



**CAMBRIDGESHIRE  
& PETERBOROUGH**  
COMBINED AUTHORITY

Agenda Item 4.2 – Appendix 2a

# **Business Case – Chalk Streams**

# VERSION CONTROL

Document version	Publication date	Description of changes	Modified by
1	25 March 2022	Template	Programme Office
2	25 October 2022	Business Case updated	Adrian Cannard
3	03 November 2022	Incorporated comments from Sub-PARC and from Project Applicant	Adrian Cannard

# EXECUTIVE SUMMARY

## STRATEGIC CASE

Economic growth (and associated housing supply) in the Greater Cambridge area faces a constraint due to water supply, which is reliant on groundwater extraction from chalk aquifers. This need for water extraction combined with climate change is having a detrimental impact on sensitive habitats of chalk streams. Chalk streams are internationally rare habitats. In Cambridge, Bin Brook, Cherry Hinton Brook, Coldham's Brook, Hobson's Brook and Vicar's Brook are all chalk streams. The chalk aquifer they emerge from, to the southeast of the city, is a main source of water for residents and businesses.

This project supports action to tackle impacts on chalk streams through a programme of individual schemes in particular by restoring river channels to a more natural shape and size. Done well, flow rate will be increased enough to keep the gravel clean, flow diversity will increase, and the river will behave more naturally, increasing biodiversity requiring less maintenance.

Addressing potential negative impacts of growth on the environment aligns with the Six Keys of the Sustainable Growth Ambition Statement. It aligns directly with the Statement's natural capital Key: *"Climate and Nature: restoring the area's depleted natural capital and addressing the impact of climate change on our low-lying area's special vulnerabilities"*

It also directly responds to the infrastructure Key on water system infrastructure:

*"Infrastructure: build public transport networks, improve digital connectivity and deliver energy and water system infrastructure"*.

The project also contributes to the CPCA endorsement of the Vision for Nature and Environmental Principles for the OxCam Arc, which includes the doubling of nature and other environmental outcomes.

## ECONOMIC CASE

The project is at its core providing natural capital benefits. By tackling some of the environmental impacts of economic growth and climate change the project also supports that agenda, potentially reducing delays or barriers to growth. There are potential carbon sequestration, and social volunteering benefits. Most of these benefits are not monetised so this Economic Case uses the outcome appraisal tool to establish the link to strategic objectives and assess the 'optimal' approach to the project.

## FINANCIAL CASE

The project is for £420k grant, split £300k capital and £120 revenue delivered over a 3 year programme. There are opportunities for combining specific elements of funding with grant programmes of other partners, including water company, Nature England and the Environment Agency.

## COMMERCIAL CASE

The City Council will project manage and deliver the project (which is a programme of individual projects). The individual projects will be based on the Greater Cambridge Chalk Streams Audit report was commissioned in 2020 as an audit of chalk streams in the upper Cam catchment. It identifies potential projects. These projects range from well researched plans to project ideas and long-term ambitions. Procurement of works will be in line with the councils systems.

## MANAGEMENT CASE

The Greater Cambridge Chalk Streams Audit provides evidence base for individual project selection. Advice from Natural England and the Environment Agency will inform specific designs. Start on site will taken place in autumn 2022 (subject to ground conditions) and complete in autumn 2023. Surveys of biodiversity before and after the project will provide the evaluation framework.

# INTRODUCTION

Chalk streams are mainly spring-fed watercourses rising from a chalk aquifer. Rainwater percolates slowly down through the chalk to the water table. Groundwater moves through the chalk bedrock and emerges at springs; there are often multiple springs along the course of a stream. The filtering and purifying action of the chalk means that water from chalk springs is characteristically “gin clear”, mineral rich, slightly alkaline, with a relatively stable flow. The stream bed is generally made up of flint gravel, because chalk geology contains flint deposits, with very little clay or sand. The unique characteristics of chalk stream water are linked to a unique ecology, supporting a wide range of flora and fauna. There are only around 200 chalk streams, found exclusively in England and northern France. In the Combined Authority area they are focused around Greater Cambridge.

Chalk streams in the area suffer from low flows. Future economic growth (and associated housing supply) in the Greater Cambridge area faces a constraint due to water supply, which is largely reliant (at least in the short term) on groundwater extraction from the chalk aquifers. This need for water extraction combined with climate change is already having a detrimental impact on sensitive habitats of chalk streams. The water resources situation is akin to the climate crisis – as a society we need to use water more sustainably and make changes to how we abstract, store and manage water, reducing abstractions that impact the environment. Addressing these long-term issues is essential but outside the scope of this project. However, in the shorter term there is activity that can be done through this project to reduce impacts on chalk streams, in particular by restoring river channels to a more natural shape and size, and adding gravel to create new riffle areas. Done well, flow rate will be increased enough to keep the gravel clean, flow diversity will increase, and the river will behave more naturally, requiring less maintenance

This project seeks bring forward the priority projects identified in an audit of potential interventions, helping to mitigate the biodiversity and climate crisis, whilst contributing towards the Cambridge Nature Network ambitions, the CPCA/Natural Cambridgeshire’s ‘Doubling Nature Vision’ and OxCam Arc Principles.

It is proposed that subject to consultation and necessary permissions the initial works are procured for delivery starting in 2023.

# STRATEGIC CASE

## INTRODUCTION

The purpose of the strategic case is to demonstrate alignment with local, regional and national policy objectives. Specifically, the strategic case should test the project fit with the CPCA's Sustainable Growth Ambition Statement.

The strategic case demonstrates the fit of the Chalk Streams project with CPCA, local and national policies.

## STRATEGIC PRIORITY

Addressing potential negative impacts of growth on the environment aligns with the Six Keys of the Sustainable Growth Ambition Statement. It aligns directly with the Statement's natural capital Key:

"Climate and Nature: restoring the area's depleted natural capital and addressing the impact of climate change on our low-lying area's special vulnerabilities"

It also directly responds to the infrastructure Key on water system infrastructure:

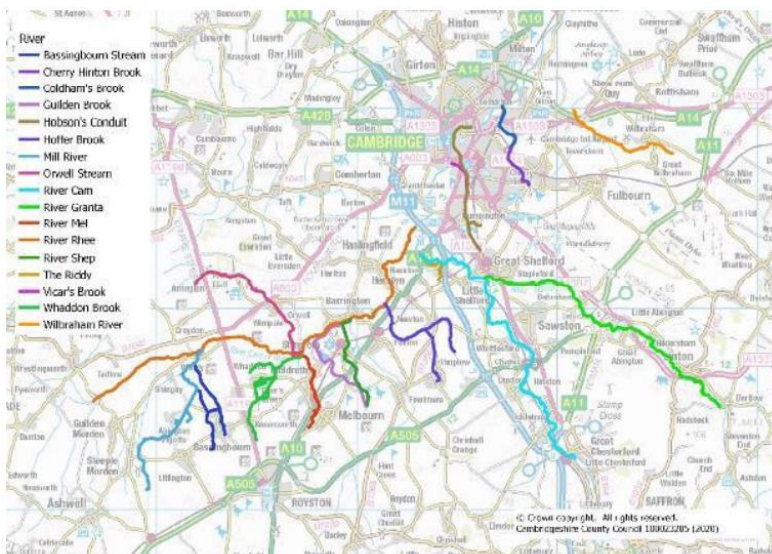
"Infrastructure: build public transport networks, improve digital connectivity and deliver energy and water system infrastructure".

The project also contributes to the CPCA endorsement of the Vision for Nature and Environmental Principles for the OxCam Arc, which includes the doubling of nature and other environmental outcomes.

## CASE FOR CHANGE

The Greater Cambridge Chalk Stream Audit<sup>1</sup> sets out the case for change and potential interventions. The scope of the streams is shown below:

There is some discussion about exactly which watercourses to consider as chalk streams in this area, as rivers may rise from the chalk but then flow over clay. They receive water from runoff and treatment works in addition to groundwater, and display chalk stream characteristics in varying degrees. The map below shows the watercourses covered in this report.



<sup>1</sup> Greater Cambridge Chalk Streams Project Report - Cambridge City Council

The Audit was prepared by the Wildlife Trust in 2020, with support from Cambridge City Council and South Cambridgeshire District Council, Cambridge Water and the Wild Trout Trust. It sets the environmental cost of not tackling the issues the chalk streams face. The emerging Local Plan also highlights the potential impacts of economic growth and associated housing on the need for water from the existing aquifer, and the constraints that places on growth levels. Whilst longer-term investments are proposed to address the water supply issues, in the short term there is activity that can prevent, or reduce, chalk stream impacts.

If the project is not implemented, then the rare habitats of the chalk streams will be less able to adapt to the changing climate/demand for water and biodiversity impacted. Wider opportunities to enhance the streams for habitat, climate, flood resilience, recreation and increased wellbeing benefits will not be realised.

## **CLIMATE CONSIDERATIONS**

The direct impact of the project on the quantum of Combined Authority carbon emissions is likely to be modest. Improvements proposed in the Audit may reduce the need for additional pumping of water to maintain flows, which will generate a carbon saving. Lessons learnt from adopting nature-based solutions can be applied to other chalk stream environments.

Any extension of habitat can provide long term source of carbon sequestration, but construction (especially any transport of aggregate materials) will have associated carbon emissions.

The project does respond to the need for climate adaptation, through making the habitats more resilient.

The contracting process will request measures to reduce carbon impacts but use of diesel fuelled machinery/transport is likely to be unavoidable.

## **SMART OBJECTIVES**

- Deliver a programme of projects selected from the Chalk Streams Audit over the period to FY 24/25 to maximise biodiversity benefits and reduce the need for pumping water to maintain flows, subject to any detailed amendments as an outcome of the further public consultation undertaken.
- To engage with external partners to seek to leverage funding through the delivery of nature-based solutions.

## **SPECIFIC DELIVERABLES/OUTPUTS**

The outputs:

- Deliver projects from the Chalk Streams Audit to a total value of £300k capital investment
- Public engagement in the programme to increase awareness and support of the habitat interventions, and encourage water demand management. Appoint a project officer. Reengage with all stakeholders, including the Wildlife Trust, Cam Valley Forum, EA, South Staffs Water and catchment partnership to review and update the 2020 baseline report and projects (as additional projects, partnerships and catchment modelling has occurred over the past 2 years). Early discussions with EA suggested that significant match funding may be available for unlocking once combined authority funds secured.

Looking at their chalk stream drivers will help prioritise and increase the number and scale of projects that can be delivered

- Provide lessons learnt to enable other similar interventions to be developed for other chalk streams
- Provide evidence for the forthcoming CPCA Local Nature Recovery Strategy

## PROJECT OUTCOMES/IMPACTS

Successful outcomes will be the increased river quality of the chalk streams; increase in biodiversity; scalable deliverables that can be applied elsewhere; enhance the riparian habitats which form a key link in the Cambridge Nature Network; sustainable economic growth.

The works will be complemented by existing chalk stream interventions.

### *CPCA performance management metrics*

The Project will deliver an outcome monitored under **CPCA performance metric 8: Climate and Nature - Land Area Providing Nature Rich Habitat (PNRH) by District**. A sub-measure is proposed on linear data i.e. length of watercourse enhanced.

## DESIGNS

See Appendix A for list of potential projects.

## RISKS

1. Proposals not supported through public consultation or regulatory applications. MITIGATION: This is deemed unlikely due to previous engagement and support from local community. Community engagement a key part of the delivery.
2. Inflation costs for delivery. MITIGATION: The number of individual projects can be managed by the Project Board to reflect cost pressures.
3. Extreme weather event impacts on chalk streams. MITIGATION: partly what the interventions are for; scheme designs will take into account climate related risks

## CONSTRAINTS

Works may be restricted to certain times of the year due to habitat and species considerations.

## DEPENDENCIES

None.

# ECONOMIC CASE

## INTRODUCTION

This financial case includes a Logic Model, a Green Book Outcome Profile Tool linked to our Sustainable Growth Ambition Statement and a summary of economic benefits.

## **APPROACH TO ECONOMIC CASE**

The project will transform habitats provided by chalk streams to protect and enhance their biodiversity value.

The project is at its core providing natural capital benefits (with some short term employment via the construction), with some social volunteering. Value for money is therefore covered by the Green Book Supplementary Guidance on 'Enabling a Natural Capital Approach' <sup>2</sup>. Natural capital is focused on natural assets in ecological terms (their quantity, condition and sustainability) and the social and economic benefits that derive from those assets. Most of these benefits are not monetised so this Economic Case uses the outcome appraisal tool to establish the link to strategic objectives and assess the 'optimal' approach to the project.

## **OPTIONS ASSESSMENT**

A 'do minimum' approach would be to not undertake interventions. As the Audit already identifies pressures on the chalk stream habitats this could lead to further damage on those habitats unless other measures were forthcoming. The 'do something' approach is to consider interventions via capital works.

The preferred option is to prioritise from the individual schemes identified to undertake targeted, impactful works that increase the resilience of the habitats and reduce the need for pumping of flows.

## **APPRAISAL SUMMARY TABLE**

The Business Case uses the Outcome Profile Tool and Logic Model rather than an Appraisal Summary Table. See next section.

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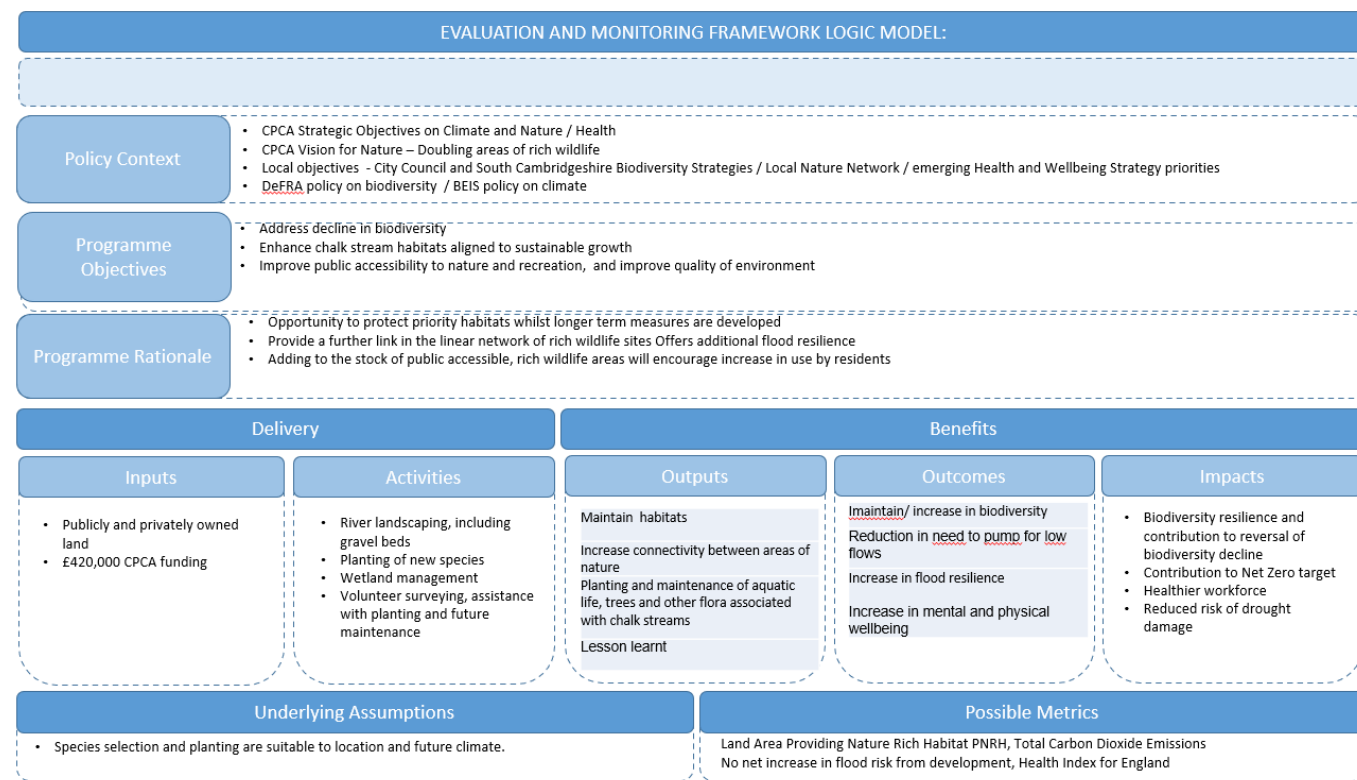
<sup>2</sup> [Enabling a Natural Capital Approach guidance - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/612222/Enabling_a_Natural_Capital_Approach_guidance.pdf)



## OUTCOME PROFILE TOOL

Sustainable Growth Outcomes	Climate and Nature	Health and Skills
Other Programme Outcomes (optional)	Climate Action Plan (CPCA) Cambridge City and South Cambridgeshire District Biodiversity Strategies; CPCA Vision for Nature; Local Nature Network Cambridgeshire Flood Risk Management Strategy	Health and Wellbeing Strategy 2022-2030
Project outcomes	Maintain / Increase in biodiversity Reduce low flow pumping requirements Increase in flood resilience	Increase in mental and physical wellbeing
Project outputs	Protect habitats Connectivity between areas of nature Management of aquatic life, trees and other flora associated with chalk streams	Increase in residents accessing nature
Project measures	Land Area Providing Nature Rich Habitat PNRH Land Area Providing Nature Rich Habitat PNRH Total Carbon Dioxide Emissions No net increase in flood risk from development	Health Index for England
Limitations	1. Habitat will take time to increase species presences and biodiversity	Mental health benefits of access to nature are documented. However, attributing any impact of the project will be difficult to distinguish at the local scale due to other socio-economic factors on residents health.

## LOGIC MODEL



## ECONOMIC BENEFITS

Biodiversity is a core component of natural capital with multiple effects on social and economic welfare. Biodiversity:

- is core to the ecological condition and quality of ecosystems that support the services provided to people
- directly benefits people through species existence, through nature-based solutions and by enriching other benefits (like nature-based recreation)
- underpins the resilience of ecosystems to shocks and can provide insurance value

The project, as well as enhancing priority habitat, maintains the links in a 'chain' of rich wildlife sites. This magnifies the biodiversity opportunities and benefits. Although DeFRA's Biodiversity Metric allows comparison of before and after habitat changes the government is yet to set the national benchmark cost for individual biodiversity credits. A financial CBR has not therefore been calculated. A scoring assessment was done against the Six Keys (1-5, with 5 being the most positive).

GVA	Six Key Themes							
	Climate and Nature		infrastructure	Knowledge	Health & Skills		Social	Finance and systems
	Climate Change	All Other			Health	Skills		
3	2	5	2	3	3	3	3	2

## DISPLACEMENT AND DEADWEIGHT

None.

## ECONOMIC COSTS

The economic costs have been derived from the requirements for landscaping and planting. These have been benchmarked against comparable projects.

## NON-QUANTIFIABLE BENEFITS

There are benefits to physical and mental health through access to nature. The chalk streams can be accessed in various locations by local residents walking and cycling, promoting active travel modes.

## SUMMARY

The project shows a clear link from the strategic objectives of the CPCA (and the local councils) to the solution proposed. There are quantifiable and non-quantifiable benefits arising from the project.

# COMMERCIAL CASE

## INTRODUCTION

This section sets out the commercial objectives and constraints for the project mainly relating to procurement. The project will be project managed by Cambridge City Council.

## PROCUREMENT OPTIONS

Cambridge City Council will be responsible for securing consents and delivery of the project under its adopted procurement rules and guidelines, working with the relevant landowners and environmental regulators.

## DELIVERY OF THE PROJECT

Cambridge City Council will take responsibility for delivery of the project, working with appropriate contractors. Revenue spend is part of the grant and will assist in project management and engaging with landowners and agencies.

Residents and landowners have been engaged through the Audit work in 2020. Additional engagement will be needed as priority interventions are determined. Regular updates on the scheme will be available on the City Council webpages and via the social media.

## PROCUREMENT STRATEGY

The contractual works will be advertised as Tender/s based on price and quality to ensure value for money.

## WIDER CONSIDERATIONS

None.

# FINANCIAL CASE

## INTRODUCTION

The financial case is to deliver the preferred option and follows the appraisal set out in the Strategic and Economic Cases.

## APPROACH TO FINANCIAL CASE

The Audit provides indicative costs for a range of interventions. The Project Board will prioritise these using appropriate criteria, and the interventions will fit with the funding envelope.

## PROJECT COSTING TABLE

Financial Year		2022-23	2023-24	2024-25	2025-26
Project Costs	Revenue	40	40	40	0
	Capital	0	60	120	120
	Total	40	100	160	120

Financial Year		2022-23	2023-24	2024-25	2025-26
Funding Stream	CPCA	40	100	160	120

## PROJECT COST BREAKDOWN TABLE

Sources	Value	Uses	Value
Combined Authority	£0.42m	River works, Landscaping/Planting, Project Management and Engagement	£0.42m
<b>Total Sources</b>	<b>£0.42m</b>	<b>Total Uses</b>	<b>£0.42m</b>

## AFFORDABILITY ASSESSMENT

The project is to start in 2022/23 and has been costed as such. The revised capital profile compared to the MTFP Subject to Approval allocation reflects the need to reengage with stakeholders on the individual projects before commencing capital works. Short-term inflationary pressures are assumed within the financial profile, and the projects can be varied to fit available budget.

## CHARGING MECHANISM / CLAIM/INVOICE PROCESS

Capital works: invoicing in arrears.

Revenue funding: annual payment in advance

# MANAGEMENT CASE

## INTRODUCTION

The purpose of management case is to test that robust arrangements are in place to manage the delivery of the project. The project will be managed and delivered by Cambridge City Council.

## PROJECT TIMELINE

A Project Board will be convened as soon as possible post the approval of business case (Winter). Appoint Fixed term Project Officer (December 2022, review audit with stakeholders and prioritise projects for impact and deliverability Jan \_ March 2022. Devise schemes and gain consents for delivery August 2023 – December 2025. Existing habitats and species will be surveyed and protected during works as part of the planning process.

## EXIT STRATEGY

The new habitats are designed to be low maintenance but the future maintenance will fall to landowners/riparian owners.

## CHANGE MANAGEMENT

The City Council as project manager will implement a suitable change management process and approach to tolerances/risk management. Cost increases would be the responsibility of the City Council as the CPCA is providing a fixed budget.

## PROJECT MANAGEMENT

**External Project Director:** Alistair Wilson – Streets & Open Spaces Development Manager  
alistair.wilson@cambridge.gov.uk

**External Project Manager:** Guy Belcher, Streets and Open Space – **Biodiversity Officer**, Cambridge City Council

**Internal CPCA Project Manager:** Adrian Cannard, Strategic Planning Manager

<div><div>R = Responsible A = Accountable C = Consulted I = Informed</div><div>Decisions/Activities</div></div>	Organisational Role	CPCA Director (Senior Responsible Officer)	External Project Director	Internal Project Manager	External project manager		Community Group	
		Project initiation	C	A	C	R		I
		Delivery of the project	I	A	C	R		C
		Changes to cost and programme	I	R	A			
		Compliance and assurance of operational data	I	A	I	R		
		Evaluation	I	A	C	R		
		Project closure	I	A	C	R		
		[Include more or delete decisions as appropriate]						

## RISK MANAGEMENT STRATEGY

The project has strategic and management support, and has been subject to public engagement on deliverables. A suitable risk management approach will be put into place. Initial risks have been highlighted in the Strategic Case section.

## STAKEHOLDER PLAN

Landowners, agencies, water company and local residents have been and will continue to be engaged. Community groups will support with promotion of the project including social media, site notices and leaflet dropping. Signage will be posted on site to advise users of project progress and any necessary public access closures during construction.

## ASSURANCE

The project will be progressed in line with the City Council's assurance framework. Regular reporting via a monthly Highlight Report to the CPCA is required.

## SUPPLY SIDE CAPACITY AND CAPABILITY

The delivery relies on successful tender processes and capacity in the sector. The current challenges to global supply chains and the impacts locally are recognised.

## KEY CONTRACTUAL AGREEMENTS

Landowners and statutory permissions required.

## MONITORING AND EVALUATION

Baseline habitat condition assessment, invertebrate and protected species surveys will inform the works and allow end of project repeat surveys to assess impacts..

The Project will contribute to an outcome monitored under **CPCA performance metric 8: Climate and Nature - Land Area Providing Nature Rich Habitat (PNRH) by District**. The sub-measure is the linear amount of chalk streams habitat improved. Allowance will need to be made for the biodiversity outcome to vary over time, as habitats take time to adapt.



