

Report on Flood Risk in the South Marston Brook Area following the 2023 storms

Compiled by South Marston Parish Council

November 2023



Introduction

The main focus of this report is the catchment area of South Marston Brook and its 4 tributaries emanating from the storage lagoons upstream of the village. These join prior to reaching Nightingale Lane and then flow south, supplemented by water that flows across Old Vicarage Lane from the fields south of the village.

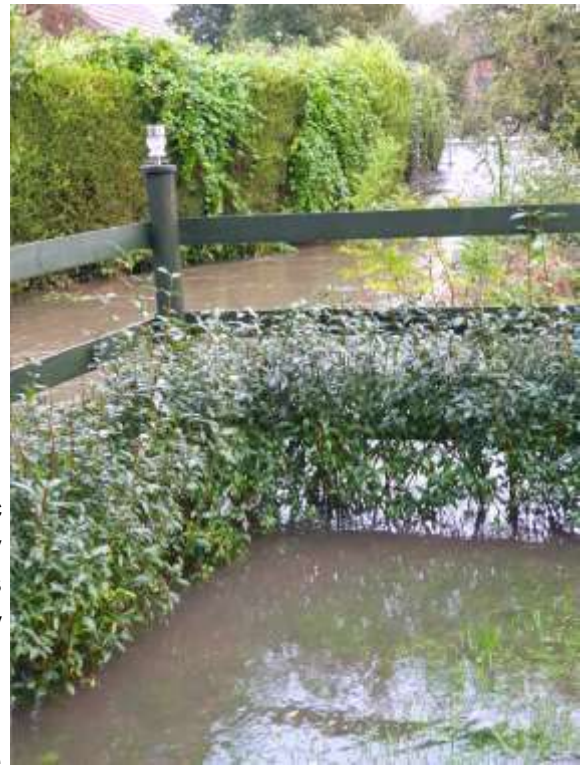


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The photo pages explore the experience of flooding in specific areas of around the village, all identified as being affected by South Marston Brook and its tributaries. Each section is headed by a map extract from the Environment Agency website, showing their known extent of surface water flooding. Comments from residents in each area are noted.

All photos and reports from residents, apart from the aerial views on P.19 relate to Storm Babet in late October 2023.



Flooding elsewhere in the Parish

Flooding was also reported at places not directly affected upstream by the Brook and its tributaries.

- South of the A420 at White Cottage on Shrivenham Road relates to a different part of the River Cole system. The fields mainly drain to the River Cole. However, a significant amount of water also goes north and collects in the line of the old canal parallel to the A420 which runs behind the housing.
- The resident says they were very close to having water inside the house as happened in 2007. They managed to pump it away from the back door which is close to the old canal but it came very close. If the water table gets too high, it comes up through the floor.

They worked hard to keep the canal culvert as clear as they could by pulling out branches and digging trenches so water overflowing into it from the fields could get away.



- There was flooding on low points of the roadway network from surface water not being able to access or have access to any drainage system eg at Morses Lane, which affects access to houses at South Marston Farm and at Hoddinotts Corner bend, which creates a road safety risk.
- ♦ Reports of more serious flooding than usual from a resident at the top of Nightingale Lane, east of the Brook, who considers this might be the impact of the french drains now installed on farmland to the north.

DRAINAGE SYSTEM: South Marston Brook and its Tributaries

South Marston Brook runs broadly northwest to southeast to reach the River Cole close to Acorn Bridge.

However, there is confusion between various flood authority maps. The Environment Agency 'South Marston Brook Flood Warning Area' poster and the Swindon Borough Flood maps both show it arising at Kingsdown in the northwest and running through the centre of the village. This is correct. The EA website designation of a more easterly stream emanating from South Marston Park Estate is wrong.

For clarity, we have designated the 4 tributaries that emanate from the Flood Storage Lagoons upstream of the village T1 to T4.

To the south of Nightingale Lane SM Brook is augmented by the surface water flow from west to east, which we have designated 'SW flows'.



The Tributaries of South Marston Brook

Tributary T1 emanates from the Keypoint Industrial Estate Lagoon ('the SBC Keypoint Lagoon'), which was transferred to the Borough in 1990. It runs eastwards before entering the culvert under Greenfields.

Tributary T2 brings water from Kingsdown into the SBC Alleviation Lagoon by the Honda North gate ('the SBC Honda North lagoon') and thence under the ex-Honda site to join T1 and/or T3.

In 2007 this lagoon was overtopped, water flooding into the Honda car park and drainage system.

Tributary T3 emanates from the southern lagoon on the ex-Honda site ('the Honda lagoon') and joins T1 above the Greenfields culvert close to the centre of the village. In 2007 this lagoon was overtopped.

T1, T2, and T3 combine before entering the culvert pipe under Greenfields and Highworth Road in the village centre that discharges by Quarrybrook and flows south towards Nightingale Lane. In 2007 this culvert was overwhelmed, leading to extensive house flooding in Greenfields and beyond.

Tributary T4 is the outflow from the large storage lagoon in South Marston Park industrial estate which runs south on the west side of Highworth Road. At the bottom of the slope, the watercourse makes a right angle bend and then passes under Highworth Road. In storm conditions, water accumulates on the Honda Gardens site and floods over the road. On the road, it is joined by a flow running from the east. From Highworth Road it continues in a south-westerly direction, running through the flood plain between solar panels and pasture.

A complex ditch network is evident at the junction of the tributaries east of the village, seen here on a 1925 historic map, which is consistent with the official EA Surface Water flood map of the area.

From the top of the map, there are two branches taken by T4. The first goes straight on to join South Marston Brook at point A on Nightingale Lane. The second route takes a sharp right hand turn down to just upstream of the Chapel Lane bridge (point B) where it joins the main Brook coming from point C.



Over the years, the 'straight-on' branch of T4 has become almost entirely blocked due to lack of ditch maintenance. The water now mainly flows along the right turn towards Chapel Lane bridge, increasing the risk to the Chapel Lane and Church Farm groups of houses.

The Brook's flow is partly constrained by the Nightingale Lane bridge, flooding into the adjacent low-lying fields. It then runs south parallel to and east of Old Vicarage Lane before turning and joining the River Cole before reaching the railway embankment.

Southern Surface Water Flow ('SW flows')

Prior to reaching the embankment, the Brook is augmented on its route by a significant volume of surface water coming west to east across the southern part of the village. Travelling via a variety of routes using occasional swales, some stretches of piped ditch and some open, but truncated ditches. This easterly flow is responsible for flooding at properties en route and on Old Vicarage Lane between Manor Cottages and the railway bridge. Roadside ditches do not and will never have the capacity to accept this flow without significant impact downstream. The water flows onto Old Vicarage Lane at various points down to the Carpenters Arms and eventually finds its way into the Brook, but not without causing significant flooding on the way.



Photos in the introduction: Highworth Rd at Byron Court, the Brook at Chapel Lane (p 1, 2 and 3), White

Condition of the Storage Lagoons in the Parish

Over the past 2 years, the Parish Council has been endeavouring to ensure a regular reporting and maintenance regime for the substantial lagoons upstream of the village. This has proved difficult.

Tributaries T1-T4 are each constrained by a flood storage lagoon, and we have correspondingly labelled these L1- 4.

L1: The SBC Keypoint Lagoon:

The lagoon was transferred to the Borough when the Estate was completed, but no maintenance appears to have taken place. The access track has become overgrown, and the sides of the lagoon are impenetrable, with substantial willow etc. growth within the basin.

The Borough initially denied any responsibility but then accepted it was theirs and that clearance was required before an inspection could be undertaken.

L2: Honda North Lagoon:

The Borough have told us that this is regularly inspected and maintained by them, but have not provided any record.

L3: The Honda Lagoon:

A comprehensive reporting regime shows it has been well maintained.

L4: M&G lagoon on SM Park

Regular reports have been given to the Borough by the owner's agents, but there is no section that relates to the lagoon. The Borough Drainage Engineer has told us that it has become silted and that he will ask the owners to arrange for this to be cleared and for future reports to include the lagoon.



Storage capacity south of the village: In the **SW flows** area, one of the few remaining ponds in the area lies behind Manor Park and is the source of a diagonal flow to behind the new Bellway development at Magdalene Close. A new storage lagoon has been installed at Magdalene Close which is designed to feed into this flow channel to go southwards under Bridleway 4, but is currently blocked. However, the majority of the SW flow as described on page 4 does not benefit from formal ponds or storage areas en route other than a haphazard scattering of natural swales and truncated ditches.

It is worth noting that around 50 ponds were reported in the parish in the 1920s, but almost all have been filled in, many due to land use changing from arable to crops.

Photo Report : Greenfields, Highworth Rd, Quarrybrook and Byron Court : T1 , T2 and T3



Water coming from the SBC storage lagoon behind the Keypoint site combines with the flow from the north (Honda/Panettoni site) via Tributaries T1, T2 and T3 to deliver surface water to the entrance of the Greenfields culvert. A significant proportion of the 53 village houses which suffered an ingress of water in the 2007 storms are located in Greenfields and Highworth Road beyond.

The entrance to the Greenfields culvert during storm Babet is shown on the right.

The flow came to about 250mm above the pipe entrance.

The photo (below left) shows the electrical substation at the point the watercourse emerges into the open after passing under Greenfields and Highworth Road.

The water came up to above the lower level of the bridge stonework by the water level sensor (bottom right).

Highworth Rd was impassable in this year's October storms and official 'Road Closed' signs erected.



Byron Court was flooded with the water lapping up to the drives of the houses (right).

The photo below is from Byron Court looking out across the Highworth Road



Looking from the bridge towards the **Carriers Arms**, it is virtually impassable (right). We had carers visiting the elderly abandoning their vehicle to wade barefoot into the **Quarrybrook** estate to the north.



The former Post Office & shop (left) had some water ingress on the ground floor and one car trying to get through had to be abandoned on the far side.

Summary : The cause of flooding is the peak water flow under the road. Possible solutions should focus on reducing the peak i.e. looking to increase storage capacity upstream. Development of the Panettoni site involves creating significant additional storage prior to the water flow being released into the Brook. However, increasing, or even just restoring the storage capacity of the SBC lagoon (which is not currently inspected or maintained) may also reduce peak flow downstream.

Photo Report : Highworth Road at the Bends, Tributary T4.



This stretch of road was impassable for most traffic. The 'Bends' dwellings experience floodwater both front and back of their properties. On the western side, flooding comes from storage ponds at South Marston Park. Surface water flows downhill to the gardens of housing on the western side of the 'Bends'. At the same time, surface water is also travelling downhill from the fields between South Marston and the road to Sevenhampton to reach the gardens of the 'Bends' housing on the eastern side. Worryingly, from the Supermarine turn, the roadway surface itself acts as a conduit for surface water, speeding up downhill until it reaches the 30 mph limit sign. At the 'Bends', this water is trapped by dwellings and buildings fronting straight onto the road, flooding the whole length of the built up area. At the southern end, the watercourse from South Marston Park passes under Highworth Rd to join the flooded gardens and fields on the eastern side of the road. Ditches and culverts are not adequate to carry the peak surface water flow away to the southeast.



Approaching the bends from the north (left) - the standing water has, in the main, travelled down the eastern side of the carriageway from the Supermarine turn without being able to enter the ditch network.

Approaching the Bends from the south (below) shows the extent of carriageway flooding south of the Bends.



The photo (right) was taken from the front drive at **'Sunleys'**, looking across to **'Ashdene'**.

Residents at Sunleys experience flooding coming from the South Marston Park lagoon, but they also point to the impact of water constantly being thrown up onto their property by traffic passing through the standing water on the road. All these properties are very close to the carriageway.

The resident pumping out his kitchen and at **'My Home'** (below) considers his flooding is entirely due to the brook at the rear of his property needing clearing and that willow growth further down was restricting the water from flowing away. He also noted the storage lagoon upstream was not adequately maintained - it was becoming overgrown and silted and was no longer functioning as it should.



'Southview' on the east of the bends is flooded both back and front (below). The road is under water (left) and the flooding in the back garden was very deep (right). The shed at the end is on 4ft. stilts.



The owner of Southview pointed out a triangle of woodland forming a natural hollow, immediately to the south of his property, probably owned by SBC Highways, which would be ideal as a flood storage lagoon. It is 2.5m lower than the South Marston Park lagoon to the North and 5m higher than the Village centre to the south.

The **South Marston Allotments** and **Honda Heritage Garden** are the last properties on this stretch of road to suffer standing water.



The Highworth Road carriageway is very much under water at the maintenance entrance to the Honda Memorial Gardens, just south of the Bends. Below, the garden area is completely water-logged - this is the landscaping, not the pond!



Summary

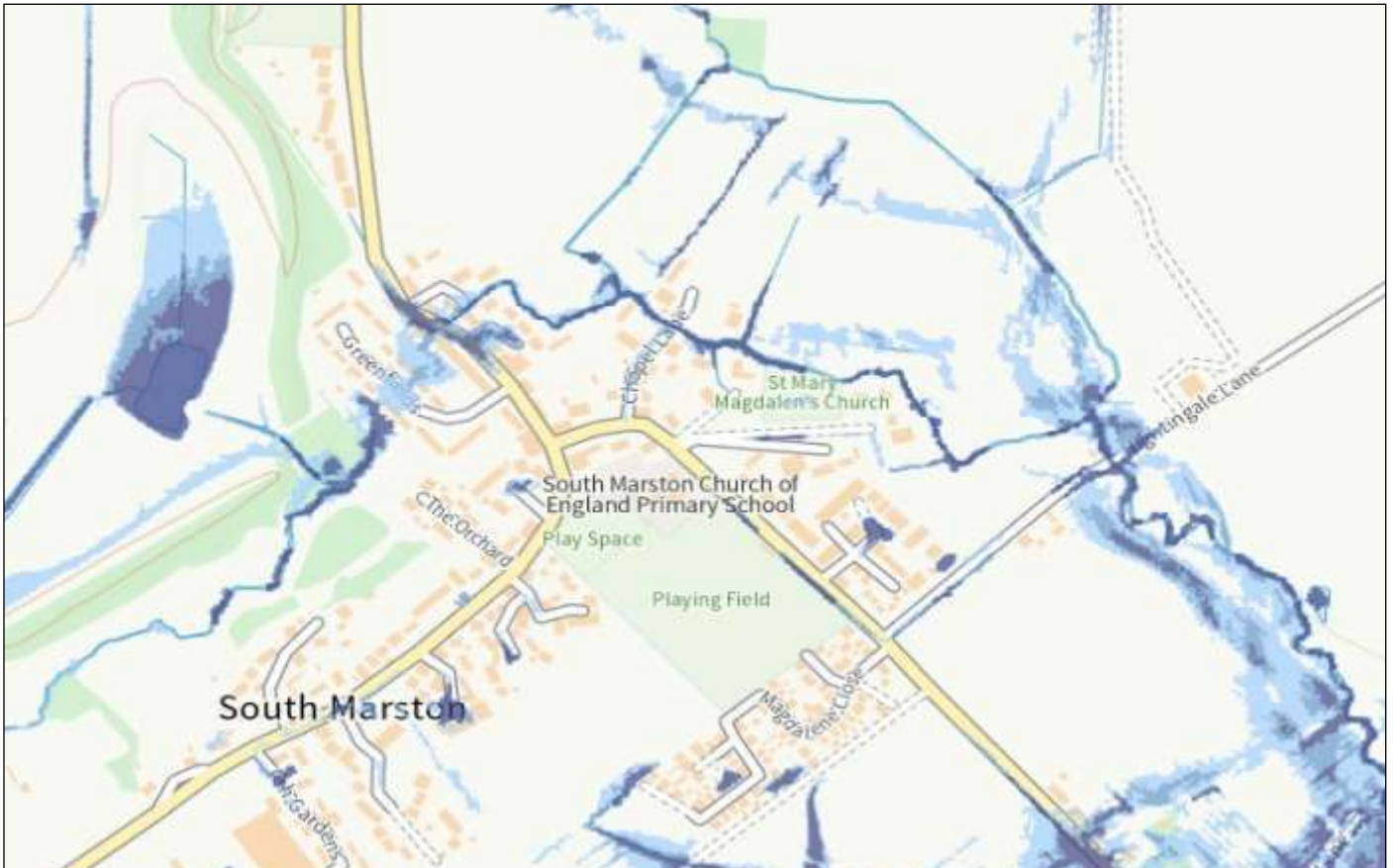
Storm water from peak rainfall will flow downhill unless there is adequate storage capacity in lagoons and ditches to hold it back. The topography of the 'Bends' area means that water will collect on the road carriageway between the houses that border the road. If the upstream SM Park lagoon was dredged to restore or possibly even enhance its capacity, and was thereafter maintained, it would reduce the peak flow volume and speed of surface water in future rain events.

The flow of water on the carriageway down the hill from the Supermarine turn could be reduced if it was re-directed into adequate roadside ditches on the eastern side of the road. The Borough's Community Action Plan matrix also identified a cause of the road flooding was that some property owners who front onto the road had done works affecting roadside ditches in breach of planning permission. This has not been remedied despite apparent reference to Planning Enforcement.

Unlike other areas of South Marston, there is currently no major development planned for north of the village. The Panettoni site, with its improved water storage capacity will not impact on T4. It may be possible to identify stretches of ditches to be cleared and water storage opportunities without causing bigger problems downstream.

For instance, if it was possible to create additional swales to the west or east of the 'Bends' to provide somewhere for the water to collect, it may help reduce the impact of peak rainfall flooding that is fast becoming a regular occurrence.

Photo Report: Chapel Lane to Manor Cottages T1, T2 and T3



South Marston Brook (T1,T2 and T3) runs through the Greenfields culvert and then adjacent to or through gardens in Byron Court. From there, it turns right to flow down towards the end of Chapel Lane. On its way, it is significantly augmented by the flow of T4, which has travelled from the east of the village using the dog-leg turn towards Chapel Lane bridge described on page 4 of this report.

The bungalow (4 Chapel Lane) next to Pigeon Farm had water overflowing into the back garden. The flood to the front of the bungalow was equally worrying. The speed of flow is visible on the right.



The Brook flowed over Chapel Lane bridge, flooding the roadway and nearby properties affecting a number of residents. One resident reports that, for the first time since 2007, they experienced water in the ditch which runs directly behind Pigeon Farm and Pigeon Cottages. This water backed up because it could not enter the Brook due to the high water level. They were therefore threatened on 3 sides: the front where the water gushed over the bridge flooding the lane and the land beyond, and even more so at the rear by 2 ditches overflowing with fast running, high volumes of water.

The Chapel Lane bungalows are owned by the Borough and occupied by vulnerable residents. Toilets in numbers 1, 2, 3, and 4 threatened to overflow. There was no flushing, just in case.



South of the bridge, the Brook overflowed its banks. There was flooding at Little Chelsea, but flood gates installed since 2007 kept water out of the home. The footbridge further on was under more than .5m of water. This body of water skirts the group of houses at Church Farm to reach the bridge on Nightingale Lane, adjacent to the Thames Water foul water pumping station.

A worrying impact is the combination of floods and sewage. Overflowing sewage threatens Pigeon Farm properties, Church Farm House (which has experienced serious internal flooding in the past) and, further south on Nightingale Lane, Meadow Cottage. The pumping station has had sewage tankers in almost constant attendance throughout and subsequent to recent period of storms.

Church Farm House, a listed building, is located very close to the Brook. It suffered serious internal flooding in 2007.

The photo shows the flooded former farmyard which is adjacent to the main house.

The sewer spills out and the water level rises in the downstairs toilet.

Since the October storms, the resident has put in increased protective measures, but the property remains vulnerable. Pumps have been used at this and other houses neighbouring the Brook.



Meadow Cottage on the left, looking eastward up Nightingale Lane towards the pumping station.



There are major local concerns about the efficiency and sufficiency of the pumping station so close to South Marston Brook, compounded by the ever - increasing frequency of Thames Water pumping vehicles appearing on the scene.

At Meadow Cottage (right), the mains sewer was overflowing on their driveway. When the Thames Water personnel lifted the manhole, a geyser of effluent erupted three foot into the air.

Summary

No amount of ditch clearance will cope with rainfall in this quantity and at this speed. The houses close to South Marston Brook will continue to be vulnerable to flooding unless the peak flow rate into the Brook and its tributaries upstream can be reduced.

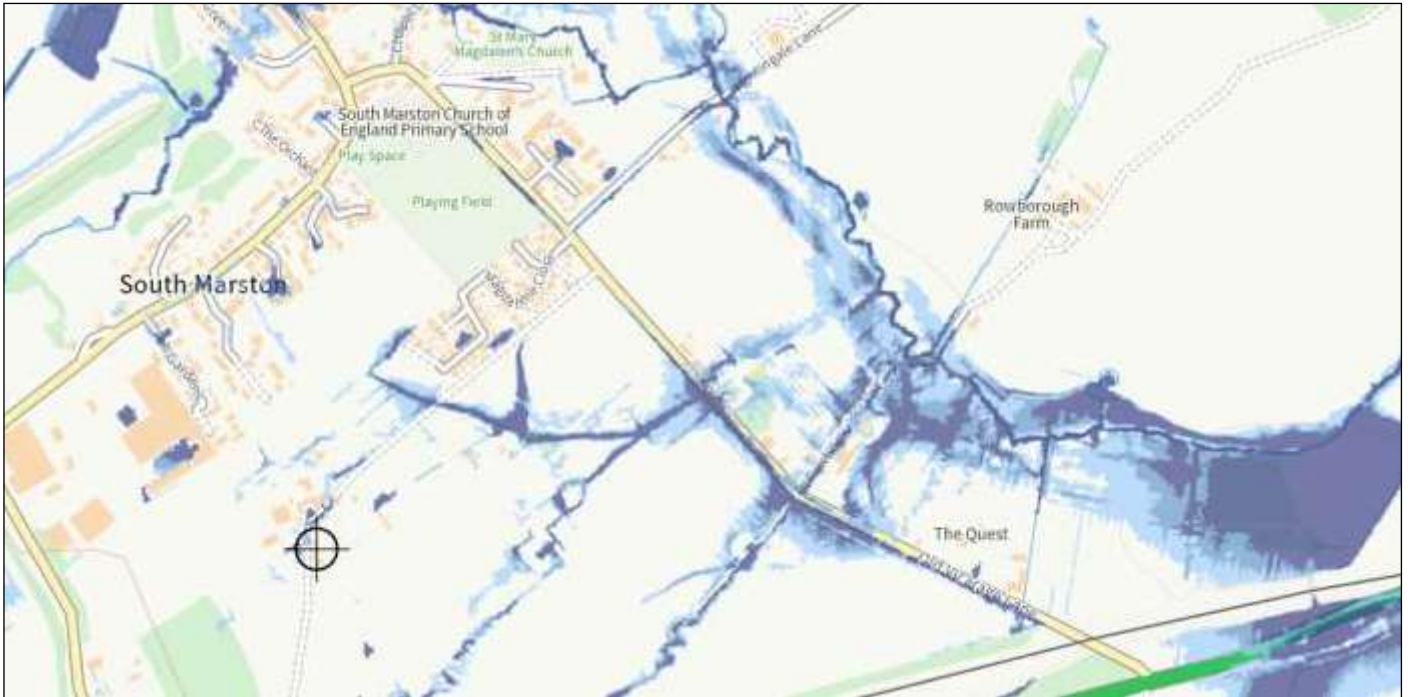
However, the fact that almost all the water from T4 now takes the right hand dog-leg turn towards the bridge at Chapel Lane will continue to be a problem. If it kept to the 'straight-on' option, the risk to housing and property would reduce. We consider restricting the flow of T4 water in the dog-leg turn and opening and widening the 'straight on' section of the watercourse is an option worth exploring.

The serious additional issues concerning sewage and surface water systems mixing must be addressed.

The Nightingale Lane pumping station cannot cope and foul water backs up several times a year. Significant development is planned for the village itself e.g. at Crown Timber and Keypoint and we require assurance that the system's capacity will be increased to cater for this.

We would also like some assurance that the new proposed pumping station for the large HHT housing development (to the south) will reduce, not exacerbate problems with the Nightingale Lane pumping station.

Photo Report: Old Vicarage Lane, Manor Cottages to the railway : All water sources



Old Vicarage Lane experienced serious flooding from Manor Cottages southwards, with water flowing out of the ditches onto the road surface.

Manor Cottages' flooding is because of the confluence of two major parts of the **SW flows** on the western side of Old Vicarage Lane:

- west to east across the fields to the south of the village and
- the flow of water from the pond behind Manor Park/Bell Gardens Field which is now augmented by outfall from the Bellway development) at Magdalene Close.

South Marston Brook to the east is too full to accept additional flow, and overflowing its banks, so there is standing water on the surrounding fields, in ditches and on the surface of the road.

Further south on Old Vicarage Lane at the junction with Rowborough Lane, a third channel of the **SW flows** water joins from the west. This compounds the flooding on the road surface, making the roads impassable in normal vehicles. Fields to the west have standing water that cannot disperse south or east. Rowborough Lane, and the houses and adjacent fields up to SM Brook are surrounded by standing water in most rain events. Fields either side of Old Vicarage Lane towards the Carpenter's Arms are the most low-lying in the village area and act as the catchment area for all surface water south and west of the village. South Marston Brook does not appear to be able to cope, resulting in flooding which is over a wider area than indicated on the EA map – for instance Old Vicarage Lane between Rowborough Lane and the Carpenters Arm's railway bridge was almost completely under water and was impassable for most traffic.

Digging out roadside ditches along Old Vicarage Lane will have limited effect. The water cannot exit freely at the railway bridge as the eastern fields are already under water

From Manor Cottages looking south towards Rowborough Lane (right). It looks just passable here.



Beyond Manor Cottages on Old Vicarage Lane, **Rowborough House** suffered its first flooding ever with water running down from the east from South Marston Brook and adjacent fields, to arrive behind the house and into the garage. This was clearly identifiable by the smell of slurry from the fields.



The resident in Rowborough House also pointed out that they were under threat from the west because of the surface water collected on the fields to the west of Old Vicarage Lane. With no maintenance or clearing of the ditch, the water was overflowing onto the road and across to the houses. It was simply standing rather than flowing away, due to the blocked ditch.

Photo (left) shows water pouring off the fields to the west of Old Vicarage Lane onto the roadway.

Further south, running east from Old Vicarage Lane, Rowborough Lane was impassable.





The junction with Rowborough Lane looking towards the railway bridge.

A Range Rover or a motorbike could just get through – but the Tesla driver sensibly turned round without trying it.

The Carpenter's Arms, Old Vicarage Lane



Looking towards the railway bridge from the Carpenter's Arms



Down at the railway bridge



Looking north from the railway bridge towards the Carpenter's Arms



Water flooding east into the field between the culvert and the railway bridge

Summary

The northwest to southwest gradient across the village makes it inevitable that surface water will build up on Old Vicarage Lane between Manor Cottages and the railway bridge and in the fields either side of the road. The roadside ditches are not currently well maintained, but clearing them would probably have marginal impact in terms of reducing flooding.

The flooding on the carriageway and in the adjacent fields is not reflected on the EA Surface Water Flood map.

We believe that there is unlikely to be a solution that gets the water away from this area without a significant downstream impact - the River Cole is already a vulnerable location and the A420 already floods around Acorn Bridge where the flow from Covingham adds to the volume of water.

If it can be solved upstream, that would reduce the risk of flooding (see last section).

Photo Report: South of the Village Centre, Keypoint to Old Vicarage Lane : SW Flows



The forthcoming expansion of South Marston village covers most of the land between the housing cul-de-sacs off Thornhill Rd to the north and the railway line to the south. This land is low-lying and prone to significant flooding, so the Parish Council has taken a close interest in the work of the developers' drainage engineers and input from the Environment Agency and the Lead Local Flood Agency.

The west to east flow across the village is officially accepted as significant (see EA map above). The photo (right) shows the water collecting on land immediately south of Magdalene Close, an area already designated for housing.



Flooding at Red House - Red House has had past experience of internal flooding. During the October storms, flood water surrounded the property, and flooded inside the house.



Future Development

The developers' concept for their SUDS drainage system is based on collecting all the surface water arriving from the west in a new main drainage swale running roughly north east from the Bell Gardens Field to the southwest corner opposite the Carpenters Arms, where it can be stored in a large basin with controlled release downstream. This should significantly reduce the volume of surface water reaching Old Vicarage Lane from the SW flow area, by intercepting and diverting it where it can be safely stored.

There is no shortage of land for this swale - it will be a green infrastructure wedge of open space, with no constraints in terms of cycleways or other hard landscaping requirements. The Parish Council feels the size of this swale and the end basin is crucial as a mechanism for holding back peak flow of water from flooding Old Vicarage from Manor Cottages southwards. The larger the swale and basin and the earlier it is constructed during the HHT build out, the greater the chance of avoiding serious future flooding events.

Aerial photos of HHT Development Land

Note these photos were taken in November 2023 on a relatively dry sunny day. They are in this report because they show the 'channels' of surface water flow that are often masked by photos of flooded fields during heavy storms. They also indicate how the developers' construction of the new main 'swale' might help divert the water away from areas designated for housing.

Photo 1 shows Bridleway 4 (B4) running up to Manor Farm, with Magdalene Close bottom right. The current drainage 'swale' is shown entering on the right, crossing under the track - this will be deepened by the HHT development. On the southern side of B4, this proposed swale will run south of Red House (roughly behind the clump of trees) to reach the planned storage basin opposite the Carpenters Arms. Land between this swale and Old Vicarage Lane will be major new housing areas.



Photo 2 clearly shows the current route of surface water from the end of Morses Lane (off to the left) across to the Carpenters Arms (right), alongside the railway. The planned storage basin is where it approaches Old Vicarage Lane.



Photo 3 shows the field network either side of Old Vicarage Lane with Rowborough Lane running up to Rowborough Farmhouse bottom left and the railway top left.

South Marston Brook is the bank of trees across the bottom. It shows the most vulnerable flooding areas both sides of Old Vicarage Lane.

Note there is a landscaped green area planned for the land between Old Vicarage Lane and the Brook, providing additional scope for swales to prevent overloading the capacity of the Brook itself.



Summary of the proposed remedial actions identified in this report

Greenfields and Quarrybrook in the centre of the village

- Solutions should focus on reducing peak flow by increasing storage capacity upstream where possible. The SBC Keypoint Lagoon should be inspected, dredged and thereafter regularly maintained.
- Development of the Panettoni site involves creating significant additional storage prior to the water flow being released into the Brook.

The Bends on Highworth Road

- If the South Marston Park Storage Lagoon was dredged to restore or even enhance its capacity and thereafter appropriately maintained, it may reduce the peak flow volume and speed.
- The flow of water on the carriageway down the hill from the Supermarine turn could be reduced if it was re-directed into adequate roadside ditches on the eastern side of the road. The roadside drainage channels through the 'Bends' built up area should be reinstated.
- If it was possible to create additional swales to the west and east of the 'Bends' to provide somewhere for the water to collect, it may help reduce the impact of peak rainfall flooding that is fast becoming the norm.

Chapel Lane to Nightingale Lane

- Upstream work to storage lagoons as above.
- Restricting the T4 flow in the dog-leg turn and opening and widening the 'straight on' section of the watercourse is an option worth exploring.
- Reconsider the adequacy of the Nightingale Lane pumping station in the light of further significant development within the village envelope (eg Crown Timber site).
- Ensure that the new proposed pumping station for the large HHT housing development (to the south) will reduce, not exacerbate problems with the Nightingale Lane pumping station.

Manor Cottages to the Railway

- Upstream work to storage lagoons as above.
- Explore the clearance of ditches where it would not exacerbate downstream flooding to either local roads and housing, the A420 or the River Cole and beyond.
- Amend the EA Surface Water Flood Map to reflect the extent of flooding.
- The housing developers HHT have plans for a major swale to intercept any west to east surface water flow and channel it southwards before it reaches the new housing areas adjacent to Old Vicarage Lane. The storage basin opposite the Carpenters Arms will offer controlled release. It will be vital that the swale and storage basin is of adequate size and constructed at a time in the phasing of the build-out that is appropriate.

Timing: Flood volumes peak at the top of the Greenfields culvert about an hour after heavy rainfall. After exiting the culvert, peak volumes take about 40 minutes to travel from Highworth Road to Church Farm House. Within this stretch, the Brook is normally back within its banks in approx. 12 hrs after peak flow. The main stream flows strongly downstream past CFH throughout. Peak rainfall on the fields to the west takes approx. 60 to 90 minutes to arrive at Old Vicarage Lane.



This report was written for South Marston Parish Council by Cllrs Nigel Hole, Sylvia Brown, and Colin McEwen, with help from the numerous South Marston residents who sent us their photos and told us of their experiences during the October 2023 storms