HELLINGLY NEIGHBOURHOOD DEVELOPMENT PLAN

TOPIC PAPER NO. 5

FLOODING

Author: Nina Downes, November 2017

This paper is one of a series of papers supporting the Hellingly Parish Neighbourhood Development Plan (NDP). As such, it contains the supporting evidence for the policies defined within the Plan. Our NDP is seeking to identify the areas within the Parish that may be least suitable for development, to assist with the allocation of housing land much needed by Wealden District Council, who have a very challenging target to meet.

In considering the issue of flooding, which is a particular and regular feature of the Parish, we wish to highlight those areas least suitable for development on the grounds of flooding, and in particular surface water flooding which is not fully covered by official records or mapping and therefore relies upon local knowledge.

For context, a map is shown on the next page of recorded flood incidents within the Hellingly Parish (Figure 1). This has been provided by East Sussex County Council in December 2016. There are “hot-spots” of incidents shown at:

- Hellingly Village
- The confluence of the Bull River and the Cuckmere River
- The Horsebridge Stream
- Lower Dicker

Most flooding has been categorised as “other” but the map also shows the following types of flooding registered in the Parish:

- Surface water : Pluvial (surface water run-off from rain)
- Surface water – highway drainage
- Sewer – foul network
- Fluvial: Main river – one instance at Hellingly

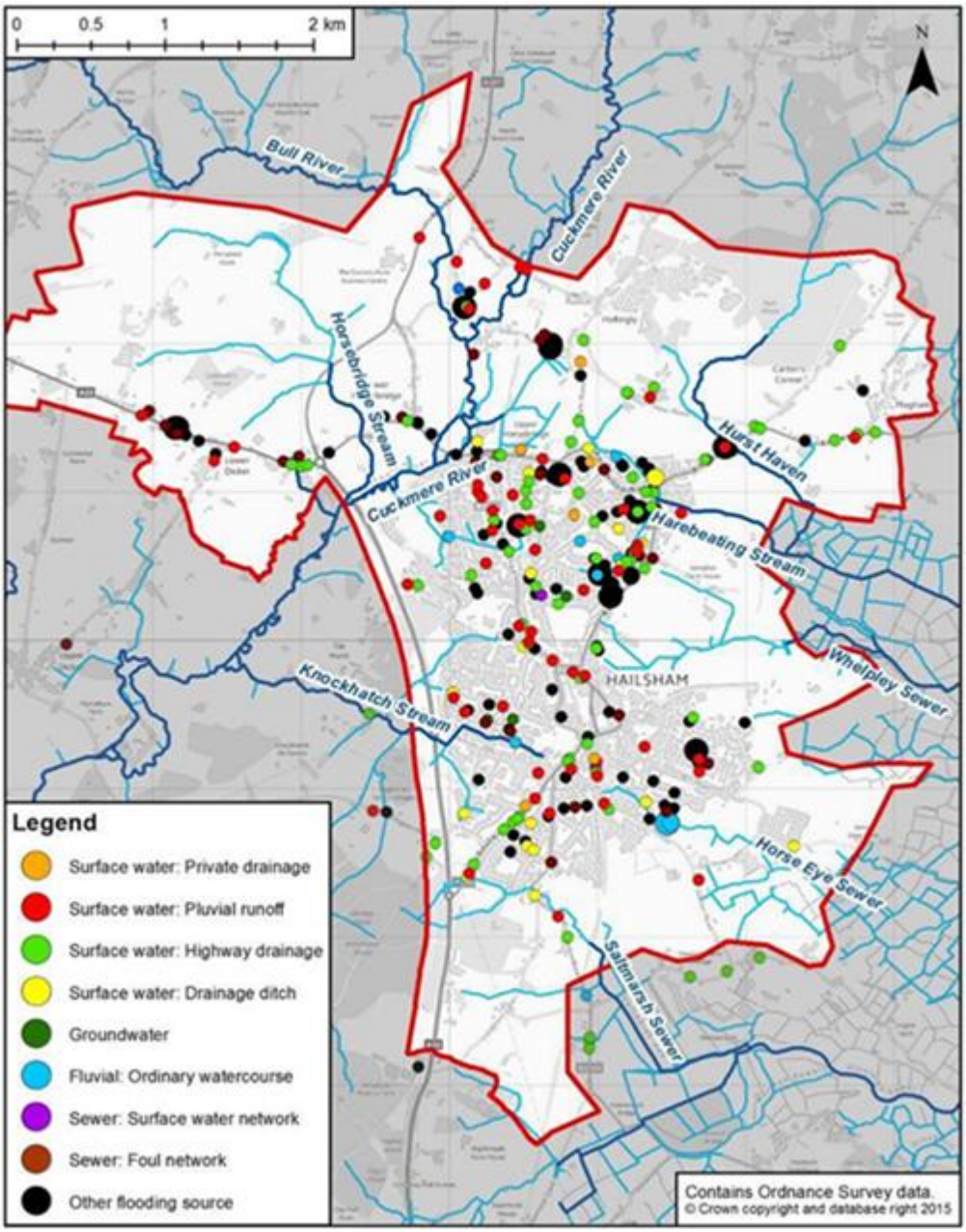

Figure 1 – Flood History in Hailsham and Hellingly

Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. Local plans should be supported by Strategic Flood Risk Assessment and develop policies to manage flood risk from all sources, taking account of advice from the Environment Agency and other relevant flood risk management bodies such as lead local flood authorities and internal drainage boards.

National Planning Policy Framework, paragraph 100

1. Section 1 of The Flood and Water Management Act 2010 defines flood quite clearly:

   "Flood" includes any case where land not normally covered by water becomes covered by water.

   It does not matter whether a flood is caused by –
   a) heavy rainfall
   b) a river overflowing its banks or being breached
   c) a dam overflowing or being breached
   d) tidal waters
   e) groundwater, or
   f) anything else (including any combination of factors)

   But "flood" does not include-
   a) a flood from any part of a sewerage system, unless wholly or partly caused by an increase in the volume of rainwater (including snow and other precipitation) entering or otherwise affecting the system, or
   b) a flood caused by a burst water main (within the meaning given by section 219 of the Water Industry Act 1991)

2. Section 7 of The Flood and Water Management Act 2010 places a duty upon the Environment Agency to develop, maintain, apply and monitor a national flood risk management strategy. Section 9 places a duty upon the lead local flood authority for an area to do the same for their own area. It also specifies "flood risk" as:

   flood risk from-
   a) surface run-off
   b) groundwater, and
   c) ordinary watercourses

   The local strategy, naturally, must be consistent with the national strategy.

3. The Environment Agency document "National flood and coastal erosion risk management for England" (ISBN9780108510366, LIT 5618) was laid before parliament in May 2011. The Foreword includes the following statements:
   "*Localism is at the heart of the new strategy, recognising that there is a limit to what Government and national bodies can achieve alone, and that national priorities are only part of the picture."*

   "We also need to make sure that consistent approaches are taken within each river catchment and coastal area. Issues need to be managed at the appropriate spatial scale, and we mustn't simply move problems from one area to another."

   "But if there is one thing we need to achieve in the coming years, it is to re-engage our communities in the risks they face and the choices that affect them."

   These statements support the inclusion of flood as an element to be considered within our Neighbourhood Development Plan (NDP).

4. Supporting documents also linking with the National Strategy are:
   - The Pitt Review (2008) setting out lessons from the 2007 flooding events across the UK
   - Catchment Flood Management Plans (CFMPs) produced by the Environment Agency
   - Surface Water Management Plans (SWMPs) produced by the lead local flood authority.

5. The Cuckmere and Sussex Havens Catchment Flood Management Plan (CFMP) was published by the Environment Agency in December 2009, and a summary report is available on their website.[1] This is the CFMP relevant to Hellingly Parish. The list of partners involved in the CFMP include (relevant to our locality):
   - Cuckmere Flood Forum
   - Defra
   - East Sussex County Council
   - Natural England
   - South East Water
   - Southern Water
   - Wealden District Council.

6. The CFMP divides the Cuckmere and Sussex Havens catchment into Policy Areas, illustrated in the map shown in Figure 2. Hellingly Parish is covered by Policy 3 and Policy 4. Policy 3 applies to "*Areas of low to moderate flood risk where we are generally managing existing flood risk effectively"* and Policy 4 applies to *"Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change."*

7. The CFMP summaries for Sub-Area 3 (Hailsham and Horsebridge) and for Sub-Area 4 (Hellingly, Grovebridge and Horam) are shown in Appendix A. The issues within Sub-Area 3 relevant to our NDP are:

"*There are significant problems associated with surface water flooding, coming from under capacity of the local drainage system in Hailsham and/or blockages within culverts or drains from debris or siltation. Possible future development in the area is likely to put further pressure on existing drainage systems, drains and culverts which are currently insufficient in times of heavy rainfall. Increased coverage of land with hard surfaces such as pavements and driveways means that run-off into local streams is likely to increase. Some fluvial flooding is caused from water backing up at the confluence with Bull River in Lower Horsebridge, however, only around five residential properties here are at risk from a 1% annual probability flood event, which also affects important roads including the A22, A267 and A271."*

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1 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293873/Cuckmere_and_Sussex_Havens_Catchment_Flood_Management_Plan.pdf

The issues within Sub-Area 4 relevant to our NDP are:
"Nine residential properties, some locally important B roads and the A267 west of Hellingly village are at risk from a 1% annual probability flood event."

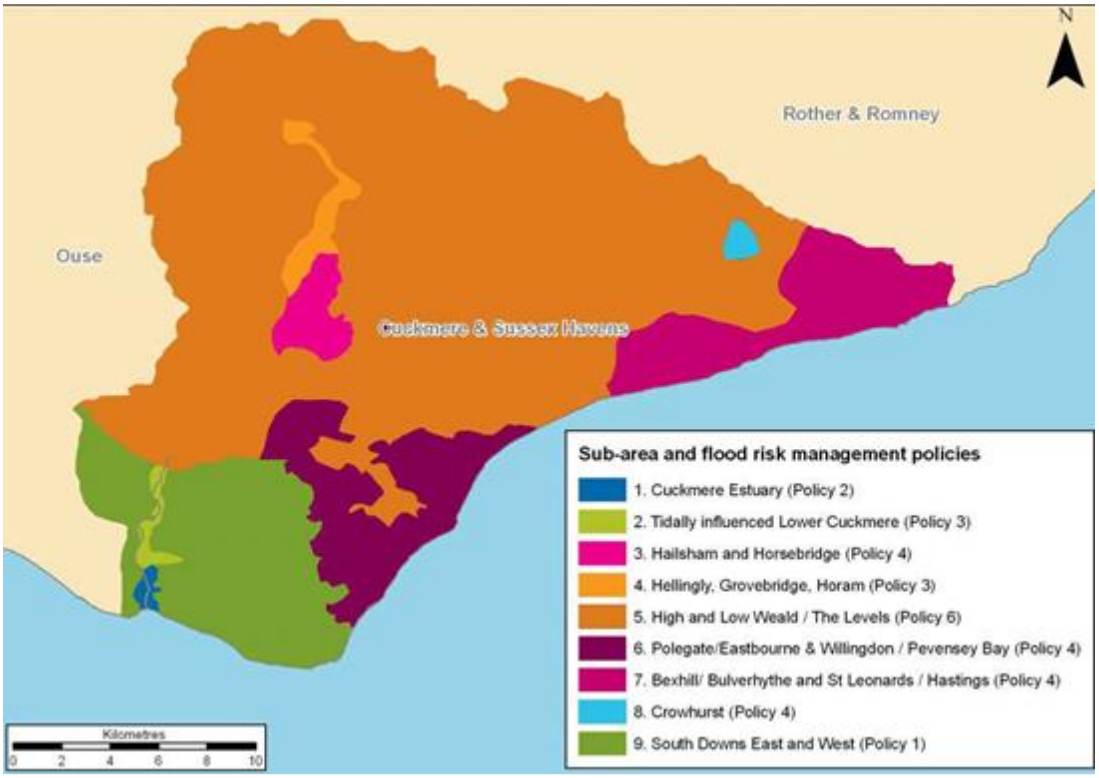


Figure 2 – CFMP Flood Risk Management Policies

8. Mindful that the CFMP was created almost a decade ago, an update was requested from the Environment Agency to check whether there have been any significant changes. They confirmed that the actions from the CFMPs have now been incorporated in to the South East river basin district Flood Risk Management Plan, which was published in March 2017[2].

The Hellingly Parish falls within the Cuckmere and Pevensey Levels Catchment, and Part B of the report refers to an area within Hellingly Parish under the heading of "Fluvial Flooding";

"The main location of fluvial flooding within the Cuckmere catchment is restricted to the natural flood plain downstream of Hailsham, although flooding is experienced within the Upper Horsebridge area to the east of Hailsham."

2 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/507136/LIT_10222_SOUTH_EAST_FRMP_PART_B.pdf

The Conclusion of the report also includes the following:

"Fluvial flooding occurs regularly from the Cuckmere, mainly affecting agricultural land, although it can also affect a small number of properties in Hellingly, Horsebridge, Alfriston and West Dean."

The report also points us to East Sussex County Council's Local Flood Risk Management Strategy for 2016 to 2026[3]

9. East Sussex County Council is the lead local flood authority for Hellingly Parish and their Preliminary Flood Risk Assessment (PFRA) (in response to the Flood and Water Management Act 2010) was published in June 2011. Contributions were received from The Environment Agency (EA), Southern Water and Wealden District Council. For this study, the EA's Flood Maps for Surface Water produced in 2010 were agreed as the best available source of surface water information. The Council also relied upon information from the District Council, Sussex Fire and Rescue Service and Southern Water to recall past flood events. There was also a local consultation period, with a survey posted on the ESCC web-site for 3 months, and drop-in sessions being held. The conclusion of this study was that whilst there had been events which were significant on a local scale within East Sussex, the scale of potential flood consequences were not comparable to the scale of national significance relevant for reporting as a "Flood Risk Area" in the Preliminary Flood Risk Assessment. East Sussex therefore does not include any Flood Risk Areas.

10. Within the PFRA is a map showing all recorded flooding incidents, from a variety of sources, and a cluster of events is visible in the Hellingly Parish, largely comprised of Southern Water flood incidents and Wealden District Council flood incidents. An area within the Hellingly Parish, extending from Lower Dicker through Lower Horsebridge and up to Hellingly Village is also marked out as being susceptible to Surface Water Flooding (see earlier map).

11. Following on from the PFRA, the East Sussex Local Flood Risk Management Strategy 2013-16 aimed *"To provide local leadership and work in partnership with public bodies, businesses, community groups, voluntary sector organisations and local people to manage the risk and associated social, economic and environmental impacts of all forms of flooding and coastal erosion across East Sussex".*

[3] https://www.eastsussex.gov.uk/media/6955/flood-risk-strategy-2016-26-final-edition-ebook1-1.pdf

The Strategy document is backed by a series of Technical Appendices which set out the roles and responsibilities of the various partners, details of the catchments that have been studied and a summary of the policy and legal framework governing the area of flood risk. This strategy necessarily focuses on the possibility of flooding affecting many people and as such the rural Parish of Hellingly is not specifically mentioned.

12. The East Sussex Flood Risk Management Strategy Delivery Plan 2015-16 identifies the key planned actions, owners and dates for Delivery. The key objectives are to:

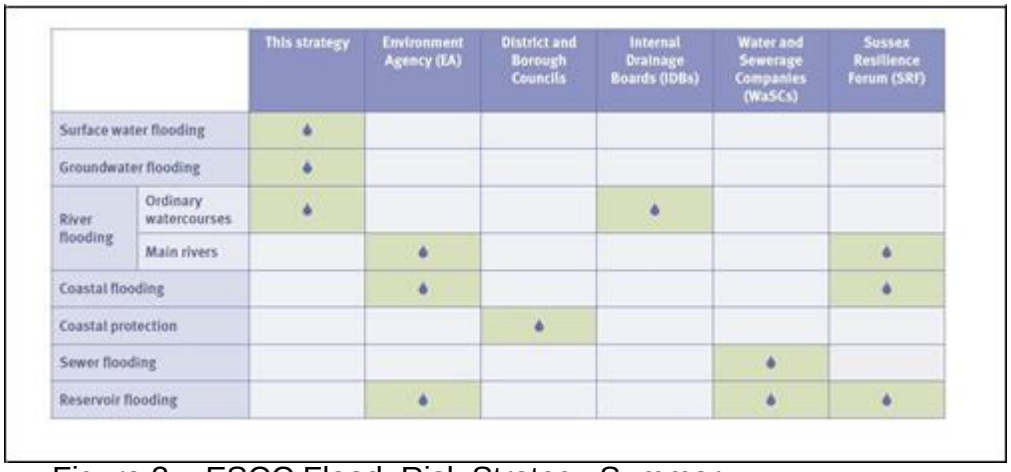
I. Establish and maintain effective partnerships with key organisations and local communities
II. Improve the evidence base and understanding of local flood risk to ensure that limited resources are targeted in the areas of highest risk and vulnerability
III. Empower local communities and land owners to take action in order to be prepared for and limit the impacts of flooding
IV. Avoid increasing flood risk by encouraging best practice for the maintenance of assets and preventing inappropriate development
V. Work in partnership to deliver cost-effective flood risk management measures which take a catchment wide approach and contribute to wider social, economic and environmental benefits

13. The Delivery Plan includes the development of a number of Phase 1 Surface Water Management Plans (SWMPs). Most of the plans appear under objective V and are yet to be delivered. However, the SWMP for Hailsham and Hellingly was published in June 2015 and appears under Objective II.

14. The more recent Flood Risk Strategy for 2016-2026 was prepared in partnership with the Environment Agency and Southern Water and aims to raise awareness of the extent of local flooding in East Sussex and highlight the fact that many are not aware of the potential risk they face.

The strategy document includes a useful summary of the aspects of flood risk management covered by the strategy, and a guide to which authorities provide guidance on other aspects. This summary is shown below in Figure 3. The strategy document also mentions the Pevensey and Cuckmere Water Level Management Board who are the Internal Drainage Board for this Parish. The distribution of flood risk has not changed significantly since the previous assessment.

Naturally the strategy has its focus on risk to people and property from flooding, with scant mention of rural areas. It sets out detailed drainage advice for development proposals, and a guide to different types of drainage risk areas (DRAs) and the expected approach to drainage in each of these areas. It also refers to the Surface Water Management Plans (SWMPs) that have already been produced for some locations.



		This strategy	Environment Agency (EA)	District and Borough Councils	Internal Drainage Boards (IDBs)	Water and Sewerage Companies (WaSCs)	Sussex Resilience Forum (SRF)
Surface water flooding		♦					
Groundwater flooding		♦					
River flooding	Ordinary watercourses	♦			♦		
	Main rivers		♦				♦
Coastal flooding			♦				♦
Coastal protection				♦			
Sewer flooding						♦	
Reservoir flooding			♦			♦	♦

Figure 3 – ESCC Flood Risk Strategy Summary

15. Within the SWMP for Hailsham and Hellingly is a map (Figure 4) showing main rivers and flood zones for those rivers, as well as ordinary watercourses. Hellingly Parish contains a number of main rivers and ordinary watercourses, as well as drainage ditches and channels not shown on the map. The Cuckmere River arrives from the North and travels in a South-Westerly direction through Hellingly, close to Horselunges Manor. The Bull River flows from the North-West and joins with the Cuckmere, close to the Manor, where the Cuckmere River then travels South between Upper and Lower Horsebridge, crossing under the road at the A271 before taking a South-Westerly direction towards the A22. The Horsebridge Stream drains the area of land immediately South of the Bull River and this crosses under the A271 between Lower Horsebridge and Lower Dicker, joining the Cuckmere just to the West of the A22.

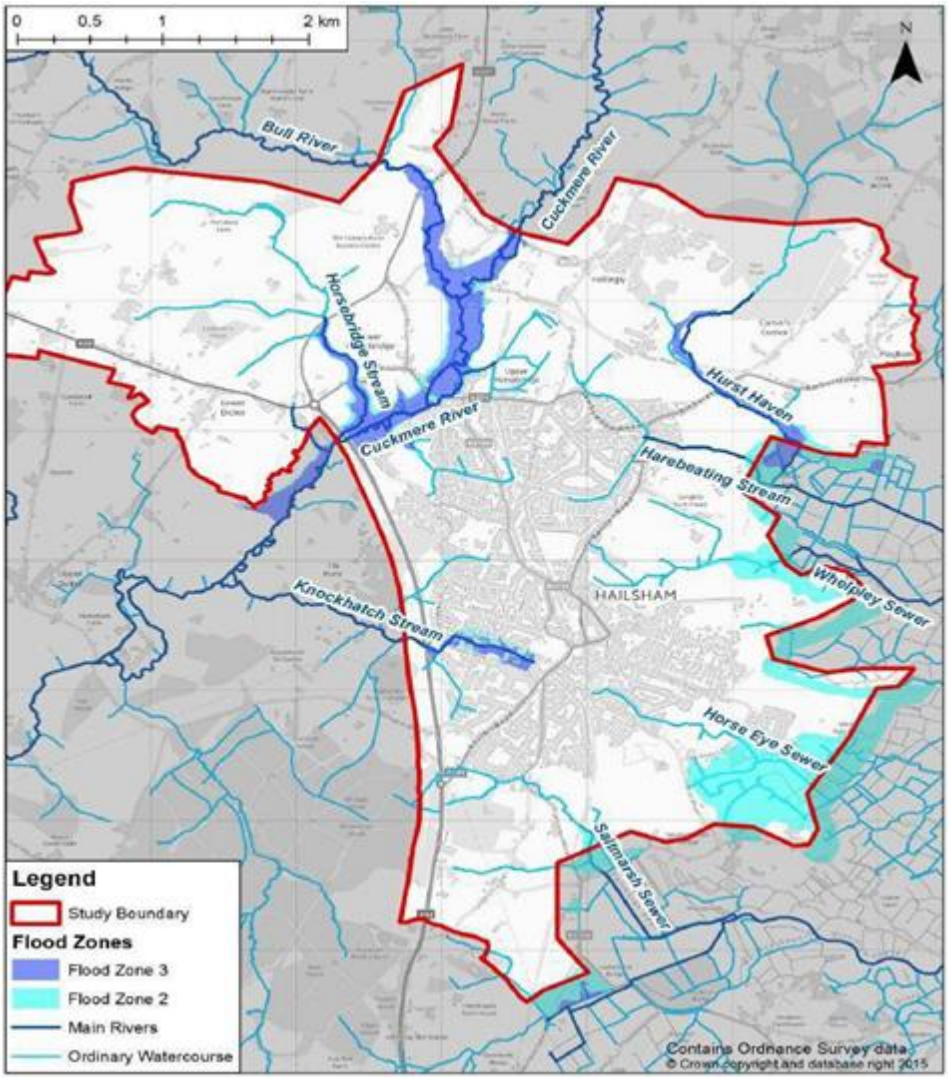


Figure 4 – Extract from SWMP – Map of Main Rivers, Flood Zones and Ordinary Watercourses

16. The Environment Agency have a level monitoring station at the Bull River (located in Station Road, Hellingly) and data from this station is available on their website. The typical range of this river (measured against its site datum of 15.41 AOD) is 0.42 to 1.35m and flooding is expected above 1.35m. The highest level recorded at this station was on 8th January 2015 at 3.02m.

17. The priority areas identified in the SWMP are all in Hailsham, as this is naturally where there is most risk of flooding properties, and when flooding occurs, more reports are made. Despite the repeated and regular flooding experienced in Hellingly Parish, relatively few incidents have appeared in the records held by ESCC and WDC which were reviewed as part of the Surface Water Management Plan. In particular there are no records at all for flooding of farm land. Data for events in the Hellingly Parish area are shown in Table 1 below.

Source	Pathway	Receptor	Frequency	Date	Data_sourc
Surface water: Drainage ditch	Ditch surcharging due to blockage	Residential, Bakers Farm Park Homes	1	01/04/1996	WDC
Sewer flooding: Foul	Hydraulic Overload	Residential, Coldharbour Lane	1	01/10/1998	WDC
Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Amberstone View	2	03/01/2012	SW
Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Amberstone View	2	26/12/2012	SW
Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	5	23/02/2010	SW
Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	3	10/02/2013	SW
Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	2	21/12/2013	SW
Sewer flooding: Foul water	Hydraulic overload	Residential curtilage/ highway, Lower Horsebridge	4	06/02/2014	SW
Sewer flooding: Foul water	Hydraulic overload	Residential, Lower Dicker	1	09/01/2015	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Residential/ highway, North Street	0	Not reported	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Residential, Upper Horsebridge Road	1	01/07/1993	WDC
Surface water: Pluvial runoff	Pluvial runoff from new development	Residential, Coldharbour Road	1	01/06/2001	WDC
Surface water: Pluvial runoff	Pluvial runoff from adjacent property.	Residential, Hackhurst Lane	1	01/11/1997	WDC
Surface water: Pluvial runoff	Pluvial runoff from the highway	Residential, Winkenhurst Cottages	2	14/05/2002	WDC
Surface water: Pluvial runoff	Pluvial ponding	Highway, Lower Dicker	1	08/01/2015	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Highway, Mill Lane	1	13/01/2015	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Highway, Upper Horsebridge	1	08/01/2015	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Highway, Station Road/ Mill Lane	1	08/01/2015	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Highway, Church Street	1	09/01/2015	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Highway, New Road	1	15/01/2015	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Highway, Mill Lane	1	15/01/2015	ESCC
Surface water: Pluvial runoff	Pluvial ponding	Highway, North Street	1	15/01/2015	ESCC

Table 1 – Flood Events Hellingly Parish – Extracted from SWMP Appendix B

18. The SWMP includes an incident specific action plan relating to individual flood incidents reported. An extract of plans for the Hellingly Parish is shown in Table 2 below.

Unique ID	Source	Pathway	Receptor	Action	Action Owner
SFF20	Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	Carry out investigations to understand cause of reported incidents	Southern Water
SFF21	Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	Carry out investigations to understand cause of reported incidents	Southern Water
SFF28	Sewer flooding: Foul water	Hydraulic overload	Residential, Lower Dicker	Carry out investigations to understand cause of reported incidents	Southern Water
SFF22	Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	Carry out investigations to understand cause of reported incidents	Southern Water
SWPR50	Surface water: Pluvial runoff	Pluvial ponding	Highway, Lower Dicker	Monitor future instances of flooding at this location.	ESCC
SFF23	Sewer flooding: Foul water	Hydraulic overload	Residential curtilage/ highway, Lower Horsebridge	Carry out investigations to understand cause of reported incidents	Southern Water
SWPR55	Surface water: Pluvial runoff	Pluvial ponding	Highway, Upper Horsebridge	Investigate network capacity.	ESCC Highways
SWPR26	Surface water: Pluvial runoff	Pluvial ponding	Residential, Upper Horsebridge Road	Monitor future instances of flooding at this location.	ESCC
SWPR51	Surface water: Pluvial runoff	Pluvial ponding	Highway, Mill Lane	Monitor future instances of flooding at this location.	ESCC
SWPR01	Surface water: Pluvial runoff	Pluvial ponding	Highway, Mill Lane	Investigate network capacity.	ESCC Highways
SWPR36	Surface water: Pluvial runoff	Pluvial ponding	Highway, Mill Lane	Monitor future instances of flooding at this location.	ESCC
SWPR09	Surface water: Pluvial runoff	Pluvial ponding	Residential/ highway, North Street	Investigate network capacity.	ESCC Highways
SWPR38	Surface water: Pluvial runoff	Pluvial ponding	Highway, North Street	Monitor future instances of flooding at this location.	ESCC
SWDD06	Surface water: Drainage ditch	Ditch surcharging due to blockage	Residential, Bakers Farm Park Homes	Monitor future flood instances at this location. If problem persists, advise riparian owners of their rights and responsibilities.	ESCC
FMR01	Fluvial flooding: Main River	River overtopped banks	Highway, Church Road	Under policy 4 of the CFMP, further actions may need to be made to keep pace with climate change.	EA
SFF05	Sewer flooding: Foul	Hydraulic Overload	Residential, Coldharbour Lane	Carry out investigations to understand cause of reported incidents	Southern Water
SWPR34	Surface water: Pluvial runoff	Pluvial ponding	Highway, Church Street	Monitor future instances of flooding at this location.	ESCC
SWPR35	Surface water: Pluvial runoff	Pluvial ponding	Highway, New Road	Inspect highway drainage on New Road. If required, undertaken maintenance works.	ESCC Highways
SWPR31	Surface water: Pluvial runoff	Pluvial runoff from adjacent property.	Residential, Hackhurst Lane	Monitor future instances of flooding at this location.	ESCC
SWPR30	Surface water: Pluvial runoff	Pluvial runoff from new development	Residential, Coldharbour Road	Install temporary drainage system during construction works.	Developer
SWPR32	Surface water: Pluvial runoff	Pluvial runoff from the highway	Residential, Winkenhurst Cottages	Install temporary drainage system during construction works.	Developer

High Priority Actions: a list of actions which should be undertaken immediately

Medium Priority Actions: a list of actions to undertake once high priority actions are complete

Low Priority Actions: a list of actions to undertake once medium priority actions are com plete

Completed Actions: listing all the actions already undertaken

Table 2 – Site Specific Action Plan Hellingly Parish – Extracted from SWMP Appendix E

19. An update was requested from ESCC for the items listed in the Site Specific Action Plan for Hellingly Parish, and their updates are shown in Appendix B.

20. The SWMP refers to the Wealden District Council Strategic Development Areas, from the Wealden Local Plan (2014). One of these areas sits within Hellingly Parish - land off New Road, Hellingly. The SWMP points out that the EA's updated Flood Map for Surface Water (uFMfSW) shows that some of this area is at risk of flooding, and that run-off from this area may contribute to the Harebeating Stream hotspot, which has been identified as the highest priority flood risk area in Hailsham. The report recommends that Local Authority planners are made aware of the drainage issues in this location for communication to developers.

20. The new Wealden Local Plan has stalled during its preparation, so we only have the current Core Strategy (2013) for reference. The existing strategy document highlights North Western district of Hailsham, which includes part of the Hellingly Parish as being unsuitable for development due to the presence of rivers and watercourses and the high likelihood of flooding.

21. The SWMP document summarises the Sustainable Drainage Systems (SuDS) which may assist with managing surface water run-off and pollution from developed areas. This encourages the integration of SuDS into the development layout. Specific guidance documents are now available for developers. The report highlights that geology in this locality is generally unsuitable for infiltration solutions, although there may be a few areas where water will soak away to the ground. Generally, it is anticipated that retention will be the preferred method of mitigating run-off.

22. The local geology is of particular importance. In the South of Hellingly Parish, there is fairly widespread clay, present as top soil and sub-surface strata. This means that where SuDS methods are employed, care must be given to take account of *all* run-off from development sites, not just the run-off from impermeable roofs, roads and pavements. Where clay is present, effectively all surfaces become impermeable, and all run-off will reach attenuation systems. This lesson has already been learnt via the failed attenuation measures adopted in Harold Avenue (noted in the SWMP) where failure to consider the run-off from nearby fields resulted in the flooding of newly installed attenuation facilities. The recommended action from this lesson was to consider all sources of flooding during Flood Risk Assessments, not solely focus on the development site.

23. Another recommendation from the Harold Avenue case proposes for finished floor level to be above road level, to protect against shallow over- land flow. Whilst this is a sensible design consideration, we should avoid “land-raising” of development sites to enable construction in flood areas, as this simply passes the flood issue to other areas, and would result in “island” properties in the event of surface water flooding. Recent examples of this problem, seen at the Bovis Homes site at Park Road are shown in Appendix C.

24. Despite the general absence of flooding history within the official records, local residents have collected photographs of flooding in Hellingly Parish and a selection of these are shown in Appendix C. The most significant flooding was experienced in Autumn 2000 when many properties in Hellingly village were flooded. There have been more recent flood events in 2012 and as recently as November 2016 when Storm Angus caused the flooding of the A271. The photographs are labelled with dates and locations.

25. We must consider the general location of our Parish, and know that upstream on the River Cuckmere is the town of Heathfield which has also been the subject of significant development over the last 15 years or more. Essentially, all of the sewage and surface water from Heathfield enters the Cuckmere and travels onwards to Hellingly Parish. The last significant flood event was in

2000, some 17 years ago. The impact of a week of severe rainfall is not known with the present configuration of drainage; the flooding of the Cuckmere could be worse than we have seen before.

26. We cannot suggest that development should not be "allowed" in the Parish because of flooding, but we need to take the risk in to account and be sure that the methods for dealing with surface water run-off are robust and not likely to place new or existing infrastructure at risk of flooding. We can also highlight those areas most at risk of flooding, and avoid development here. The evidence photographs in Appendix C and the data and mapping from ESCC and the EA all suggest that development of areas immediately adjacent to main rivers and ordinary watercourses should be avoided. These designations are shown on the Proposals Map.

27. Foul drainage in the Parish is provided by Southern Water. They have provided the following information:

    The Parish is served by two pumping stations, one at Station Road Hellingly and one at Upper Horsebridge. The pumping station at Station Road takes flow from Hellingly Village and some of Roebuck Park. This is then pumped onwards to join the gravity sewer near to the Hellingly Primary School, from where flow passes down North Street towards the junction with the A271. Here the sewer connects with local Lower Horsebridge sewers, but also a foul sewer that arrives from the Whitesmith area also taking in flows from the A22 and Lower Dicker development en route. The sewer continues from Lower Horsebridge to Upper Horsebridge Pumping Station, from where it is pumped in to the gravity sewer near to the Co-Op Store in Upper Horsebridge. Flow then gravitates to Hailsham North Sewage Treatment Works. The Upper Horsebridge pumping station has a consented storm overflow, to reduce the risk of flooding to properties, after the maximum flow has been passed forward by the pumps. The dilute screened overflow discharges to the River Cuckmere, adjacent. In the recent past the pumping station has been subject to refurbishment works.

28. The Hailsham North Sewage Treatment Works receives all flows from Hellingly Parish and is currently working to full capacity. There are plans to upgrade this, however the detail and timing of this upgrade work is not yet known.

29. Whilst foul drainage capacity can be provided on request, via Section 98 of the Water Industry Act, there is evidence to show that this has not happened locally and therefore sewer capacity has not been upgraded where it ought to have been. A number of developments in Hellingly Parish have taken place without upgrading of the sewerage network, so there is likely a need for significant investment in this area.

30. Surface water drains (from roads and paths) within the Parish will drain to the easily accessible Cuckmere River, via a series of ditches and gulleys. Unfortunately, this means that when river level is high, surface water cannot escape and may back up and overflow in to public spaces but also into

foul water sewers, increasing the risk of foul water flooding.

31. It is also worth noting that culverts and bridges can create an additional restriction to the water flow, acting as a “throttle” and holding back flow. Identifying and removing such restrictions can assist in reducing flood risks upstream, although there may be impacts further downstream. There is a photograph of such restriction points in Lower Horsebridge and Hellingly in Appendix C.

32. The combination of low permeability soils in the Parish, and having land unsuitable for development directly adjacent to watercourses does provide a substantial opportunity to more effectively manage our surface water run-off within the Parish. The Ciria SuDS Manual (C753) version 6 offers a wide range of advice for managing surface water run-off and many attractive features can be used to build an effective means of managing surface water. Filter strips, swales, bioretention systems, trees, attenuation storage tanks, detention basins, ponds and wetlands can all be used to collect and manage surface water. If we plan and allow space for such features adjacent to our watercourses, we may even have the possibility to re-direct some of the surface water that currently overloads our sewer system, and manage it via a surface water treatment facility that is also an attractive local amenity. Created and managed wetlands and reed beds can also be an attractive haven for wildlife and with the passage of time will become a valued community asset. This type of construction could be funded by the Community Infrastructure Levy.

Appendix A – CFMP Summaries

Sub-area 3

Hailsham and Horsebridge

Our key partners are:

- Wealden District Council
- Southern Water
- Natural England

Impact of a 1% annual probability flood event

	Today	Future (2100)
Number of properties at risk	15	20

The issues in this sub-area

There are significant problems associated with surface water flooding, coming from under-capacity of the local drainage system in Hailsham and/or blockages within culverts or drains from debris or siltation. Possible future development in the area is likely to put further pressure on existing drainage systems, drains and culverts which are currently insufficient in times of heavy rainfall. Increased coverage of land with hard surfaces such as pavements and driveways means that run-off into local streams is likely to increase.

Some fluvial flooding is caused from water backing up at the confluence with Bull River in Lower Horsebridge, however, only around five residential properties here are at risk from a 1% annual probability flood event, which also affects important roads including the A22, A267 and A271.

The vision and preferred policy

Although current flood risk is low, it is expected to increase in the future, therefore the chosen policy is:

Policy Option 4 – areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change.

The key messages

The greatest risk to people and property in this sub-area is from surface water flooding due to the drainage network being overwhelmed during heavy rainfall. This is likely to increase in future if steps are not taken to reduce the effects of climate change and future development.

The current level of expenditure on flood risk management in the area is relatively low. With increasing pressure from future change, it is justifiable to increase the level of activity within the area to prevent an increase in flood risk.

Proposed actions to implement the preferred approach:

- Complete a System Asset Management Plan (SAMP) to determine how existing flood defences will be managed.
- Work with Wealden District Council to influence spatial development with the aims of ensuring no net increase in run-off from new developments (including the use of Sustainable urban Drainage Systems (SuDS)) and to ensure adequate foul and surface water infrastructure is available before new development.
- Work with Wealden District Council and the water companies to develop a Surface Water Management Plan (SWMP), with review of receiving watercourses/ catchments, foul and surface water, and consider the effects of climate change.

Flood waters at Horsebridge February 2007. →

Sub-area 4

Hellingly, Grovebridge and Horam

Our key partners are:

Wealden District Council

Impact of a 1% annual probability flood event

	Today	Future (2100)
Number of properties at risk	9	9

The issues in this sub-area

Nine residential properties, some locally important B roads and the A267 west of Hellingly village are at risk from a 1% annual probability flood event.

The vision and preferred policy

The current level of flood risk is managed to an appropriate level so the selected policy is:

Policy Option 3 – areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

The key messages

A significant level of flood risk management is currently carried out in this area to maintain river channels and structures and to ensure the channel flows freely. Flood risk is currently managed at a level appropriate to the scale of risk.

Flood frequency may increase slightly in the future as a result of climate change. The impact of this could be reduced by increasing flooding in appropriate areas upstream.

Proposed actions to implement the preferred approach:

- Complete System Asset Management Plan (SAMP) with an aim of maintaining existing level of maintenance while looking for efficiencies and improvements
- Improve flood warning service to properties in Hellingly and Lower Horsebridge by using telemetry on Bull River.
- Investigate local improvement schemes to increase usage of flood plain while ensuring that the likelihood of localised property flooding in area is not increased .

← Flooding on agricultural land January 2008.

Appendix B – Update on Site Specific Action Plan, ESCC - Update Received 20/12/16

Unique ID	Source	Pathway	Receptor	x	y	Action	Action Owner	Status
SFF20	Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	556879	111209	Carry out investigations to understand cause of reported incidents	Southern Water	SW currently undertaking review of Hailsham South and North catchments to identify necessary works. Outputs to be put forward as part of business planning process for funding.
SFF21	Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	556985	111241	Carry out investigations to understand cause of reported incidents	Southern Water	SW currently undertaking review of Hailsham South and North catchments to identify necessary works. Outputs to be put forward as part of business planning process for funding.
SFF28	Sewer flooding: Foul water	Hydraulic overload	Residential, Lower Dicker	556083	111451	Carry out investigations to understand cause of reported incidents	Southern Water	SW currently undertaking review of Hailsham South and North catchments to identify necessary works. Outputs to be put forward as part of business planning process for funding.
SFF22	Sewer flooding: Foul water	Hydraulic overload	Residential curtilage, Lower Dicker	555976	111547	Carry out investigations to understand cause of reported incidents	Southern Water	SW currently undertaking review of Hailsham South and North catchments to identify necessary works. Outputs to be put forward as part of business planning process for funding.
SWPR50	Surface water: Pluvial runoff	Pluvial ponding	Highway, Lower Dicker	556548	111305	Monitor future instances of flooding at this location.	ESCC	ongoing
SFF23	Sewer flooding: Foul water	Hydraulic overload	Residential curtilage/ highway, Lower Horsebridge	557681	111507	Carry out investigations to understand cause of reported incidents	Southern Water	SW currently undertaking review of Hailsham South and North catchments to identify necessary works. Outputs to be put forward as part of business planning process for funding.
SWPR55	Surface water: Pluvial runoff	Pluvial ponding	Highway, Upper Horsebridge	558630	111225	Investigate network capacity.	ESCC Highways	Issue identified in asset management plan. ESRP yr1 DR-048: PSI carried out & local residents spoken to, however people were un-aware of any significant problem at this location. DSI; Further jetting and CCTV of drainage works agreed to identify if any drainage improvements required.

SWPR26	Surface water: Pluvial runoff	Pluvial ponding	Residential, Upper Horsebridge Road	558484	111289	Monitor future instances of flooding at this location.	ESCC	Ongoing
SWPR51	Surface water: Pluvial runoff	Pluvial ponding	Highway, Mill Lane	558520	112501	Monitor future instances of flooding at this location.	ESCC	Ongoing
SWPR01	Surface water: Pluvial runoff	Pluvial ponding	Highway, Mill Lane	558478	112517	Investigate network capacity.	ESCC Highways	ESRP yr1 DR-051: PSI completed and reported; Although there is plenty of history at this location all the gullies in the immediate area of the flooding appeared to be in acceptable condition with water holding at invert level in the pots. Unfortunately there is very little the Highway Authority can do at this location
SWPR36	Surface water: Pluvial runoff	Pluvial ponding	Highway, Mill Lane	558240	112409	Monitor future instances of flooding at this location.	ESCC	Ongoing
SWPR09	Surface water: Pluvial runoff	Pluvial ponding	Residential/ highway, North Street	557956	115131	Investigate network capacity.	ESCC Highways	ESRP yr1 DR-052: PSI carried out report yet to be received.
SWPR38	Surface water: Pluvial runoff	Pluvial ponding	Highway, North Street	557797	112721	Monitor future instances of flooding at this location.	ESCC	Ongoing
SWDD06	Surface water: Drainage ditch	Ditch surcharging due to blockage	Residential, Bakers Farm Park Homes	558189	111346	Monitor future flood instances at this location. If problem persists, advise riparian owners of their rights and responsibilities.	ESCC	Report of invasive species growing in watercourse – august 21016 – reported to EA. Will be addressed as part of maintenance programme
FMR01	Fluvial flooding: Main River	River overtopped banks	Highway, Church Road	558061	112374	Under policy 4 of the CFMP, further actions may need to be made to keep pace with climate change.	EA	Ongoing

SFF05	Sewer flooding: Foul	Hydraulic Overload	Residential, Coldharbour Lane	555419	109976	Carry out investigations to understand cause of reported incidents	Southern Water	SW currently undertaking review of Hailsham South and North catchments to identify necessary works. Outputs to be put forward as part of business planning process for funding.
SWPR34	Surface water: Pluvial runoff	Pluvial ponding	Highway, Church Street	558049	112558	Monitor future instances of flooding at this location.	ESCC	Ongoing
SWPR35	Surface water: Pluvial runoff	Pluvial ponding	Highway, New Road	559354	111643	Inspect highway drainage on New Road. If required, undertaken maintenance works.	ESCC Highways	ESRP yr1 DR-055: PSI carried out but waiting for report and its recommendations for further action.
SWPR31	Surface water: Pluvial runoff	Pluvial runoff from adjacent property.	Residential, Hackhurst Lane	555924	111520	Monitor future instances of flooding at this location.	ESCC	Ongoing
SWPR30	Surface water: Pluvial runoff	Pluvial runoff from new developme nt	Residential, Coldharbour Road	556417	111216	Install temporary drainage system during construction works.	Developer	Complete
SWPR32	Surface water: Pluvial runoff	Pluvial runoff from the highway	Residential, Winkenhurst Cottages	557932	115133	Install temporary drainage system during construction works.	Developer	Complete

Appendix B – Explanatory Notes Included with ESCC Response

ESRP – the Highway Authority's Employer's Service Requirement Plan (an Asset Management Plan)

Preliminary Site Investigation (PSI)
Typically to include locating and uncovering all gullies, locating runs and outfalls.
General Site Survey (road widths, overheads etc.), plotting an initial working drawing
Talking to the locals about flooding issues (sites best visited in the rain but this may not always be possible)
Identified Plant/TM etc for the DSI

Detailed Site Investigation (DSI)
Will include full CCTV investigation, the use of Plant (Jetter, Super Combo, Bowser etc)
Traffic Mgt (Closure, Traffic Lights, Stop/Go)
Provide all information to enable detailed design, to include CD, drawings (hand drawn or CAD sheets), detailed site info

Detailed Design (DD)
Full design to enable Commercial/ Construction phases, to include Detailed Drawings, Bill of Quantity's, SHE Documents etc

Appendix C – Photographs of Flooding in Hellingly Parish

Autumn 2000 – View from outside “Rudgwick”, looking East along A271
The garage on the left is now Horsebridge Veterinary Practice.
Photograph provided by D Bone.

Feb 2012 – View looking East along A271. Failure of highway drains due to river high level. Photoraph provided by resident of Lower Horsebridge.

Jan 2016 – Aerial view from Hellingly Village looking East / South East towards Lower Horsebridge. Photograph provided by 4 x 4 Sussex Rescue.

Jan 2016 – Aerial view of Hellingly Village near to Mill Lane / Station Road Junction, looking East. Horselunges Manor out of shot to the left. Photograph provided by 4 x 4 Sussex Rescue.

Jan 2016 – Grove Hill / Mill Hill area between Hellingly / Horam. Photograph provided by 4 x 4 Sussex Rescue.

Jan 2016 – Drainage Ditch adjoining field next to dis-used McDougalls Flour mill. Photograph provided by S Carr.

Jan 2016 – View from Upper Horsebridge to dis-used flour mill.
Photograph provided by S Carr.

Jan 2016 – view from A271 South-East towards Cuckmere River.
Photograph provided by S Carr.

Jan 2016 – Water level downstream of A271 crossing.
Photograph provided by S Carr.

Jan 2016 – View of River Cuckmere from bridge over A271.
Photograph provided by S Carr.

Jan 2016 – Mill Road, Hellingly Junction with Cuckoo Trail.
Photograph provided by S Carr.

Jan 2016 – "Wealdway" footpath from Hellingly towards Horselunges Manor.
Photograph provided by S Carr.

Jan 2016 – Land adjacent to “Lunge Haven” in Hellingly. Photograph provided by S Carr.

Jan 2016 – Station Road approaching Hellingly Village, looking North-East. Photograph provided by S Carr.

Jan 2016 – Land adjacent to Hellingly Church. Photograph provided by S Carr.

Jan 2016 – Hellingly Village outskirts. Photograph provided by S Carr.

Nov 2016 – Water level in drainage ditch adjacent to River Cuckmere after one night of rain - Storm Angus. Photograph provided by N Downes

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Nov 2016 – Water Level passing under A271 after one night of rain – Storm Angus. Photograph provided by N Downes.

Feb 2017 – Bovis Homes Site – High Finished Ground Level and Water Run-off Pooling Adjacent. Photograph provided by D Phillips.