



Essex County Council

Essex Flood Partnership Board

10:00	Thursday, 25 January 2018	Committee Room 1, County Hall, Chelmsford, CM1 1QH
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For information about the meeting please ask for:

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2	Minutes To approve as a correct record the Minutes of the meeting held on 5 th October 2017.	5 - 10
3	CFIF Experience From A District/Borough Perspective To receive a PowerPoint presentation from: <ul style="list-style-type: none">• Dean James and Patrick Bailly, Harlow District Council and• James Ennos, Tendring District Council on their experience of the Community Flood Improvement Fund.	
4	Capital Programme update To receive a report (EFPB/1/18) and verbal update from Dave Chapman, Delivery & Enforcement Manager, on the progress of schemes in the Capital Programme and the Outline Business Case for 2018/19.	11 - 13

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| 5 | Essex Property Level Resilience update
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To receive a report (EFPB/3/18) and verbal update from Oladipo Lafinhan, Flood Partnerships Funding Co-ordinator, regarding an update on Community Flood Improvement Fund (CFIF). | 18 - 25 |
| 7 | Local Flood Risk Management Strategy- A New Approach
To receive a PowerPoint presentation from Kat Dedman, Lead Local Flood Authority Manager, on the review and communication of ECC Local Flood Risk Management Strategy. | |
| 8 | Essex Surface Water Management Plan Update
To receive a report (EFPB/4/18) and PowerPoint presentation from Lee Sencier Watercourse Regulation Engineer. | 26 - 31 |
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Thursday 5th April 2018 at 10.00am County Hall Chelmsford
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Exempt Items

(During consideration of these items the meeting is not likely to be open to the press and public)

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In each case, Members are asked to decide whether, in all the circumstances, the public interest in maintaining the exemption (and discussing the matter in private) outweighs the public interest in disclosing the information.

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Agenda item 1

Committee: Essex Flood Partnership Board

Enquiries to: Lisa Siggins, Democratic Services Officer

Membership, Apologies, Substitutions and Declarations of Interest

Recommendations:

To note

1. Membership as shown below
2. Apologies and substitutions
3. Declarations of interest to be made by Members in accordance with the Members' Code of Conduct

Membership	
Cllr Simon Walsh	Essex County Council
Jon Wilson	Essex County Council
John Meehan	Essex County Council
Kathryn Dedman	Essex County Council
Peter Massie	Essex County Council
Graham Verrier	Environment Agency
Rachel Keen	Environment Agency
Graeme Kasselmann	Thames Water
Jonathan Glerum	Anglian Water
Dave Bill	Essex County Fire and Rescue Service
Cllr Alan Ball	Basildon Borough Council
Cllr Wendy Schmitt	Braintree District Council
Cllr Tony Sleep	Brentwood Borough Council
Cllr Ray Howard	Castle Point Borough Council/ECC
Cllr Neil Gulliver	Chelmsford City Council
Cllr Mark Cory	Colchester Borough Council
Cllr Will Breare-Hall	Epping Forest District Council
Cllr Danny Purton	Harlow District Council
Cllr Andrew St Joseph	Maldon District Council
Cllr Dave Sperring	Rochford District Council
Cllr Mick Skeels	Tendring District Council
Cllr Martin Terry	Southend on Sea Borough Council
Cllr Gary Collins	Thurrock Council
Cllr Vic Ranger	Uttlesford District Council

Minutes of the meeting of the Essex Flood Partnership Board (Private Meeting), held in Committee Room 1 County Hall, Chelmsford, CM1 1QH on Thursday, 05 October 2017

Present:

Members of the Board:

Cllr Simon Walsh (Chairman)	Essex County Council
Liz Berry (substitute for Graham Verrier)	Environment Agency
Cllr Frank Ferguson (substitute for Cllr Allan Ball)	Basildon Borough Council
Jonathan Glerum	Anglian Water
Cllr Ray Howard	Castle Point Borough Council
Peter Massie	Essex County Council
John Meehan	Essex County Council
Cllr Danny Purton	Harlow District Council
Cllr Andrew St Joseph	Maldon District Council
Cllr Dave Sperring	Rochford District Council
Cllr Vic Ranger	Uttlesford District Council

Other persons present

Paul Hayden	RFCC
Trudie Bragg	Castle Point Borough Council
Oladipo Lafinhan	Essex County Council
Lisa Siggins	Essex County Council - Democratic Services
Tim Simpson	Essex County Council
David Prudence	Essex Highways

1 Apologies for Absence

Apologies were received from:

Cllr Mark Cory –Colchester Borough Council
 Cllr Gary Cullen –Southend Borough Council
 Cllr Will Breare- Hall - Epping Forest District Council
 Cllr Wendy Schmitt - Braintree District Council
 Cllr Allan Ball – Basildon Borough Council -Cllr Frank Ferguson attending as a substitute
 Councillor Mick Skeels - Tendring District Council
 Graham Verrier Environment Agency - Liz Berry attending as a substitute
 Rachel Keen – Environment Agency
 Dave Bill – Essex Fire and Rescue Services

Graeme Kasselmann – Thames Water

2 Minutes

The minutes of the meeting held on 6th July 2017 were agreed as a correct record and signed by the Chairman.

3 Declarations of Interest

The Chairman requested Members declare an interest as appropriate.

4 Role of the Essex Flood Board

The Board received an update from John Meehan, Head of Environment and Flood Management on the role of the Essex Flood Board.

Members were given an overview and details of:

- The team structure of the Flood and Water Management Team
- Details of representation on the Flood Board
- How the Board provides an excellent forum for information sharing
- Its aim to decrease flood risk
- Achievements thus far
- Budgets
- Website and communications
- Canvey Island 6 point plan/partnership working
- The volunteer ditch clearing programme

The Chairman thanked John Meehan for the useful update.

5 Local Flood Risk Management Strategy- a new approach

The Board received a presentation and update from Richard Brenkley, Better Agency, working on behalf of Essex County Council to review and communicate our Local Flood Risk Management Strategy.

Members were advised that the main objective was to improve public knowledge and understanding within Essex.

The update included:

- campaign objectives
- aim to increase usage of the flood risk tool on the website
- aim to increase the number of households taking action to protect against flooding
- engage more developers, to utilise the flood teams services and advice
- engage the public to demonstrate and tell stories of the preventative work undertaken by ECC

- the target audience

A discussion followed regarding how the success of the project will be measured and the timescales involved. Members were advised that website usage will be tracked and that public awareness results in costs savings in terms of enquiries received.

It was also confirmed that as not all residents are digitally active, other forms of communication will be used, for example via parish councils.

The Chairman thanked Richard Brenkley for his presentation and update.

6 Highways Surface Water Alleviation Schemes- A pictorial example of schemes

The Board received a PowerPoint presentation from David Prudence, Asset Management Strategy & Policy Engineer, Essex Highways to further illustrate the types of works done under the Surface Water Alleviation Scheme (SWAS) process.

Members were advised that SWAS schemes are capital funded drainage works, generally requiring a wider scope than revenue funded schemes which are minor works such as replacing a gully.

Members were then shown pictorial examples of successful SWAS schemes.

A discussion followed regarding the responsibility and funding of maintenance work. Councillor Purton raised concerns about an ongoing issue in his district, and David Prudence confirmed that if details were provided to him, he would investigate the issue.

Councillor Howard raised an issue regarding Ouida Road in Canvey Island with David Prudence confirming that progress updates on the schemes would be sent to Councillor Howard. Jonathan Glerum of Anglian Water, confirmed that he was aware of the issue and that it would be investigated.

Finally David Prudence provided answers to the questions raised following the his presentation at the July meeting of the Board

- How is the SWAS budget spent?
Answer - 2016/17 capital allocation of £2.5M, outturn was £2.646M – slight over spend
- SWAS procedure can include 'initial assessment', 'appraisal', 'detailed design', and 'works delivery'. This can be a lengthy process

requiring more than one year. Can anything be done to speed up this process?

Answer - There is now improved liaison with the drainage engineer, so that straight forward schemes can progress straight to 'walk, talk and build' gaining quick wins.

The Chairman thanked David Prudence for his presentation.

7 Essex Capital Flood Programme 2017-18 and 2018-19 Outline Business Case update

The Board received a report (EFPB/14/17) and verbal update from John Meehan, Head of Environment & Flood Management, on the progress of schemes in the Capital Programme and the Outline Business Case for 2018/19.

Members were reminded of the three elements of the capital flood programme:

- Property Level Protection (PLP)
- Community Flood Improvement Fund (CFIF)
- Capital funded Flood Alleviation Schemes (FAS)

John Meehan provided an update of external funding for capital schemes and advised Members that Property Level Protection (PLP) in 2018/19 is deemed a revenue cost as the expenditure is less than £5,000 per property. For this reason PLP does not appear in the Capital Flood Programme OBC.

However in 2017/18 Environment Agency funded c.£100,000 for PLP and ECC is very positive about a further c.£100,000 proposal. ECC is optimistic in 2018/19 that it can work with Environment Agency to deliver another £100,000 or £200,000 of PLP projects.

Members also received details of scheme delivery during 2017/18.

During the discussion that followed Councillor Howard raised concerns about the scheme in East Thundersley. It was confirmed that John Meehan would arrange a meeting to discuss the issue.

Councillor St Joseph raised concerns about the scheme in Heybridge and it was agreed that John Meehan would contact him in this regard.

The Board **NOTED** the report and update.

8 Essex Property Level Protection update

The Board received a report (EFPB/15/17) and a verbal update from

Oladipo Lafinhan, Flood Partnerships Funding Co-ordinator, regarding an update on Property Level Protection (PLP).

Members were advised that there is currently no ECC funding allocated for the delivery of the 2018/19 PLP project phase. However external funding has been secured from the Environment Agency, with plans to make an application for further funds before the end of the financial year.

Members were informed of the progress made in the delivery of the 2017/18 phase of the project, and that the current consultant's contract is due to end on 31 March 2018 with a new tender process in place in respect of a new contract.

The Board **NOTED** the update.

9 **Essex Community Flood Improvement Fund**

The Board received a report (EFPB/16/17) and verbal update from Oladipo Lafinhan, Flood Partnerships Funding Co-ordinator, regarding an update on Community Flood Improvement Fund (CFIF).

The report gave details of the 11 applications received thus far in the 2018/19 phase, with the potential to reduce flood risk to 74 residential properties.

Members were advised that unresolved watercourse regulation enquiries currently make up most of the CFIF applications made.

The total grant applied for was £560,000 in 2017/18 and as a result of Environment Agency interest in the CFIF grant, an outline business case for £50,000 contribution to the 17/18 CFIF will be submitted to the EA.

The Board **NOTED** the report.

10 **New development & mitigating flood risk**

The Board received a PowerPoint presentation from Tim Simpson, Development & Flood Risk Manager, on the policies applied to new development and the ability to gain developer contributions.

The presentation included an overview of;

- surface water management in Essex
- details of what aspects ECC comments upon
- support for decision making
- key requirements
- post planning considerations
- ECC standard conditions
- Developer contributions in respect of Sec 106 and CIL

In response to a question raised, Tim Simpson clarified that whilst ECC do comment on local plans, flood plans fall outside of this remit ,and that was in fact a matter for the Environment Agency.

The Chairman thanked Tim Simpson for his presentation.

11 Any Other Business

With the agreement of the Chairman, the Board received an update from Paul Hayden, RFCC Anglian Eastern Chairman. He spoke regarding the funding challenges faced and urged Members to look at different ways of working, including the reprogramming of schemes. He felt Essex's proactive Floods teams could find further opportunities in the next 2 years which are the final years of the EA 6 year plan.

He also advised of the restrictions in connection with Local Enterprise Partnership (LEP) funding, with Jonathan Glerum offering to facilitate talks with the relevant LEPS.

Councillor Ranger raised an issue regarding the SLADE site in Saffron Walden and it was confirmed that John Meehan and David Prudence would contact him directly in this regard.

12 Future Meeting Dates

The Board noted the future meeting dates:

Thursday 25th January 2018 at 10.00am County Hall Chelmsford

Thursday 5th April 2018 at 10.00am County Hall Chelmsford

Thursday 5th July 2018 at 10.00am County Hall Chelmsford

Thursday 4th October 2018 at 10.00am County Hall Chelmsford

The meeting closed at 12.32 pm

Chairman

Report to: Essex Flood Partnership Board	Report Number: AGENDA ITEM 4 (EFPB/1/18)
Date of report: 25/01/2018	County Divisions affected by the decision: All
Title of report: Capital Programme update	
Report by: David Chapman Delivery and Enforcement Manager	
Head of Service: John Meehan Acting Head of Environment and Flood Management	
Enquiries to: John Meehan Acting Head of Environment and Flood Management 07827 976397	

1. Purpose of report

- 1.1. To update the Flood Board on the 2017/18 Capital Flood Programme

2. Background

- 2.1 The Capital Flood Programme has a £19 million ECC budget broken down over 5 years. It has an ambitious programme in 2017/18 of £4.4 million for grants and projects. In order to deliver schemes on the Flood Programme, we are using a number of consultants and in house expertise to design and build individual projects.
- 2.2 The Capital Flood Programme is broken down into 3 elements:
 - 1) Property Level Protection (PLP) is a scheme that offers previously flooded properties an opportunity to apply for individual protection. The applications are then vetted and prioritised. The latest PLP information and the 2017/18 PLP programme will be covered by Oladipo Lafinhan in item 6.
 - 2) The latest Community Flood Improvement Fund (CFIF) information will be covered by Oladipo Lafinhan in item 7.
 - 3) Capital funded Flood Alleviation Schemes (FAS) forms the bulk of our programme; this area focuses on delivering projects on the ground in the areas most at risk of surface water flooding. Below is more specific detail on the Capital Programme FAS.

3. External funding update for capital schemes

3.1 Over the past couple of years, as a result of partnership working with a wide range of stakeholders such as the Environment Agency, Anglian Water and District Councils, the Flood and Water Management team has been able to attract external contributions and income to support a number of functions. These include:

- Feasibility and assessment studies
- Delivery of capital flood alleviation schemes
- Delivery of the Property Level Protection project

3.2 The Flood Team is forecasting to bring in a total of £1.63m worth of external funding as a result of the work we have carried out on this year's capital programme. The funding allocation is as follows:

- Flood Defence Grant in Aid £1.328m
- Property Level Protection £199k
- Local Levy £54k
- External stakeholder contributions £49.5k

3.3 The amount of income generated by the capital programme is 35% of our annual budget, which is above the 25% target that was set at the start of the year.

3.4 This is in addition to

- £125,771 contributions secured in 2014/15
- £225,227 contributions secured in 2015/16 and
- £436,490 contributions and income secured in 2016/17

4. Planning Applications

4.1 Planning applications have been submitted and approved for the following schemes:

- HAR2 Kingsmoor
- HAR6 Brays Grove – phase 1
- HAR10 Nettleswell

4.2 We are expecting the planning application for HAR6 Brays Grove phase 2 to be determined by the 20th January 2018.

5. Delivery programme

5.1 The updates to note are:

- ROC1 Rayleigh West – Both phases are now complete and in operation. Compliments have been received from Sweyne Park School and RDC regarding the completed works.
- CAS3 West Wood – The scheme is now complete and in operation. Our partners CPBC have given the finished scheme their approval.
- COL2B The Hythe – The tender process is complete and the contract has been awarded to On Site. Construction work is due to start on site on the 29th January.
- HAR2 Kingsmoor – Desilting of the ponds and construction of the Leaky Dams is complete. Planning approval has been granted for the Flood Storage Area, the tender process is complete and the contract has been awarded to TopBond. Work on site is programmed to start in February.
- HAR10 Nettleswell - Planning approval has been granted for the Flood Storage Area, the tender process is complete and the contract has been awarded to SF Stefans. Work on site is programmed to start in February.
- HAR6 Brays Grove phase 1 - Planning approval has been granted for the Flood Storage Area, the tender process is complete and the contract has been awarded to TopBond and work on site is programmed to start in February.
- HAR6 Brays Grove phase 2 - Planning approval is in progress and should be determined by the 20th February, the tender process is ongoing and work on site is programmed to start in March.
- ROC7 Ashingdon – The tender process is ongoing. The work will be carried out using our permitted development rights and is programmed to start in February.

5.2 The total number of properties benefitting from reduced surface water flood risk as a result of all completed schemes so far on the 2017/18 capital programme is 305. With the completion of all of the outstanding schemes on our programme, we are set to over achieve our target of 377 properties benefitting.

6. Recommendation

6.1 For Essex Flood Board Members to note progress on the Capital Flood Programme.

Report to: Essex Flood Partnership Board	Report number: AGENDA ITEM 5 (EFPB/2/18)
Date of report: 25/01/2018	County Divisions affected by the decision: All
Title of report: Essex Property Level Resilience update	
Report by: Dipo Lafinhan Flood Partnerships Funding Co-ordinator.	
Head of Service: John Meehan Head of Planning and Environment	
Enquiries to: Dipo Lafinhan Flood Partnerships Funding Co-ordinator - 03330 139512	

1. Purpose of report

- 1.1. To highlight the progress of the delivery of the 2017/18 phase of the PLR project, outline the external funding secured and highlight the plans for the delivery of the 2018/19 phase including potential risks.

2. Background

- 2.1. Essex County Council set aside £600,000 for the delivery of 100 PLR installations to flooded residents of the County in 2017/18.
- 2.2. This is a £5,000 per property grant available for the installation of Property Level Resilience measures available to Essex residents who have been internally flooded in the past.
- 2.3. There have been 366 PLR applications received to date.
- 2.4. There is currently no Essex County Council funding allocated for the continuation of the PLR scheme in 2018/19 and beyond.

3. Issues

- 3.1. Securing funding for the 2018/19 phase of the PLR project in order to ensure the grant will continue to be available for Essex residents both those who have been flooded in the past and those who might get flooded in the future.
- 3.2. Seeking approval from Nicola Beach, Executive Director Infrastructure and Environment, to go out to procure the services of the preferred contractor to deliver the 2018/19 phase of the PLR project.
- 3.3. A potential risk in that the potential extension of the procurement process beyond the proposed 31st March 2018 deadline. This has the risk to potentially delay the start date of the 2018/19 phase of the Essex PLR project.

4. Project progress

- 4.1. 115 pre-installation surveys have been completed during the 17/18 PLR phase. This has provided a very large pool of potential installations.
- 4.2. 104 PLR installations have been completed to date and total number of installations completed has surpassed the milestone of 100 PLR installations. These installations include property level resistance and resilience measures such as airbricks, sump pumps, flood barriers, water proofing properties, Non-return valves and flood doors.
- 4.3. £99,500 external funding from the Environment Agency has been secured. Another of a further £99,500 has been made. Therefore total sum of external funding for the 2017/18 phase of the PLR project is £199,000. This is in addition to the £145,000 secured during the 2016/17 PLR project.
- 4.4. An agreement has been made with Thurrock Council to deliver a number of PLR installations to its residents. Letters have been sent out to all 8 residential properties with 3 positive responses received, one resident is not interested and we are making further efforts to receive responses from the remainder residents.
- 4.5. The costs of the PLR installations would be recovered for Thurrock through a combination of Environment Agency and Anglian Water funding.

5. Recommendations

- 5.1. Receive approval to tender for the selection of a preferred consultant to manage and deliver the 2018/19 phase of the PLR project.

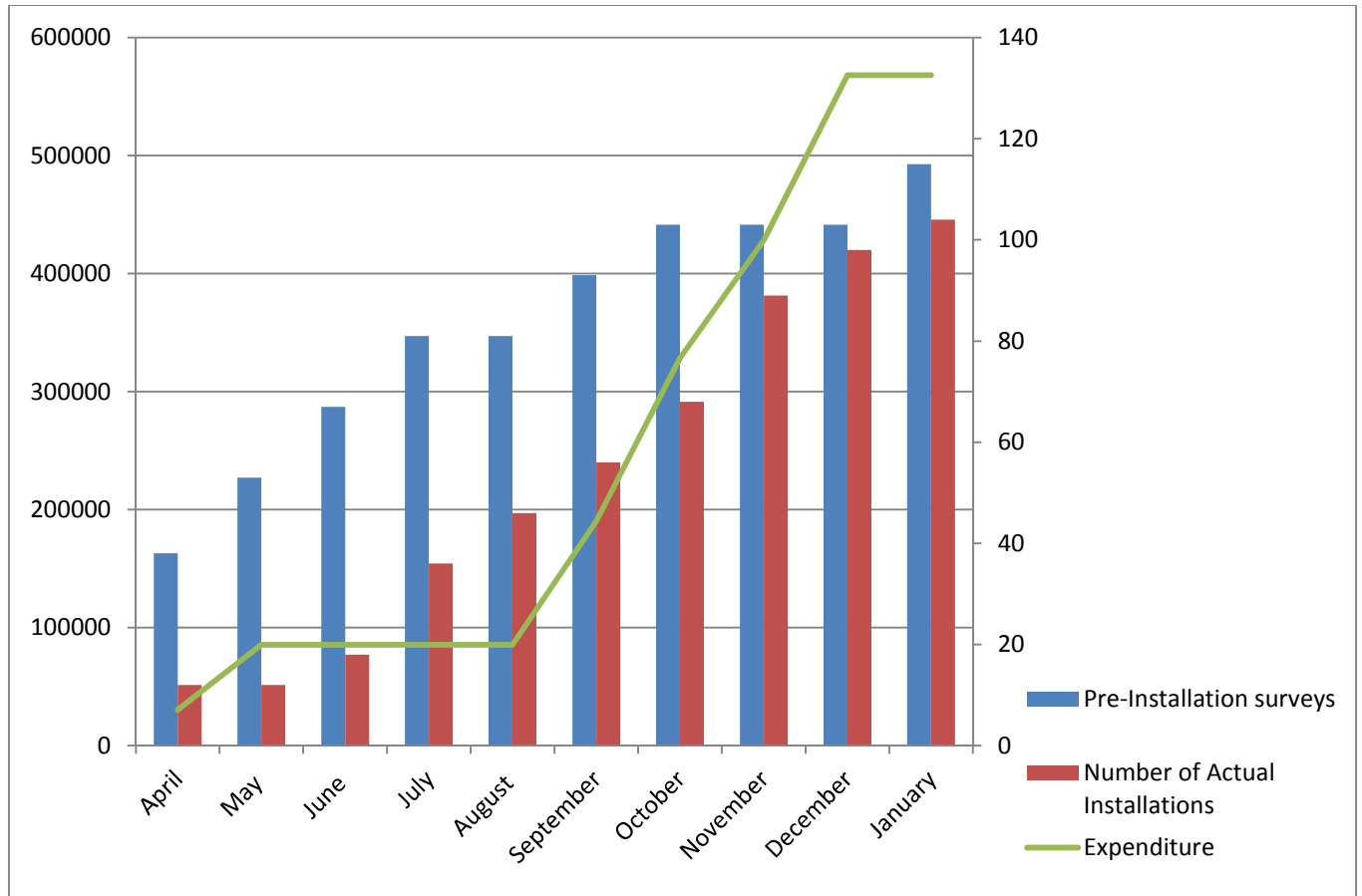
- 5.2. 49 residential properties from the Anglian Water DG 5 records have been selected for PLR installations in 2018/19. An agreement would be made with Anglian Water to formalize this arrangement.
- 5.3. To make further grant applications to the Environment Agency in 2018/19 in order to provide funding for further Essex Flood Property Level Resilience projects not covered under the agreement with Anglian Water.

6. Looking Ahead

- 6.1. All the Issues and recommendation are being discussed with and reported to the Flood Programme Board.
- 6.2. The PLR project has been successful in terms of delivering resistance and resilience measures to flooded Essex residents. It has also been successful in attracting external funding.
- 6.3. Proceeding with a 2018/19 phase ensures the Flood and Water Management team would deliver an economically self-sustaining scheme and also more Essex residents would be better protected from flooding.

Appendices

Number of Installations completed



Report to: Essex Flood Partnership Board	Report Number AGENDA ITEM 6 (EFPB/3/18)
Date of report: 25/01/2018	County Divisions affected by the decision: All
Title of report: Essex Community Flood Improvement Fund update	
Report by: Dipo Lafinhan Flood Partnerships Funding Co-ordinator	
Head of Service: John Meehan Head of Planning and Environment	
Enquiries to: Dipo Lafinhan Flood Partnerships Funding Co-ordinator - 03330 139512	

1. Background

- 1.1 Essex County Council set aside £400,000 of its Capital Flood Prevention Programme to provide a Community Flood Improvement Fund grants to other flood risk management authorities, charities, community groups, farmers and or landowners committed to delivering projects resulting in the reduction of flood risk to Essex residents. The 2017/18 phase so far has included 13 applications with the potential to reduce the flood risk to 87 residential properties. These applications are from District and Parish Councils, Community Organizations, Developers, a Private Water company, a Housing Society and a Bowling Club. The total amount applied for so far total £643,500 (See Appendix 1 and 2 for more details)

2. Purpose of report

- 2.1 To highlight observations made during the implementation of the 17/18 phase of this grant with the view to incorporate changes which would further encourage increased take up and efficient delivery and implementation of future phases of the CFIF grant.

3. Issues

- 3.1 Increasing engagement with scheme beneficiaries as agreements between applicants such as Parish/Town councils/Landowners/Farmers and residents benefitting from the schemes need to be drafted and governed as flood assets need to be maintained as part of the grant process. As a corollary, the need for this engagement, drafted, re-drafting and agreeing to these agreements have the potential to delay the delivery of the schemes funded through this grant.

- 3.2 Furthermore, there has been a lot of involvement and officer time dedicated to supporting CFIF applicants in managing the delivery of the schemes. This support has been in the form of producing Outline Design Plans, accompanying contractors on site visits, assisting with public engagement and dealing with ancillary concerns such as foul drainage connections in surface water systems that need improving.
- 3.3 While officer time can be charged against the capital budget for the support provided above, there is the risk officers are increasingly taking a bigger role in schemes which applicants are meant to deliver.
- 3.4 There have been examples where District Councils have provided expertise to Parish Councils in managing their CFIF application. This is a model that could be replicated County-wide.

4. Applications received

4.1 The 2017/18 CFIF grant phase has received the following applications:

- Radwinter Parish Council (Maple Lane Drainage Connection)
- Anglian Water, Great Burstead (Kennel Lane Improvement Works)
- Tendring District Council (Nansen Road Works and Ipswich Road SWAS scheme)
- Crest Nicholson Eastern, Great Notley (Drainage improvements to London Road)
- Mr. Horsnell, Ingatestone (Landowner, Highwood Cottages)
- Bowling Club, Thorpe-Le-Soken (Paradise Alley Works)
- Woodroffe Road Fund, Little Baddow (Fir Tree Lane Drainage Works)
- Harlow District Council (Oakwood Pond Works and Sumners Area Works)

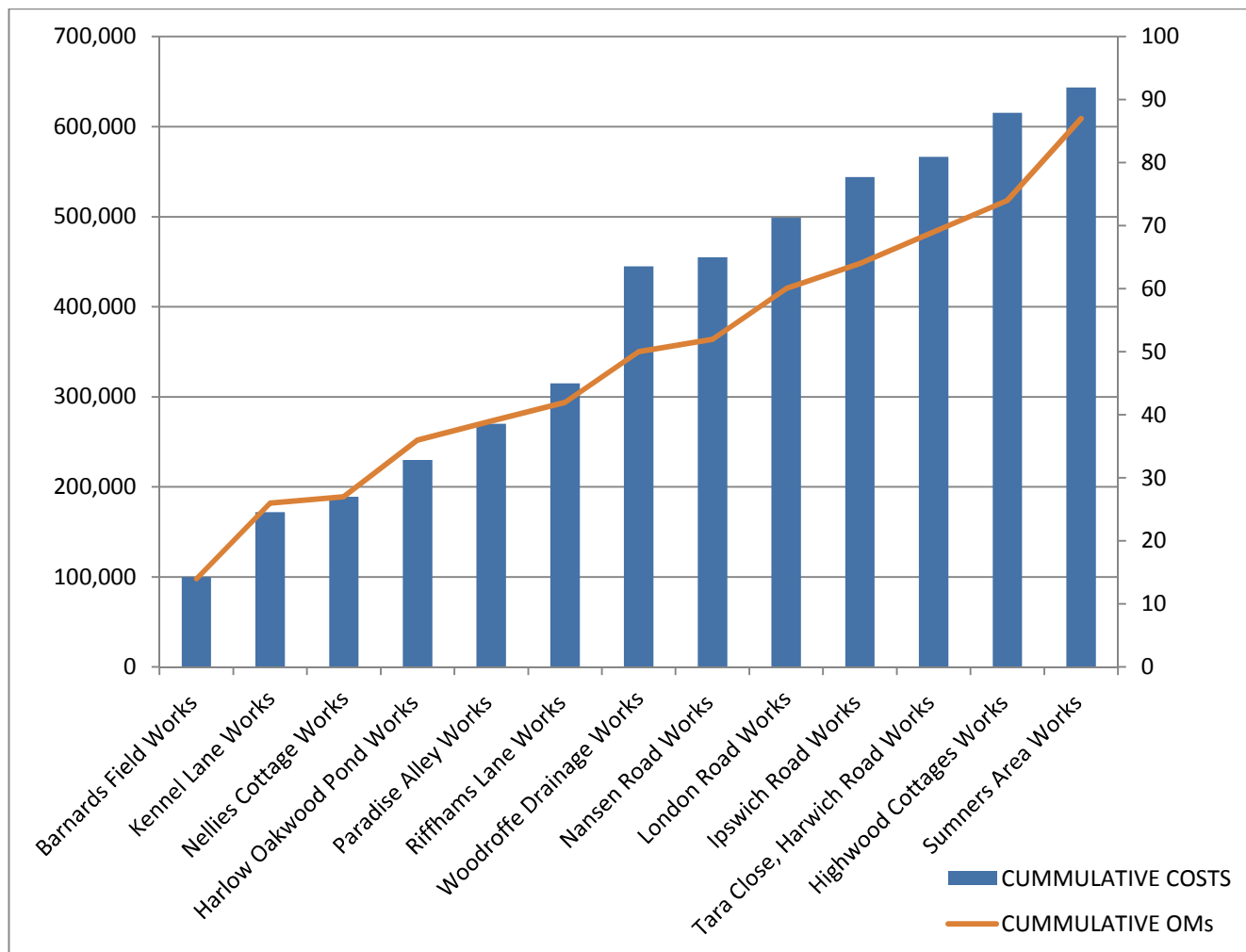
4.2 The total grant applied for is at £643,500 and the total number of properties to be protected from the proposed projects is estimated at 87 residential properties. If all applications are delivered, the total amount that would be spent reducing flood risk to each property would be approximately £7,396 per property.

5. Recommendations

- 5.1 Encourage our partners and other stakeholders in Essex to endeavor to continue to make more applications in order to provide relief to Essex residents affected by very frequent local flooding.
- 5.2 As a result of Environment Agency interest in the CFIF grant, an Outline Business Case for £50,000 contribution to the 17/18 CFIF fund would be submitted to the EA.

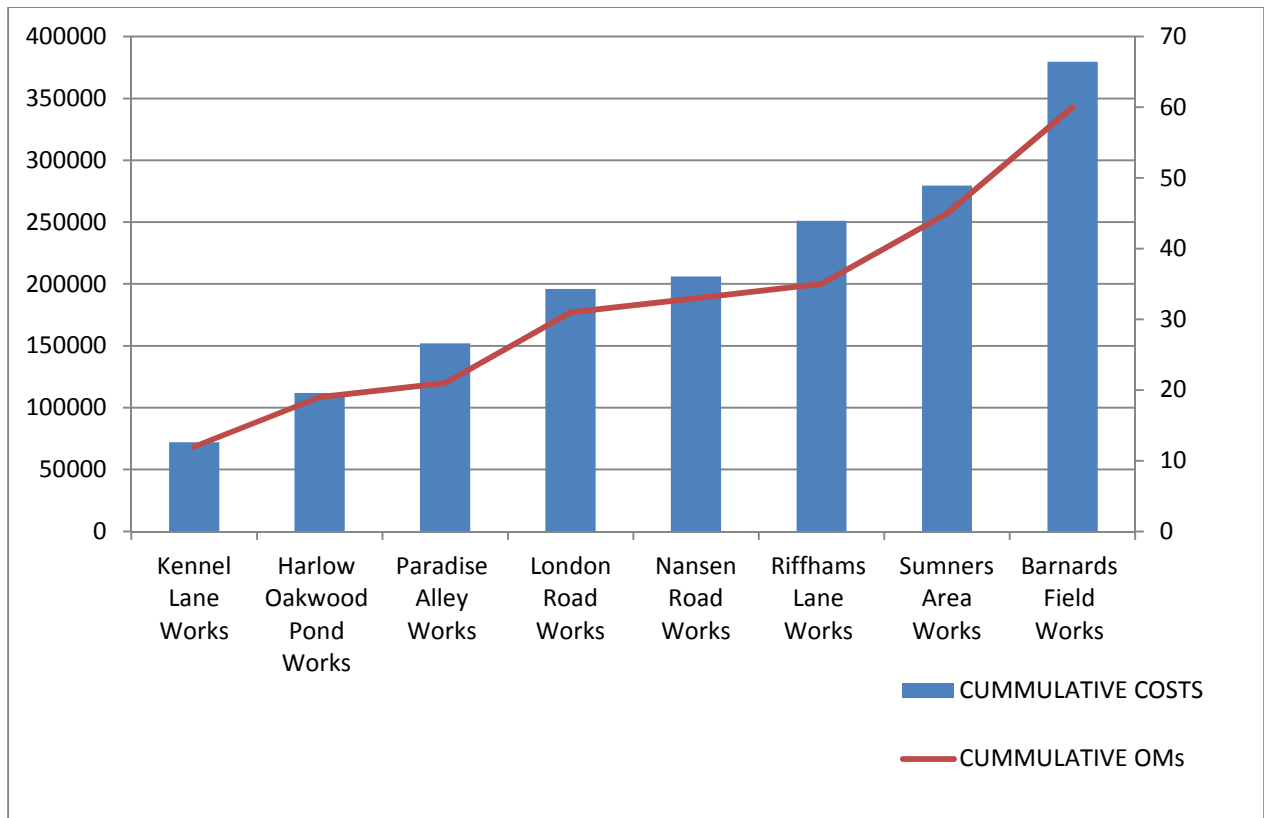
Appendix 1

Total number of applications received and total grants applied for



Appendix 2

Schemes started/completed



Appendix 3

Kennel Lane Great Burstead Works





Nansen Road Holland on Sea Works



Report to: Essex Flood Partnership Board	Report Number: AGENDA ITEM 8 (EFPB/04/18)
Date of report: 25/01/2018	County Divisions affected by the decision: All
Title of report: Essex Surface Water Management Plan Update	
Report by: Lee Sencier, Surface Water Planning Engineer	
Head of Service: John Meehan Head of Planning and Environment	
Enquiries to: Lee Sencier, Surface Water Planning Engineer - 03330 136741	

1. Background

- 1.1 Essex County Council has recently undertaken a review of the numbers of properties at risk of pluvial flooding across the county. The review has been carried out to capture the most up to date standards, modelling methods and data availability and comprises of two stages as follows:
- 1) Review the number of properties at risk of pluvial flooding across the whole of Essex to reflect changes in national datasets and the subsequent impact this will have on existing flood risk area rankings (Tier Review) within the Local Flood Risk Management Strategy (LFRMS) (2013).
 - 2) Update existing Surface Water Management Plan (SWMP) hydraulic modelling and review the impact this has on the number of properties identified as being at risk of pluvial flooding within each study area.
- 1.2 Some key changes in the way national flood mapping data is produced and the method/ criteria used to identify properties at risk of pluvial flooding has led to some significant changes in the flood risk area rankings to be reported in the Local Flood Risk Management Strategy.
- 1.3 Improvements in hydraulic modelling and data availability have produced a much better understanding of the numbers of properties at risk of pluvial flooding within existing SWMP study areas and the move toward a catchment based approach to defining Critical Drainage Area's (CDA's) will help improve flood alleviation scheme viability by opening up opportunities for more cost effective, catchment wide solutions such as Natural Flood Management (NFM) measures.

2. Purpose of report

- 2.1. The purpose of this report is to highlight observations made during the review of properties at risk of pluvial flooding across Essex, along with the Surface Water Management Plan hydraulic modelling update.

3. Observations

Stage One Flood Risk Area Ranking/ Tier Review

- 3.1 The numbers of properties identified at risk of pluvial flooding within the Essex LFRMS (2013) are based on the Flood Map for Surface Water (FMfSW) (2010), a national dataset produced by the Environment Agency (EA).
- 3.2 In 2013 the EA produced the updated Flood Map for Surface Water (uFMfSW) which introduced changes in the way properties at risk of pluvial flooding were identified based on an improved methodology, modelling techniques and data availability to better represent the risk of flooding. Table 1 below provides a summary of the key differences between the FMfSW (2010) and the uFMfSW (2013) datasets:

	Nationally produced surface water flood mapping (2013)	FMfSW (2010)
Hydraulic modelling	2D overland flow modelling	2D overland flow modelling
Model software and equations	JFlow+ (Shallow Water Equation-based)	JFlow-DW (diffusion wave-based) - does not solve full shallow water equations
Hydrological modelling	Direct Rainfall approach with allowances for the sewer network and infiltration (see below).	Direct Rainfall approach with allowances for the sewer network and infiltration (see below).
Design rainfall	FEH depth-duration-frequency parameters defined on a regular 5km grid (with no areal reduction factor applied) for rainfall with a probability of occurring in any year: <ul style="list-style-type: none">• 1 in 30• 1 in 100• 1 in 1,000	FEH depth-duration-frequency parameters defined on a regular 5km grid (with no areal reduction factor applied) for rainfall with a probability of occurring in any year: <ul style="list-style-type: none">• 1 in 30• 1 in 200
Storm duration(s)	1, 3 and 6hrs used for all scenarios (unless specified locally by LLFA) 50% summer storm profile	1.1hrs used for all scenarios 50% summer storm profile

Table 1 – Summary of Differences between FMfSW (2010) and uFMfSW (2013)

- 3.3 Table 2 below provides a summary of the new parameters used to identify a property 'at risk' of internal flooding from surface water based on the uFMfSW Property Point dataset:

Buffer	MasterMap building footprints buffered by 2m to represent the size of a grid square and to reduce the gridded effect of the way that the raised property footprint is represented.
Proportion of property perimeter wetted by a minimum depth of water	50% of the external portion of the buffered property perimeter to be wet to the given minimum depth - balances the desire to include all affected properties with the need to recognise that many borderline properties will not be affected.
Minimum depth of water	Minimum modelled depth of 200mm - a depth that is broadly between the average airbrick height and average door threshold height.

Table 2 – National Property Count Method Parameters (2014)

- 3.4 Whilst these parameters identify property 'at risk' of internal flooding it should also be noted that properties reaching the 200mm depth threshold with 0% wetted perimeter are said to be in 'areas at risk' of surface water flooding.
- 3.5 Given these changes it was necessary for Essex County Council to carry out a review of the number of properties at risk of pluvial flooding across the county to align with this. The results of this exercise are summarised in Table 3 below:

Residential	Wetted Perimeter	Depth Threshold					
		0mm	150mm	200mm	300mm	600mm	900mm
30 Year	>0%	33781	25995	18119	9126	1497	493
	>25%	21010	13206	8441	3701	619	220
	>50%	9722	5776	3677	1728	382	135
	>75%	5006	3179	2118	1086	278	98
100 Year	>0%	61583	48856	36165	19502	3470	1213
	>25%	40120	27105	18310	9092	1771	636
	>50%	20341	12815	8692	4670	1139	446
	>75%	11033	7400	5311	3044	857	360
1000 Year	>0%	173309	151578	125075	76889	19192	6293
	>25%	127443	94781	69653	39656	10943	3710
	>50%	71064	48700	35924	21668	7008	2556
	>75%	39913	28391	21478	13905	4965	1912

Table 3 – Summary of updated Essex County Residential Property Counts

- 3.6 In reviewing the total number of properties at risk across the county it was also necessary to look at the impact updates to the national mapping and property point dataset would have on the ranking of Local Flood Risk Areas identified within the Essex LFRMS (2013). Table 4 below provides a summary of the outcome of the Local Flood Risk Area Ranking review:

Area Name	New Tier Classification	Old Tier Classification	Tier Movement
South Essex - Rochford & Hod	T1	T1	T1 Remain
Chelmsford	T1	T1	T1 Remain
Heybridge	-	T1	Unclassified Remain
South Essex - Castle Point	T1	T1	T1 Remain
South Essex - Billericay	T1	T1	T1 Remain
Maldon	-	T1	T1 to unclassified
Brentwood	T1	T1	T1 Remain
Harlow	T1	T1	T1 Remain
Colchester	T1	T1	T1 Remain
Loughton	T1	T1	T1 Remain
South Essex - Basildon	T1	T1	T1 Remain
Baintree	T2	T1	T1 to T2
Witham	T2	T1	T1 to T2
South Woodham Ferrers	-	T2	T2 to unclassified
Waltham Abbey	-	T2	T2 to unclassified
Saffron Walden	-	T2	T2 to unclassified
Halstead	-	T2	T2 to unclassified
Steeple Bumpstead	-	T2	T2 to unclassified
Hedingham	-	T2	T2 to unclassified
Clacton on Sea	T1	-	Unclassified to T1
Mayland	-	-	Unclassified remain
Sawbridgeworth	T2	-	Unclassified to T2
Lower Nazeing	-	-	Unclassified remain
Manningtree	-	-	Unclassified remain
Great Dunmow	-	-	Unclassified remain
Thaxted	-	-	Unclassified remain
Bicknacre	-	-	Unclassified remain
North Weald	-	-	Unclassified remain

Table 4 - Summary of Flood Risk Area Ranking Review

Ranking	Criteria
Tier 1	More than 1000 people predicted to be at risk
Tier 2	Between 1000 and 500 people predicted to be at risk
Tier 3	Less than 500 people predicted to be at risk

Table 5 – Ranking Criteria for Flood Risk Areas

- 3.7 Some key observations of this exercise were the emergence of Clacton on Sea as a Tier 1 Flood Risk Area, Sawbridgeworth as a Tier 2 Flood Risk Area and movement of a number of former Tier 1 and 2 areas to un-classified. With this in mind we are looking at procurement of the Clacton-on-sea SWMP for delivery in the 2018/19 financial year.

Stage Two Existing SWMP Hydraulic Modelling Update

- 3.8 SWMPs have been completed within Essex for the urban areas of South Essex, Brentwood, Chelmsford, Colchester, Epping (Inc. Loughton), Braintree and Witham, Harlow and Maldon (Inc. Heybridge). Hydraulic modelling was used to inform the SWMPs, identifying areas at risk of pluvial flooding and assessing the effectiveness of potential mitigation schemes.
- 3.9 Essex County Council commissioned an update of the existing models for South Essex, Brentwood, Chelmsford, Colchester, Harlow and Maldon to include new datasets and current best practice methodologies, such as climate change, integrated urban drainage, infiltration etc. to improve the estimation of surface water flood risk within these SWMP study areas.
- 3.10 The results of this exercise are broad, including updated hydraulic modelling outputs and associated property at risk of flooding counts for each of the Critical Drainage Areas (CDAs) identified within the SWMP Study areas.
- 3.11 There is no clear trend as to whether or not the number of properties at risk within each CDA increases or decreases but in some cases the difference is quite significant, for example BAS10 Existing 826 Properties, Updated 403 Properties and CHE9 Existing 119 Properties, Updated 199 Properties.
- 3.12 A key change that came about as result of this exercise was the move toward defining CDAs using a 'Catchment Based Approach'. Previously CDAs were defined by forming a boundary around clusters of properties identified at risk of flooding which meant they were often located within urbanised areas and may not have truly reflected influences from the wider catchment area.
- 3.13 The revised approach will extend the CDA boundary to the full extent of the catchment area which will incorporate both urban and rural areas that have an influence on flood risk. This will enable a wider range of flood alleviation measures to be considered, such as Natural Flood Management measures which may prove more cost effective than more heavily engineered options.

4. Recommendations

- 4.1. We would recommend that the Essex Flood Partnership board note the changes in this report to the numbers of properties identified as being at risk of surface water flooding across Essex and reclassification of flood risk areas for inclusion

in the Local Flood Risk Management Strategy. This will be the subject of approval via the ECC governance process.

- 4.2. We would recommend that the update to the existing SWMP hydraulic modelling, revised CDA boundaries and revised properties at risk counts are adopted as a technical addendum to the existing Surface Water Management Plans for Essex which will be subject to approval via the ECC governance process.

5. Looking ahead

- 5.1. The revised property counts will be used for any future reporting of properties at risk of flooding within Essex (inc. Local Flood Risk Management Strategy) and hydraulic models along with associated outputs will be made available as part of our paid services provision.
- 5.2. The changes outlined in this report are likely to have an impact on Local Development Plans and moving forward we will look at working with local planning authority teams and Spatial Planning at ECC to decide how best to incorporate the impact of these changes.
- 5.3. The changes will also impact on the Flood Capital programme, in particular economic appraisal and assessing viability of flood alleviation schemes so we will continue to work with the programme lead on incorporating these as appropriate.