Buckinghamshire County Council

Local Flood Risk Management Strategy

2013 - 2018

Working in Partnership

Key - Priority	
High	
Medium - High	
Medium - Low	
Low	

Bucks	Buckinghamshire wide
CH	Chiltern District
WD	Wycombe District
AV	Aylesbury Vale

Action ID Bucks	Location Buckinghamshire wide
CH	Chiltern District
WD	Wycombe District
AV	Aylesbury Vale

Action ID and Red/Amber/Green Priority	Action				Location	Responsibility		Stakeholders	Costs			Benefits	Potential Funding Source	Timing		Review	
	Action	Type	How?	Achieved Yes or No		Lead Organisation	Team		Investigation / Feasibility / Design	Capital	Other (inc. maintenance/ revenue costs)			Start Date	Duration	Frequency	Next Review Date
Bucks 01	Develop and implement a risk-based maintenance schedule	Mitigation	1. Populate asset register with information on existing infrastructure and who owns and/or is responsible for maintaining it. Identify where further survey is required. Records of assets should be available to all partners.		Countywide	BCC	Tfb/PACS/EA	• EA (Main Rivers) • AW & TW (sewers) • IDB (Ordinary watercourses) • Riparian owners • TfB	Low	N/A	Medium	1. Flooding during high frequency events is reduced 2. Knowledge of existing infrastructure is improved and retained 3. Maintenance activities are prioritised according to risk 4. Public are aware of maintenance schedules possible with available budget	BCC Transport for Buckinghamshire	Apr-13	12 months	Bi-Annually	Apr-15
			2. Arrange workshops on good maintenance practice, for both traditional and SuDS drainage infrastructure.														
			3. Partners to develop maintenance schedules to target areas at higher risk of flooding e.g. as identified in SWMPs. Where applicable, coordination of e.g. road and sewer cleaning could reduce traffic management costs.														
			4. Communicate coordinated maintenance activities with the public to manage expectations.														
Bucks 02	Develop a communication and engagement plan	Communication	1. Develop clear key messages		Countywide	BCC	PACS & Sustainability Services Team	All RMAs and wider stakeholders	Low	N/A	Low	1. Improve communication using a clearly defined process for internal and external communication with stakeholders and the public, including transient or hard-to-reach communities	BCC	Apr-14	Initially 4 months	Annually or during structural change	Apr-15
			2. Create simplified maps and meaningful data for communications materials														
			3. Undertake stakeholder mapping to better understand roles and responsibilities across all partners														
			4. Consider scope for and role of Community Flood Resilience Liaison Groups and Business Continuity Flood Resilience Partnerships.														
			5. Develop C&E Plan.														
			6. Implement C&E Plan.														
			7. Provide guidance on best practice watercourse management														

Action ID and Red/Amber/Green Priority	Action	Type	How?	Achieved Yes or No	Location	Responsibility: Lead Organisation	Responsibility: Team	Stakeholders	Costs: Investigation / Feasibility / Design	Costs: Capital	Costs: Other (inc. maintenance/ revenue costs)	Benefits	Potential Funding Source	Timing: Start Date	Timing: Duration	Review: Frequency	Review: Next Review Date
Bucks 03	**Raise awareness of surface water flood risk**	Communication	1. Brief relevant County and District council teams on local flood risk so it is considered in e.g. spatial and emergency planning.		Countywide	BCC	PACS & Sustainability Services Team	• AVDC • CDC • SBDC • WDC • EA • IDB	Low	N/A	Low	1. Best available information is provided for the public to take appropriate action to protect themselves 2. Assist in getting political acceptance and buy in and that political influence is used positively to support and fund flood risk actions 3. Evidence will be gathered which can support future grant applications 4. Local flood risk can be given due consideration during undertaking of other council functions 5. Opportunities for integrated water management and multiple benefits will be discovered	BCC	Apr-14	Initially 6 months	Annually	Apr-15
			2. Actively engage political stakeholders														
			3. Improve record keeping of flood events. Ensure all partners have access to the central data store.														
			4. Provide guidance on use of green roofs, rainwater harvesting, water butts, other source control measures and property level resistance and resilience measures.														
			5. Provide information regarding paving over of front gardens and construction within watercourses to appropriate council teams and the public via BCC website, and consider enforcement in some situations to encourage compliance														
			6. Undertake targeted awareness raising in identified high risk areas														
			7. Facilitate the setting up Community Flood Resilience Liaison Groups and Business Continuity Flood Resilience Partnerships (if adopted in C&E Plan).														
			8. Identify and map any basement properties or below ground infrastructure (including low level road or rail infrastructure; and low level car parks or loading areas). Provide specific guidance on threshold raising or ramping at access points, on installation of flood level alarm systems, on ensuring safe means of rapid egress are available and on specific basement resistance and resilience measures for residential and commercial properties.														
			9. Provide guidance on minimum heights for doorway thresholds and air brick levels for new build domestic properties in surface water risk areas and on minimum threshold heights or ramping or high capacity surface water interception drainage at access points for new build commercial and non-domestic properties (this could also be implemented through amendments to local planning and building regulations).														
Bucks 04	**Promoting Sustainable Drainage Systems (SuDS)**	Policy	1. BCC, Districts and the EA to agree a position statement on the preferred use of green roofs and pervious paving such that EA can provide necessary support in response to planning applications		Countywide	BCC	PACS	• AVDC • BBOWT • CDC • SBDC • WDC • EA • IDB	Low	N/A	Medium	1. Runoff is managed more naturally, sedimentation is reduced and water quality is improved 2. The local environment is enhanced, including social and air quality 3. Strategic locations for targeting green infrastructure are identified	BCC	Apr-14	Initially 6 months	With Strategy Review	Apr-15
			2. Develop a sustainability policy regarding use of green roofs, pervious paving and other appropriate SuDS where practicable														
			3. Produce a map of areas with the potential for improved Green Infrastructure which coincide with natural routes for surface water runoff and ponding.														
			4. Identify key flow routes along roads where kerbside rain gardens could be used to manage runoff and sedimentation and improve the local environment.														

Action ID and Red/Amber/Green Priority	Action					Responsibility		Stakeholders	Costs			Benefits	Potential Funding Source	Timing		Review	
	Action	Type	How?	Achieved Yes or No	Location	Lead Organisation	Team		Investigation / Feasibility / Design	Capital	Other (inc. maintenance/ revenue costs)			Start Date	Duration	Frequency	Next Review Date
			5. Encourage use of permeable paving surfaces where paving permitted in domestic/non-domestic properties as well as 'storage at source' measures (Links with 'awareness raising' guidance as above).														

Action ID and Red/Amber/Green Priority	Action					Responsibility		Stakeholders	Costs			Benefits	Potential Funding Source	Timing		Review	
	Action	Type	How?	Achieved Yes or No	Location	Lead Organisation	Team		Investigation / Feasibility / Design	Capital	Other (inc. maintenance/ revenue costs)			Start Date	Duration	Frequency	Next Review Date
Bucks 05	**Increase technical capacity in BCC and District teams responsible for managing local flood risk**	Financial and Resourcing	1. Training programme for appropriate individuals or departments		Countywide	BCC	PACS	• AVDC • CDC • SBDC • WDC • IDB	N/A	N/A	Medium	1. Skilled resources are available to improve management of local flood risk 2. Reduced need for specialist technical input from engineering firms 3. More engaged staff can develop and promote innovative approaches with all Partners	BCC EA/Defra	Apr-13	Initially 1 year	Annually	Apr-14
Bucks 06	**Improve management of agricultural land to reduce runoff volume and sediment transport**	Mitigation	1. Identify agricultural land adjacent to primary natural flow routes and establish the status of land with respect to membership of stewardship schemes. 2. Where appropriate, promote and assist with		Countywide	BCC	PACS	• Natural England • Local conservation groups (e.g. BBOWT) • IDB	N/A	N/A	Low	1. Runoff and sedimentation is reduced and water quality is improved 2. Land owners are funded to improve management practices	Natural England	Apr-14	Initially 2 years	With Strategy Review	Apr-16
Bucks 07	**Update SFRAs and planning policy so that local flood risk management is suitably considered**	Policy	1. Each District to review its SFRA and links to planning policy		Countywide	Planning Authorities	Planning	• BCC • AVDC • CDC • SBDC • WDC	High	N/A	N/A	1. Development in inappropriate areas will be minimised or suitably managed	Planning authorities	Apr-13	6 months	3 - 5 years	Apr-14
CH 01	**Property resistance/ resilience** Improve property resistance/resilience for selected properties along Berkhampstead Road and Broad Street.	Mitigation	1. Submit a funding bid to EA/Defra for property level protection supplemented by any property-owner evidence of flood history 2. Encourage uptake of resistance/ resilience measures		Selected properties along Berkhampstead Road and Broad Street.	BCC CDC CTC	PACS	CDC CTC	Low	Medium	Low	protect 6-20 properties	Flood Defence Grant in Aid (FDGiA) for property level protection	Apr-13	12 months	Annually until implemented	Apr-14
CH 02	**Attenuation of surface flow** Provide kerbside storage at junction of The Spinney and Chestnut Avenue. Install a slot drain across The Spinney. Depending on infiltration rates, link the drain to existing soakaways on The Spinney.	Mitigation	1. Check infiltration capacity at The Spinney 2. Submit a funding bid for a feasibility study.		The Spinney, Hilltop	BCC CTC	PACS	CTC	Low	Medium	Low	Protect 1-5 residential properties	Local Levy to supplement TfB funding to undertake a feasibility study.	Apr-13	12 months	Annually until implemented	Apr-14
CH 03	**Attenuation of surface flow** Attenuate surface flow in detention basins formed by lowering existing grassed areas adjacent to junction with Victoria Road	Mitigation	1. Explore funding opportunities to pursue scheme		White Hill	BCC CTC	PACS	None	Low	Medium	Low	Reduce flooding on Broad Street.	Funding to undertake a feasibility study.	Apr-13	12 months	Annually until implemented	Apr-14
CH 04	**Maintenance and attenuation of surface flow** Supplement improved programme of maintenance of drains and soak ways with attenuation of surface flow in green street planters or rain gardens adjacent to the junction with Belmont Road.	Mitigation	1. Ensure Hivings Hill is prominent on the list of soakaways to be maintained by TfB 2. Obtain funding to pursue scheme		Hivings Hill	BCC	PACS	CTC	Low	Medium	Low	Reduce flooding on Hivings Hill	TfB funding to undertake a feasibility study.	Apr-13	12 months	Annually until implemented	Apr-14

Action ID and Red/Amber/Green Priority	Action				Location	Responsibility		Stakeholders	Costs			Benefits	Potential Funding Source	Timing		Review	
	Action	Type	How?	Achieved Yes or No		Lead Organisation	Team		Investigation / Feasibility / Design	Capital	Other (inc. maintenance/ revenue costs)			Start Date	Duration	Frequency	Next Review Date
CH 05	**Routing and attenuation of surface flow** Route surface flow from Bellingdon Road (via Sunnyside Road and Higham Road) into over ground or underground storage in the Higham Mead industrial estate. Also route surface flow from Berkhampstead Road into the same storage.	Mitigation	1. Undertake maintenance of the open Vale Brook between Higham Road and Townsend Road. 2. Consider area in any strategic redevelopment for uses compatible with natural storage for the Vale Brook 3. Pursue Local Levy funding for feasibility study into this scheme if area is to be redeveloped		Newtown	CTC CDC	PACS	EA BCC	Medium	High	Medium	Protect 21-50 properties	Local Levy to undertake a feasibility study, together with CIL funding for any redevelopment	Apr-14	12 months	Annually until implemented	Apr-15
CH 06	**Attenuation of surface flow** Attenuate flow along Missenden Road in a swale on the north side of the road between the junctions with Delmeade Road and Dawes Close. Reprofile Pednor Road adjacent to the Chesham Lawn Tennis & Squash Club to direct surface runoff into the River Chess and adjacent field.	Mitigation	1. Agree responsibility for maintaining River Chess culvert under Missenden Road and undertake maintenance as a high priority 2. Submit funding bid for feasibility study into options for Pednormead End.		Pednormead End	BCC EA	PACS	CTC	Low	Medium	Low	Protect up to 6-20 properties.	Local Levy to supplement TfB funding to undertake a feasibility study	Apr-13	12 months	Annually until implemented	Apr-14
CH 07	**Routing and attenuation of surface flows** Route surface flows which exceed the new road culvert into a detention basin on the west side of Vale Road to the north of Vale Farm. Route exceedance flows from Vale Road and Nashleigh Hill into a detention basin in the Recreation Ground.	Mitigation	1. Submit funding bid for feasibility study into the options		Vale Road / Nashleigh Hill	CTC BCC	PACS	CDC	Low	Medium	Low	Protect 21-50 properties	Local Levy to supplement TfB funding to undertake a feasibility study.	Apr-14	12 months	Annually until implemented	Apr-15
CH 08	**Attenuation of surface flow** Attenuate surface runoff from Cameron Road in a swale adjacent to the Allotment Gardens running from the junction with Nalders Road to the junction with Greatacre.	Mitigation	1. Obtain funding to pursue scheme		Cameron Road	CTC BCC	PACS	Chesham Allotment Group	Low	Medium	Low	Reduce flooding on Cameron Road and Broad Street	TfB funding to undertake a feasibility study	Apr-14	12 months	Annually until implemented	Apr-15
CH 09	**Attenuation and routing of surface flow** Attenuate surface flow along Fuller's Hill in a detention basin formed by lowering existing grassed area adjacent to junction with Fuller's Close. Route exceedance flow along Germain Street and into the River Chess.	Mitigation	1. Submit funding bid to EA/Defra for a feasibility study		Fuller's Hill	CTC BCC	PACS	N/A	Low	Medium	Low	Protect 6-20 properties	Flood Defence Grant in Aid (FDGiA) to undertake feasibility study.	Apr-13	12 months	Annually until implemented	Apr-14

Action ID and Red/Amber/Green Priority	Action				Location	Responsibility		Stakeholders	Costs			Benefits	Potential Funding Source	Timing		Review	
	Action	Type	How?	Achieved Yes or No		Lead Organisation	Team		Investigation / Feasibility / Design	Capital	Other (inc. maintenance/ revenue costs)			Start Date	Duration	Frequency	Next Review Date
CH 10	**Attenuation of surface flow** Lower roundabout to attenuate surface flow in a grassed detention basin / rain garden before discharging at a controlled rate to the River Chess.	Mitigation	1. Obtain funding to undertake feasibility study into scheme		Amersham Road junction with Amy Lane and Moor Road	BCC	PACS	CTC	Low	Medium	Low	protect 1-5 properties	BCC	Apr-14	12 months	Annually until implemented	Apr-15
CH 11	**Attenuation of surface flow and increase capacity** Attenuate surface flow through pervious paving and underground storage in existing car parks. Incorporate day lighting of the Vale Brook through Library and Sainsbury's car parks to increase storage capacity.	Mitigation	1. Undertake feasibility study into storage and culvert day lighting scheme as part of culvert bypass study		Sainsbury's, Library and Star Yard car parks, St Mary's Way	EA/BCC	Partnership Strategic Overview/ PACS	CTC	Low	High	Medium	Protect 6-20 properties	Environment Agency to consider further as part of Vale Brook culvert feasibility study	Apr-15	12 months	Annually until implemented	Apr-16
CH 12	**Increase capacity of Vale Brook culvert** Attenuate surface runoff in a rain garden at the Broadway. Route surface flows from The Broadway and the Vale Brook through the High Street via an open channel, discharging into the existing culvert at Red Lion Street.	Mitigation	1. Undertake feasibility study into storage and culvert diversion and daylighting scheme as part of culvert bypass study		High Street, between The Broadway and Red Lion Street	EA/BCC	Partnership Strategic Overview/ PACS	CTC	Low	High	Medium	Protect 6-20 properties	Environment Agency to consider further as part of Vale Brook culvert feasibility study	Apr-15	12 months	Annually until implemented	Apr-16
WD 01	**Improve property resistance/ resilience and reroute surface flow** Improve property resistance/resilience for identified properties between Hughenden Road and Hughenden Stream. Route surface flow along Coates Lane into Hughenden Park via road reprofiling.	Mitigation	1. Submit EA/Defra funding bid to protect selected properties 2. Encourage uptake of resistance/ resilience measures at identified properties.		Coates Lane / Hughenden Road	BCC WDC	PACS	NT	Low	Low	Low	Protect 1-5 properties	Flood Defence Grant in Aid (FDGiA) for property level protection and to supplement BCC funding	Apr-14	12 months	Annually until implemented	Apr-15

Action ID and Red/Amber/Green Priority	Action				Location	Responsibility		Stakeholders	Costs			Benefits	Potential Funding Source	Timing		Review	
	Action	Type	How?	Achieved Yes or No		Lead Organisation	Team		Investigation / Feasibility / Design	Capital	Other (inc. maintenance/ revenue costs)			Start Date	Duration	Frequency	Next Review Date
WD 02	**Improve property resistance/resilience** Improve property resistance/resilience for selected properties along Lane End and Mill End Roads. Provide kerbside storage along Lane End Road and Mill End Road in green planters/ rain gardens.	Mitigation	1. Submit funding bid for property protection along Lane End and Mill End Roads and feasibility of kerbside storage at junctions of Lane End Road/Chapel Lane/New Road/Mill End Road, and Mill End Road/Gallows Lane 2. Encourage uptake of resistance/ resilience measures		Lane End Road and Mill End Road, Sands	BCC WDC	PACS	N/A	Low	Medium	Low	Protect 6-20 properties.	Flood Defence Grant in Aid (FDGiA) for property level protection and to supplement BCC funding	Apr-13	12 months	Annually until implemented	Apr-14
WD 03	**Improve property resistance/ resilience and attenuation and routing of surface flow** Provide attenuation along Arnison Avenue and Bowerdean Road through use of detention basins sited at junctions of, Adelaide Road, Hill View Road and Totteridge Avenue and green street planters where space and parking requirements permit. Improve property resistance/ resilience along route as required. Route surface flow from Bowerdean Road into the River Wye at junction with London Road via lowered access track to High Wycombe Cricket Club ground.	Mitigation	1. Submit funding bid to undertake a feasibility study into this option. 3. Encourage uptake of resistance/ resilience measures at identified properties.		Arnison Avenue / Bowerdean Road	BCC WDC	PACS	N/A	Low	Medium	Low	Protect 6-20 properties	Flood Defence Grant in Aid (FDGiA) for property level protection and to supplement BCC funding	Apr-14	12 months	Annually until implemented	Apr-15
WD 04	**Improve property resistance/ resilience and attenuation and routing of surface flow** Provide attenuation along Micklefield Road through use of a detention basin sited at the junction of Herbert Road and green street planters where space permits. Improve property resistance/ resilience along route as required. Route surface flow from Micklefield Road into River Wye at the junction with London Road.	Mitigation	1. Submit funding bid to undertake a feasibility study into this option. 3. Encourage uptake of resistance/ resilience measures at identified properties.		Micklefield Road	BCC WDC	PACS	N/A	Low	Medium	Low	Protect 6-20 properties	Flood Defence Grant in Aid (FDGiA) for property level protection and to supplement BCC funding	Apr-14	12 months	Annually until implemented	Apr-15

Action ID and Red/Amber/Green Priority	Action				Location	Responsibility		Stakeholders	Costs			Benefits	Potential Funding Source	Timing		Review	
	Action	Type	How?	Achieved Yes or No		Lead Organisation	Team		Investigation / Feasibility / Design	Capital	Other (inc. maintenance/ revenue costs)			Start Date	Duration	Frequency	Next Review Date
WD 05	**Attenuation of surface flow** Attenuate surface flow along the Oxford Road from the west through improved road drainage and a swale. Improve road drainage at low spot adjacent to the Library. Intercept and attenuate roof runoff and lateral flow which would otherwise discharge directly onto the High Street using green street planters where space permits. Raise kerbs at key locations along the High Street.	Mitigation	1. Submit funding bid to undertake a feasibility study into this option.		West Wycombe	BCC NT	PACS	WDC	Low	Medium	Low	Protect 6-20 properties	Flood Defence Grant in Aid (FDGiA) for property level protection and to supplement BCC funding	Apr-14	12 months	Annually until implemented	Apr-15
WD 06	**Attenuation and routing of surface flow** Attenuate surface flows in pond or wetland as part of proposed open space on Abercromby Avenue and in a detention basin sited in the existing Desborough Street car park and pond or wetland in the currently open space at the junction with Victoria Street. Use green street planters / rain gardens at suitable places along Desborough Road. Route surface flow along Desborough Road to discharge into the existing storage tank under the Bus Station on Bridge Street.	Mitigation	1. Undertake feasibility study into attenuation and routing scheme, including ascertaining the capacity of the storage tank under the Bus Station		Desborough	BCC	PACS	BCC	Low	High	Low	Protect 21-50 properties	Council funding supplemented by Council Infrastructure Levy (CIL) linked to appropriate new development	Apr-15	12 months	Annually until implemented	Apr-16
WD 07	**Route surface flow** Route surface flow from a detention pond at the Hughenden Road roundabout in a shallow cobbled swale/ channel through Frogmoor, White Hart Street and St Mary Street into the River Wye adjacent to the Fire Station, with online storage in a water feature in Frogmoor.	Mitigation	1. Undertake feasibility study into attenuation and routing scheme for consideration as part of town centre redevelopment		Frogmoor, St Mary Street	BCC	PACS	BCC	Low	High	Low	Protect 21-50 properties	Council funding supplemented by Council Infrastructure Levy (CIL) linked to appropriate new development	Apr-15	12 months	Annually until implemented	Apr-16
WD 08	**Attenuation and routing of surface flow** Route surface flow down Amersham Hill and Crendon Street and into the River Wye adjacent to the WDC offices.	Mitigation	1. Investigate the construction and infiltration capacity of the escape lane on Amersham Hill to help determine the feasibility of using this as attenuation storage.		Amersham Hill / Crendon Street	BCC	PACS	N/A	Low	Low	Low	Reduce flooding on Crendon Street	BCC	Apr-15	12 months	Annually until implemented	Apr-16
WD 09	**Route surface flow** Route surface flow from The Pastures, across West Wycombe Road to discharge into the River Wye through road reprofiling	Mitigation	1. Undertake feasibility study into routing of surface water across West Wycombe Road and into the River Wye		West Wycombe Road at the junction with The Pastures and Desborough Avenue	BCC	PACS	N/A	Low	Low	Low	Protect 1-5 properties	BCC	Apr-15	12 months	Annually until implemented	Apr-16

Action ID and Red/Amber/Green Priority	Action				Location	Responsibility		Stakeholders	Costs			Benefits	Potential Funding Source	Timing		Review	
	Action	Type	How?	Achieved Yes or No		Lead Organisation	Team		Investigation / Feasibility / Design	Capital	Other (inc. maintenance/ revenue costs)			Start Date	Duration	Frequency	Next Review Date
WD10	**Marlow Surface Water Management Plan** Prepare a Surface Water Management Plan for Marlow paying specific attention to flooding from local sources behind fluvial defences	Mitigation	1. Prepare a Surface Water Management Plan for Marlow paying specific attention to flooding from local sources behind fluvial defences		Marlow	BCC	PACS	WDC, EA, TW	Low	Low	Low	Understand local flood risk and interaction with proposed defences	BCC	Jan-13	12 months		Apr-14
AV 01	**Padbury Flood Alleviation** Repairing/refurbing the existing culvert line through the village and creating a by-pass open channel on the Padbury Brook - project on hold due to landowner representation	Mitigation	1. Monitor ongoing work which is expected to be completed on the section under Derrick Lane (leading to Derrick Cottage from Main Street) and the recreation ground before April 2012		Padbury Brook	AVDC	Engineering	N/A	Low	High	Low	Property protection	Council (AVDC), residents and Parish Councils	Apr-15	12 months	Annually until implemented	Apr-16
AV 02	**Property Protection** Little Horwood Property Level Protection	Mitigation	1. Submit FDGiA funding bid		Little Horwood	AVDC/EA	Engineering	N/A	Low	Medium	Low	Property protection	FDGiA, AVDC, residents	Apr-12	12 months	Annually until implemented	Apr-13
AV 03	**Enmainment of Watercourse** Report to be produced investigating options for mitigation including possibiity of the EA taking responsibility for the watercourse through Leckhampstead as it poses a serious health and safety problem due to the flashy nature of the catchment	Mitigation	1. Pursue discussions with the EA		Leckhampstead	AVDC	Engineering	EA	Low	Low	Low	Improved management of the watercourse and protection for properties	FDGiA	Apr-14	12 months	Annually until implemented	Apr-15
AV04	**Buckingham Surface Water Management Plan** Prepare a Surface Water Management Plan for Buckingham	Mitigation	1. Prepare a Surface Water Management Plan for Buckingham		Buckingham	BCC	PACS	WCC, EA, AW	Low	Low	Low	Understand local flood risk	BCC	Jan-13	12 months		Apr-14