

Building a resilient water future

4 March 2019

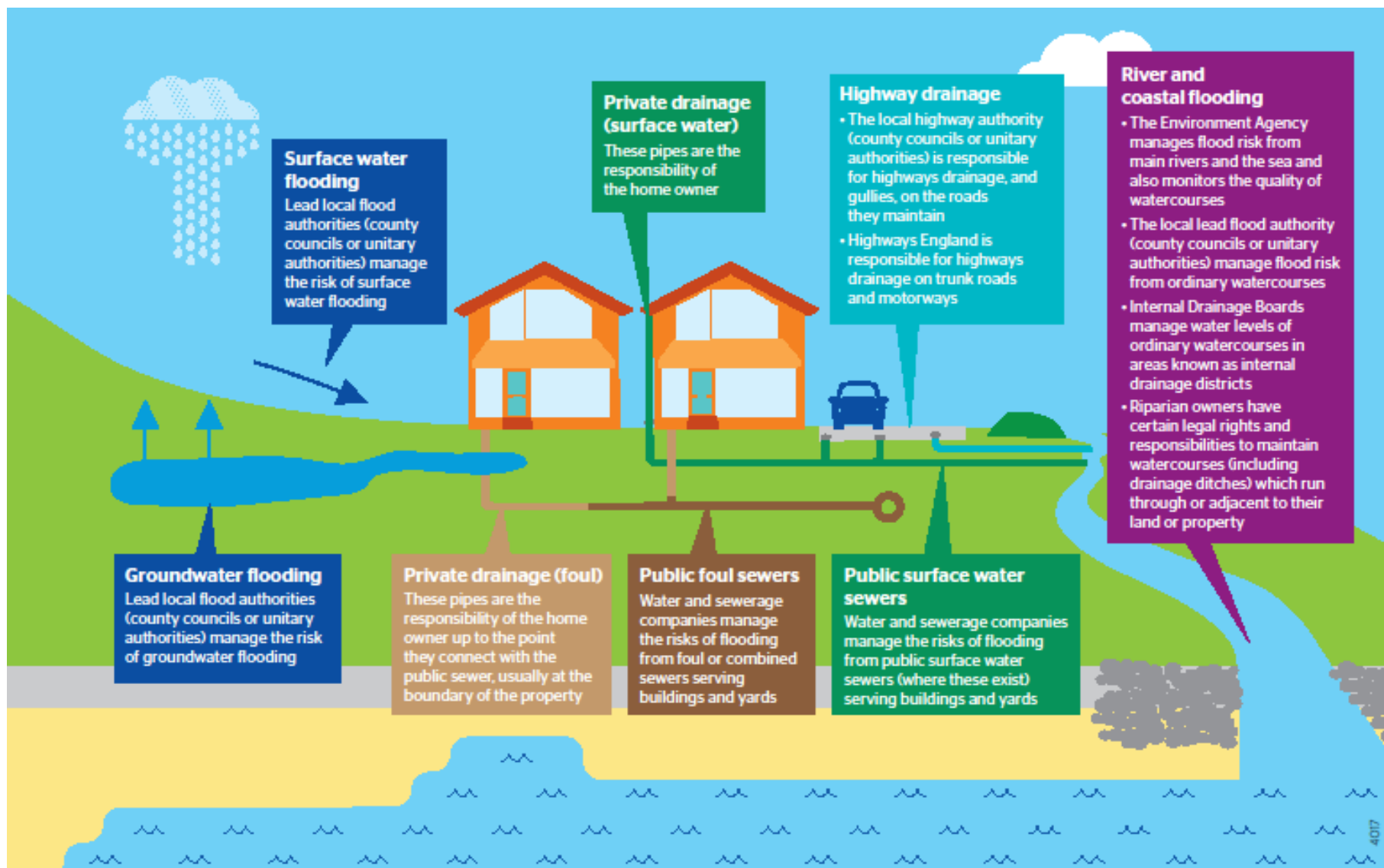


Our business

We're proud to provide water and wastewater services to more than 4.6 million people across the South East.



Flood risk responsibilities



Planning for growth – new development

- Fully committed to providing the right infrastructure in the right place at the right time, in collaboration with local planning authorities and developers
- Statutory obligations to provide water and wastewater services - we cannot refuse new connections and we are unable to object to new developments
- Statutory consultee on Local Plans.
- Not a statutory consultee on individual planning applications - we encourage local authorities to consult us on applications for major development (20 homes and upwards).
- Can request planning conditions, if necessary, to ensure connection to our network takes place at an appropriate point and does not cause a deterioration in service to existing customers
- Plan and invest in five-year periods and use adopted Local Plans and census and population data to plan ahead.

Local investment to 2020

- Circa £1.5 million investment at Sidlesham WTW. Included maintaining and improving biological filters and inlet screens
- Bathing Water Enhancement Programme investment at Selsey, worth c£2.5 million
- Works involve construction of a new Combined Sewer Overflow (CSO) chamber with screening facilities in Beach Road (close to the junctions with Constable Drive and East Beach Road)
- Plus, construction of new 135 metre long, 1.2m diameter, on-line storage tank further down Beach Road
- Upgrade of East Beach (Selsey) WPS worth £150k
- Catering for local growth – e.g. new sewers constructed.



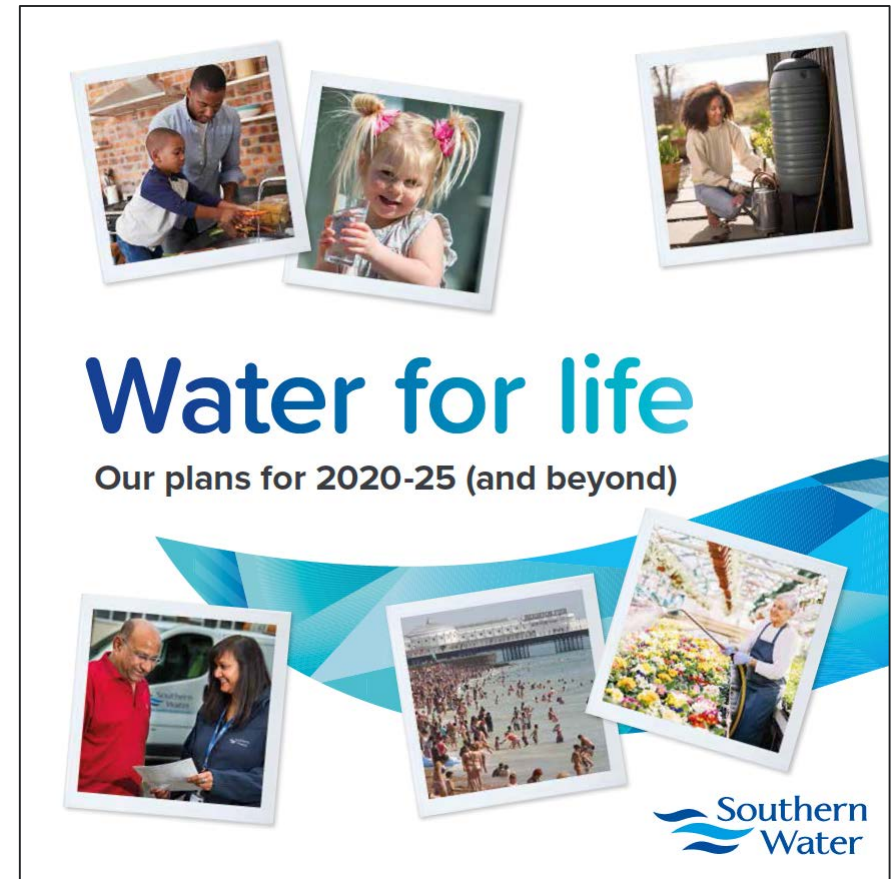
Your water is at risk

- Where we live is changing
- The region's population is rising
- Our climate is changing: drier summers and more winter flooding
- Our economy is growing: more tourism, more businesses and more exports
- More people. More water stress.



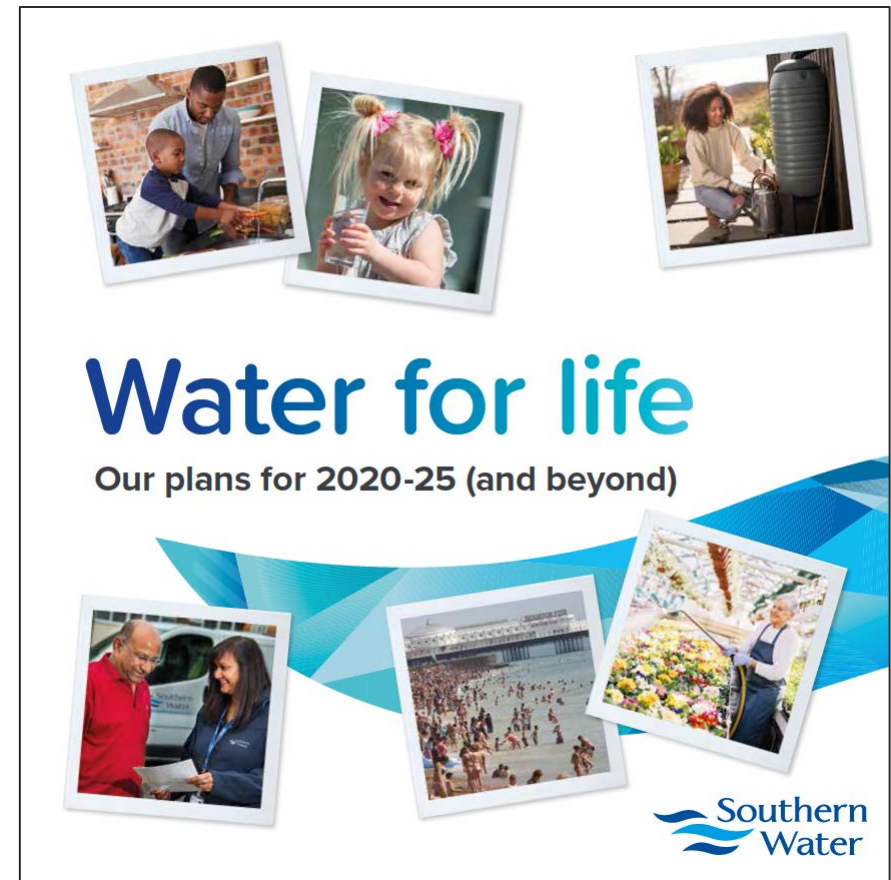
Our vision - A resilient water future for the South East

- 'Water for life', our Business Plan for 2020-25
- Details what we will deliver and what this will mean for customer bills
- Plan is based on:
 - *Our 25-year strategy, entitled 'Southern Water Futures'*
 - *Our 50-year Water Resources Management Plan for 2020–70*
 - *Our Drought Plan for 2018–22*
- All our plans are based on the findings from detailed customer and stakeholder insight research.



Water for life – key facts & figures

- Increasing investment to £4 billion, while bills fall by 3%
- Investing £814 million to protect and improve our environment
- Cutting pollution incidents by 40%
- Reducing sewer flooding incidents, including during storm conditions
- Removing surface water from sewer system to prevent flooding (e.g. via use of SUDS).



Working in new ways: our transformational priorities

Leading long-term resilience to support economic growth, environmental improvement and social wellbeing

Catchment First

More holistic management of catchments will help us protect and improve our natural environment and ensure we can support economic growth

Drainage 2030

Making better use of our drainage networks by implementing multi-beneficial surface water solutions, creating smart networks and increasing customer awareness

Network 2030

Rationalise, standardise and automate our water supply networks by 2030 to improve connectivity and ensure a resilient system

Resource Hubs

Transforming our wastewater treatment works into Resource Hubs capable of generating energy for local communities, recycling water, and use as a community asset

TARGET 100

Universal metering, water efficiency programmes, and partnerships to reduce PCC to 100 litres per day by 2040

Drainage Area Plan (DAP)

- 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
- Southern Water maintains a rolling programme of Drainage Area Plans
- Drainage Area Plans are internal documents to Southern Water
- Production of DAPs is prioritised based on existing issues, such as sewer flooding, and where there are proposals for future development which may impact on performance of the local sewer system
- Sidlesham DAP completed in March 2016, with Surface Water Management Plan report also compiled.

DSF Partner

Environment Agency

Lead Local Flood Authority

Local Authority(ies)

Highways Authority

Organisation

Environment Agency

West Sussex County Council

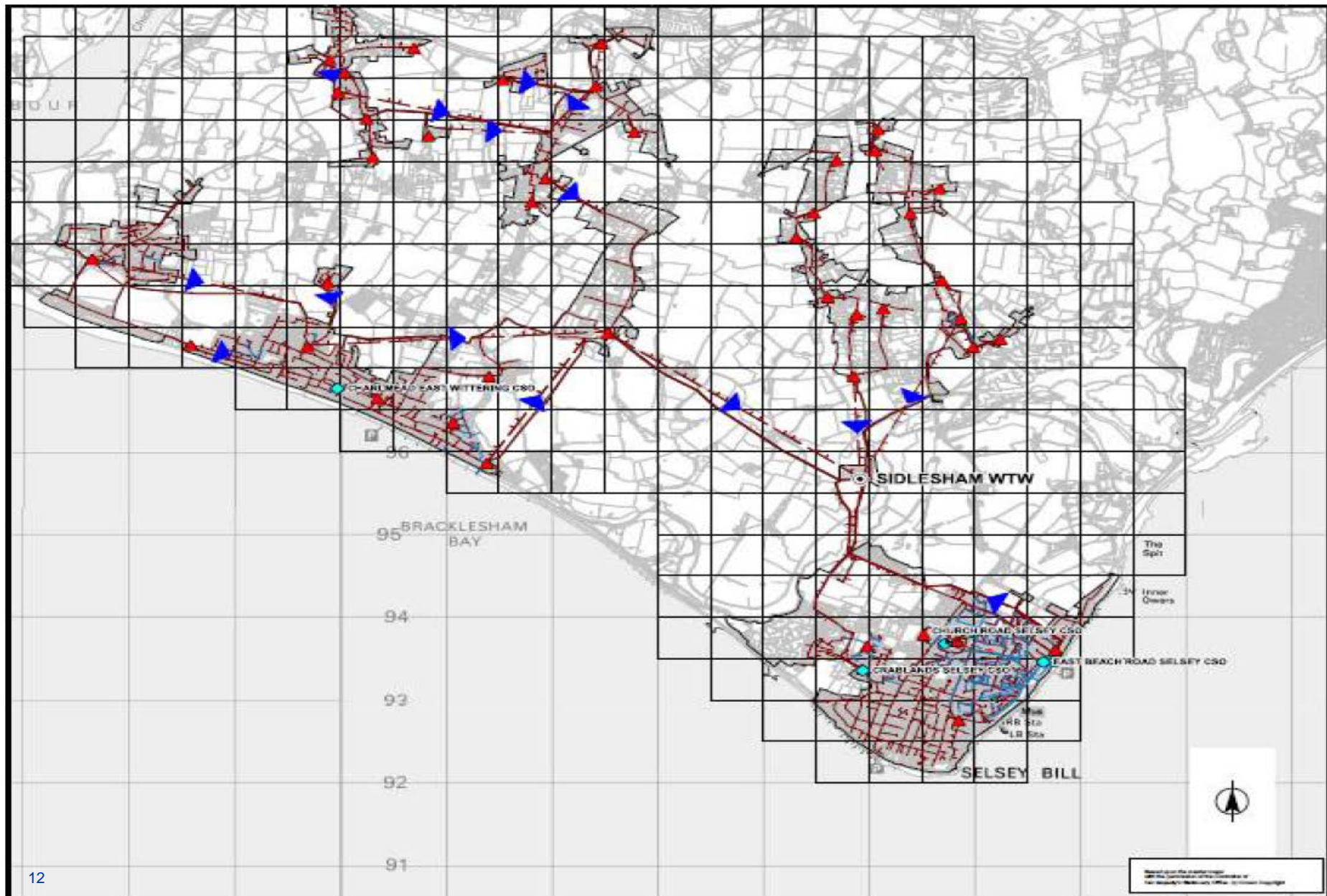
Chichester District Council

West Sussex County Council.

Sidlesham catchment

- **The Sidlesham catchment is around 16 square kilometres in size**
- **It contains a population of 20,453 outside of the tourist season. There is an additional tourist influx of circa 3,000 people during the summer months**
- **The catchment covers the parishes of: Sidlesham / Earnley / West Wittering / Birdham / East Wittering / West Itchenor**
- **Land drainage through the Manhood Peninsula is via a series of rifes**
- **The majority of local drainage ditches connect into these rifes before discharging into Chichester Harbour, Pagham Harbour, the Medmerry re-alignment scheme, or directly to the sea**
- **Local geology = relatively impermeable soils, such as boulder and sedimentary clays, as well as permeable soils with shallow groundwater in low lying areas and mixed areas of permeable and impermeable soils.**

High-level map of local sewer network, including Wastewater Pumping Stations (WPS)



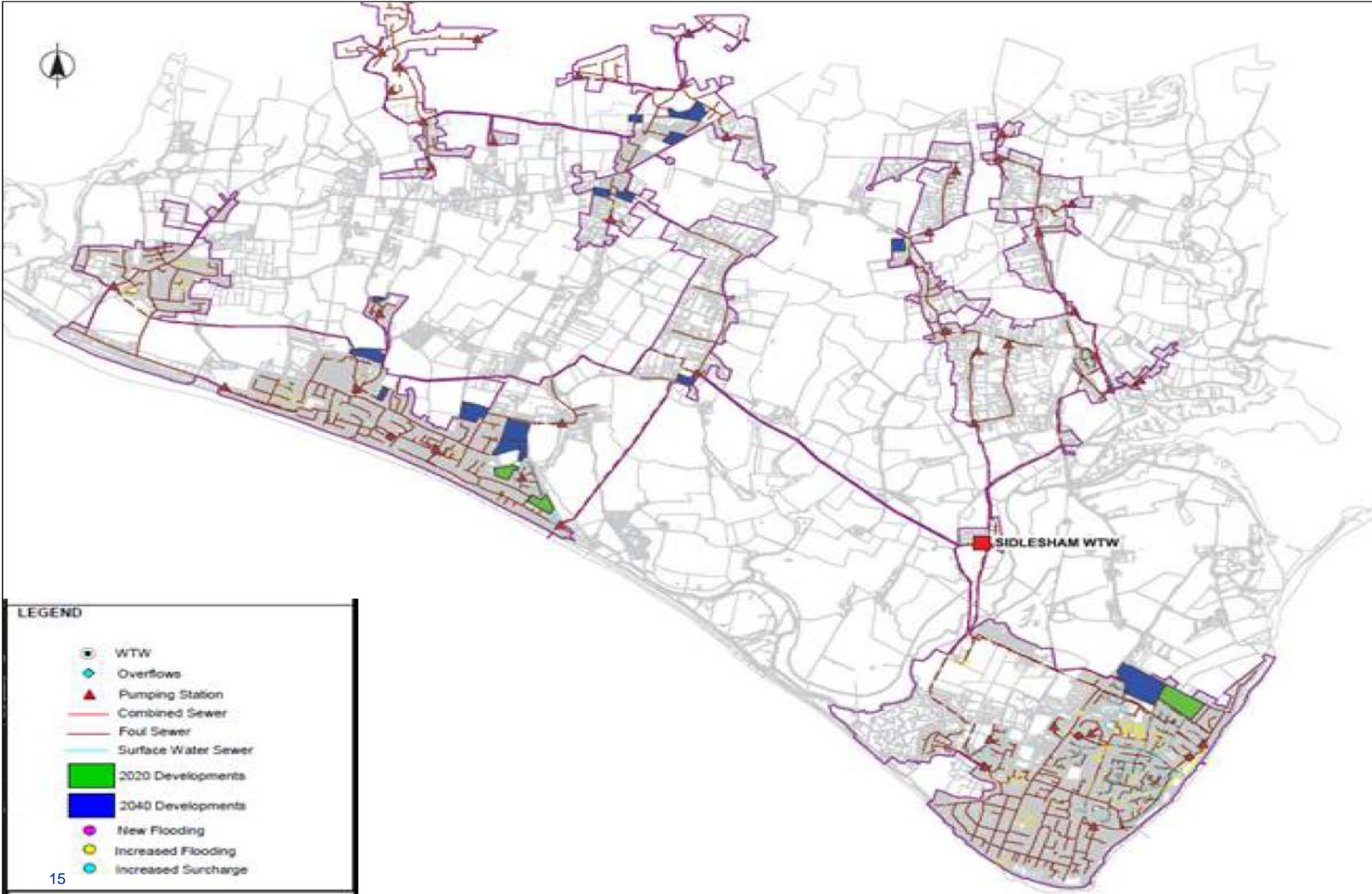
Local drainage systems

- **Sidlesham WTW receives flow from surrounding towns and villages in the six local parishes**
- **Each location is served by a predominantly foul sewer system, with a terminal pumping station in place for each, which pumps directly to the WTW**
- **Local surface water drainage is predominantly by land drainage or soak-aways**
- **Original design of local sewer system did not cater for drainage from impervious areas such as roads, roofs and patios / drives.**
- **There is a more extensive surface water drainage system serving the town of Selsey.**

Hydraulic model

- **A verified computer hydraulic model is used to determine the areas where the sewer system is currently under stress, plus the impact of future development on the existing system performance.**
- **The models utilise the latest industry standard model software - InfoWorks ICM Version 6.4**
- **Design rainfall events were generated for 1, 2, 5, 10, 20, and 30 year return periods**
- **For scheme design a 20% uplift was applied to design rainfall in accordance with latest climate change predictions**
- **A real-time varying tide profile was applied to the model for time series rainfall runs using a level hydrograph at storm system outfalls based on measured tidal data**
- **For design storm analysis a joint probability approach was used in applying level hydrographs to system outfalls in accordance with industry code of practice.**

Local development sites



Flooding and growth options

- Hydraulic appraisal of the flooding locations in the Sidlesham catchment has been undertaken and appropriate interventions have been identified.
- E.g. for Selsey the following options have been scoped:

Option 1 Infiltration reduction

Option 2 Separation (south Selsey High Street, East Street areas)

Option 3 Increased highway drainage maintenance

Option 4 Upgrade East Beach WPS (may require improvements to Sidlesham WTW)

Option 5 Online network storage capacity (upsized network)

Option 6 Offline network storage (tanks)

Option 7 New WPS at Halford Green

- For growth, the following options have been identified for Selsey

1) Transfer development flows directly to Sidlesham WTW

2) Online storage tank

- The above is based on enabling new development to be accommodated, while not adversely impacting on the level of service afforded by the existing system
- Solutions identified to accommodate growth are indicative and require adjustment once further detail is available from developers.

Further actions

- **The delivery of improvement schemes will be dependent on prioritisation process including an assessment of affordability**
- **There is no committed timescale for the construction of the schemes identified in the document**
- **Delivery of improvements required to accommodate flow from new developments for example will be largely governed by the planning application process which would give a degree of certainty regarding building timing and phasing**
- **In Selsey as part of the Bathing Water programme, schemes are in progress to help improve bathing water quality whilst offering some betterment to the catchment in general**
- **In addition the East Beach Selsey WPS is being upgraded to accommodate the current growth**
- **In specific areas there have been reports that infiltration or surface water inundation is impacting on the capacity of the sewerage system**
- **In the short term, further investigations are proposed to be carried out to identify sources of ingress – West Itchenor & Birdham have received infiltration reduction recently. Being at the top end of the catchment, it will have beneficial impact locally as well as further downstream.**