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Save the environment - think before you print.

From: paul collins [REDACTED]

Sent: 30 April 2020 10:21

To: Simon Davis <Simon.Davis@arun.gov.uk>

Cc: Karl Roberts <Karl.Roberts@arun.gov.uk>; Neil Crowther <Neil.Crowther@arun.gov.uk>; Planning.Responses <Planning.Responses@arun.gov.uk>

Subject: P/23/20 DOC, P/35/20 DOC, P/37/20 DOC & P/38/20 DOC - Land north of Summer Lane

Mr Davis

Pagham Parish Council will comment direct on these applications when able to do so but in the meantime I wish to place this e mail and my attached report to Pagham Parish Council and the SWS Ltd Drainage report on your web files (minus the attached documents as these are already on your files) as my representation on these applications for the public record. I understand that the Pagham Ward ADC Members will be raising the concerns it explains with your senior officers and the Cabinet member for planning and I feel duty bound to give you the opportunity as the current case officer to take any legal advice you see fit and address my legitimate concerns with the applicant before making any recommendation or continuing with the determination of the applications.

Notwithstanding the legal mess created by ADC decision making you will also note that there is no planning permission or approved access plan for this scheme and that the applicants drainage proposals for this site are in direct conflict with the SWS drainage report attached.

Thank you

Paul Collins BA (Hons) DipTP
[REDACTED]

APPLICATION REPORT FOR CLERK TO PAGHAM PARISH COUNCIL	
DATE OF REPORT	23 April 2020
AUTHOR	Retained Planning Consultant (Paul Collins BA (Hons) Dip TP)
ADC REF:	P/23/20 DOC, P/35/20 DOC, P/37/20 DOC & P/38/20 DOC
DESCRIPTION:	Various
LOCATION:	Land North of Summer Lane Pagham

PROCEDURAL MATTERS

P/58/15 OUT

*The site subject to all these applications benefits from an outline planning permission granted under P/58 15 OUT on 30/9/16 (**Decision notice attached**).*

This is an outline planning permission with all matters except for access reserved for later approval (condition 1).

Condition 3 states that: The development shall be carried out in full accordance with the following approved plans: DLA.1552.L003.01 Rev D; 120843/A/11 Rev C; 120843/A/05 Rev B; 120843/SK/13 Rev A; 120843/SK/14 Rev A; 120843/AT/A01 Rev A; 120843/AT/A02 Rev A; 120843/SK/15 Rev A; and the Ecological Assessment (April 2015).

This is legal gibberish. This is an OPP with all matters except access reserved by condition 1 so the only drawings approved were the location plan drawing DLA.1552.L003.01 Rev D describing the site edged red and the access drawing 120843/A/11 Rev A being the only drawings on the councils file in any case. Copies of these are attached.

Conditions 12 – 15 on the decision are legal gibberish and unenforceable. These require the submission of further information relating to access as part of the reserved matters to be submitted in accordance with condition 1 but access is not a reserved matter and the details required are in any case in conflict with the only approved access drawing on file 120843/A/11 Rev A .

P/52/19 PO & The S106 Agreement

The only section 106 agreement relating to the site is that dated 27 September 2016 (copy attached) as said to be varied by the permission granted under P/52/19/PO which was an application made and validated on 3/6/19 under S106 A of the Act.

This is also legal gibberish. Whilst Planning obligations can be renegotiated at any point by the parties to it, an application under section 106A of the Town and Country Planning Act 1990 to do so may not be made or validated within 5 years of the date of the original S106¹.

P/70/20 RES

On 28-02-20 ADC approved reserved matters following outline consent P/58/15/OUT for 90 No. dwellings and the discharge of planning conditions 6 (Phasing), 8 (ecology), 9 (Surface Water), 12 (Vehicular Access), 15 (Parking), 18 (Travel Plan), 20 (Landscape Management), 24 (Parking Control), 25 (Dwelling Parking) and 26 (Materials) by way of application made under council ref: P/70/20 RES. (Decision attached).

This was legal gibberish too for a whole raft of reasons including (but not exclusively) the following:

- *An application for reserved matters and the discharge of conditions may not be made under the same application as this was.*
- *An application for reserved matters may not be made other than in accordance with the OPP to which it relates (and P/70/20 RES was not) as an application for reserved matters may not change the OPP granted and is not in itself an application for planning permission so that even if it is approved the development may still only be lawfully implemented in accordance with the terms and conditions of the original OPP*
- *An approval of reserved matters may not alter or change the conditions imposed on the original OPP to which it relates and this one does so.*
- *An application to discharge conditions may only be approved if the information provided discharges the OPP condition to which it relates and cannot even if approved change the conditions on the OPP to which it relates which remain in force unless or until they are varied by way of an application made under S73 of the act and this application was not made under that section.*

Conclusion

Put simply ADC and the Applicant have created a planning nightmare and a lawyers dream with a very regrettable, unsatisfactory and unintelligible position for Pagham Parish Council and the community they represent.

¹ S106 A of the act and NPPG at Paragraph: 020 Reference ID: 23b-020-20190315 <https://www.gov.uk/guidance/planning-obligations> See also s106 considerations

CONSIDERATION

P/23/20/DOC: Approval of details reserved by condition imposed under ref P/58/15/OUT relating to Condition Nos 8 - ecological, 16 - Construction Management Plan, 17 - archaeological, 21 - Public Open Space, 22 - broadband strategy and 23 renewable and low carbon energy

P/35/20/DOC: Approval of details reserved by condition imposed under ref P/58/15/OUT relating to Condition Nos 7- foul water drainage, 10 - discharge flows to watercourses and 11 - maintenance and management of SuDs

P/37/20/DOC: Approval of details reserved by condition imposed under ref P/70/19/RES relating to Condition Nos 3 - drainage strategy and 5 - pumping station design

P/38/20/DOC: Approval of details reserved by condition imposed under ref P/70/19/RES relating to Condition Nos 4 - paved & gated access, 6 - charging of electric vehicles and 9 - new signage to encourage responsible dog ownership.

P/38/20/DOC: Approval of details reserved by condition imposed under ref P/70/19/RES relating to Condition Nos 4 - paved & gated access, 6 - charging of electric vehicles and 9 - new signage to encourage responsible dog ownership.

The Applicant and the LPA have no idea which reserved matters (if any) have or have not been approved, whether or not the only planning permission on the site (P/58/15 OUT) remains capable of being lawfully implemented and no idea as to which of the conditions imposed (if any) can or cannot be enforced. It is also unclear as which of the permissions granted (lawfully or not) the applicant intends to implement.

For my part if they have no idea on these matters I cannot comment further but what I can say is that decisions taken ultra vires are not only unintelligible but are also incapable of being lawfully implemented and in my experience keep lawyers and the courts very busy so that the best, most cost effective and sensible way out for all interested parties in this case maybe to forget OPP P/58/15 OUT and P/70/20 RES (whatever that was in law) and start again by way of a negotiated

fresh planning permission with new conditions and a new S106 . (see S106 and CIL Considerations below)

However these are matters for the interested parties to consider and in the meantime I am unable to offer any advice regarding the contents or merits of these applications until such time as the legal mess is satisfactorily resolved and that the LPA and the applicant would be ill advised to seek or grant any discharge consents until such time as it is.

However, should Pagham Parish Council wish to make comment on these applications or seek changes to the details of same I must advise that they seek legal advice before doing so.

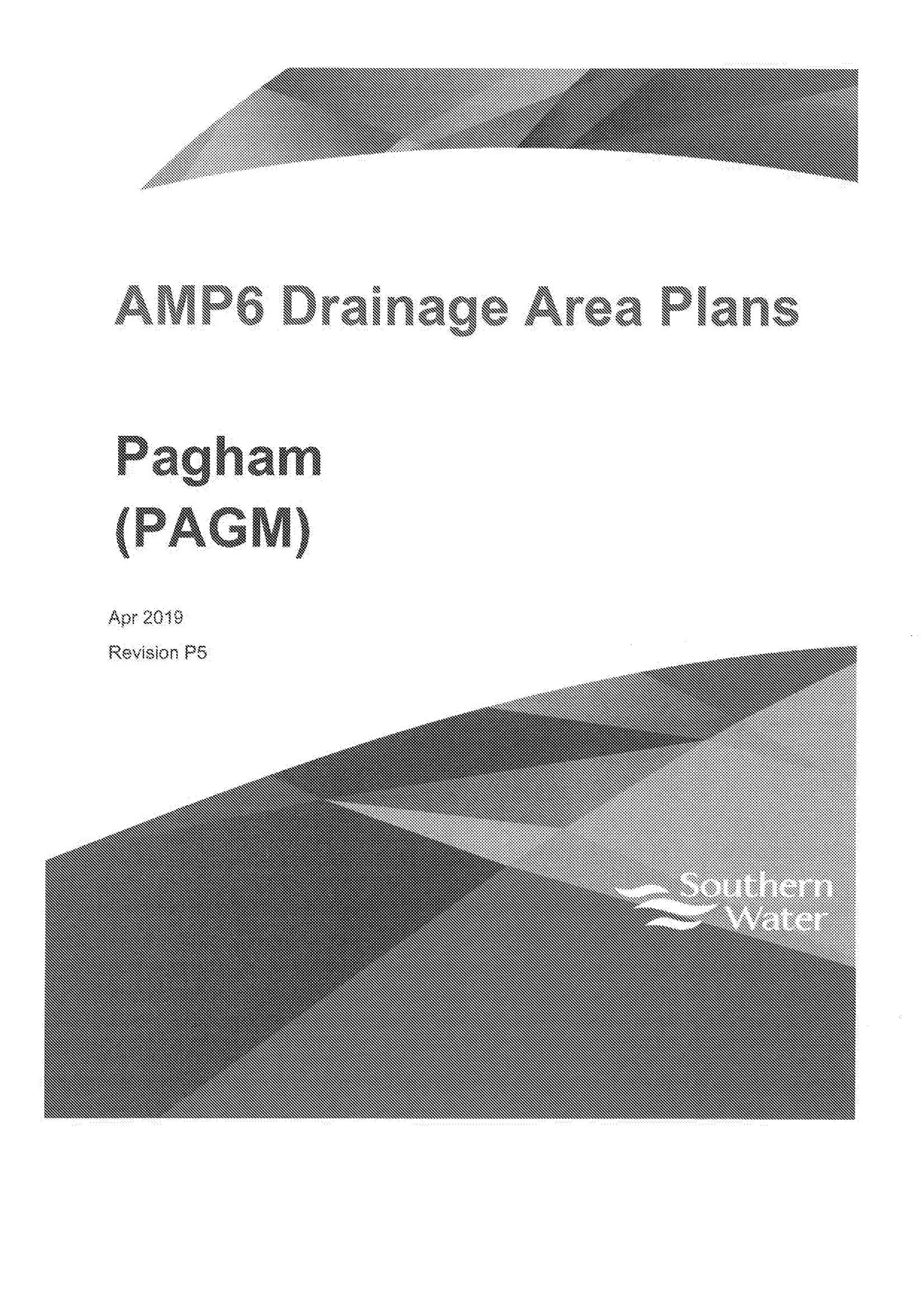
S106 CONSIDERATIONS

Frankly I have no idea whether or not the S106 as varied in this case under P/52/19 PO is or is not enforceable in the circumstances of this case and should Pagham Parish Council and Arun District Council want it to be enforceable they will need to seek legal advice as to how best to achieve this and work together accordingly.

CIL CONSIDERATIONS

Where an outline permission has been granted before a charging schedule is in effect, but reserved matters are not approved until after a charging schedule has come into effect, the development should not be subject to the levy under the transitional arrangements.

However as I understand matters (it is not entirely clear in legislation or NPPG) the transitional arrangements do not apply to development undertaken pursuant to any other permission granted on the site after the CIL Charging schedule comes into effect. The CIL Charging schedule in Arun came into force on 1st April 2020 and this site lies within CIL charge Zone 4 where the charge rate is £0/m². Therefore the only means (currently) by which this site and this development may make contributions towards the delivery of appropriate local infrastructure is by way of a S106 Planning Obligation.



AMP6 Drainage Area Plans

Pagham (PAGM)

Apr 2019

Revision P5



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1 EXECUTIVE SUMMARY



This document is the AMP6 Drainage Area Plan for the Pagham drainage catchment.

This version of the document is for general publication.

The DAP was produced as part of SW's AMP6 DAP investment programme. The study primarily focused on the hydraulic appraisal of the drainage network. This involved the assessment of internal and external DG5 "at risk" flood locations, and also the proposed growth within the catchment.

To assist with the risk identification and appraisal process, meetings were held with SW Operations and with key external stakeholders. Discussions at these meetings focused attention on flooding issues linked to hydraulic overload within the catchment, but also considered potential interaction with third party assets such as watercourses.

Options have been developed to address properties at risk of flooding and have been assessed against design rainfall to a 1 in 30 year target level (inclusive of a 20% allowance for climate change). Where appropriate, flooding schemes have also been tested against a reduced target level, either 1 in 10 or 1 in 20 years, in order to provide some improvement to customers where the 1 in 30 option may be unaffordable. For all flooding problems, surface water separation has been considered as the first option for flood alleviation.

Structural and operational problems are not the primary drivers for the DAP but have been assessed at high level at a catchment scale and in detail at specific hydraulic needs locations to identify inter-linkage with hydraulic issues. Opportunities have also been investigated to resolve known structural and operational issues with primary hydraulic needs based on geographical proximity.

Given the projected growth within the catchment, the impact of increased flow as a result of growth has been investigated as a primary need for short term (2025) and long term (2040) design horizon scenarios.

In line with the principles of the Drainage Strategy Framework (DSF), the DSF partners were consulted regarding the Pagham DAP to provide visibility of the aims of the DAP and sewerage needs and to identify possible partnership working to resolve shared problems. Efforts have also been made to gather data that will feed the DSF needs.

What's in this section?

2.1 Background to the DAP Programme

Table 2.1 Key Catchment Stakeholders

Figure 2.1 Key DAP Steps

2.1 Background to the DAP Programme

The published good practice guidance 'Drainage Strategy Framework' (DSF) commissioned by OFWAT and the EA aims to build on the Drainage Area Plan (DAP) and Surface Water Management Plan (SWMP) frameworks. The responsibility for the delivery of DAPs and SWMPs is split with Water and Sewerage Companies being responsible for the collation of Drainage Area Plans and Lead Local Flood Authorities being responsible for the production of Surface Water Management Plans. The Drainage Strategy Framework provides a holistic view of all drainage issues affecting a defined catchment area. It will confirm high level responsibilities for drainage (e.g. land drainage, groundwater, foul etc), promote collaborative working and to determine opportunities for partnership working to sustainable and holistic solutions for current and future drainage needs. The final DSF report is intended to be a public facing document.

The specific aims of the drainage strategy for the study area are to:

- Provide Surface Water Management (in partnership where appropriate)
- To plan for growth and climate change
- To maintain river water quality

Southern Water maintain a rolling programme of Drainage Area Plans. Plans are developed and are continually reviewed to ensure they remain up to date with emerging issues such as new issues reported or changes to development proposals for example. Southern Water prioritises the production of DAPs with the highest priority being those catchments with existing issues such as sewer flooding and where there are proposals for future development which may impact on the performance of the sewerage system.

The Pagham DAP has been produced at this time as it is considered to be of sufficient priority.

Drainage Area Plans are internal documents to Southern Water and are not intended to be public facing. This is because the purpose of a DAP is to determine all issues in a wastewater catchment, the root cause of those problems and options to resolve these. The documents discuss issues at customer level and identify individual properties which suffer flooding. Release of this information to the public would be seen as a breach of customer confidentiality and may cause property blight. The schemes identified from all DAPs are reviewed and prioritised against competing needs across the region. These documents are key in identifying investment requirement in the production of 5 yearly Business Plans, and as explained above will inform Drainage Strategy Frameworks which have a wider remit and are public documents.

A DAP for Pagham was first produced in 2002 and assessed the known issues at that time. This is the latest DAP report produced for Pagham.

The DAP for Pagham focuses on the formal public drainage system, its current performance and the impacts of potential future development on the existing level of service provided. The DAP also identifies the areas of investment to address these risks.

This document provides a high level summary of the DAP for Pagham which would feed into the DSF for the catchment. The document does not consider the land drainage issues which the SWMP would focus on.

A formal Surface Water Management Plan report exists for this catchment under the Arun Strategic Surface Water Management Study. This details both Pagham North and Pagham South, capturing the full catchment extent. This was undertaken by Mott Macdonald and is freely available.

For the DAP Southern Water has engaged with the key stakeholders listed below:

Table 2.1 Key Catchment Stakeholders

DSF Partner	Organisation
Environment Agency	Environment Agency
Lead Local Flooding Authority	West Sussex County Council/Arun District Council
Local Authority(s)	Pagham Parish Council
Highways Authority	West Sussex County Council

The flow diagram below illustrate the various steps in the process to complete the DAP.

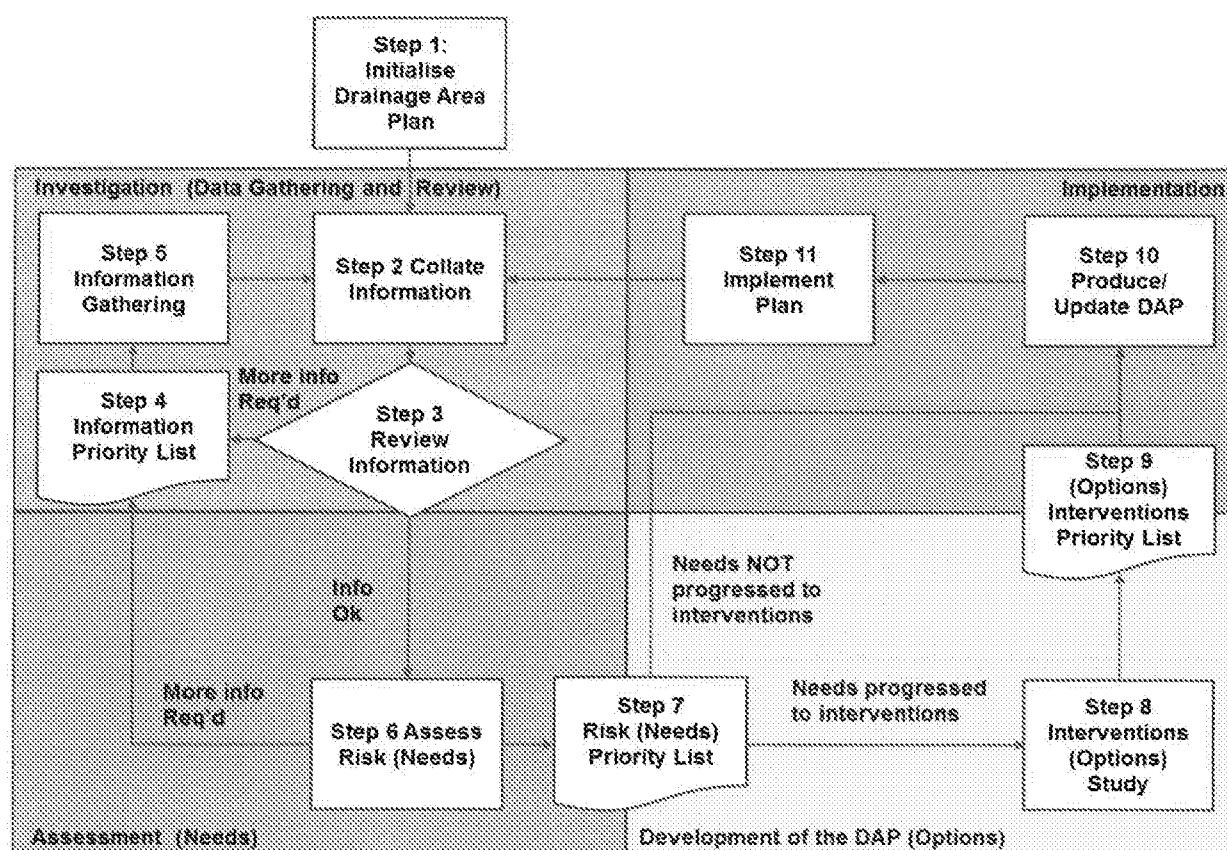


Figure 2.1 Key DAP Steps

3 CATCHMENT DESCRIPTION

What's in this section?

3.1 Catchment Geography

Figure 3.1 Location of Pagham drainage catchment within Southern Water region

Figure 3.2 Location of Pagham drainage catchment and surrounding towns

3.2 Population

Table 3.1 Catchment Populations

3.3 Description of the Drainage Systems

Table 3.2 Sewer Category

Table 3.3 Sewer System Type

3.4 Receiving Waters

3.4.1 Rivers

Table 3.4 Significant Rivers and Water Bodies

Figure 3.3 Main Rivers within the Pagham drainage catchment

3.4.2 Estuaries and Coastal Waters

Table 3.5 Estuaries and Coastal Waters

3.5 Wastewater Treatment Works

3.1 Catchment Geography

The Pagham catchment lies on the coast to the south of Chichester and to the west of Bognor Regis. The main population resides on the coastal region of Pagham with North Mundham and Hunston making up the remainder. Pagham Rife runs from the north to the south of the catchment where it confluences with Broad Rife before discharging into the English Channel.

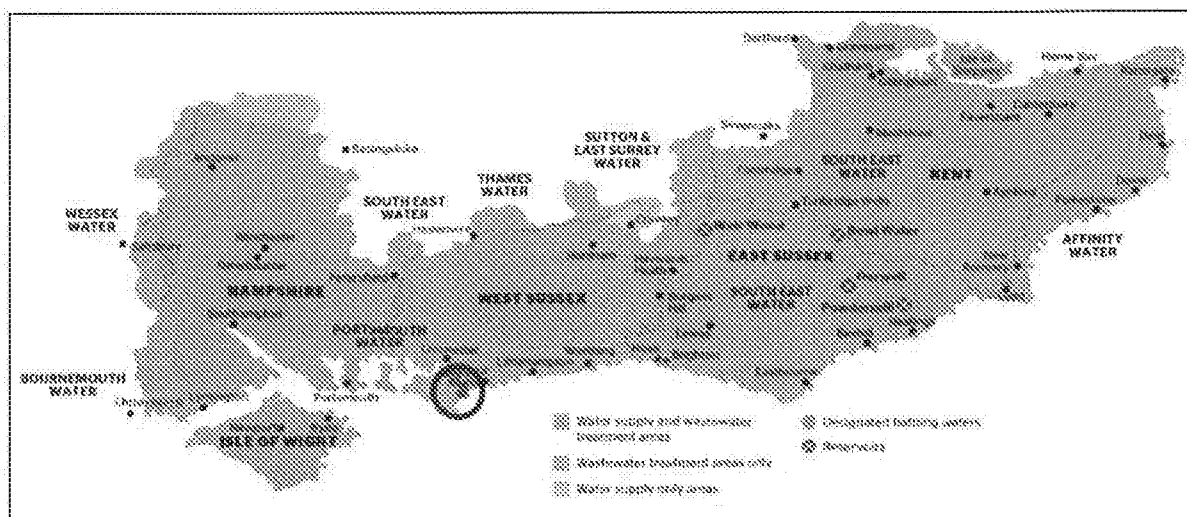


Figure 3.1 Location of Pagham drainage catchment within Southern Water region

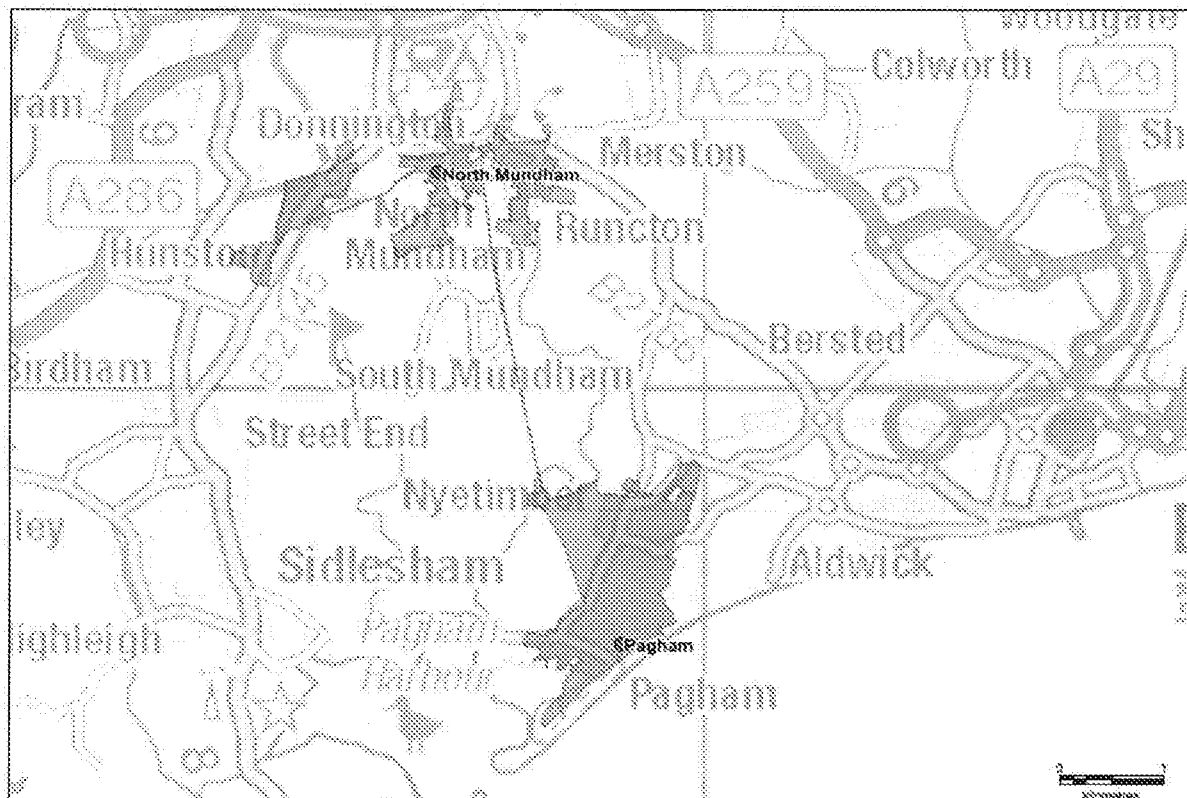


Figure 3.2 Location of Pagham drainage catchment and surrounding towns

3.2 Population

Table 3.1 Catchment Populations

Table 3.1 shows the current and projected future residential populations of the drainage catchment served by the Pagham Wastewater Treatment Works (WTW)

Year	2015	2025	2040
Domestic Population	8,139	8,443	8,749
Percentage Increase from current	-	4%	7%

Section 9 of this report describes the project catchment growth in more detail.



3.3 Description of the Drainage Systems

Table 3.2 summarises the length and basic details of the Southern Water sewerage system in the Pagham drainage catchment.

Table 3.2 Sewer Category

Sewer Categories	Length (m)	No of MHs	Min Sewer Size (mm)	Max Sewer Size (mm)	Min Sewer Depth (m)	Max Sewer Depth (m)
All Gravity Sewers	56,763	2,710	75	1,050	0.1	5
Rising Mains	10,167	16	50	375	Unknown	2

The catchment is separately drained in the south of catchment, with a series of pump stations draining flows to Summer Lane WTW in the centre of the catchment. The north of the catchment appears to only have foul flows modelled, with the majority of surface going to soakaway. Pagham consists of a large number of ditches due to its predominantly flat topography therefore the drainage relies on pumping stations to pump flows to the WTW.

The main two rivers draining the catchment are Pagham Rife and Brenmere Rife. The river runs from north to south, eventually discharging into the English Channel. These rivers provide the overflow drainage for the two CSOs in the catchment.

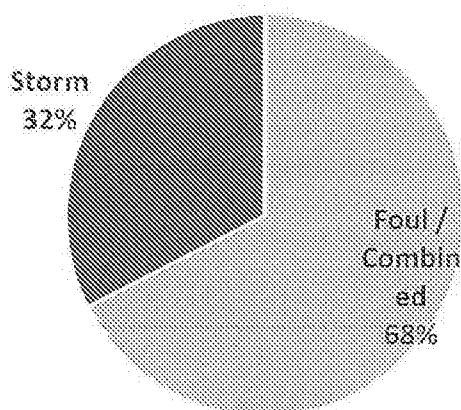
Table 3.3 shows the breakdown of sewer system types in the catchment

Table 3.3 Sewer System Type

System Type	Sewer Length (m)
Foul / Combined	38,322
Storm	18,441
TOTAL	56,763

Foul and combined sewers carry sewage and rain water runoff

Storm sewers carry rain water runoff only



The catchment consists of mostly separate sewers and an area of foul only to the north of the catchment around North Mundham. The south of the catchment is separately drained, this area is notably more developed than the northern area of the catchment. There is a large pumped system which drains the north of the catchment to the WTW in the centre of the catchment.

The hydraulic model only consists of the foul network, the surface water network is not modelled.

3.4 Receiving Waters

3.4.1 Rivers

The following significant water bodies interact with the sewerage system

Table 3.4 Significant Rivers and Water Bodies

Water Body Name	Status
Pagham Rife	Inland River



Figure 3.3 Main Rivers within the Pagham drainage catchment

3.4.2 Estuaries and Coastal Waters

There are no estuaries or coastal waters in this catchment

Table 3.5 Estuaries and Coastal Waters

Water Body Name	Status
No estuaries or coastal waters interact with the sewerage system	

3.5 Wastewater Treatment Works

The Pagham drainage catchment is served by the Pagham Wastewater Treatment Works (WTW). The WTW is located in the centre of the catchment, north of Pagham town discharging to Pagham Rife.

A detailed description of the WTW and its relationship with the sewer network is included in Section 10 of this report.



4 INPUT FROM STAKEHOLDERS

What's in this section?

4.1 Introduction

4.2 DSF Partners

Table 4.1 Key Catchment Stakeholders

4.3 Previous Studies and Reports

Table 4.2 Previous Studies and Reports

4.4 Consultations

4.5 Wider Drainage Issue and Strategies

4.5.1 Preliminary Flood Risk Assessments

4.5.2 Strategic Flood Risk Assessments

4.5.3 Surface Water and Flood Risk Management Plans

Figure 4.1 Surface Water Management Plan areas

4.5.4 Environment Agency Fluvial Flood Map

Figure 4.2 Environment Agency Fluvial Flood Map

4.5.5 Environment Agency Pluvial Flood Map

Figure 4.3 Environment Agency Pluvial Flood Map

4.5.6 River Basin Management Plans

Figure 4.4 River Basin Management Plan map

4.5.7 Groundwater Protection

Figure 4.5 Groundwater Source Protection Zone map

4.5.8 Community Flood Resilience Plans

4.1 Introduction

The recently published good practice guidance 'Drainage Strategy Framework' (DSF) commissioned by OFWAT and the EA aims to build on the current Drainage Area Plan (DAP) and Sewerage Management Plan (SMP) frameworks currently employed by the UK Water & Sewerage companies and develop a holistic approach based on partnership and collaborative working. The ultimate goal of the Drainage Strategy is to be accessible and understandable to customers, local authorities and any other stakeholders who may be interested and will therefore require a much more strategic approach that is less reactive and more proactive in delivering what customers and stakeholders expect.

It is SW's intention that DAP processes and the principles of the DSF are to form an integral part of their Integrated Area Asset Plan Process and there is a requirement to further develop existing processes structured around the principles of the DSF.

In preparation for the Pagham DSF and to aid understanding of potential inter-dependencies in the catchment, a number of historical assessments have been utilised as described below. These will be assessed in more detail in producing the DSF.

4.2 DSF Partners

Table 4.1 Key Catchment Stakeholders

DSF Partner	Organisation	Website
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Sewerage Undertaker	Southern Water	https://www.southernwater.co.uk/	⇒
Environment Agency	Environment Agency	https://www.gov.uk/government/organisations/environment-agency	⇒
Lead Local Flooding Authority	West Sussex County Council	https://www.westsussex.gov.uk/	⇒
Local Authority	Pagham Parish Council	http://www.paghamparishcouncil.gov.uk/main.cfm	⇒
Highways Authority	Arun District Council	https://www.arun.gov.uk/	⇒
Internal Drainage Board (IDB)	Environment Agency	https://www.gov.uk/government/publications/internal-drainage-districts-in-southern-england/internal-drainage-districts-in-southern-england	⇒
Community Flood Action Groups	None known	None known	
Others	n/a	n/a	

4.3 Previous Studies and Reports

Since 2002, there have been a number of reports produced addressing issues within the Pagham catchment. This current DAP has taken into account the findings and recommendations of these reports.

4.4 Consultations

As part of the study, consultation meetings were held with internal and external stakeholders. The key aims of the meetings were:

- To outline Southern Water's Drainage Area Plan programme and provide an overview of the key study drivers for the Pagham DAP
- To provide a forum for exchange of information and visibility of SW and other stakeholder current and projected activities relating to drainage issues.
- To identify shared problems and partnership working opportunities

No external stakeholder meeting has been undertaken for this catchment under this DAP.

4.5 Wider Drainage Issue and Strategies

The following section summarises some of the significant external data sources related to the management of water and drainage issues in and around the Pagham drainage catchment. It is not the intention of this DAP to reproduce large sections of these documents, so links have been provided to the relevant websites.

4.5.1 Preliminary Flood Risk Assessments

https://www.westsussex.gov.uk/media/1626/west_sussex_pfra.pdf



West Sussex carried out a Preliminary Flood Risk Assessment in 2011. The Environment Agency has not ranked Pagham within this assessment.

4.5.2 Strategic Flood Risk Assessments

<https://www.arun.gov.uk/download.cfm?doc=docm93ijm4n3518.pdf&ver=3172>



The SFRA provides information on river, sea, groundwater, land and sewer flooding. Pagham is influenced by all of these factors on varying scales. The most notable are flooding from rivers; from Pagham Rife; and from coastal flooding due to overtopping of sea defences. The long term coastal plan is to hold the line and protect the existing assets along the Pagham coastline. However, Pagham Harbour is not included within the catchment boundary.

4.5.3 Surface Water and Flood Risk Management Plans

The northern part of the Pagham catchment boundary falls within one Surface Water Management boundary; Manhood Peninsula SWMP. However, the south of the catchment does not fall within any SWMP boundary area.

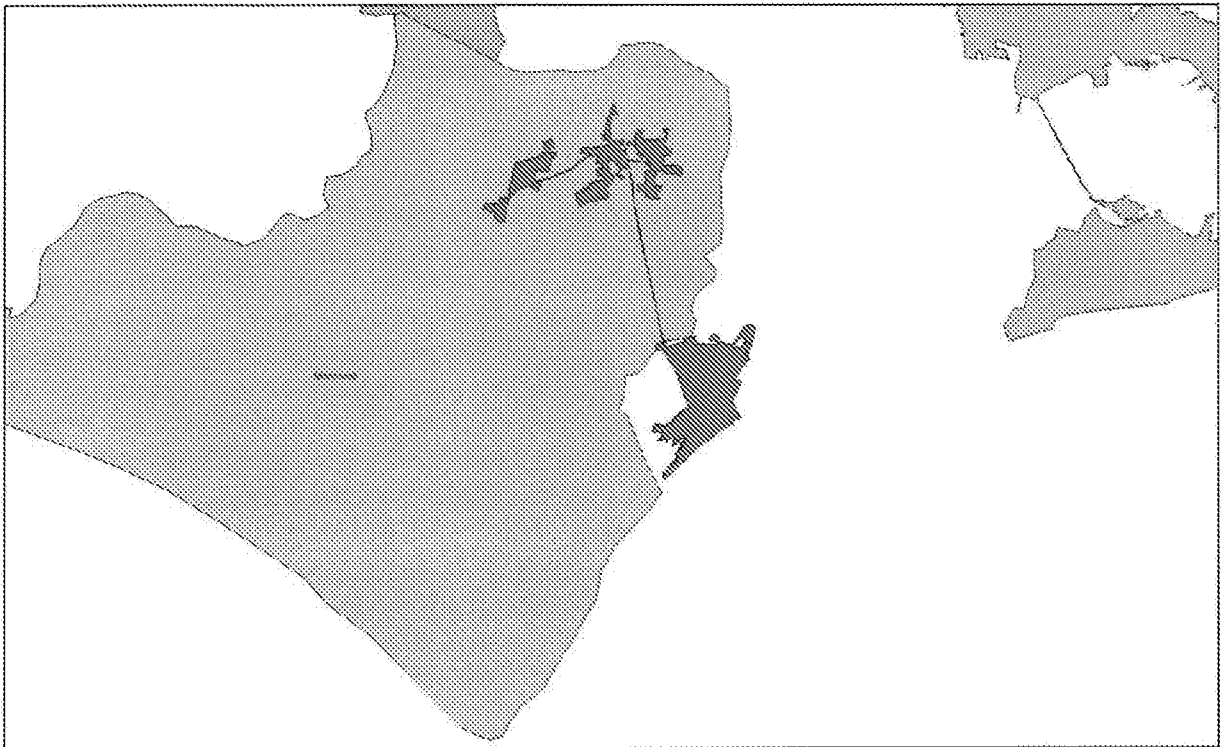


Figure 4.1 Surface Water Management Plan areas

https://www.westsussex.gov.uk/media/5607/manhood_peninsula_swmp_final_report.pdf



The Manhood Peninsula SWMP assesses two flooding locations in the Donnington area of the catchment model. However, they have been classed as low priority as they were the result of isolated highway flooding that remained passable with care. This did not impact the Pagham catchment directly.

4.5.4 Environment Agency Fluvial Flood Map

Figure 4.2 is a map, taken from the Environment Agency website, showing the risk of flooding caused by rivers or the sea. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail. More detail can be found via the link below.

<https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=569742&northing=158650&address=100061153701&map=RiversOrSea>

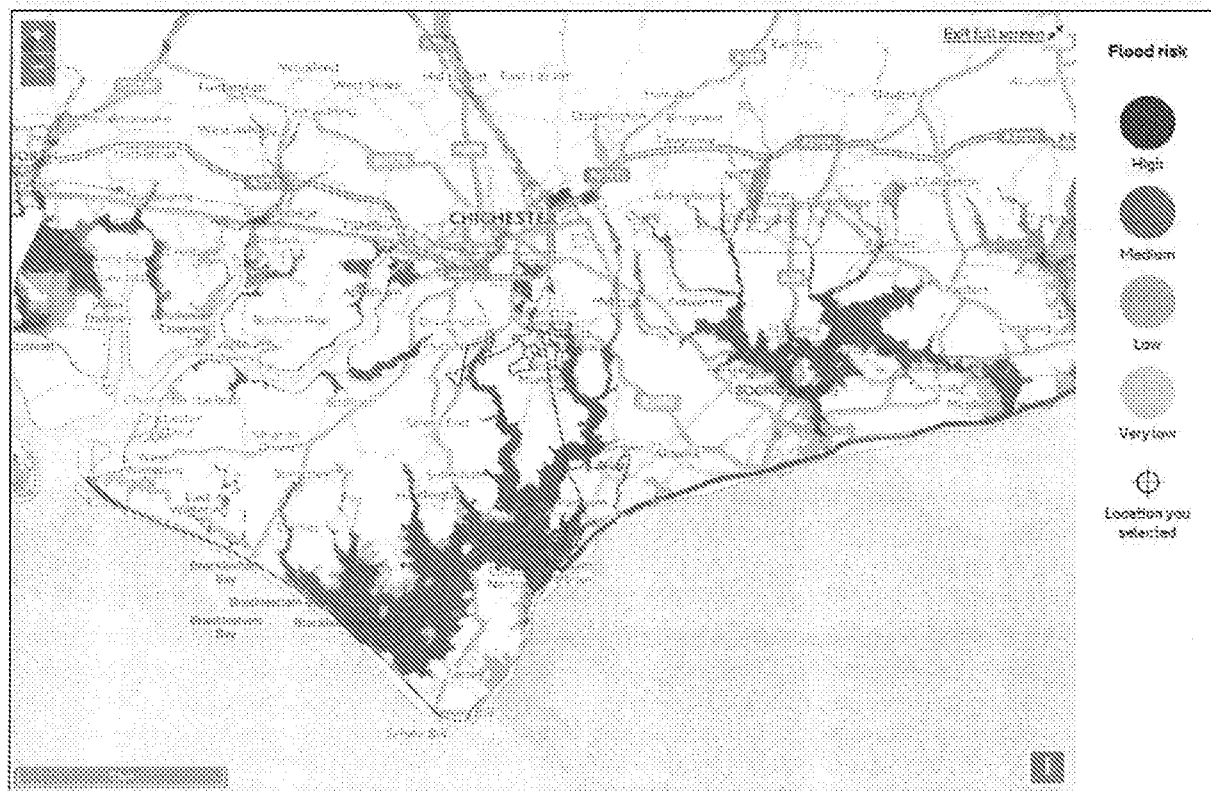


Figure 4.2 Environment Agency Fluvial Flood Map

Pagham appears to be within a high flood risk zone from fluvial flooding, with the entire of the south of the catchment at risk.

4.5.5 Environment Agency Pluvial Flood Map

Figure 4.3 is a map, taken from the Environment Agency website, showing the risk of flooding caused by surface water. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding. More detail can be found via the link below.

<https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=569742&northing=158650&address=100061153701&map=SurfaceWater>

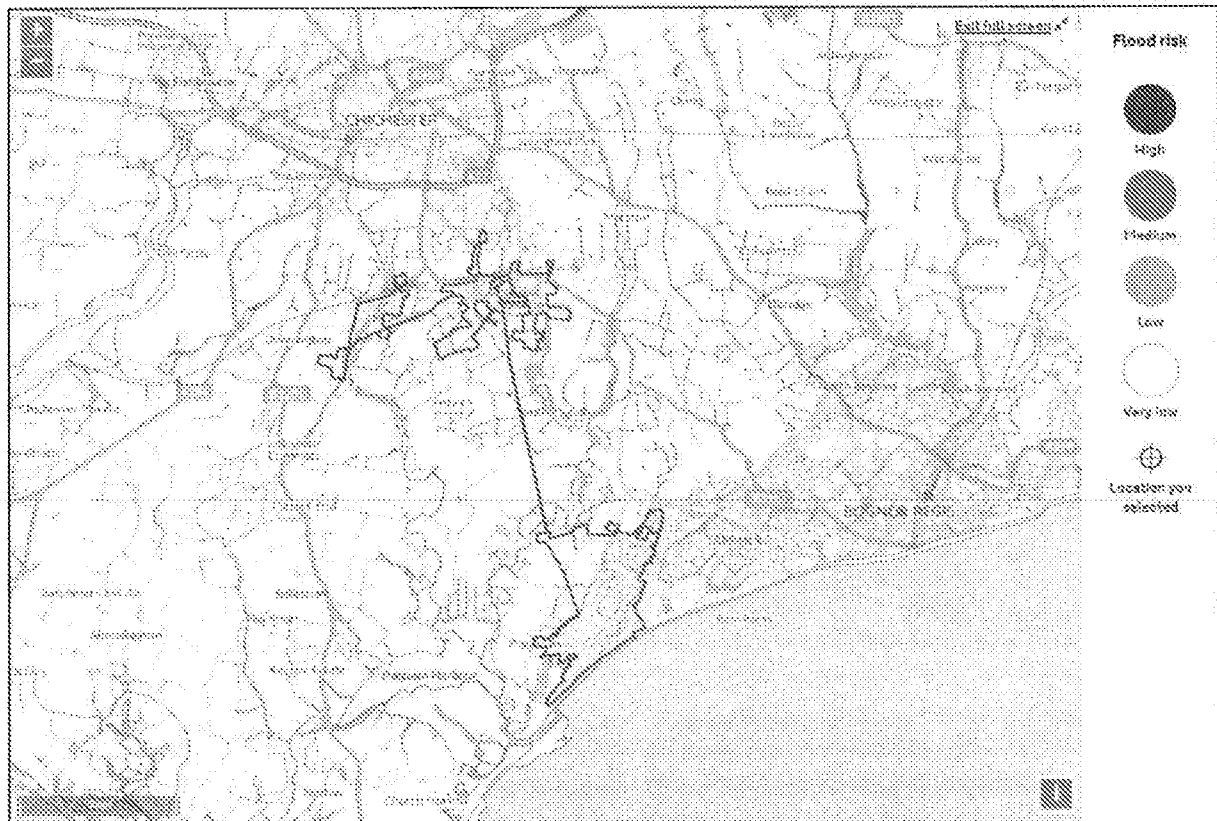


Figure 4.3 Environment Agency Pluvial Flood Map

Pagham appears to be in a low/very low pluvial flood risk zone.

4.5.6 River Basin Management Plans

The Pagham drainage catchment falls within the East Sussex River Basin District. A link to the **Gov.uk** River Basin Management Plan (RBMP) website is given below.

<https://www.gov.uk/government/collections/river-basin-management-plans-2015>

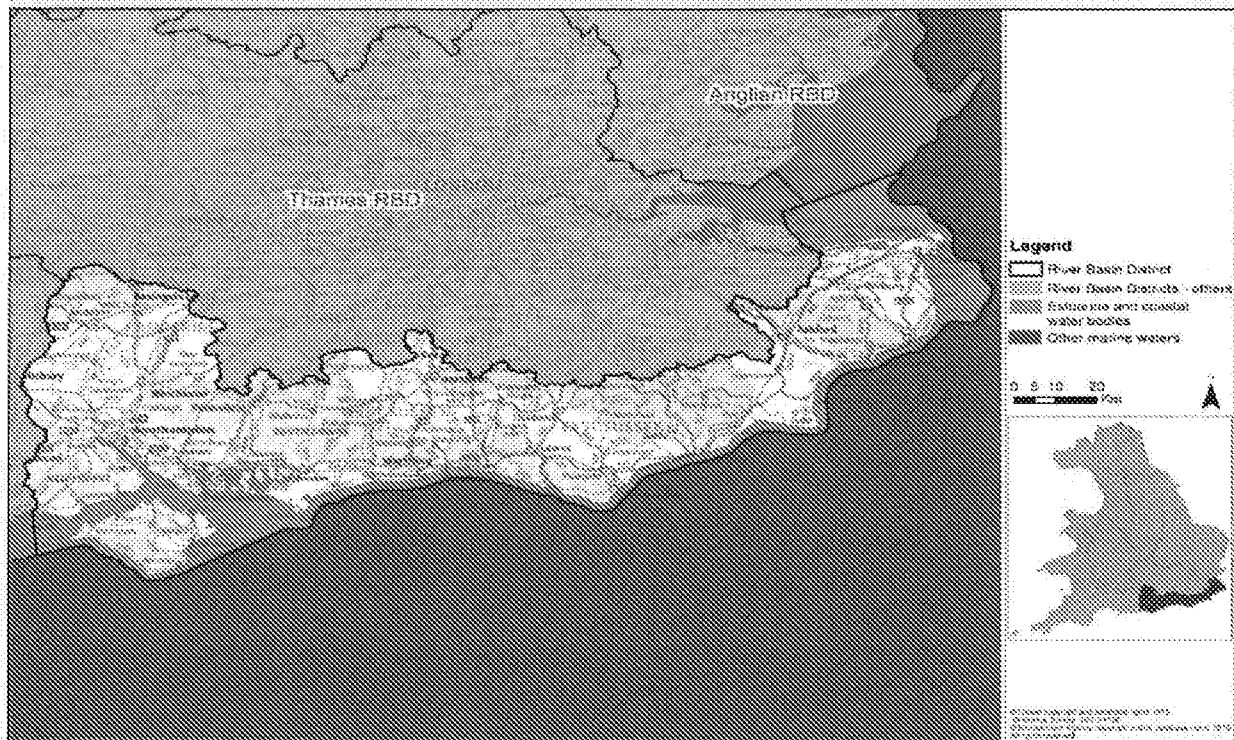


Figure 4.4 River Basin Management Plan map

Catchment partnerships are a major initiative to encourage local action to protect and enhance the water environment. The catchment based approach allows flexibility in the geographic scale at which catchment partnerships operate. Most catchment partnerships operate at the water 'management' catchment scale. Some operate at a smaller catchment scale. The partnerships consist of a wide range of stakeholders with an interest in the water environment. This includes, but is not limited to local government, angling interests, wildlife organisations, water companies, land managers, business representatives and government agencies.

Within the East Sussex RBMP, there is only one management catchment which impacts the Pagham DAP catchment:
Arun and Western Streams

More detail about the local measures being proposed and enacted by the catchment partnerships can be found in the RBMP, available via the link above.

4.5.7 Groundwater Protection

In the Southern Water region, groundwater supplies a large percentage of drinking water. The Environment Agency (EA) has defined Source Protection Zones (SPZs) for 2000 groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. The maps show three main zones (inner, outer and total catchment) and a fourth zone of special interest, which is occasionally applied, to a groundwater source.

The EA use the zones in conjunction with their Groundwater Protection Policy to set up pollution prevention measures in areas which are at a higher risk, and to monitor the activities of potential polluters nearby.

http://maps.environment-agency.gov.uk/wiyby/wiybyController?value=snodland&lang=_e&ep=map&topic=groundwater&r&layerGroups=default&scale=9&textonly=off&submit.x=0&submit.y=0

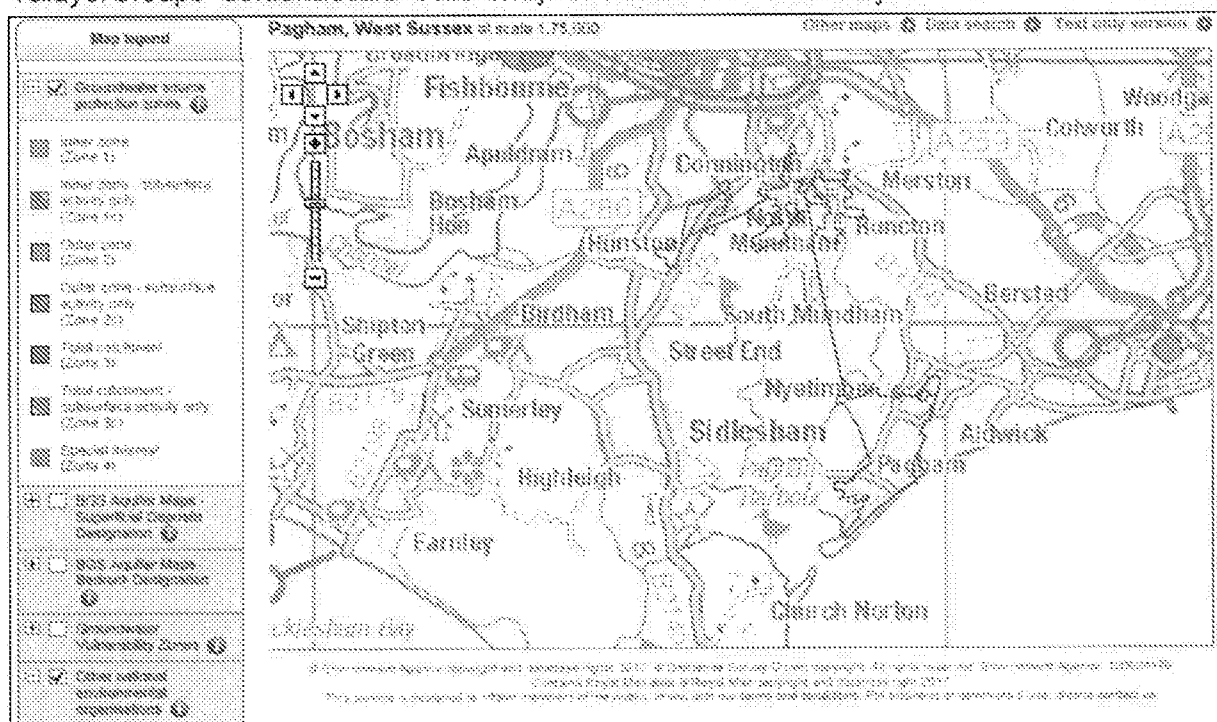


Figure 4.5 Groundwater Source Protection Zone map

Pagham does not appear to be in a Groundwater Source Protection zone.

4.5.8 Community Flood Resilience Plans

None known Flood Resilience Plan

None known Flood Resilience Plan

What's in this section?

7.1 Operational Risks

Figure 7.1 Regular Planned Maintenance

7.1 Operational Risks

Catchment wide operational analyses and risk assessments have not been carried out as part of the DAP as these are dealt with regionally in Southern Water's Asset Maintenance Process. Where appropriate, operational problems have been assessed in detail in specific hydraulic risk areas to ensure that the DAP interventions, proposed are holistic in nature by identifying and resolving interaction between operational and hydraulic problems.

There are some lengths of sewer within the catchment that are known to be prone to build up of sediment, which can be a cause of blockages. To help mitigate this, Southern Water carry out a programme of regular planned CCTV and sewer jetting. Figure 7.1 shows the locations and frequency of these activities.



Figure 7.1 Regular Planned Maintenance

8 STRUCTURAL RISKS

What's in this section?

8.1 Structural Risks

8.1 Structural Risks

Catchment wide structural analyses and risk assessments have not been carried out part of the DAP as these are dealt with regionally in Southern Water's Area Asset Planning (AAP) Process. There are ongoing programmes of work to carry out CCTV surveys to help identify sewers that are showing evidence of structural deterioration and to carry out remedial works to repair failing sewers.

Where appropriate, structural assessments have been undertaken in specific hydraulic risk areas to ensure that the DAP interventions proposed are holistic in nature by identifying and resolving interaction between structural and hydraulic problems. Efforts have been made to maximise opportunities to resolve other structural problems which can economically be integrated into hydraulic interventions based on geographical proximity.

What's in this section?

9.1 Catchment Growth

9.2 Population

Table 9.1 Catchment Populations

9.3 Location of Development Sites

Figure 9.1 Location of Proposed Developments

9.4 Impact of Growth

Figure 9.2 Impact of Proposed Developments

9.5 Procedure for advising developers of investment need

9.6 Proposed Options to Resolve Growth Detriment

9.6.1 Provision of Additional Network Capacity

9.6.2 Linking Growth and Flooding Options

9.6.3 Removal of Surface Water

9.6.4 Collaboration with Stakeholders

9.1 Catchment Growth

There are a number of sources of data available which have been used in combination to provide the best estimate of future catchment growth rates:

- Population Forecast data
- Enquiries direct from developers (DETS / Developer Assessment Data)
- Local Plan data from local planning authorities (SHLAA)

9.2 Population

Table 9.1 Catchment Populations

Table 9.1 shows the current and projected future residential populations of the drainage catchment served by the Pagham Wastewater Treatment Works (WTW)

Year	2015	2025	2040
Domestic Population	8,139	8,443	8,749
Percentage Increase from current	-	4%	7%

9.3 Location of Development Sites

Figure 9.1 shows the geographic location of the proposed developments within the catchment at each design horizon.

It is noted that development shown here are the best data available at the time of writing. The pace of development is in the hands of private developers, and although they must work within the planning regulations, they may stop or start developments to suit their own needs.

Particular caution should be exercised when considering longer term developments. The SHLAA data provided by local planning authorities often comprises areas of land that are available for development, but for which there is no firm commitment from a developer.

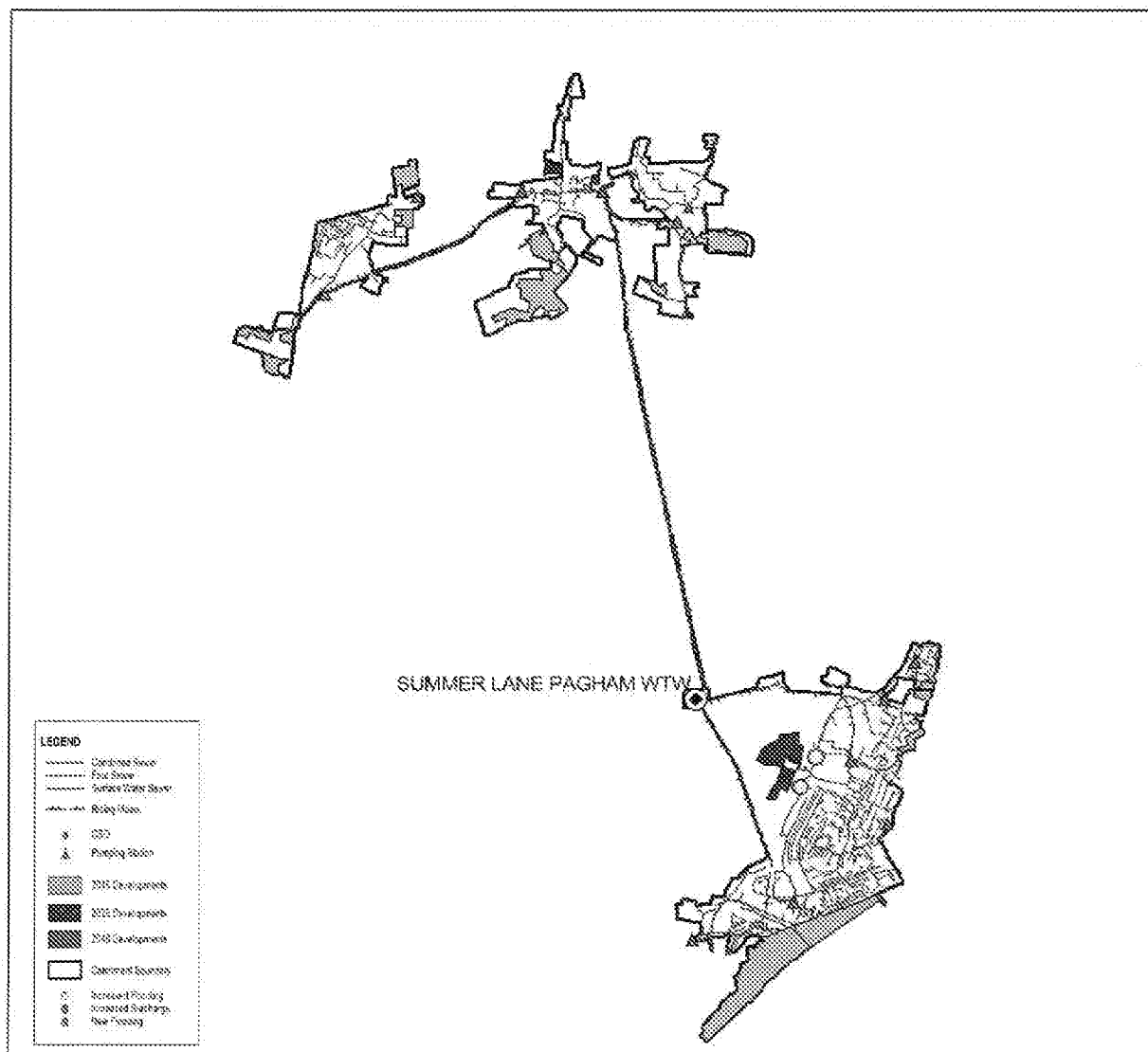


Figure 9.1 Location of Proposed Developments

9.4 Impact of Growth

The hydraulic model of Pagham was used to evaluate the impact of the project catchment growth on the performance of the sewerage system.

The model helped identify areas where system performance deteriorated such that it potentially caused a detriment to customers in one of these ways:

- new or worsening flooding
- an increase in sewer surcharge levels close to ground level or that could impact on basements
- an increase in spills from overflows or storm tanks

The areas predicted by the model to be most affected by the proposed growth are shown in Figure 9.2

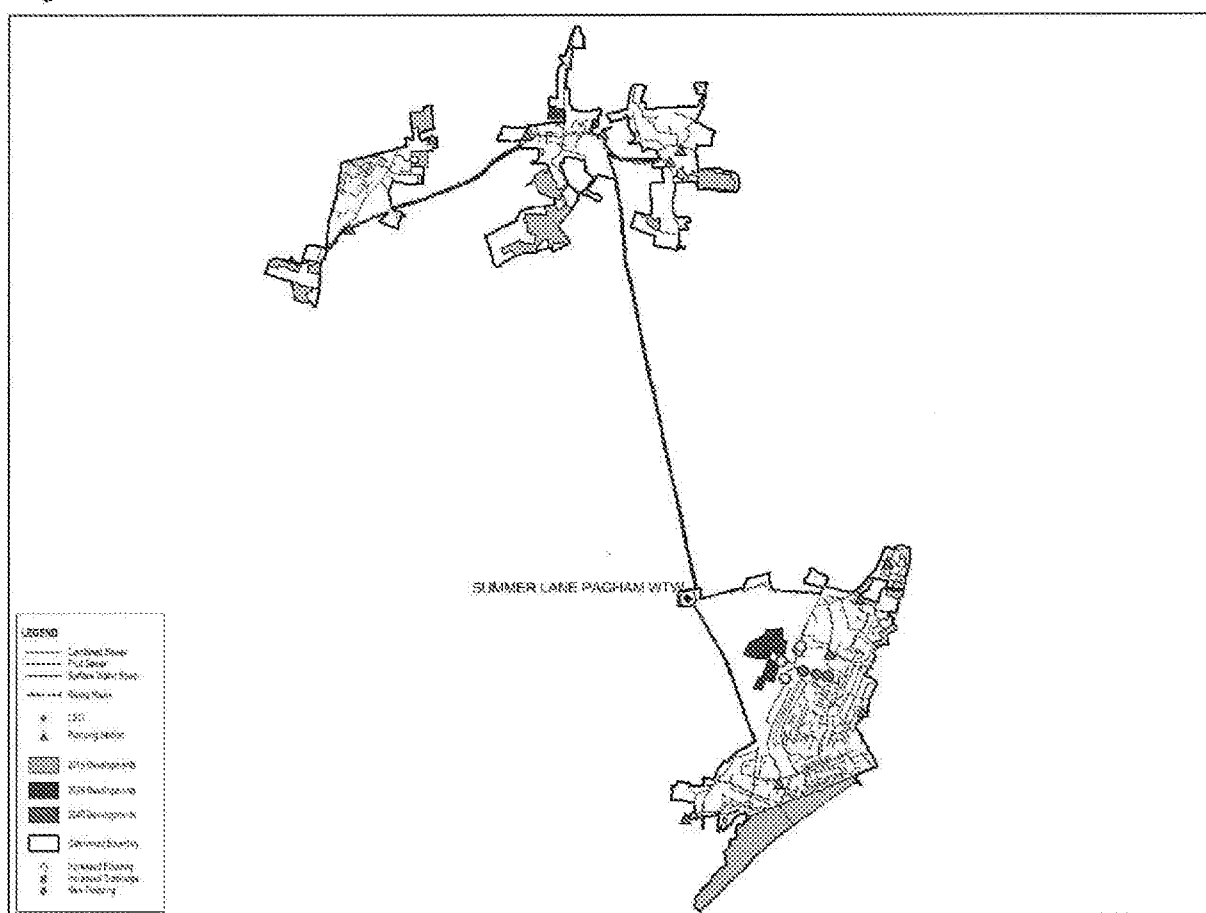


Figure 9.2 Impact of Proposed Developments

9.5 Procedure for advising developers of investment need

It must be noted that Southern Water is not a statutory consultee on planning applications. However, when planning applications are received by Arun District Council, it is critical that Southern Water are consulted regarding the adequacy of the sewerage system to accommodate the flows from new developments. This will be the only opportunity for conditions to be placed against development sites regarding the adequacy of drainage and also serves to instruct the developer to enter discussions with Southern Water regarding investment needed for the provision of additional network capacity to guard against a deterioration in network performance.

Southern Water would expect developers to contribute to any enhancement needed to the sewerage system rather than this burden being placed on the existing customer base through water charging.

9.6 Proposed Options to Resolve Growth Detriment

The following options have been identified to address the impact of growth on the network

9.6.1 Provision of Additional Network Capacity

Strategic schemes have been developed for both the 2025 and 2040 design horizons to provide additional network capacity to ensure no deterioration for a 30-year return period storm event. These involve construction to increase the size of existing sewers and to provide new attenuation storage.

9.6.2 Linking Growth and Flooding Options

Where appropriate, a strategic scheme has been developed that removes the impact of growth and also addresses catchment flooding at the same time. It would not be expected that developers would contribute towards this additional enhancement as it is not related to the impact of development.

9.6.3 Removal of Surface Water

There are areas of the catchment where roof drainage and highway drainage are connected to foul sewers that were not designed to accommodate this flow. There may be opportunities to disconnect these flows and discharge them to soakaway or a local watercourse. It is unlikely that all roof and highway drainage can be removed, so in itself this approach will not resolve flooding. However, there is potential for this option to be implemented in conjunction with other options.

9.6.4 Collaboration with Stakeholders

It is important that the local authority's Building Control department monitor the construction of new developments and the building control approval process should limit the amount of mis-connections that are made at construction phase. Where it is found that over time rainfall-related flows are increasing, then it is recommended that stakeholders work closely to address this. Measures will include:

- Collaborative working with local authority inspection teams
- Education of householders, local building firms, etc
- Provision of rainwater harvesting equipment, e.g. water butts

10 WASTEWATER TREATMENT WORKS

What's in this section?

10.1 Location of the Works

Figure 10.1 Location of Pagham WTW within the catchment

Figure 10.2 Location of Pagham WTW (OS MasterMap)

10.2 Description of the Works

10.1 Location of the Works

The Pagham drainage catchment is served by the Pagham Wastewater Treatment Works (WTW). The WTW is located in Pagham, north of Pagham town in the centre of the catchment

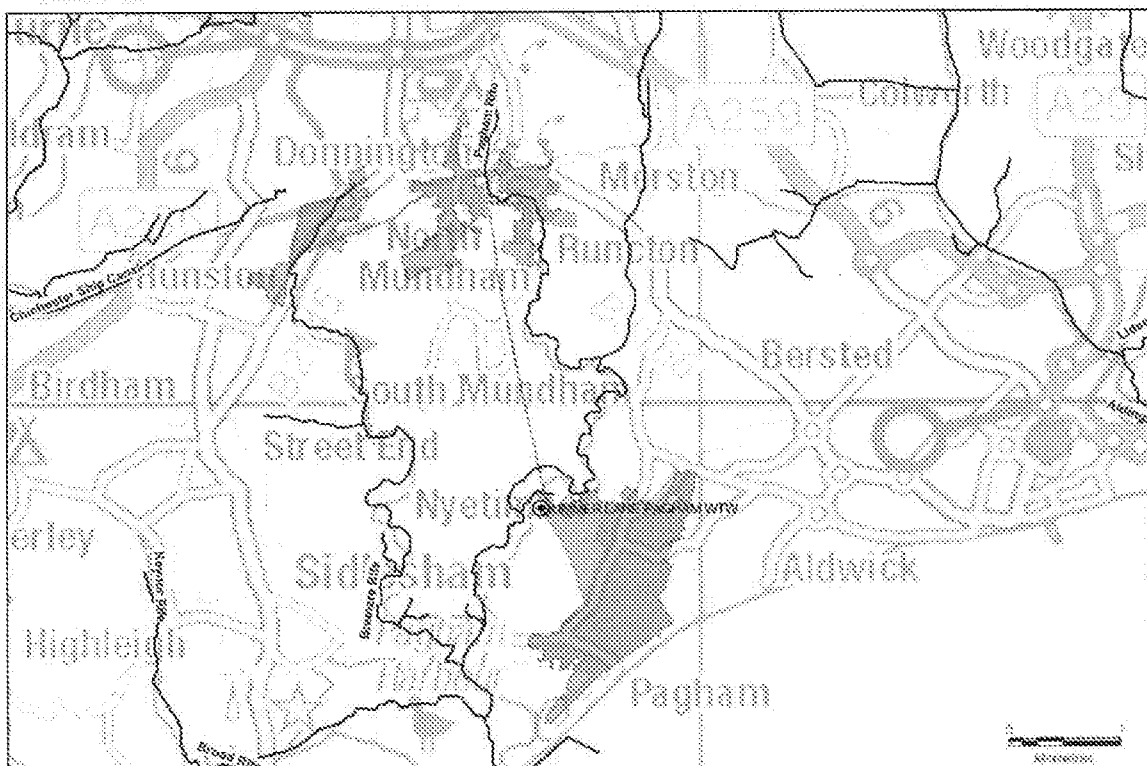
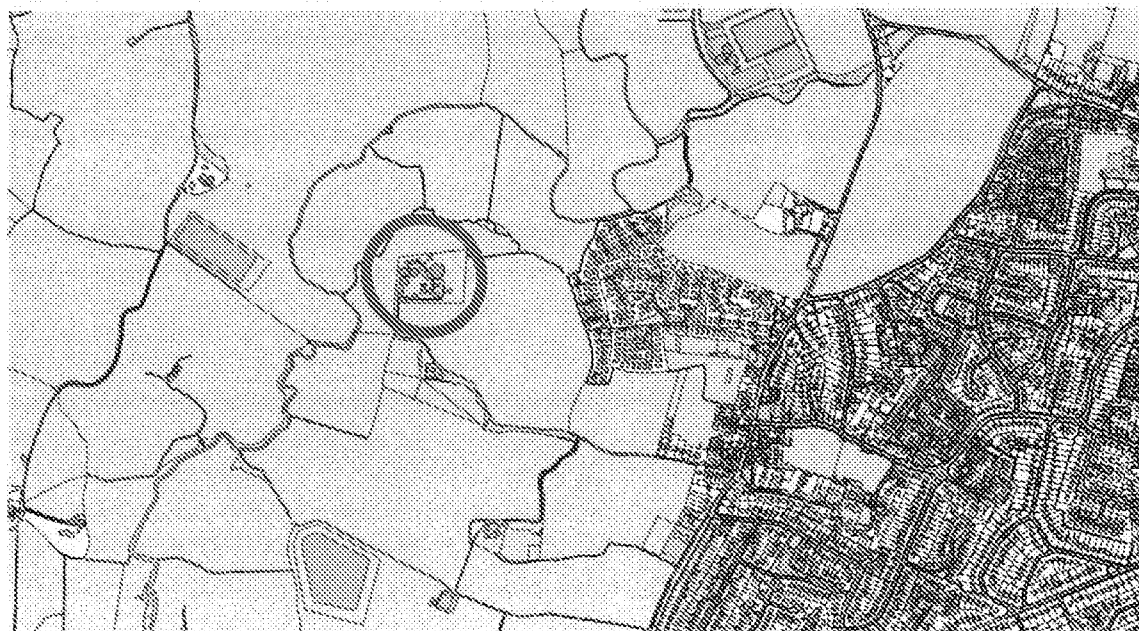


Figure 10.1 Location of Pagham WTW within the catchment



10.2 Description of the Works

Summer Lane (Pagham) WTW has a two phase treatment process, including a preliminary stage of 2 6mm 2D duty standby screens and a detritor. The key elements of the process stream are:

- Primary treatment consisting of two radial primary settlement tanks, these are dosed with ferric chloride between February and May.
- Secondary treatment consisting of plastic media filter and 3 mineral media filters
- Secondary treatment (2nd stage) is 2 humus tanks.

Treated sewage effluent is discharged into Pagham Rife.

11 PUMPING STATIONS

What's in this section?

11.1 Catchment Pumping Stations

Table 11.1 Pumping Stations

Figure 11.1 Location of Pumping Stations within the Pagham catchment

11.1 Catchment Pumping Stations

There are 11 operational wastewater pumping stations in service within the catchment. These are listed in Table 11.1.

Table 11.1 Pumping Stations

Pumping Station Name	Pumping Station Type
DUKES MEADOW PAGHAM WPS	Wastewater
NYETIMBER CRESCENT NYETIMBER WPS	Wastewater
NYETIMBER LANE NYETIMBER WPS	Wastewater
FLETCHER PLACE NORTH MUNDHAM WPS	Wastewater
PAGHAM ROAD NORTH MUNDHAM WPS	Wastewater
RUNCTON LANE RUNCTON WPS	Wastewater
POND PLACE SALTHAM LANE RUNCTON MPS	Wastewater
CHURCH FARM PAGHAM WPS	Wastewater
HARBOUR ROAD PAGHAM WPS	Wastewater
KINGS BEACH PAGHAM WPS	Wastewater
MAIN ROAD HUNSTON WPS	Wastewater

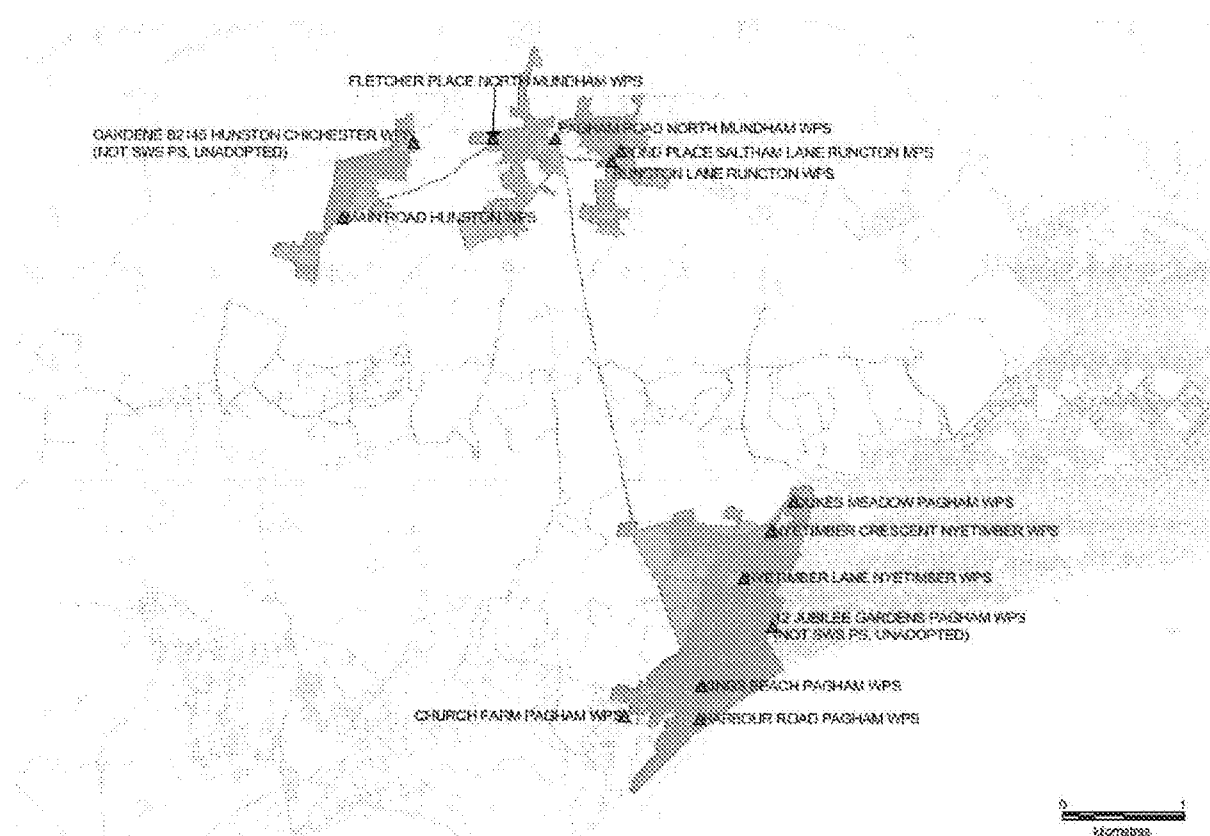


Figure 11.1 Location of Pumping Stations within the Pagham catchment

12 OVERFLOWS

What's in this section?

12.1 Catchment Overflows

Table 12.1 List of Overflows within the Catchment

Figure 12.1 Location of Overflows within the Pagham Catchment

12.1 Catchment Overflows

There are 3 operational overflows within the catchment including an overflow from Pagham Wastewater Treatment Works. These are all listed in Table 12.1. The overflows are consented by the Environment Agency permitting team.

Please note, the designation of any overflows spilling to bathing water or shellfish water areas has been dictated using the 'CSO Receiving Waters' spreadsheet as agreed with Southern Water. This is considered to be the best known information available to date.

According to this document, Pagham does not have any overflows spilling to designated bathing or shellfish water areas.

Table 12.1 List of Overflows within the Catchment

Overflow Name	Receiving Watercourse
MAIN ROAD HUNSTON CEO	Bremere Rife
PAGHAM ROAD NORTH MUNDHAM CEO	Pagham Rife
SUMMER LANE PAGHAM WTW CEO	Pagham Rife

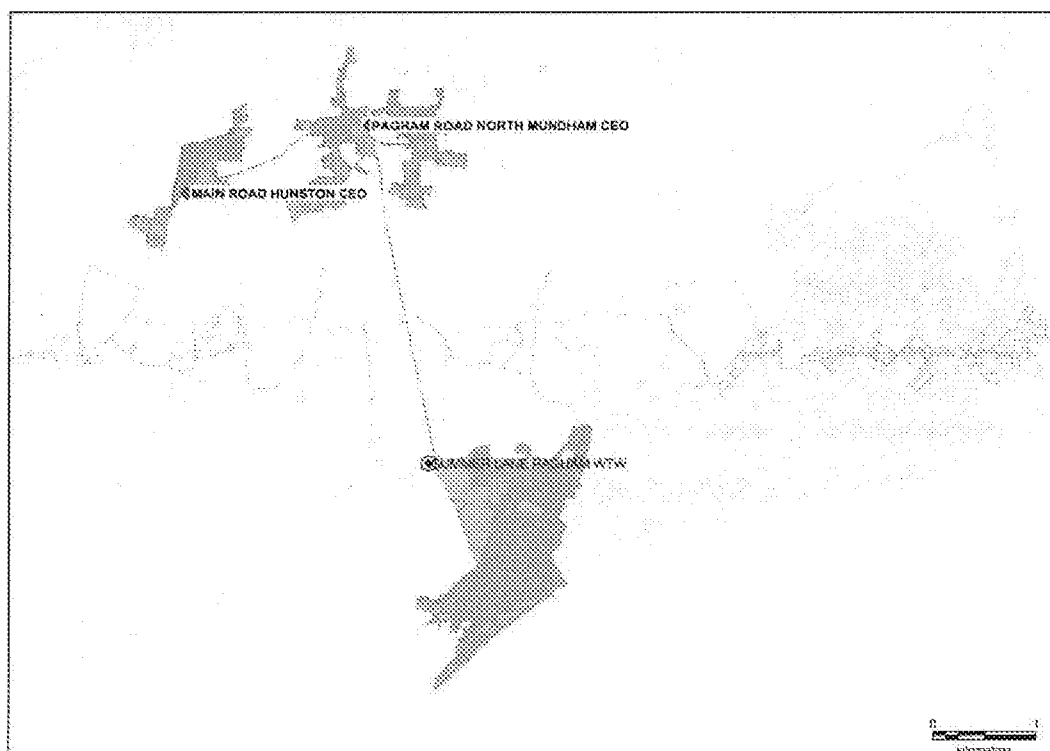


Figure 12.1 Location of Overflows within the Pagham Catchment

13 TANKS

What's in this section?

13.1 Catchment Tanks

Table 13.1 List of Tanks within the Catchment

Figure 13.1 Location of Known Tanks within the Pagham Catchment

13.1 Catchment Tanks

There is one known operational sewerage storm tank within the catchment which is the storm tank at the Pagham Wastewater Treatment Works. This is detailed in Table 13.1.

Table 13.1 List of Tanks within the Catchment

Tank Ref	Tank Name	Associated Overflow
100093	SUMMER LANE PAGHAM WTW CEO	SUMMER LANE PAGHAM WTW CEO



Figure 13.1 Location of Known Tanks within the Pagham Catchment

14 CONCLUSIONS

What's in this section?

- 14.1 Introduction
- 14.2 Flooding
- 14.3 Hydraulic Model
- 14.4 Growth
- 14.5 Overflows
- 14.6 Structural and Operational Risks

14.1 Introduction

These are the key findings and recommendations of the Pagham DAP

14.2 Flooding

The DAP has not investigated any hydraulic flooding issues as no priority flooding clusters were agreed with Southern Water during the course of the study. Therefore, no position statements have been created.

14.3 Hydraulic Model

The existing hydraulic model of the drainage catchment has not been updated with any new survey data during the course of the DAP.

14.4 Growth

Within the Pagham catchment, there is projected population growth of 7% by 2040. The impact of the increased flow as a result of growth has been investigated as a primary need for short term (2025) and long term (2040) design horizon scenarios. A strategic growth scheme has been developed which includes the impact of climate change in addition to standard growth parameters.

For all growth issues, an assessment has been made concerning the feasibility of the removal of surface water runoff from the foul sewer network. This is the most sustainable method of removing flooding and has additional benefits such as lowering energy costs as a result of reducing the amount of pumping required.

14.5 Overflows

There are two sewer overflows which discharge to watercourses within the catchment. These have both been assessed against their Environment Agency consents.

14.6 Structural and Operational Risks

This DAP has not directly addressed any structural or operational issues, however it has identified any potential links with hydraulic issues. Where upgrades to the network go ahead, joint benefits will be realised wherever possible.