

Essex Flood Partnership Board Agenda Item 7:

Surface Water Management Plan (SWMP) Update

Presentation by:

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Essex County Council

01 – Introduction:

Most recent SWMP update (Oct 2020) includes:

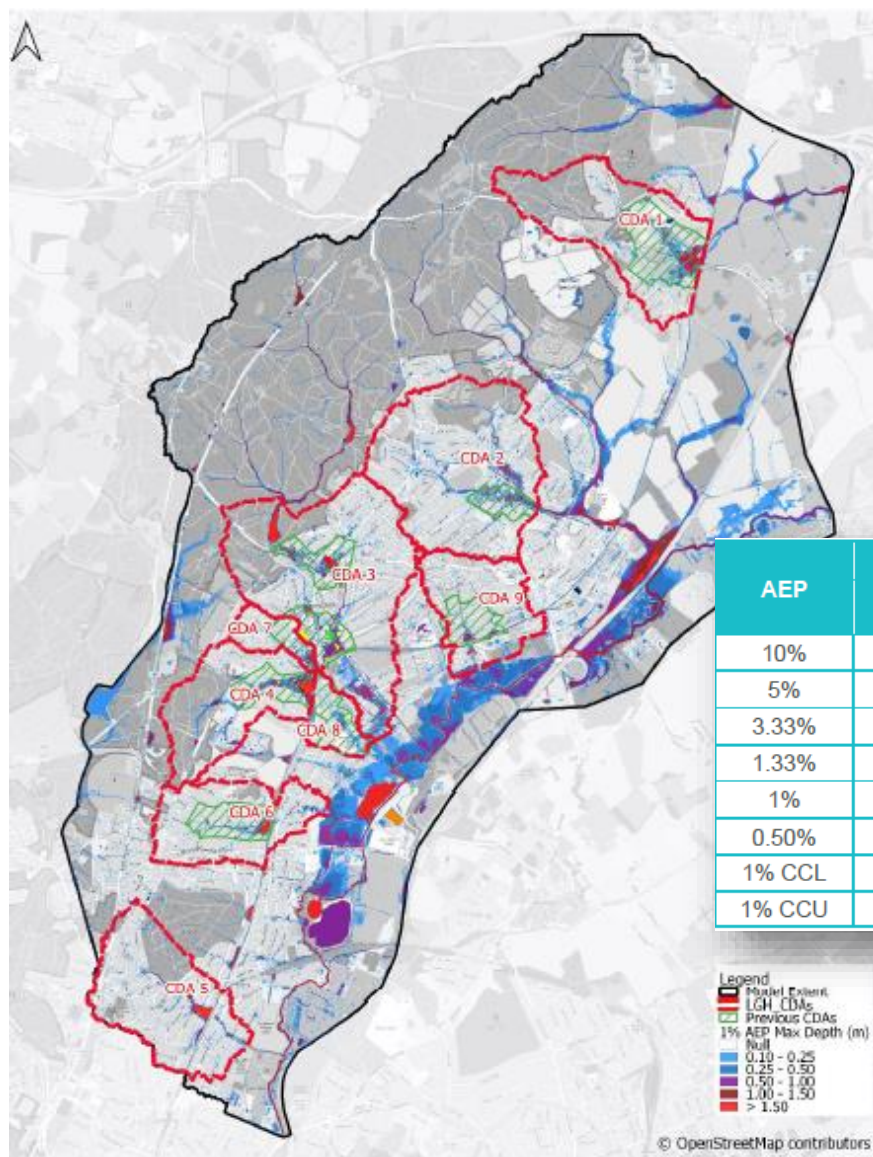
- 1) Completion of the existing SWMP update to now include Loughton, Braintree and Witham**
- 2) Update of SWMP Action Plans for all existing SWMP's**
- 3) Delivery of Two new SWMP's and Initial Assessments for Clacton on Sea and Lower Sheering/ Sawbridgeworth**

02 – Background:

From Previous Flood Board Update (Apr 2018):

- 1) National Flood Risk Dataset updated (2013-14), triggering the need to review ECC's Preliminary Flood Risk Assessment (PFRA) that was first produced in 2011.**
- 2) The PFRA (2011) reported 55,000 properties at risk during the 1 in 200 year event, comparable to 36,165 properties for the 1 in 100 year event (2018).**
- 3) This update also triggered the need to review Flood Risk Area Tier rankings. As a result, various Tier 2 areas moved to Unclassified status, however two new Tier 1 areas emerged. (Clacton on Sea and Lower Sheering)**
- 4) Update of existing SWMP modelling (2018) to include new datasets, best practice and hydraulic modelling methods to improve the estimation of surface water flood risk. Revised CDA Boundaries to Catchment Based approach.**

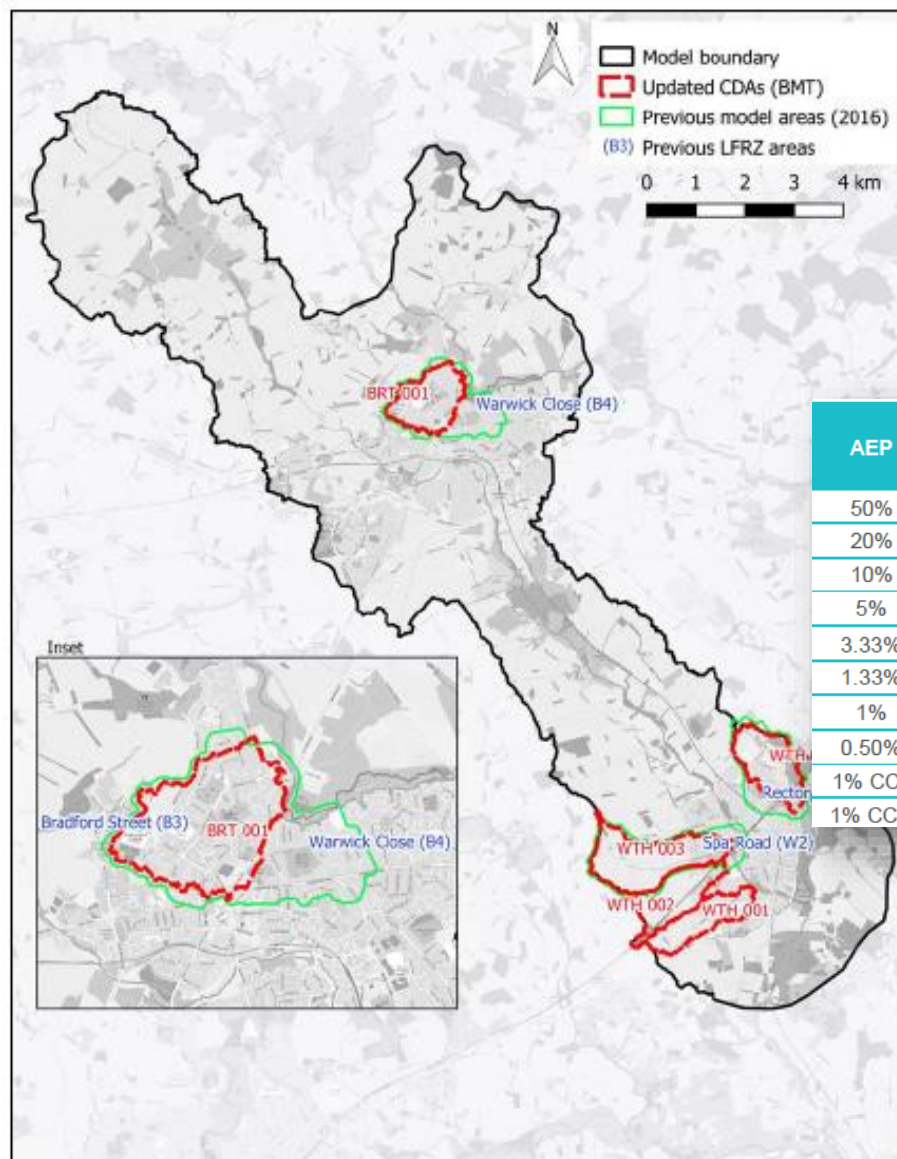
03 – Loughton SWMP Update Overview:



Critical Drainage Area	Total Estimated Number of Flooded Properties (1% AEP Event)
CDA 1: Theydon Bois, Loughton	167
CDA 2: Pyrles Lane, Loughton	237
CDA 3: Loughton Brook, Loughton	289
CDA 4: The Avenue, Loughton	88
CDA 5: Kings Avenue, Loughton	69
CDA 6: The Meadway, Loughton	60
CDA 7: Lower Park Road, Loughton	19
CDA 8: Valley Hill, Loughton	29
CDA 9: Chequers Road, Loughton	74

AEP	Property Count Estimation			
	Residential	Non-Residential	Critical Service	Total
10%	326	65	0	391
5%	544	93	1	638
3.33%	668	105	2	775
1.33%	997	144	6	1147
1%	1108	154	6	1268
0.50%	1404	178	9	1591
1% CCL	1340	173	7	1520
1% CCU	1625	193	10	1828

04 – Braintree SWMP Update Overview:



Critical Drainage Area	Total Estimated Number of Flooded Properties (1% AEP Event)
WTH 001: Maltings Lane, Witham	29
WTH 002: Blunts Hall Road, Witham	17
BRT 001: Bradford Street, Braintree	67
WTH 003: Spa Road, Witham	17
WTH 004: Elderberry Gardens, Witham	33

AEP	Property Count Estimation			
	Residential	Non-Residential	Critical Service	Total
50%	36	13	1	50
20%	57	34	1	92
10%	94	48	2	144
5%	235	78	2	315
3.33%	305	91	2	398
1.33%	387	111	2	500
1%	457	128	2	587
0.50%	616	169	2	787
1% CCL	628	172	2	802
1% CCU	831	223	5	1059

05 – SWMP Action Plan Update:

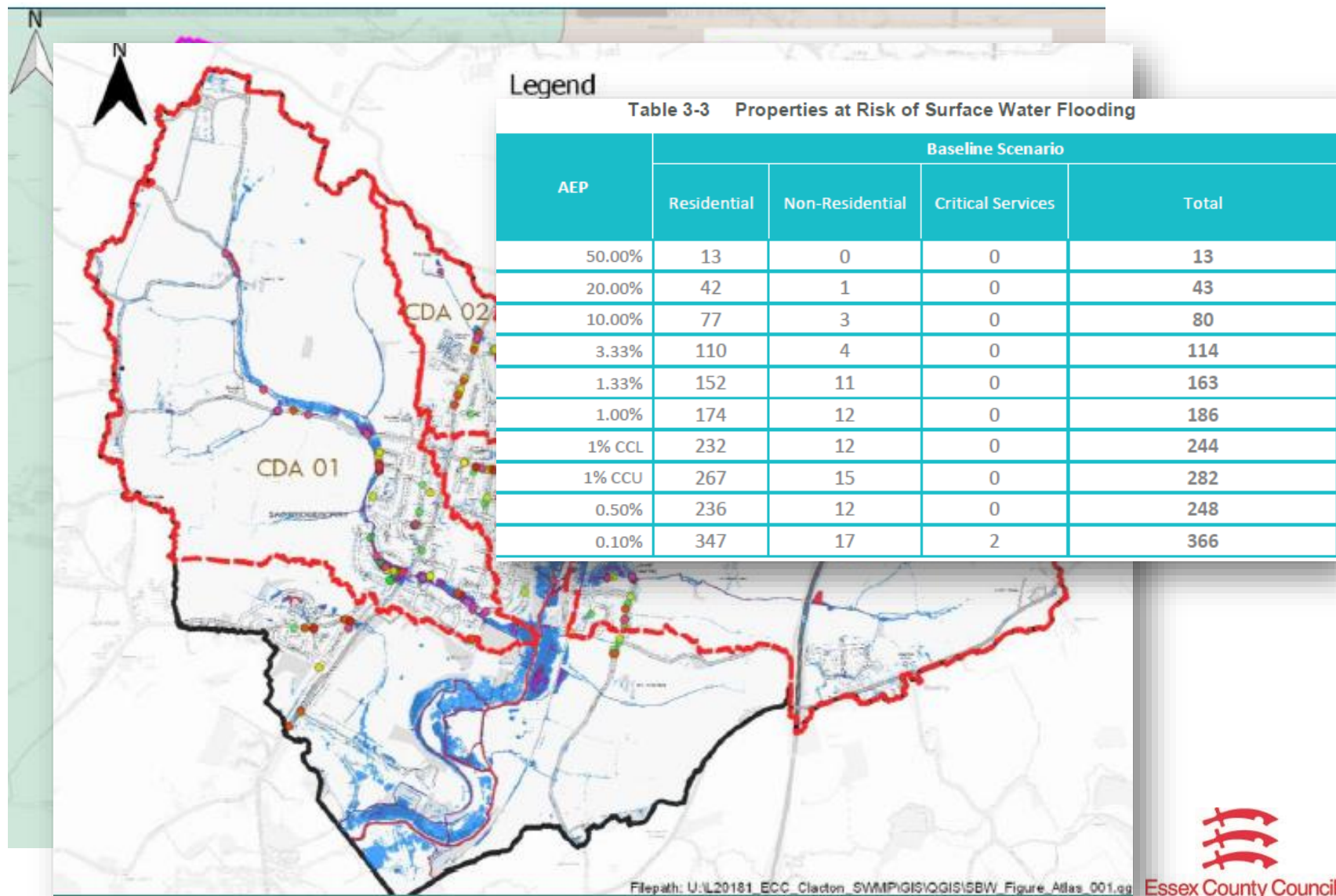
County Wide Action Plan and District Level Action Plan's

DISTRICT WIDE ACTION PLAN

CRITICAL DRAINAGE AREA	Est No. of residential properties at risk from the 100 year rainfall event ****	ACTION				RESPONSIBILITY				FINANCE						Current Project Status	
		ID	Description	Potential Locations	Benefits*	Priority Ranking	Lead Organisation	LLFA Dept.	Primary Support	Other Stakeholders	Indicative Cost**	FUNDING SUITABILITY***					
LGH 001	145	1	Investigate specific surface water flood risk mitigation to manage overland flow and reduce risk of surface water flooding through considering the construction of basins and associated bunds on Theydon Green.	Theydon Green	Reduction in properties flooded during high intensity rainfall events	High	ECC	FWM Team	EFDC	Landowners	High	-	Yes	Yes	Yes	FDGIA	Not commenced
		2	Consider installation of SuDS measures throughout CDA to reduce surface water flooding depths and durations.	Various	Reduction in depth of flooding, improvements to biodiversity	High	ECC	FWM Team	EFDC / Anglian Water	-	Medium	-	Yes	-	Yes	-	Not commenced
		3	Investigate suitability of Property Flood Resilience measures for properties in areas identified as high risk within the CDA, particularly on Station Approach, Forest Drive and surrounding roads.	Station Approach, Forest Drive and surrounding roads	Reduction in the impact of flooding to properties	Medium	ECC	FWM Team	Development Management	Local Resilience Forum / EFDC	Medium	-	-	-	-	-	Not commenced
LGH 002	236	4	Investigate specific surface water flood risk mitigation to manage overland flow and reduce risk of surface water flooding through considering the construction of basins and associated bunds in Hillyfields Open Space.	Hillyfields Open Space	Reduction in properties flooded during high intensity rainfall events	Medium	ECC	FWM Team	EFDC	Landowners	High	-	Yes	Yes	Yes	FDGIA	Not commenced
		5	Investigate specific surface water flood risk mitigation to manage overland flow and reduce risk of surface water flooding through considering the construction of basins and associated bunds in the linear park adjacent to Rectory Lane.	Land adjacent to Rectory Lane	Reduction in properties flooded during high intensity rainfall events	High	ECC	FWM Team	EFDC	Landowners	High	-	Yes	Yes	Yes	FDGIA	Not commenced
		6	Work with Environment Agency to ensure maintenance, access and mitigation is carried out where appropriate along the Debden Brook.	Debden Brook	Ensure conveyance of watercourse and reduce likelihood of flooding	Low	ECC	FWM Team	EA	-	Medium	-	-	-	-	-	Not commenced
		7	Review effectiveness of the gullies and the sewer network, working with the water utility company.	Throughout CDA	Improve gully effectiveness and benefit of urban drainage	Medium	ECC	FWM Team	Thames Water	-	Medium	-	-	-	-	-	Not commenced
		7	Investigate suitability of Property Flood Resilience measures for properties in areas identified as high risk within the CDA, particularly on Colebrook Lane, Burney Drive and surrounding roads.	Colebrook Lane, Burney Drive and surrounding roads	Reduction in the impact of flooding to properties	Medium	ECC	FWM Team	Development Management	Local Resilience Forum / EFDC	Medium	-	-	-	-	-	Not commenced
		8	Investigate specific surface water flood risk mitigation to manage overland flow and reduce risk of surface water flooding emerging from downstream of Staples Road Flood Storage Reservoir.	Upper Catchment	Reduction in properties flooded during high intensity rainfall events	Medium	ECC	FWM Team	EFDC	Landowners	High	-	Yes	-	-	FDGIA	Not commenced
		9	Assess flood risk to Roding Valley High School, and implement flood warning and evacuation plan if	Roding Valley High	Reduce impact of flooding to	High	ECC	FWM Team	EFDC	Roding Valley High	Low	-	-	-	-	-	Not commenced

Update includes South Essex, Brentwood, Loughton, Harlow, Chelmsford, Braintree and Witham, Maldon and Colchester SWMP's

06 – Lower Sheering SWMP Overview:



07 – Lower Sheering SWMP Overview:

3.11 Overview of Flood Risk within CDA 01 – Sawbridgeworth Brook

Source

The source for flooding in Sawbridgeworth CDA is primarily from overland flow originating in the rural upper catchment to the north west, concentrating in the brook. The upper catchment is primarily fields underlain by loam

3.12 Overview of Flood Risk within CDA 02 – April Place

Source

3.13 Overview of Flood Risk within CDA 03 – Lower Sheering

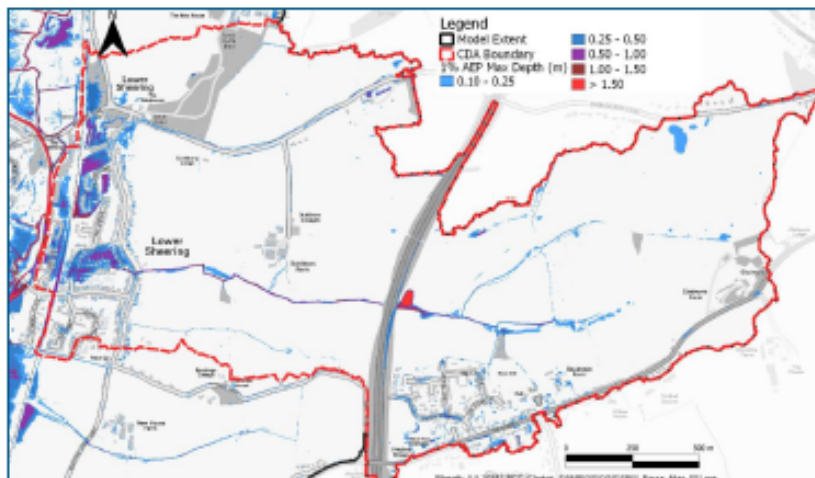


Figure 3-23 CDA 03 - 1% AEP Storm Event, Maximum Depth

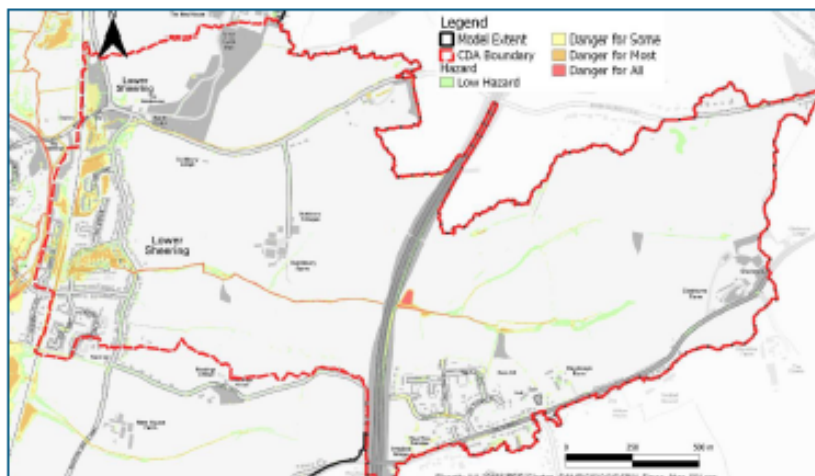


Figure 3-24 CDA 03 - 1% AEP Storm Event, Maximum Hazard

Source

Runoff in the Lower Sheering CDA is generated in the rural upper catchment. An ordinary watercourse focuses localised field runoff into the stormwater drainage system adjacent to Meadow way. The main flood mechanism is activated where exceedance of the local drainage system occurs. Water head increases behind Sheering Lower Road culvert and the inlet to the subsurface stormwater drainage system adjacent to Meadow Way, causing surface water flooding onto the road network and residential properties on The Four Acres. Overland runoff from Sawbridgeworth Road is a major contributing source of surface water flooding along The Meadows.

Pathway

Catchment runoff is conveyed in culverts through Lower Sheering and under the railway embankment to discharge into the River Stort. There is uncertainty associated with the underground drainage throughout this CDA relative to the Network Rail assets. The ordinary watercourse experiences out of bank flooding as head levels increase in relation to the capacity of the downstream drainage system being overwhelmed by runoff volumes entering Sheering in events including and greater than the 50% AEP. The Four Acres and The Meadows are low-lying regions of topographical depressions and subsequently experience localised ponding. Where exceedance of the open drain running parallel to Sawbridgeworth Road causes runoff on the road network, localised ponding is predicted against the railway embankment through this topographical restriction affecting properties on The Meadows. Exceedance of the stormwater drainage system in events including and greater than the 50% AEP results in the open drain behind Waterside Place causing additional overland flow against the railway embankment, inundating properties along the Meadows.

Receptor

Hotspots of residential flooding are identified on The Four Acres and The Meadows and The Meadows relative to the two sources of surface water runoff. Lower Sheering is susceptible to flooding in events including and greater than the 50% AEP. High velocity flows on Sheering Lower Road, The Four Acres and The Meadows in high events coupled with deep ponding result in hazard risk being high.

Table 3-9 CDA 03 – Lower Sheering, Property Count Estimation

AEP	Residential	Non-Residential	Critical Services	TOTAL
50.00%	6	0	0	6
20.00%	22	1	0	23
10.00%	40	2	0	42
3.33%	57	3	0	60
1.33%	79	4	0	83
1.00%	94	4	0	98
1% CCL	138	4	0	142
1% CCU	150	5	0	155
0.50%	140	4	0	144
0.10%	179	6	0	185

Table 3-10 CDA 03 – Lower Sheering, Damage Estimation

Economic Damage Summary	Tangible Damage NPV	Intangible Damage NPV	Total Damage NPV
CDA03: Baseline	£22,101,772	£3,068,219	£25,169,991

08 – Clacton on Sea SWMP Overview:

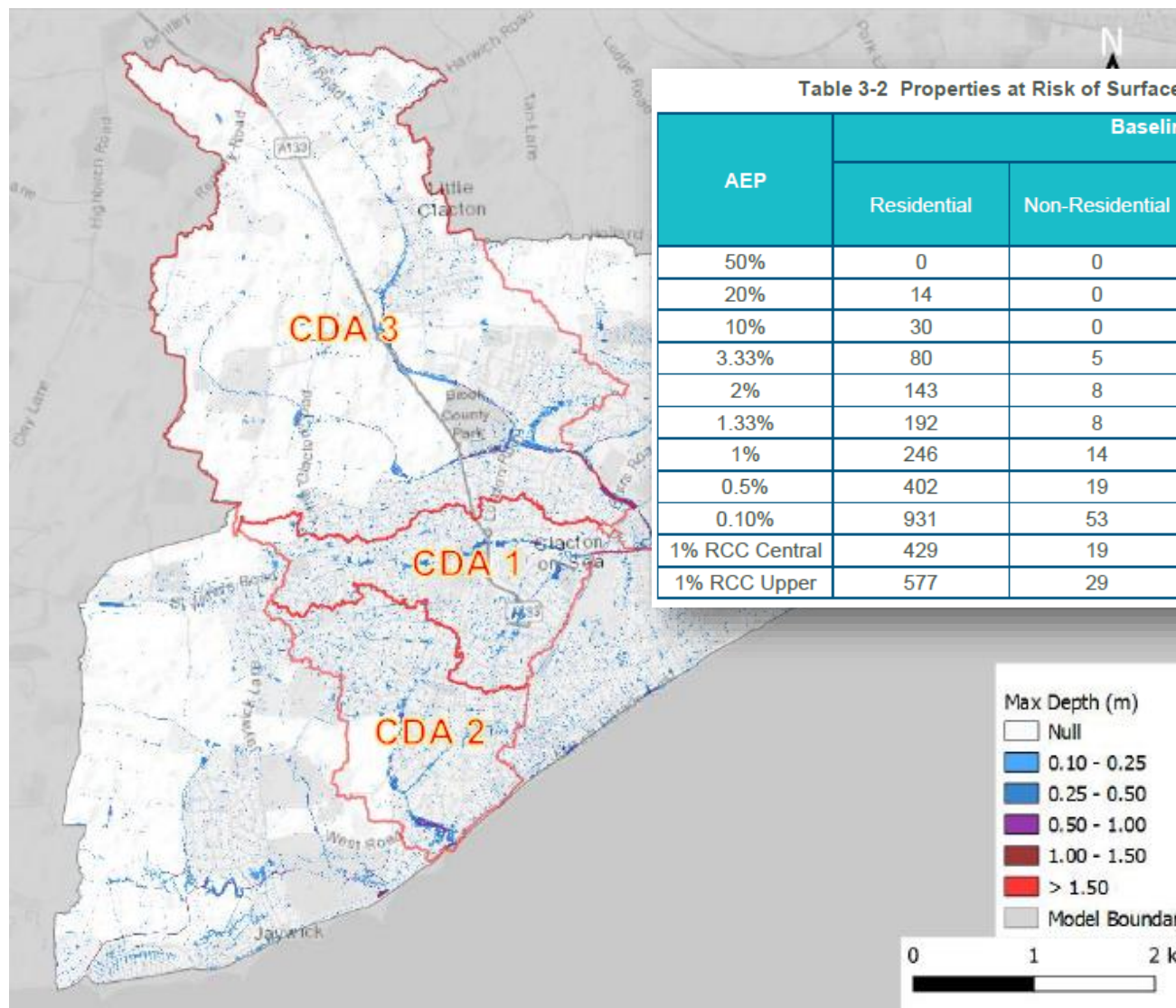


Table 3-2 Properties at Risk of Surface Water Flooding

AEP	Baseline Scenario			
	Residential	Non-Residential	Critical Services	TOTAL
50%	0	0	0	0
20%	14	0	0	14
10%	30	0	0	30
3.33%	80	5	0	85
2%	143	8	0	151
1.33%	192	8	0	200
1%	246	14	0	260
0.5%	402	19	0	421
0.10%	931	53	2	986
1% RCC Central	429	19	0	448
1% RCC Upper	577	29	0	606

09 – Clacton on Sea SWMP Overview:

Clacton-On-Sea Surface Water Management Plan

Phase 2 - Risk Assessment

Clacton-On-Sea Surface Water Management Plan

Phase 2 - Risk Assessment

3.16

Clacton-On-Sea Surface Water Management Plan

Phase 2 - Risk Assessment

3.16 Overview of Flood risk within CDA 03 – North Clacton

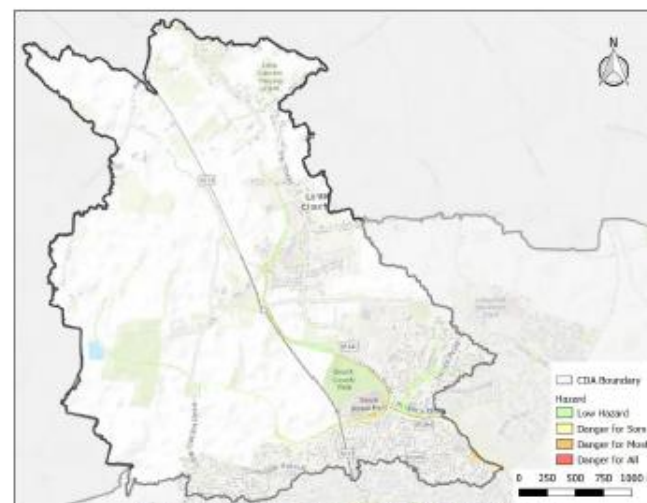
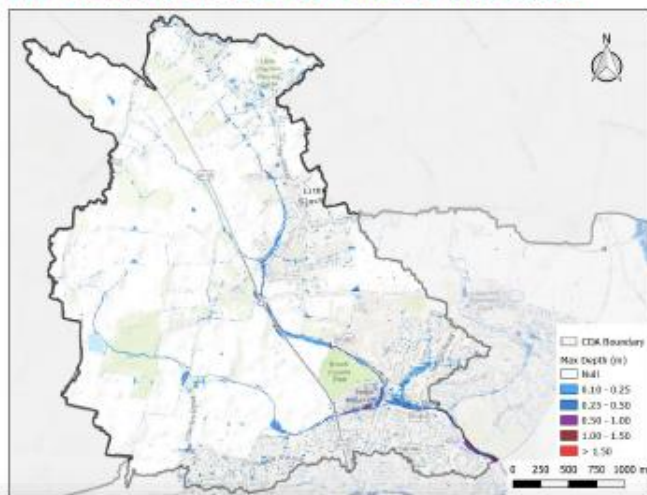


Figure 3-23 CDA 03 - 1% AEP Storm Event, Maximum Hazard

AEP

AEP	Residential	Non-Residential	Critical Services	TOTAL
50%	0	0	0	0
20%	7	0	0	7
10%	14	0	0	14
3.33%	28	1	0	29
2%	43	2	0	45
1.33%	58	1	0	60
1%	72	2	0	74
0.5%	100	2	0	102
0.1%	211	1	1	214
1% CC Central	102	2	0	128
1% CC Upper	211	2	0	178

10 – Next Steps:

Next Steps Towards SWMP Delivery:

- 1) CMA Currently in progress and once signed off project outputs (Inc. Mapping and reports) will be made available to the general public and project stakeholders.**
- 2) Updated SWMP Action Plans and new SWMP Initial Assessment reports will be reviewed internally for new scheme potential and details passed over to the Project Delivery team for inclusion on the forward programme.**
- 3) Review licensing requirements for WaterRIDE data viewing software to enable better access and update the background model data with new outputs.**

Questions ?

Contact: floods@essex.gov.uk