 Conclusion

This Summative Assessment recognises that there is clear evidence to support the need for a flood defence scheme at this location and that the project development, business case and rationale employed also strongly supports this.

The robust process followed throughout the conception, development and delivery stages of this project have enabled the successful delivery of outputs, outcomes and impacts as anticipated. This has included the assurance at National Project Approval Board (NPAB) through the adoption of the EA's 5 Case Business Model. An additional benefit of this approach is that all parties understand what the investment and delivery expectations are, which has contributed to efficient and collaborative working.

All Flood and Coastal Erosion Risk Management (FCERM) works follow this process (as a requirement to obtaining FDGiA) and it is recognised as robust and best practise.

Delivery of the construction phase was particularly well manged utilising the WEM Framework Contract and through the Project Board and Project Delivery Team, to ensure matters were considered and dealt with appropriately.

The flood defence wall has been constructed and a Standard of Protection of 1% is now provided. All outputs and outcomes have been achieved, impacts are being realised through business investment in the area and potential market failures have been addressed.

All contractual targets have been met and payment claims submitted in a timely manner.

The project was delivered through very difficult times with the restrictions imposed relating to Covid bringing various challenges. The positive approach to partnership working through these unprecedented times is testament to the project team, the workforce and others involved through the supply chain.

The use of established best practise, approved and adopted processes, including FDGiA Appraisal, 5 Case Business Case Model, procurement and use of the WEM Framework, are all fundamental to developing and delivering a complex project of this nature. However, the expertise, knowledge and experience of those involved with the project has also significantly contributed to its success.

The contribution of ERDF funding to this project has enabled delivery of much-needed flood protection to businesses. Without this contribution it is unlikely that a Flood Alleviation Scheme would go ahead that would provide a substantial increase in the SoP against flooding from the River Lune. The timescales associated with the EDRF application have also ensured early delivery of the benefits associated with the project.

The project can be considered as a resounding success, delivering objectives on time and within budget. It has been especially recognised by the EA for bringing in additional private contributions and has also been put forward, and shortlisted, for recognition in the category of medium sized project for the Institute of Civil Engineers (ICE) North-West Awards.

Positive feedback from the cycling community has been received since completion and the project has been seen as very positive by the business community, with more investment and development coming forward within the industrial estates.

Andy Brown, Environment Agency's Flood and Coastal Risk Manager for Lancashire:

"The communities of Lancaster have seen first-hand how devastating flooding can be. That's why I'm so pleased to see the completion of the fluvial flood defences of this much anticipated and vital scheme reach completion.

"This investment will better protect homes and businesses in Lancaster, and is an example of how we work with partners to make communities more resilient to the escalating impacts of the climate emergency.

"The Caton Road scheme will have a substantially higher standard of protection, and whilst we can never guarantee that there will never be future flooding, we hope that this scheme will bring peace of mind to our communities".

Councillor Tim Hamilton-Cox, Lancaster City Council's Cabinet member with responsibility for sustainable economic prosperity, said:

"This is a vitally important scheme that aims to address the unacceptably high level of flood risk immediately upstream of Lancaster city centre between Halton Weir and Skerton Bridge.

"With the construction of these new flood defences our ambition is to protect one of Lancaster's most important commercial areas, as well as homes and businesses on the right bank at Aldrens Lane, from river flooding for many years to come.

"I'd like to pay tribute to the huge amount of work that has been undertaken by officers in the city council in partnership with the Environment Agency, construction partners, a number of local businesses, and our communities to deliver this project and improve our flood resilience."

Email received from a local resident:

I'd just like to say thanks for the lovely job the team have done on the completed foot/cycle path by the new Lune flood defences. The path is now better to cycle on than it was before, and the up-and-overs work really well. Thanks for making the effort to improve the path as part of the project.

Comment from local business Safety, Health and Environmental Manager:

"It is certainly comforting to hear that the flood defences are essentially fully operational. Definitely fewer sleepless nights watching the Caton river level gauge …."

6.2 Lessons Learned

Lessons learned were incorporated into the monthly progress meetings during the construction phase, alongside the issues and risk register, and on completion of the works this has been reviewed and shared with relevant partners.

A post project review was also undertaken by the Project Team that considered the overall project process and a lessons learned overview was produced.

Key findings include; project management methodology and success of the project was identified as a strength whilst a weakness in resources was identified. This could be improved with better resource planning particularly at the scoping stage so that particular requirements (for example recruitment of a Clerk of Works and/or Quantity Surveyor) could be identified.

Evaluation through the delivery period included engagement with those that are considered as "end users" including the EA Asset Performance and Field Teams to ensure that any potential problems are identified and resolved before completion. This effectively reduced the issues that could have been identified as problems requiring consideration on completion of the project.

6.3 Project Strengths

- The robust process followed throughout the conception and delivery stages of this project have enabled the delivery of outputs, outcomes and impacts as anticipated. This has included the assurance at National Project Approval Board (NPAB) through the adoption of the EA's 5 Case Business Model. The benefit of this approach is that all parties understand what the investment and delivery expectations are. All Flood and Coastal Erosion Risk Management (FCERM) works follow this process (as a requirement to obtaining Grant in Aid - FDGiA) and it is recognised as robust and best practise.
- Use of PRINCE2 project management principals, incorporating suitable and appropriate representation at Project Board, and Project Delivery Team levels.
- Evaluation through the delivery period including engagement with those that are considered as "end users" to ensure that any potential problems are identified and resolved before completion.
- The project was delivered through very difficult times with the restrictions imposed relating to Covid bringing various challenges. The positive approach to partnership working through these unprecedented times is testament to the project team, the workforce and others involved through the supply chain.

6.4 Project Weaknesses

- Resources required to administer the project through ERDF funding application process.
- Resources required to administer the project through delivery including compilation and submission of ERDF funding claims.
- Resources required through the project delivery to supervise construction, deal with contractual administration and ensure appropriate records are kept to comply with ERDF requirements.

6.5 Recommendations from this Summative Assessment

The recommendations below are based on the way this project has been developed and delivered with due regard to the research required to compile this Summative Assessment and also the Lessons Learned that have been recorded. The recommendations should be considered by anyone considering to deliver a similar project.

Recommendation 1: Clear Project Management and Governance process should be in place with appropriately experienced representatives

Recommendation 2: Strong partnership working ethos to be promoted – through use of appropriate contracts where appropriate, with clarity on risk allocation and accountability of specific partners

Recommendation 3: Consideration of capacity required to deliver the project and allocation of sufficient time and resources for relevant and necessary functions.

Recommendation 4: Client should ensure a robust process is in place for recording, keeping, and storing relevant documents that is easily accessible – especially important where there are multiple delivery partners.

Recommendation 5: Organisations delivering large to medium sized projects should consider all sources of income, including potential private contributions, to support public funding grants where there is a shortfall in project funding which may prevent the project from being delivered at all.

6.6 Observations

Throughout the compilation of this Summative Assessment Report, there are a number of observations worth noting for further consideration relating to the processes from inception to delivery of the project. Although not identified through the formal Lessons Learned process, the following could be considered by those responsible to improve the process and expand uptake of similar projects in the future.

- Greater Flexibility around eligibility of beneficiaries has been key to securing the funding required to achieve the outcomes of the project. Through this project, the rationale for consideration of P5 and P6 outputs was developed and should be readily shared and replicated elsewhere.
- ESIF monitoring and appraisal should consider the wider benefits in this respect (where there are benefits delivered to transport routes and commercial links), not just at an individual SME site level.
- The global pandemic affected costs, supply and delivery of materials nationally, as well as bringing uncertainties locally to this project around availability of workforce (due to absence). This was managed exceptionally well utilising remote working and isolation procedures, keeping the impacts to a minimum with additional costs being covered from sources other than ERDF.
- All contractual targets were met and payment claims submitted in a timely manner, although the management of income and outgoings from all sources was sometimes challenging. The Summative Assessment process identified that the administration associated with the additional requirements for ERDF compliance were sometimes quite onerous, particularly where the responsible body is a relatively small Local Authority with limited resources.
- ERDF guidance could be updated to be more prescriptive with regard to document retention requirements throughout the delivery period of a project, as well as on completion.

It may be prudent for the Project Team (or in their absence now the project has been closed down this could be Lancaster City Council or the EA) to revisit the flood zone and NRD datasets used to identify the number of properties benefiting when these have been updated.

APPENDIX A

Environment Agency

North West PA5 ERDF Revised methodology for business output criteria

12th June 2017

Two February 2017 North West outline submissions under PA5 were rejected as they were unable to meet the required output criteria in relation to numbers of businesses directly protected (Output reference P6). Without output guidance amendments none of the schemes can currently be resubmitted under future PA5 calls. With this in mind we have worked with DCLG and Local Authorities to propose a revised methodology to enable these schemes to attract the funding available. If the revised methodology can be applied across the country and guidance updated our aim will be to submit three schemes to the value of £100m for £12.7m in ERDF funding contribution.

Why is the revised methodology needed?

PA5 schemes across the country have been unable to secure ERDF funding available this year due to the current funding criteria. Each LEP has a set amount of business properties it must directly protect under the current criteria. Currently for Cumbria LEP this is 655 and for Lancashire LEP it is 455.

Proposed revised methodology for measuring business numbers

Under the guidance, only businesses directly benefiting from a proposed flood defence scheme can be counted towards these targets. Given that hundreds of other businesses are directly affected by flooding but not actually inundated themselves, we feel that these should be captured within the target numbers as they will directly benefit from ERDF funding. We know that we cannot amend the guidance to take into account the value, turnover or employees of each business any more than already considered. The only element that can change is the overall total of businesses benefiting. In order to capture these we can look wider in the surrounding flood plain and beyond.

Lancaster Caton Road (industrial case study):

The three industrial estates along Caton Road in Lancaster flooded almost entirely in 2015. Individual businesses reported insurance loses of millions of pound each, the electricity substation located here flooded causing 55,000 homes to be without power for over 48 hours. Caton Road itself flooded partially but businesses which did not flood were inaccessible due to local roads being flooded and access cut off.

Caton Road Industrial estates flooded 2015

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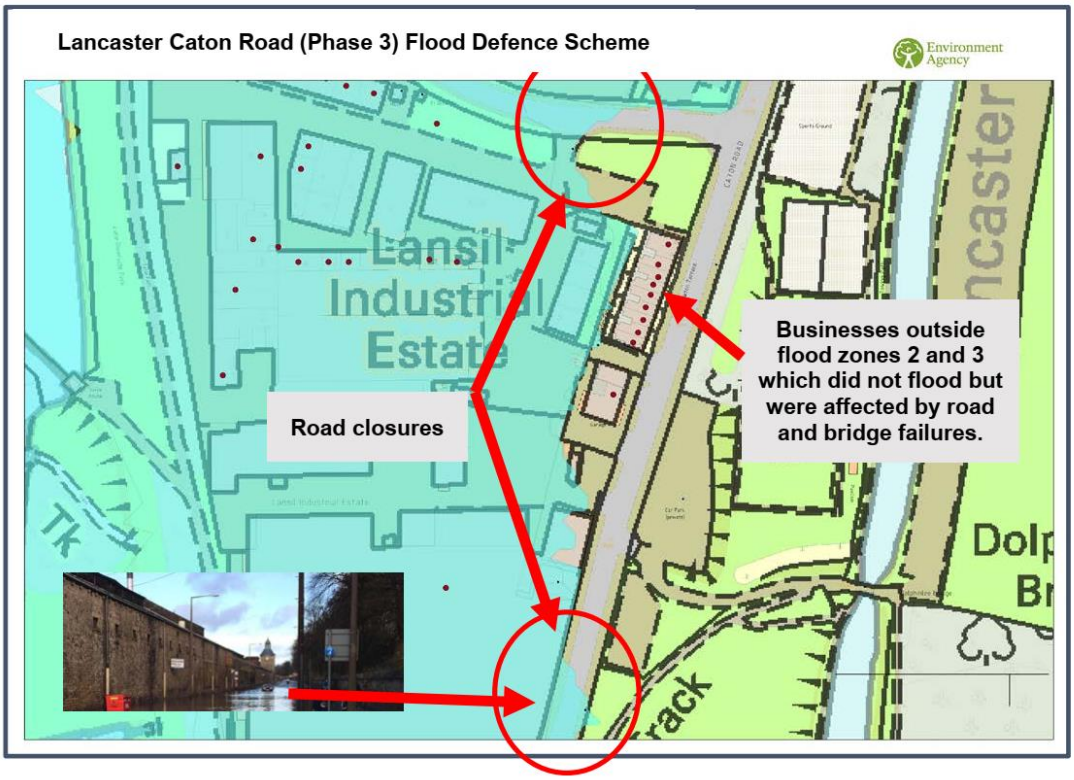


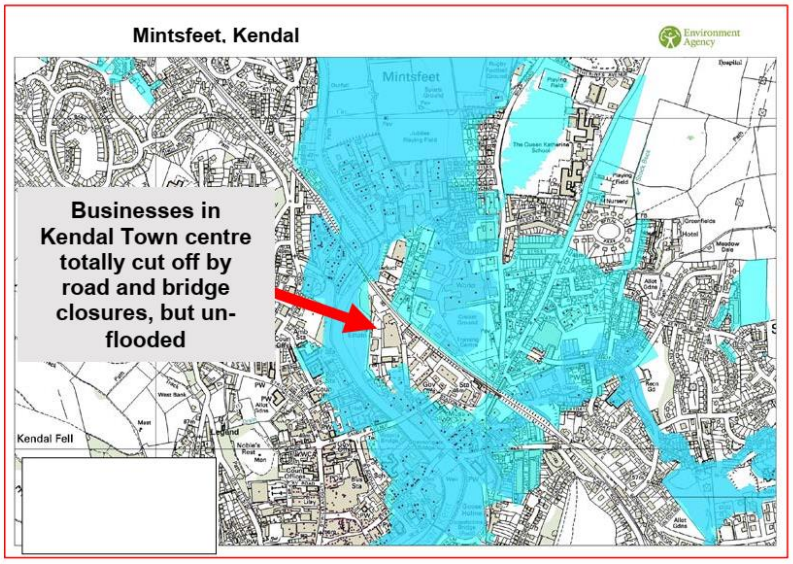
We should therefore be taking into account businesses which are also impacted as a direct result of flooding.

(Rural) Mintsfeet, Kendal Case Study

In the same way that Lancaster was unable to protect enough businesses directly for the funding applied for, this was even more difficult in the case of rural locations.

Mintsfeet in Kendal by definition has a smaller locality suitable for businesses. Arguably rural economies are more dependent on businesses than larger towns and cities as they can be the main sources of employment and manufacturing as is the case of Mintsfeet.

Applying the same methodology as used for Lancaster you can see that businesses directly impacted as opposed to flooded should be included P6 property counts.



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Measuring businesses directly benefiting from ERDF funded defences

Current bids for funding under PA5 have been, and will continue to be unsuccessful at outline submission stage, as the majority are unable to meet P6 criteria under the current guidance. In order to ensure they are successful during future calls, adaptation to guidance and output criteria is required. It is proposed that to do this, we use flood zones 2 and 3 relevant to each proposed scheme and include a 500m buffer in addition. Applying this to a proposed scheme provides an area most likely to be impacted by flooding in any particular area. This therefore provides a truer picture of the area benefiting from any proposed defences. From testing this methodology on 3 projects in the North West this will enable bids to meet P6 criteria and projects under PA5 to progress.

Using address point data in GIS and plotting the businesses impacted within this zone, provides a detailed dataset demonstrating all businesses specifically benefitting from an ERDF funded scheme. It is not enough to only include businesses within the flood plain, as demonstrated with the Kendal and Lancaster examples above, as this takes no account of infrastructure and transport failures which can and do affect communities and businesses immediately outside the flood plain. These can be and are impacted for days or weeks. Provision of the 500m buffer to flood zones 2 and 3 provides for the necessary degree of uncertainty that can be experienced with flood events and with improved modelling, particularly as the weather patterns are becoming more unpredictable and more is learned from each flood event.

This methodology has been tested and applied to rural, industrial and city scale ERDF proposals and provides an accessible and auditable route for all future and revised PA5 submissions. This method provides the numbers and full details of businesses benefitting and can be used to revise the existing guidance.

Using solely EA data, lists of all businesses, business type along with the relevant mapping for each scheme can be provided for audit purposes. This allows for an appropriate, demonstrable and achievable way in applying funding across PA5.

Impact and application of revised methodology to North West ERDF PA5 submissions:

Available funding for Cumbria June 2017 : £3,837,662*
Available funding for Lancashire June 2017: £8,925,000*

* Please note that funding has been reduced by 6% across the programme due to funding penalty as advised by DCLG.

Scheme	Overall scheme cost (approx.)	Proposed ERDF contribution	Proposed application date to DCLG	Businesses claimable under current P6 guidance	Business numbers benefitting (using new methodology)	Business numbers required under current ERDF rules	Residential properties protected
Lancaster Caton Road	£9.4m	£3.1m	June 2017	105	1227	455	20
Mintsfeet, Kendal	£40m	£3.84m	September/ November 2017	190	1717	645	161
Preston and South Ribble (Phase 1)	£40m-£50m	£5.2m	September/ November 2017	600	3000+	1022*	3000
Earby	£1m	£600k	February 2017	70	TBC	455	TBC
Total	**£100.4m**	**£12.74m**		**895**	**5944**	**2132**	**3181**

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For more information on the revised methodology please contact Anne-Marie Quibell, Integrated PSO team. Anne-Marie.Quibell@Environment-Agency.gov.uk