Synopsis

This paper examines the immediate effect on Clapham – and the consequences for Angmering, the community immediately downstream – of the recent heavy rains in and around Clapham.

The papers reports no danger to life, nor any uninsurable losses, but does suggest that attention to local drains – redesign, repair, and regular preventive maintenance – may avert a continuing drain on public finances in the future.

Rain

When the jetstream shifted southwards over the British Isles in early June 2012, the track of a series of slow-moving cyclonic depressions moved south with it. Moving towards the UK from the south and west, these depressions brought heavy and sustained rain to West Sussex. Stories of 'a month's rain in twenty-four hours' were common. In the lower-lying parts, some damage was inevitable, as the flatness of the land makes fast drainage impossible. In the hillier areas, damage was not inevitable, but occurred nevertheless as a result of poorly-designed and poorly-maintained drainage systems.

Similar flash floods have occurred in recent years. If we believe the climate scientists, we can expect similar events to occur more frequently in the coming years. This was NOT "a once in 200 years event", as some have asserted.

The paper recounts in detail what happened in Clapham village, and suggests that future distress, damage and public expense, not only in Clapham but also downstream in Angmering, can be avoided if lessons are learned and changes made.

Damage recorded in Clapham

Clapham is a small community – with around 300 inhabitants in around 150 households – so it is comparatively easy to list the flooding incidents known to have arisen from the recent sustained downpours.

The list is:-

(a) Spate runoff into the east end of The Street from the farm track, flooding the garage (and threatening the house) at Throapham Cottage south of The Street immediately west of the farm gate;

(b) Spate runoff from The Street into Clapham Close (unadopted?) from which the only outlet is the front drive of No.2;

(c) Spate runoff into the east end of Clapham Common (from a private road to Woodhatch?) and thence into the shared garage forecourt – and individual garages;

(d) Spate runoff from the TP/Highways approach road into Clapham Common (west end) and thence down to the front doorsteps of Nos. 3 & 5;

(e) Spate runoff into and through the valley to the east of the Coopers' property, 'Shutters', flooding their lawns, the house being saved from flooding by some last-minute ditch clearance;

(f) Spate runoff from 'Shutters' flowing under and over the A280 and thereafter, as a consequence of onward drainage systems having failed to perform as intended, into Seth Evans' Joinery.
(In the writer's view, having heard reports - and seen the consequences - of some remarkably reckless driving, the flooding of the A280 posed the greatest immediate threat to the greatest number.)

(g) On the boundary of the Parish with Worthing, spate runoff from the A27 – in Clapham Parish at this point – lapping at the front doorstep of the "Coach and Horses" public house.

(h) Just across the Clapham/Patching boundary at Hillside, where a row of cottages had water up to their front doorsills.

This list of incidents is trivial compared to the damage sustained in other West Sussex parishes, particularly those – such as Angmering - below the South Downs on the coastal plain. However, given that much of the water that caused damage in Angmering was uncontrolled runoff from the Clapham area, a solution to our relatively minor – and transient - local difficulties may be a significant part of Angmering's water-management plan.

Land Form and Occupation

The South Downs resemble a stack of paving slabs that has tilted up to the north with the upper slabs slipping southwards, giving a series of hills with gentle southern 'dip' slopes and steep northern 'scarp' slopes. The natural drainage runs east-west at the foot of the scarp slopes before escaping southwards through fractures in the slabs. The southern edge of the slab-stack is buried under the coastal plain.

The slabs are made of differing geological deposits, with differing abilities to allow the passage of water. Natural drainage has been significantly affected by the paving and curbing of roads and industrial premises.

Clapham sits on two such slabs just to the east of a significant north-south fracture. Water flowing through the fracture then flows through Angmering.

The Shape of the Village.

Clapham village occupies the north, west and south sides of a square roughly half a kilometre across.

The northern side - The Street and three Closes – lies on the dip slope of a chalk slab which is truncated immediately to the west by the north-south valley in which the A280 trunk roads runs. The Street is the oldest part of the village with about 80 domestic properties. Road patterns suggest that an important highway once ran through Clapham and Patching, and that they stood to either side of a locally important valley crossing (now Coldharbour Lane).

South of The Street, the dip-slope – which provides rich grazing – drops southwards to a clayey east-west valley which drains sluggishly to the west, across the line of the A280, into the north-south valley. The western, and newest, side of the Clapham square is formed by domestic and industrial ribbon development along (the eastern side of) the north-south section of the A280, thus forming a permeable barrier across the mouth of the east-west valley.

It may be significant that while the north-south valley has a dry bed to the north of its confluence with the east-west valley, it has a permanent stream to the south.

Earlier settlement patterns shunned the floors of both the valleys mentioned.

The scarp slope rising from the south side of the east-west valley was once the site of an extensive brick-pit. The pit has been filled – presumably with refuse – and capped. The cap appears relatively impervious to water.

South again, at the top of the scarp slope, is the site of the former brickworks, now occupied by the large, paved yards of Travis Perkins and West Sussex Highways. Most of the domestic properties lie on the dip-slope, on either side of an east-west street named Clapham Common, just to the south of these paved areas. This forms the south side of the Clapham square.

Each of the three sides of the Clapham square experienced flooding during and after the recent downpours. While the common cause was the failure of poorly designed and poorly maintained drainage systems, the circumstances are different for each of the three areas.

The Street – Causes, Consequences and Recommendations

Flooding along The Street is simple to explain, and relatively simple to prevent.

In general, water drains into The Street from the agricultural areas upslope to the north and east. Reaching The Street, water tends to be channelled along it to the west. Water enters The Street from premises along the north side of The Street, and along the man-made metalled channels of Church Lane, Church Close, Woodlands Close and the Clapham Farm track (aka Right of Way (RoW) 2302).

Once running along The Street, water can escape from it:-

(a) through storm-drainage systems,

(b) along tracks and driveways leading off The Street to the south;

(c) through domestic premises.

Along The Street, soakaways are conspicuously ineffective in moderate to heavy rain. An upwelling of water, in rainy weather, in the gardens below South House suggests that there's a relatively impervious layer just below the surface.

In the recent downpours, spate water running down RoW 2302 eroded the trackway quite seriously. The resultant reprofiling diverted water into the east end of The Street that might otherwise have flowed on into the pastures below. This was a direct cause of the flooding at Throapham Cottage.

Spate water accumulating in the eastern section of The Street found an outlet at the mouth of Clapham Close. Clapham Close has no storm drainage. Water flowed on into the property at the lowest corner of the paved area (No.2), overwhelmed the limited diversion channels there, and ran onwards, fortunately preferring the garage to the house itself.

Storm drains in the Close would have helped. A small hump, or a row of granite setts, at the mouth of the Close, to keep spate water from leaving The Street, would be more effective. Adequate storm drains on The Street itself would be even better.

It would be possible to encourage spate water to channel southwards off The Street down every drive and trackway. This is considered undesirable; it would lead to further flooding of premises and would increase the accumulation of water and water-borne detritus in the clay-floored east-west valley.

Hillside – Causes, Consequences and Recommendations

Hillside is a row of houses in Patching Parish. It lies just outside the north-west corner of the Clapham square, at the junction of Coldharbour Lane and the A280, and thus at some distance from Patching village. It does not occupy a hillside; it sits on the floor of the (usually) dry north-south valley. It is liable to suffer from run-off from The Street, from the A280 and from surrounding fields.

Three storm-gratings at the western end of The Street and on the east side of the A280 immediately to the north are all that stop runoff from The Street and the A280 flowing down into Hillside – which has no storm gratings. In the June rains the gratings were overwhelmed and the runoff did just that. Some weeks later, one of those storm gratings is invisible under a mound of pebbles and sand. The second storm grating is visible, but choked just two inches below road level. The third is not choked – as far as can be seen by a casual inspection.

The Hillside households are used to flooding; it happens quite regularly. On this occasion it reached – but did not overtop – the doorsills of most of the houses in the row.

It is suggested that the three existing gratings should be cleared and kept clear, and that further storm drainage should be install in Hillside to protect the properties there.

Clapham Common – Causes, Consequences and Recommendations

The flooding at Clapham Common was far more severe than its position just below the top of a sandy ridge would lead one to expect. No such flooding occurs in the woodland to the east of the settled area.

It is suggested that the primary cause is the paving of large areas in the Travis Perkins and West Sussex Highways premises, from which water spills off down the hillsides. The natural outlet for this water is the access roadway for the two sites. Once on the access roadway, the water will choose the mouth of Clapham Common, and thence the front gardens and front doors of No. 3 and No.5.

Better storm drains should be installed on both sites and on the access roadway. Water that gets as far as the mouth of Clapham Common should be channelled past it.

At the eastern end of Clapham Common, the garages and their forecourt were flooded. The sources of this water are likely to include:-

(a) the metalled roadway from Woodhatch,

(b) runoff from the properties on the north side of Clapham Common and

(c) runoff from the West Sussex Highways site.

Better storm drainage upslope – to prevent ingress, and storm drains *(not soakaways, see below)* in the garage yard itself seem to be called for.

A complicating factor here is the apparent presence of an impervious stratum a few feet below the natural surface of the dip-slope. The houses on the upper (north) side of Clapham Common stand on plots cut into the slope. In and after heavy rain water emerges from the soil halfway down their gardens, possibly from soakaways in/around the paved areas upslope. It's not clear whether this threatens the foundations of the buildings concerned.

Long Furlong – Causes, Consequences and Recommendations

The 'hollow centre' of the Clapham square is an insignificant-looking valley – really no more than a large re-entrant – draining westwards, across the A280 – into the north-south valley along whose side the A280 runs. This re-entrant captures water flowing southward from, and across, The Street. It captures water flowing northwards off the industrial paving on the Clapham Common ridge and off the impervious cap of the infilled brick pit. It appears to be fed at all times by an upwelling at its eastern end, in The Harehams. The reliably lush condition of the meadows in the valley suggests that the ground is not pervious

to water. It's a well-fed reservoir, and the A280 and the buildings along it can easily form a dam.

As you would expect with such an obvious threat to the A280 and to the dwellings along it, the valley has storm drains laid to carry water to, under, and away from the A280.

The recent flooding showed that these drains are certainly under-maintained, probably in disrepair and possibly inadequate even if properly repaired and maintained.

There is incontrovertible evidence – from those who struggled to reopen them, that the pipes under the A280 were blocked by detritus – a tree-trunk, a football, an accumulation of wood-chip mulch. Proper preventive maintenance would have seen these removed earlier.

Once the water was free to move past the A280, either by over-topping it or through the cleared storm drains, it should have moved onwards in pipes leading westwards down a gentle slope towards Patching Pond. Apparently because the onward drainage channels under/past the Village Hall field are blocked or broken, the water had to find another outlet. The floods – having first covered the A280 - found a northward outlet, into Seth Evans' joinery workshops.

The failed dispersal system needs to be repaired and augmented – or simply replaced by pipework which can be made, and kept, fit for use.

While the consequences were seen at and around the A280, there was a further blockage upstream, in the pasture/paddock to the east of the 'Shutters' property's boundary. Here, a substantial pool formed, at a level several meters above the pool blocking the A280. It would seem prudent to repair any existing drainage here and/or to install a new system, not just to protect 'Shutters' but to ensure that a temporary ponding here does not, on breaking through its dam, carry silt and debris down to the A280 roadway.

When considering renovation of the A280's drainage systems, it's worth noting that moderate rain causes an upwelling of water in the garden of the cottage just the north-east of the A280/Clapham Common junction. This causes a north-westward flow of water across the A280, ideally suited to the formation of an ice-rink in winter conditions.

Upstream and Downstream

Water that flows off the Clapham ground surface (up to 50 metres above sea-level) flows, by and large, into Patching Pond, half a kilometre away and less than 25 metres above sea-level. That's a gradient of about 1 in 20. Patching Pond feeds a brook which flows on south-westwards for about 3 kilometres into the centre of Angmering (5 metres above sea-level). That's a gradient of 1 in 150. Thereafter, the natural channel to the sea is a further 6 kilometres of farmland ditches and urban pipework, with a gradient of 1 in 1,000.

This suggests that the nature of the water management problem will differ greatly in different areas. On the flat coastal plain, fast-moving waters – and the damage they can do – are not really an issue; water will rise like the tide, and eventually fall like the tide. However, in the downland foothills, water doesn't hang around – it rushes through, clutching at what it can, only dropping its spoils when it slows. And as the slope eases, on the approach to Angmering, the speed will inevitably slow.

What we in Clapham need is well-designed, well-maintained spate control systems, channeling water off the surface as soon as possible and letting it flow cleanly to where it can do least harm. What Angmering needs is a system that manages the Clapham spate and ensures that it does not pour down Water Lane in a debris-filled torrent ready to clog the Angmering village centre with silt and rubbish.

John Morris, Clerk to Clapham Parish Council

28th June 2012

Submitted with this paper are four short 'picture essays' which use photos taken either on 12th June, a day after the flooding, or – in much drier weather – on 28th and 30th June, to illustrate the underlying problems.

The four essays are:-

(a) Annex A: Run-off in The Street, Clapham

(b) Annex B: The Hillside (Patching) Problem

(c) Annex C: Clapham Common: Floods by Design?

(d) Annex D: Floods on the Long Furlong (A280)

JM, 01/07/2012