

EXECUTIVE - 17 MARCH 2016

HOE VALLEY FLOOD ALLEVIATION AND ENHANCEMENT SCHEME

Executive Summary

This report has been prepared to give an update in relation to the Hoe Valley Flood Alleviation and Enhancement Project and to ask for authorisation to proceed to detail design through the release of funding, to seek and apply for appropriate funding opportunities and to pursue the necessary land purchases.

The Hoe Valley Flood Alleviation and Enhancement Project is an innovative, integrated, multi-beneficial enhancement scheme that provides flood risk, environmental and social benefits to residents and the local community.

In addition, the Hoe Valley Flood Alleviation and Enhancement Project presents significant opportunities to provide educational benefits along the course of the stream, within the proximity of the local schools.

It is also proposed that areas along the length of the watercourse are developed to provide useful recreational spaces for the community to come together, encouraging the use of the enhanced valley by the local community as well as improving community spirit along the length of the watercourse.

A potential programme of works has been provided which shows that a final scheme could be considered by the Executive from September 2017 at which time the Council will also know the result of any external funding applications.

Due to the size of the Scheme, two maps are provided in Appendix 1 of the Mayford Meadows scheme area and the Queen Elizabeth scheme area; a large copy of the entire Scheme is provided within the Member's Room.

Reasons for Decision

A decision is sought to allow the Hoe Valley Flood Alleviation and Enhancement Project to progress to the next stage of development through the release of appropriate funds from the Investment Programme and authorisation to seek required land purchases.

Recommendations

The Executive is requested to:

RESOLVE That

- i) Officers be authorised to pursue funding opportunities in delivering the multi-beneficial Scheme;
- ii) funds of £600k be released from the Investment Programme to enable detail design and to obtain necessary consents; and
- iii) the Strategic Asset Manager be authorised to investigate and agree terms for the necessary land purchases.

The Executive has authority to determine the above recommendations.

Hoe Valley Flood Alleviation and Enhancement Scheme

Background Papers:

Sustainability Impact Assessment
Equalities Impact Assessment

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Hoe Valley Flood Alleviation and Enhancement Scheme

1.0 Introduction

- 1.1 In 2000 the Hoe Valley Flood Alleviation Project was launched following the significant flooding along the Hoe Stream which affected the Westfield area. The original scheme also dealt with contaminated land, relocated a number of community groups, dealt with local highway issues and provided affordable housing within the Borough. The original Hoe Stream Flood Alleviation Project was completed in 2012 and has reduced the flood risk to approximately 200 residential properties from regular flooding.
- 1.2 The Hoe Valley Flood Alleviation and Enhancement Project is a multi-beneficial integrated environmental scheme; it takes an integrated approach to reducing flood risk, improving accessibility for all, establishing a diverse ecosystem, improves water quality and increases recreation and educational facilities in the area for the benefit of the local community and all residents which reside within the Borough. It is an extension and enhancement to the existing scheme. A location plan of the proposed scheme is included in Appendix 2.
- 1.3 The main objective of the project is to protect the remaining 14 properties located within the current High Risk 1 in 100 (1%) annual probability plus climate change extent upstream and downstream of the original scheme.
- 1.4 The Project extends further than just protecting properties from flooding. The Scheme aims to protect and improve the habitat surrounding the Hoe Stream and will reintroduce various native species to the area, providing suitable habitat for species that are listed at risk such as the water vole, otter, kingfisher and bats. In addition, the Scheme aspires to connect the communities surrounding the stream to the area by giving access to everyone. Furthermore, it seeks to increase awareness and understanding into water and ecological related matters.
- 1.5 Accessibility will be improved throughout the Hoe Valley area, allowing all residents to travel by sustainable methods from Prey Heath SSSI to Mayford Bridge via Woking Park, which has links to the Town Centre. The installation of recycled plastic boardwalks throughout the entire scheme will give access to all residents and allow joint use in some areas by cyclists and runners, which will have a number of health and social benefits to the local community.

2.0 Project Objectives

- 2.1 The key objectives of this project are:
 - Provide additional flood mitigation to the remaining 14 properties which lie within the 1 in 100 (1%) annual probability plus climate change flood extent;
 - Further improve ecological habitat, both alongside and within the watercourse;
 - Improve water quality;
 - Increase the number of green infrastructure sites within the vicinity of the watercourse and improving links between green infrastructure (current and proposed) across the area;
 - Improve the area surrounding the watercourse to provide educational benefits and facilities for schools, special interest groups and the wider community; and

Hoe Valley Flood Alleviation and Enhancement Scheme

- Improve the health of the local community by improving the landscape and providing alternative transport options.

3.0 The Scheme

- 3.1 The Scheme introduces multiple benefits to the area and the local community. The benefits are however indicative at this stage and are subject to detail design and modelling.
- 3.2 Due to the size of the Scheme, two maps are provided in Appendix 1 of the Mayford Meadows scheme area and the Queen Elizabeth area; a large copy of the entire Scheme is provided within the Member's Room.

3.3 Flood Alleviation

Flood alleviation is one of the main aspects and objectives of the Hoe Valley Flood Alleviation and Enhancement Project. The completed part of the Hoe Valley project has protected over 200 properties from flooding but there are still 14 houses that are not fully protected from a flooding event and lie within the 1 in 100 (1%) annual probability plus climate change flood extent, of these 5 properties lie within the 1 in 100 (1%) flood extent. The proposed flood alleviation works is expected to protect these properties from flooding during the 1 in 100 (1%) annual probability plus climate change event.

The Hoe Stream is a tributary of the River Wey, the confluence of which is upstream of Pyrford Golf Course. The Scheme will also attempt to reduce the peak flood level on the River Wey downstream of Pyrford, helping to reduce the impact of flooding on the surrounding residential areas of Byfleet, this aim will be accomplished through the regulation of flows from the Hoe Stream at the peak of a flood event due to the construction of the proposed wetland areas.

The Flood Alleviation works are in two key areas, Mayford Meadows and Queen Elizabeth Way.

At Queen Elizabeth Way, a diversion channel will be created, allowing the flood flows to be channelled away from some of the high flood risk properties within this area. Surrounding both channels will be a newly created wetland area. Wetlands are great natural flood defence as they increase water attenuation compared to an ordinary floodplain. A flood embankment will also be created protecting houses on one side of the stream.

At Mayford Meadows, the river is to be diverted away from the back of the existing houses. And an embankment is to be installed to provide a 1 in 100 (1%) annual probability plus climate change standard of protection. Wetlands are to be created within the area to help slow the flows down and increase the volume of flood storage within the area.

Throughout the Scheme ponds are to be installed to attenuate the existing surface water runoff that discharges to the stream, to slowdown the rate at which it enters the watercourse and providing treatment of any pollutants it may contain. This will also help improve the water quality of the river and create additional habitat.

3.4 Habitat Creation

The Scheme also includes creating a variety of different habitats that will help to protect numerous at risk species such as water voles, otters, bats, kingfishers, aquatic invertebrates, fish, and reptiles. The main aspect of this habitat creation is the

Hoe Valley Flood Alleviation and Enhancement Scheme

development of wetland and pond areas and the re-establishment of the ordinary watercourse. The Scheme will make the area suitable for the species and the opportunity for them to either be reintroduced to the area or the potential for them to migrate to the area from the local surroundings.

As part of the water vole habitat creation it will also be necessary to carry out American Mink control along the Hoe Stream and surrounding area. American Mink are classified as a non-native invasive species and are the main cause for the eradication of the Water Vole in the area and throughout Surrey. Other non-native invasive species will also be assessed to determine the best methods in removing these from the area.

The enhancement and re-establishment of existing wet woodlands will help create an important habitat as these ecosystems are rich in insects, supporting a large number of species like beetles, many of which are now rare in the UK. Dead wood associated with water provides specialised habitat which support craneflies and the netted carpet moth which are both on the UK Biodiversity Action Plan (BAP) priority species list.

Flood bunds are to be created with dual functionality, subject to design constrictions, to also allow Holt habitat for otters and water voles within the riverward side of the defence, to allow them to escape the water in times of flood providing an area of safe refuge.

Where the watercourse is heavily overgrown in some sections, vegetation will be cleared to allow the light to reach the watercourse stimulating aquatic vegetation growth supporting the development of favourable habitat for aquatic invertebrates.

To further improve the conditions for fish with the Hoe Stream, a fish weir bypass channel at the downstream end of the valley will be constructed. This will enable fish to pass the Environment Agency weir at this location which in conjunction with the other improvement will allow fish to migrate upstream and increase populations of fish in the river.

3.5 Accessibility

To help increase accessibility throughout the area, 3m wide recycled plastic boardwalks are to be installed where deemed appropriate, where not appropriate due to other restrictions 1.8m wide recycled plastic boardwalks will be installed with suitable passing points. Recycled plastic is more durable than normal timber boardwalks especially in wet areas and have a longer life expectancy with minimal maintenance.

In some locations these boardwalks will be impacted by high river flows; however the area will be more accessible than present as water will be allowed to flow underneath them in most locations for smaller flood events and allow access when the ground is waterlogged.

3.6 Water Quality

The Water Framework Directive (WFD) was adopted in 2000 by the European Union to set the objectives for water protection in the future. It was set up in response to increasing demand for cleaner rivers, lakes, groundwater and coastal beaches. Protecting and improving the environment is vital to sustainable development. The EU Water Framework Directive represents European legislation which is intended to improve the water quality and reducing the danger that the water body may pose.

The WFD was established in 2000 with targets to get all water bodies to a good ecological and chemical status by 2015. Although progress has been made towards this, most water bodies are a long way off reaching the targets. Therefore there has been an extension added and they will now have to meet good ecological and chemical status by 2027. At

Hoe Valley Flood Alleviation and Enhancement Scheme

present only 27% of waterbodies in England and Wales have a good status and therefore an extension was necessary.

The Hoe Stream (Pirbright to River Wey confluence at Woking) is a Water Framework Directive water body and covers all the project areas. The baseline (2009) status is Poor ecological and chemical Status, failing for fish (Poor) and phosphate (Moderate). The most recent (2013) monitoring data shows the Hoe Stream is still failing but is now slightly better at Moderate Ecological Status, still failing for phosphate (Moderate) but also for macrophytes (Moderate). Fish are now at Good status, but this could change and we have been advised that it is the 2009 baseline data that we should be guided by.

To improve the WFD status, all areas would benefit from some in-channel habitat enhancements that would benefit fish and macrophytes (plants) as well as aquatic invertebrates. Further assessments would be required, but could include incorporation of woody debris, Coir Roles and gravels, particularly in straight sections of channel, as long as these did not increase flood risk. These enhancements would give improved habitat for a variety of fish and aquatic invertebrates.

The Watercourse will also benefit from steep banks to be regraded or stepped to provide animals with access to the stream and allow valuable habit to be created for a range of plant varieties with prefer different levels of water. The inclusion of Wetland, reed beds, attenuation ponds and other SuDS features will help with the treatment of surface waters; especially from runoff from the built environment with can contain harmful pollutants that can cause serious harm to the water environment.

3.7 Educational

The Scheme presents significant opportunities to provide educational benefits along the course of the stream. Within the local area there are 12 educational establishments within 100m of the Hoe Stream ranging from pre-schools to sixth form colleges. Part of the proposal for the Scheme is to provide educational boards throughout the area providing information and background to the environment around them, the importance of each aspect and highlighting key features of the Scheme. In addition nature watching Huts, floating educational facilities, interactive trails along the watercourse and wetlands, Jetties along ponds that allow children to learn about the wildlife within them and trails through woodlands and meadows to help teach children about the wildlife that also live in these habitats are proposed to be included within the Scheme

Education plays an important role in helping reduce the impact of flooding, increasing resident resilience, help protect the environment around us and raise the importance of climate change in our surroundings. Providing areas that the local schools can visit and gain knowledge in relation to rivers, SuDS and the environment will benefit the community greatly.

3.8 Community and Recreational Space

Areas along the length of the watercourse will be developed to provide useful spaces for the community to come together and interact. These spaces will help encourage the use of the area by the local community. These spaces may include picnic areas, seating areas, play areas and outdoor gyms.

3.9 Health and Well Being

The provision of pedestrian and cycle paths along the length of the valley has the potential to provide numerous health and social benefits to the local community.

Hoe Valley Flood Alleviation and Enhancement Scheme

Improved health benefits that result from increased cycling levels are shown to increase an employee's productivity by reducing short term sickness absence from work. The department for Transport, 2014, Transport Analysis Guidance states that an average absence of employees in the UK is 6.8 days per year, of which 95% is accounted for by short-term sickness leave. Increased physical activity by 30mins a day can help to reduce this value.

3.10 Land Purchases

To allow the Scheme to progress and to provide the maximum flood alleviation benefit it will be required to purchase the additional land within the Scheme. Some of this land is home to Old Woking Cricket Club which will also need to be relocated as part of this project ideally to a nearby location at a lower risk of flooding.

The land currently home to the cricket ground is required to allow the creation of a bypass channel to divert high flows away from existing residential dwellings.

4.0 Climate Change

- 4.1 Existing climate change predications within existing hydraulic models such as the Hoe Stream hydraulic model are based on UKCP 2002 which states a 20% increase should be added to river flows to allow for climate change. However this allowance is now outdated and new studies within UKCP 2009 state a range of predications should be used. The Environment Agency is now using the new allowances for all new fluvial hydraulic models.
- 4.2 The climate change ranges for the south east area within UKCP 2009 sensitivity tests require between 25% and 70% increase when using a timeframe greater than 2080. Therefore when the hydraulic modelling of the Hoe Stream is carried out to determine the impact of the proposed Scheme new climate change allowances will be used as agreed with the Environment Agency.
- 4.3 The new climate change allowances will increase the predicted river flood levels in the area; this is likely to increase the number of properties that could be at risk of flooding. Through the detailed design process the new Scheme will take this in to account and help protect any additional properties where appropriate.

5.0 Framework Agreement

- 5.1 To procure the necessary consultants to develop the Scheme to detailed design, a procurement exercise will be undertaken using an existing government framework agreement.

6.0 Funding Mechanisms

- 6.1 One of the more viable funding options for the Scheme is LIFE funding from the European Union. LIFE is the European Unions financial instrument supporting environmental and nature conservation projects. To gain funding from LIFE, the proposed project has to be relevant to at least one of the thematic priorities. Three of the priorities are water, including marine environment, nature and biodiversity and efforts leading to increased resilience to climate change.
- 6.2 The proposed project is anticipated to fall under the Nature and Biodiversity priority area of the environment sub-programme. Projects that fall under this priority area can implement existing approaches, best practice and solutions or develop, test and demonstrate new approaches, best practices and solutions. The project has the potential

Hoe Valley Flood Alleviation and Enhancement Scheme

to sit under a number of the priority project criteria list for the Nature and Biodiversity project area.

- 6.3 The LIFE programme includes one call for project proposals each year and occurs in May, with submissions being required by October of that year. Grants are then signed in the following July. A project proposal submitted by 1 June 2016 will not receive funding until the beginning of July 2017.
- 6.4 The LIFE Programme can provide up to a maximum of 60% of the project cost. The remaining 40% will need to be funded by the council or from other funding streams.

7.0 Indicative Programme of Works

- 7.1 An indicative programme of works is provided in the table below. This highlights key milestones that if the dates are not achieved will delay the remaining programme and final completion date.

Surveys including Ecological Surveys	March 2016
Procure Feasibility and detailed design Contractors	June 2016
EU LIFE Funding Application	September 2016
Review Period	July 2017 – August 2017
Funding applications outcome received.	July 2017
Executive committee and consultation	September 2017 – October 2017
Tender for Build	October 2017 (8 weeks)
Target Completion	October 2020

8.0 Implications

Financial

- 8.1 In order for the project to reach detailed design stage £600,000 consultancy fees shown in the Investment Programme are required. The total cost for the completed Scheme is estimated at £11 Million, which the Council can apply for EU Life Funding of 60% for.
- 8.2 Another potential source of funding is the Heritage Lottery Fund, through the Landscape Partnership Grant. This grant focuses on nature and restoring habitats and wildlife and the Council can apply up to the value of £3 million. As one of the objectives of the Hoe Valley Scheme is to improve and restore the habitat for water voles, otters and other species, the Council would be able to apply for this grant in addition to the EU Life Funding. It is unlikely to fund the full Scheme but it may be possible to gain some funding for the regeneration of this priority habitat.
- 8.3 The Council has adopted the community infrastructure levy (CIL) as the primary means for securing developer contributions towards infrastructure provision in the area. This came into effect from April 2015. To ensure transparency on how the CIL income is used, the

Hoe Valley Flood Alleviation and Enhancement Scheme

Council has published a Regulation 123 list, which specifies the schemes that the CIL income will be used. The list was considered at the CIL Examination and has been adopted by the Council.

- 8.4 Whilst flood mitigation schemes were considered necessary and an important infrastructure to support growth and protect residents against the risk of flooding, it could not be included on the Regulation list because there was no costed scheme at the time. The Regulation 123 list will be subject to a regular review at least every five years or sooner if there is a case to do so. The benefits of the Hoe Valley Scheme, which the Council now has sufficient information, could qualify for inclusion on the Regulation 123 list when it is reviewed to enable CIL money to be used to fund it. The Joint Committee has the responsibility to consider the future review of the list, and as such will be given the opportunity to consider a request to include this Scheme when the list is reviewed.
- 8.5 Any remaining funding would have to be considered as part of the Council's capital Investment Programme.

Human Resource/Training and Development

- 8.6 As the programme develops further staff resources will be requested to support the development of the Scheme and other schemes that are progressing as well as support the functionality of the flood risk and drainage team in their other duties.

Community Safety

- 8.7 There are no community safety implications.

Risk Management

- 8.8 The risks associated with not taking this project further is that a scheme will not be implemented to protect the residential dwellings from flooding nor address the impact of climate change on flood levels. The area will remain inaccessible to the majority of residents even in dry conditions and the opportunity to increase people's awareness and understanding in relation to flooding; climate change and the environment will be lost. The Scheme will serve as an incredibly positive public relations activity for the Council, benefiting both the Council's reputation with those living, working and visiting the Borough.

Sustainability

- 8.9 The proposed Scheme provides many opportunities for sustainable use of our land and greater protection for the wildlife within.

Equalities

- 8.10 The final Scheme will be as inclusive as possible with access provided for all.

9.0 Consultations

- 9.1 The Scheme has been progressed to date with the assistance of the Environment Agency and Wey Landscape Partnership colleagues.
- 9.2 The Portfolio Holder has been consulted on the contents of the report.

REPORT ENDS

EXE16-005

Hoe Valley Flood Alleviation and Enhancement Scheme

Hoe Valley Flood Alleviation and Enhancement Scheme

APPENDIX 1 MAPS OF SCHEME AREA

Equality Impact Assessment

The purpose of this assessment is to improve the work of the Council by making sure that it does not discriminate against any individual or group and that, where possible, it promotes equality. The Council has a legal duty to comply with equalities legislation and this template enables you to consider the impact (positive or negative) a strategy, policy, project or service may have upon the protected groups.

		Positive impact?			Negative impact?	No specific impact	What will the impact be? If the impact is negative how can it be mitigated? (action) THIS SECTION NEEDS TO BE COMPLETED AS EVIDENCE OF WHAT THE POSITIVE IMPACT IS OR WHAT ACTIONS ARE BEING TAKEN TO MITIGATE ANY NEGATIVE IMPACTS
		Eliminate discrimination	Advance equality	Good relations			
Gender	Men					x	
	Women					x	
Gender Reassignment							
Race	White					x	
	Mixed/Multiple ethnic groups					x	
	Asian/Asian British					x	
	Black/African/Caribbean/Black British					x	
	Gypsies / travellers					x	
	Other ethnic group					x	

		Positive impact?			Negative impact?	No specific impact	What will the impact be? If the impact is negative how can it be mitigated? (action) THIS SECTION NEEDS TO BE COMPLETED AS EVIDENCE OF WHAT THE POSITIVE IMPACT IS OR WHAT ACTIONS ARE BEING TAKEN TO MITIGATE ANY NEGATIVE IMPACTS
		Eliminate discrimination	Advance equality	Good relations			
Disability	Physical	x	x	x			Project seeks to provide greater success to our countryside for the whole community.
	Sensory					x	
	Learning Difficulties					x	
	Mental Health					x	
Sexual Orientation	Lesbian, gay men, bisexual					x	
Age	Older people (50+)			x		x	
	Younger people (16 - 25)			x		x	
Religion or Belief	Faith Groups					x	
Pregnancy & maternity						x	
Marriage & Civil Partnership						x	
Socio-economic Background						x	

The purpose of the Equality Impact Assessment is to improve the work of the Council by making sure it does not discriminate against any individual or group and that, where possible, it promotes equality. The assessment is quick and straightforward to undertake but it is an important step to make sure that individuals and teams think carefully about the likely impact of their work on people in Woking and take action to improve strategies, policies, services and projects, where appropriate. Further details and guidance on completing the form are [available](#).

Sustainability Impact Assessment

Officers preparing a committee report are required to complete a Sustainability Impact Assessment. Sustainability is one of the Council's 'cross-cutting themes' and the Council has made a corporate commitment to address the social, economic and environmental effects of activities across Business Units. The purpose of this Impact Assessment is to record any positive or negative impacts this decision, project or programme is likely to have on each of the Council's Sustainability Themes. For assistance with completing the Impact Assessment, please refer to the instructions below. Further details and guidance on completing the form are [available](#).

Theme (Potential impacts of the project)	Positive Impact	Negative Impact	No specific impact	What will the impact be? If the impact is negative, how can it be mitigated? (action)
Use of energy, water, minerals and materials	x			Recycled plastic boardwalks
Waste generation / sustainable waste management			x	
Pollution to air, land and water	x			
Factors that contribute to Climate Change	x			
Protection of and access to the natural environment	x			Improved biodiversity and increase in wildlife
Travel choices that do not rely on the car	x			Increase use of walking and cycling
A strong, diverse and sustainable local economy			x	
Meet local needs locally	x			
Opportunities for education and information	x			Increased educational resource and access to schools
Provision of appropriate and sustainable housing			x	
Personal safety and reduced fear of crime			x	
Equality in health and good health	x			Improved access to area and increase of recreational facilities
Access to cultural and leisure facilities	x			
Social inclusion / engage and consult communities			x	
Equal opportunities for the whole community	x			
Contribute to Woking's pride of place	x			Ambitious, innovative scheme that provides Woking the opportunity to raise the council's profile.

