

SUPPLY AND DEMAND MANAGEMENT

Leicester Scrutiny Committee

7th June 2017

Doug Clarke

Growth & Water Efficiency Manager



MAKING OUR REGION THE MOST WATER EFFICIENT

- We will empower our customers to save 25MI/d by 2020.

To date we've achieved over 9 MI/d saving

- We will reduce leakage to 424MI/d by 2020.

2017 outturn position 432MI/d

- We will improve understanding of our services through education.

Engaging with 700,000 customers on water efficiency and sewer misuse by 2020.

So far we've engaged 285,000 customers

Education on water efficiency and sewer misuse



Working with new builds



Free water efficiency home checks

JOIN IN
and lower your bills

with our **FREE** Home Water Efficiency Check
Takes just 50 minutes.

- FREE** water meter test
- FREE** inspection of taps
- FREE** home water audit
- FREE** plumbing check
- FREE** personal water audit

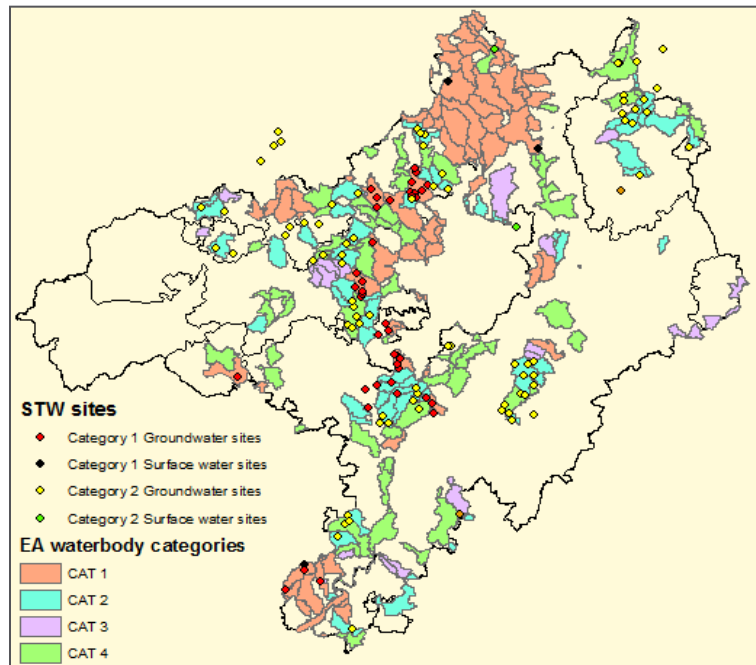
Call 0330 159 9070
or shwater.co.uk/homecheck

SEVERN
TRENT

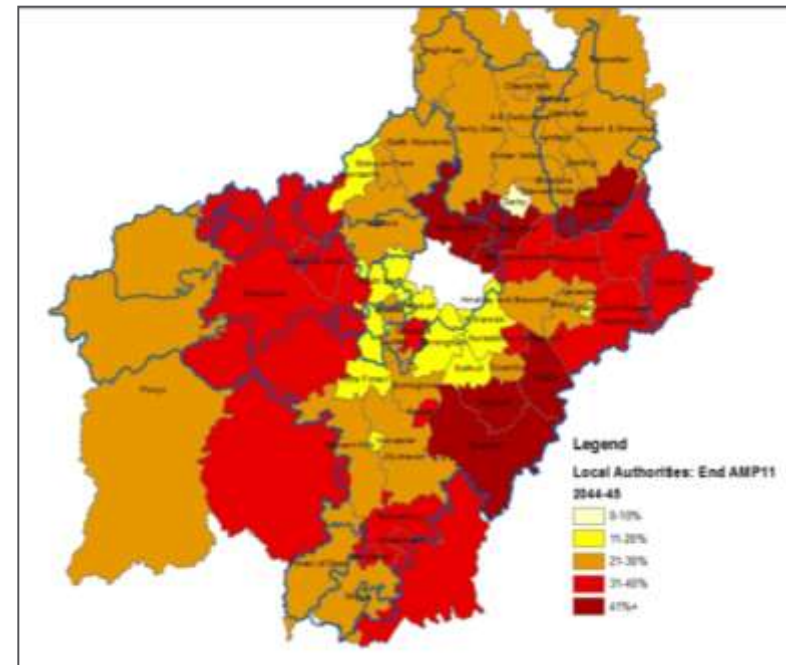
REDUCING DEMAND FOR WATER SUPPLY AND DEMAND

Over the next 25 years a number of challenges will need to be addressed in order to maintain reliable, affordable and sustainable water supplies.

Groundwater and surface water sources at risk



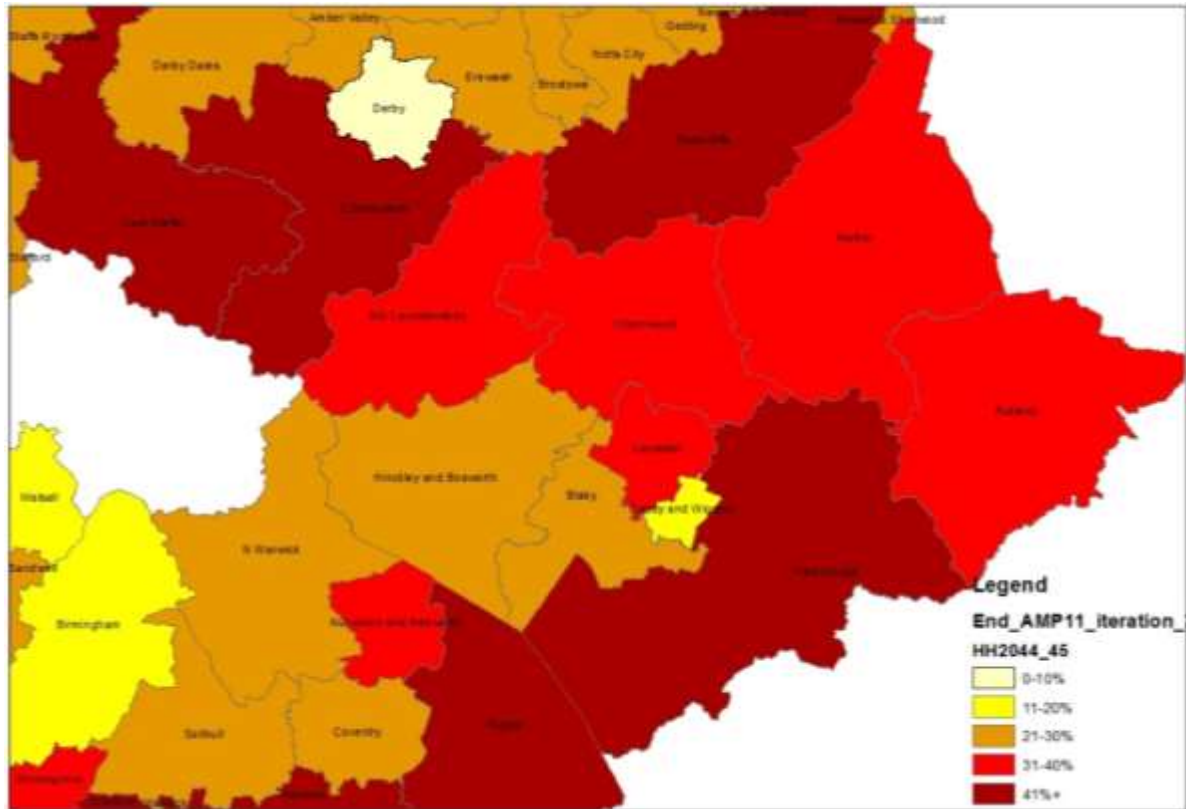
Housing growth forecasts



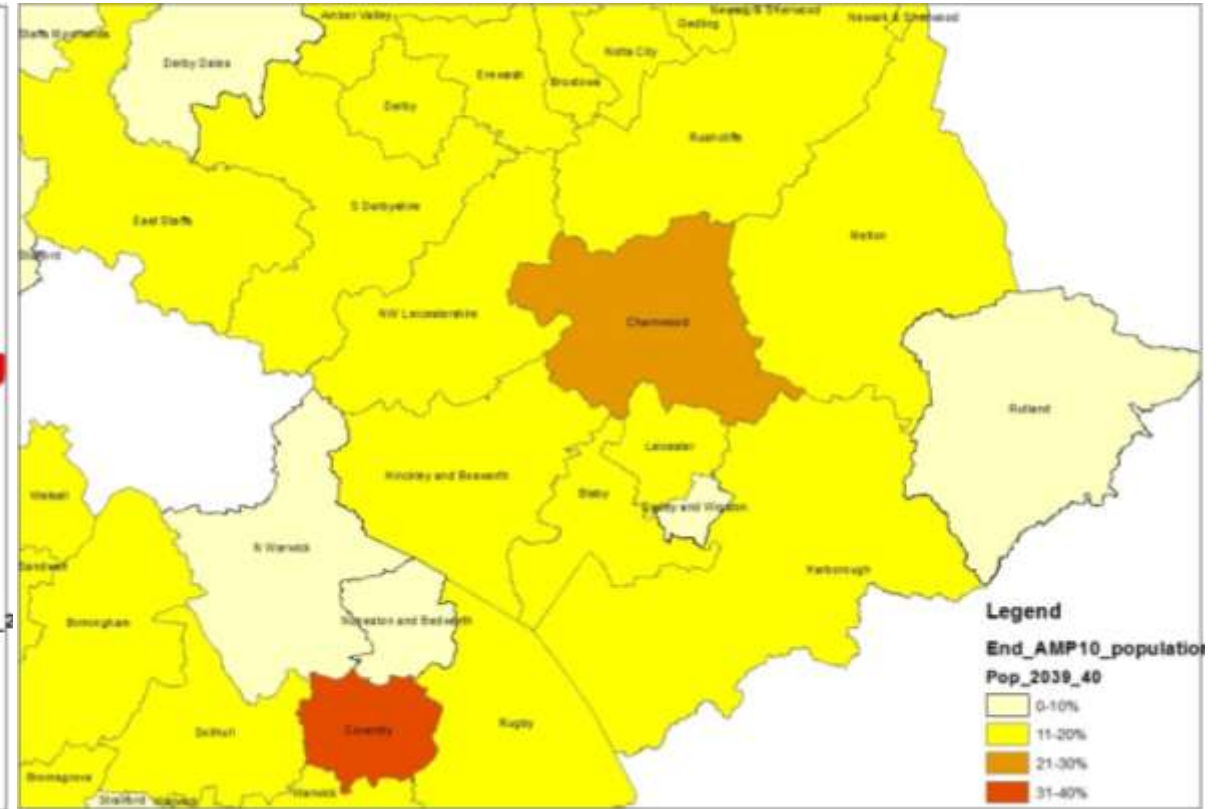
Approximately 200Ml/d of current resource may need to be given up: equivalent to 11% of total demand.

HOUSING AND POPULATION GROWTH FORECAST

Housing



Population



WATER EFFICIENCY OPTIONS IN THE DRAFT PLAN

Continuation of our AMP6 programme is “baked in” to the plan

- Stakeholder support for a base programme for household Water Efficiency activity built into our demand forecast:
 - Supplying products (free and subsidised)
 - Home Audit programme (installation of products and customer engagement)
 - Educating/engaging consumers (improved on line resources, comms and education programme)
- Strategic decision that we cannot do less than we are doing now.

We have proposed options for enhanced activity to increase demand management

- There are opportunities to do c.50% more:
 - Increased home audit programme (up to targeting 100% of customer base)
 - Increased free product distribution (accelerated uptake, though still ending AMP9)
 - Developer incentives (Infrastructure charges discounts)

We are assessing additional opportunities:

- Non-household customers
 - Big opportunity for demand reduction
 - Private side leakage
 - Traditional WE options (urinals, toilets, etc)
 - Reuse (onsite, RWH, treated effluent)
- Innovation
 - New tech e.g. leak alarms
 - Household water reuse (effective, sustainable systems)

WATER RESOURCES MANAGEMENT PLAN

Meeting	Content
Sep 2016	<ol style="list-style-type: none">1. AMP6 progress / situation2. Process and timeline3. Framing the problem4. Proposed Strategic Environmental Assessment Criteria
April 2017	<ol style="list-style-type: none">1. Recap on previous session2. Feedback from last session and actions driven from it3. The size of the SDB challenge – sustainable abstraction, climate change, resilience, growth etc.4. What options do we have, and how to find the right balance of supply side / demand management5. Visibility of how to engage on wider PR19 plan
Autumn 2017	<p>First view of Draft Water resource plan</p> <ul style="list-style-type: none">• Deficits• Balanced plan• Recommended schemes
Spring 2018	Water resource plan consultation feedback

We've held two stakeholder workshops, the next is in the Autumn.

SEVERN TRENT WATER

THEME 1: FUTURE HOUSING AND GROWTH

Leicestershire County Council's Scrutiny Commission

7th June 2017

Paul Hurcombe



GENERAL OVERVIEW

We are regulated by Ofwat under Water Industry Act 1991

Key duty to provide public sewers and to 'effectually'
drain our area (customer to river)

Duty relates to:-

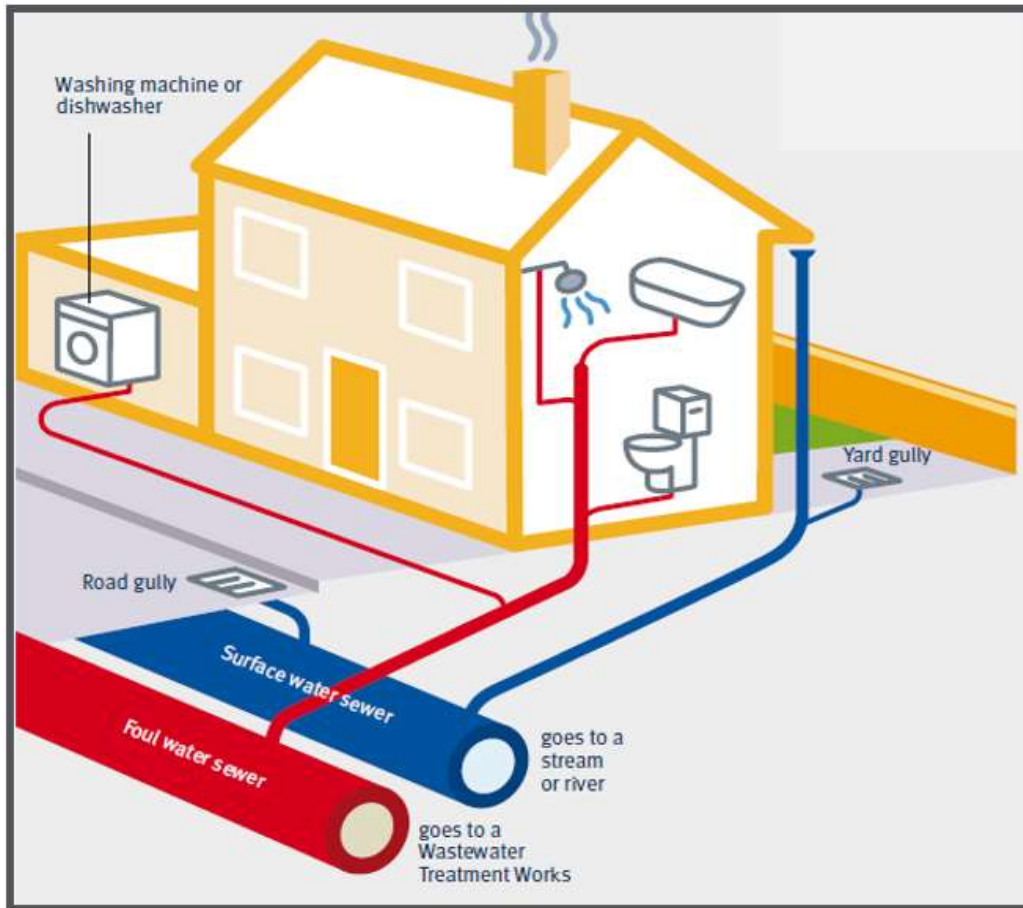
- Domestic sewage
- Surface water from roofs and curtilage

Also accept:-

- Industrial / commercial effluent
- Highway Drainage by agreement (with reciprocal rights)

Not responsible for :-

- Draining highways
- Land Drainage
- Watercourses



DEVELOPMENT DUTIES

Water Industry Act 1991

- **Section 94:** Requirement to provide effectual drainage and to extend the sewerage network and provide sewage treatment capacity to accommodate planned development.
- **Section 37:** Duty to develop and maintain an efficient and economical system of water supply within its area and to ensure that all such arrangements have been made for maintaining, improving and extending the water undertaker's water mains
- **Section 37A, B, C & D:** It shall be the duty of each water undertaker to prepare and maintain a water resources management plan
- **Section 41 & Section 98:** Duty to comply with water main and sewer requisitions for new development
- **Section 104:** Sewer Adoption
- **Section 106:** Right to connect to sewers
- **Section 185:** Duty to divert water and sewerage assets

HOW WE ARE FUNDED

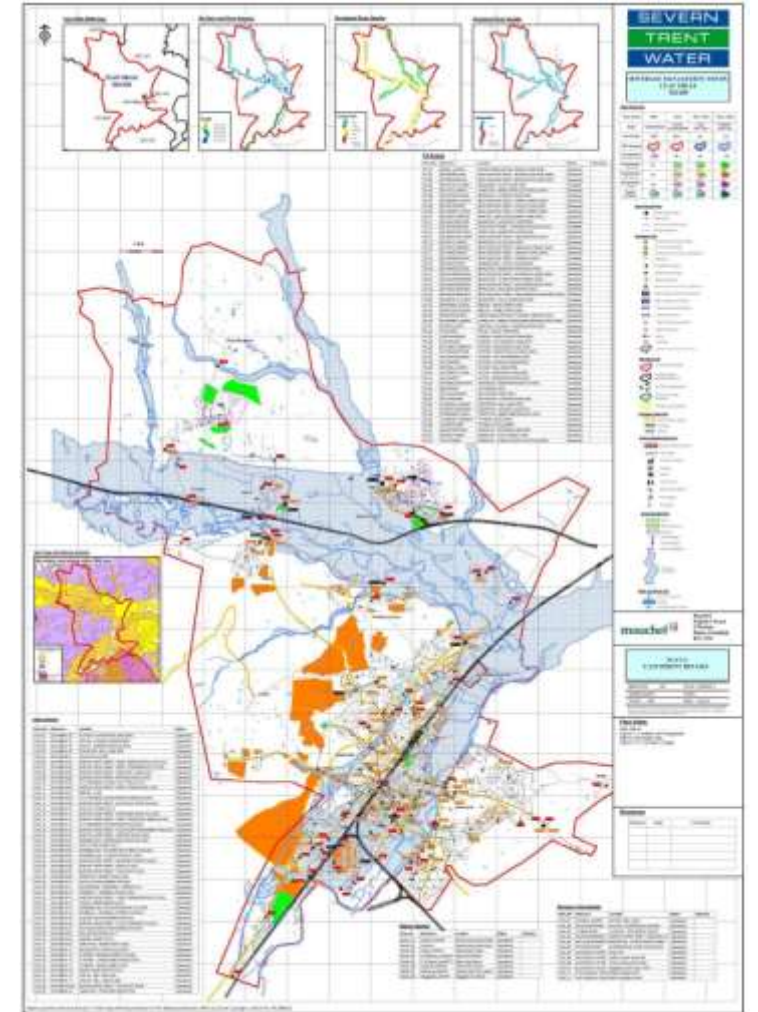
Water Industry Act 1991

- Activities funded through Regulatory Framework agreed with Ofwat, includes sewer flooding new development
- We also have a duty to keep existing customer's bills as low as possible
- Asset Management Plan 6 (AMP6) covers 2010-2015 with AMP7 due to be determined in November 2019 as part of Price Review 2019 (PR19).
- Income to accommodate new development is regulated by Ofwat through Annual Charging policy
 - Customer Bills
 - Infrastructure Charges
 - Requisitions
 - Diversions
- Investment needs to accommodate new development to comply with our WIA 1991 duties are regulated
- **As part of our regulatory requirement we need to ensure there is enough water supply, water distribution, sewerage, waste water treatment and sludge capacity to meet Leicestershire's planned growth, irrespective of whether demand in rural or urban areas.**

MANAGING SEWER CAPACITY

Sewerage Management Plans (SMPs)

- Our SMPs assess:
 - Hydraulic performance (Sewer flooding and Growth)
 - Operational issues (Blockage and maintenance risks)
 - Structural condition of assets (Sewer collapses)
 - Environmental compliance (Pollution compliance)
- 186 catchment areas serving 8.95 million residents, comprising 37,000km of sewers, 4350 pumping stations, draining to 1019 sewage treatment works and 34 sludge treatment facilities.
- Our sewerage hydraulic models are used to inform short term (+5 year) and long term (+25 year) investment plans taking into account new development, climate change and impermeable area creep.
- Funding is provided within our AMP6 plan to address sewer flooding risk, reduce blockage, repair pipe condition.
- **Enables investment needs for Leicestershire to be prioritised alongside all other areas within the Severn Trent region.**



SEWER FLOODING RISK

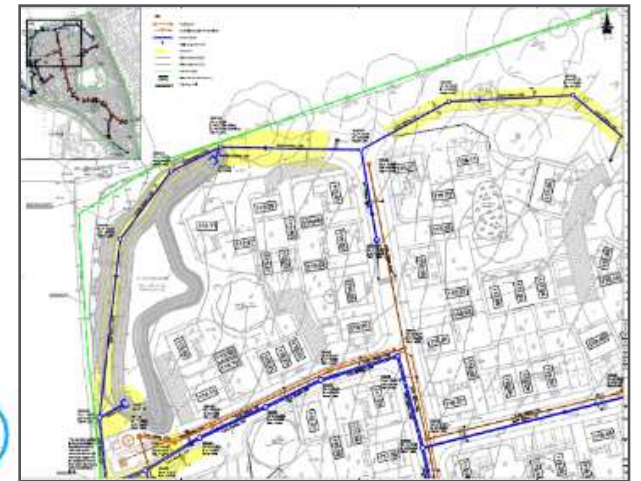
Hydraulic Sewer Flood Risk

- We maintain a register of all properties and external areas at risk from sewer flooding
 - Investment prioritised based on incident likelihood and impact on customers
 - £120million is being spent in AMP6 to alleviate sewer flood risk
 - This is available to LLFAs to develop partnership solutions
- We install Property Level Resilience (PLR) measures to reduce the impact of flooding pending resolution of the underlying issue
- Main concern with new development is connectivity of surface water
 - Automatic right to connect under S106
 - Severn Trent is not a statutory consultee in the planning process
 - Since April 2015 the LLFA has a role to ensure sustainable surface water disposal
 - Due to our S94 duty we cannot stop development, only seek drainage conditions to complete upgrades
 - Our Asset Protection team encourage early engagement with developers so capacity constraints can be highlighted to reduce risk of delay
 - We are planning to invest around £40million in AMP6 to accommodate new development.
- **Failure to accommodate increased demand will increase incident risk which impact on our targets agreed with Ofwat.**



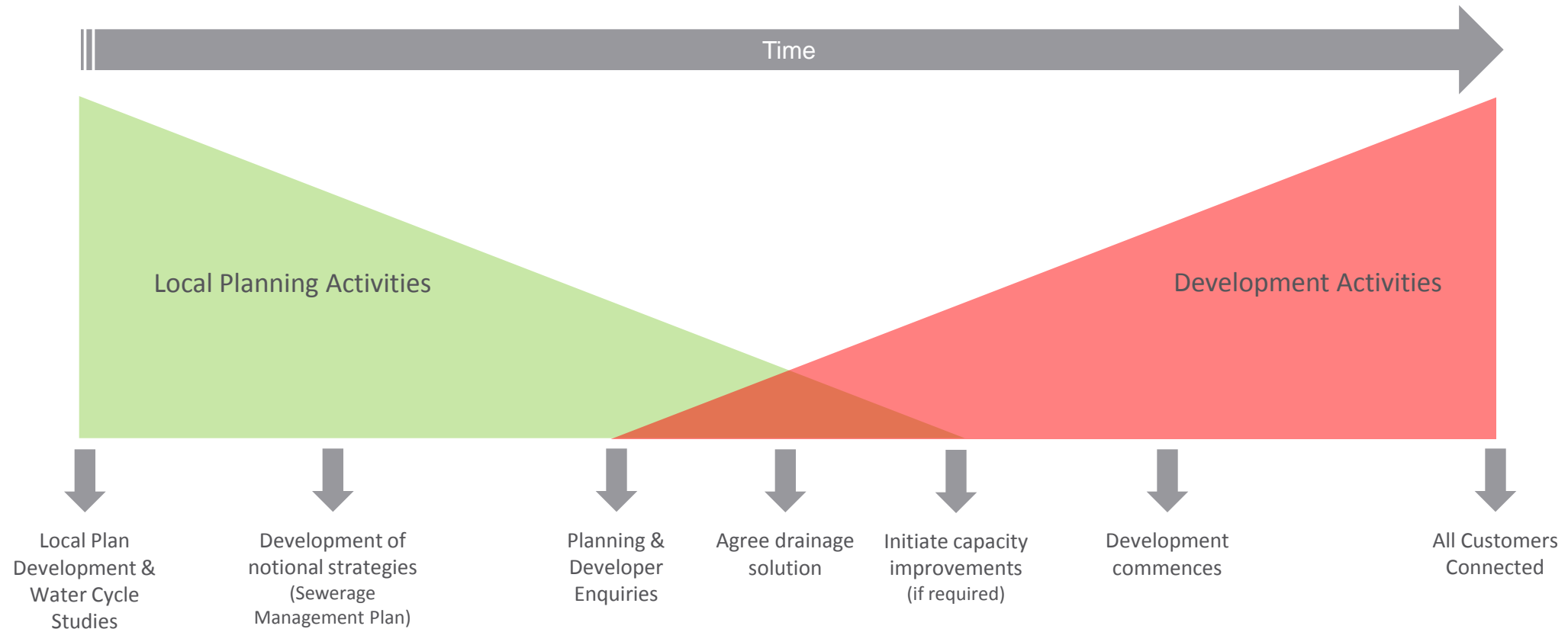
NEW DEVELOPMENT ROLES

- Developer has an automatic right to connect to the public sewerage system under S106.
 - Additional foul flows have negligible impact on sewer performance compared to surface water
 - Surface water can be connected at unlimited flows, with a right to connect surface water into foul sewer.
 - Developer does not have the right to connect new highway drainage
- LPA, with statutory consultee support LLFA, responsible for ensuring sustainable surface water disposal.
 - SuDS hierarchy
 - Rain water reuse
 - Infiltration to ground
 - Controlled discharge to a water body
 - Controlled discharge to sewer or drainage system
 - Controlled discharge to foul/combined sewer
- Our New Connection Asset Protection Team liaise with LPA/LLFA to ensure foul and surface water connections to the public sewer can be accommodated
- Occasionally we may seek drainage conditions.
 - Our aim is not to delay development but provide time to complete upgrades
 - Timing of occupancy does not generally cause an issue



DEVELOPMENT PLANNING

Capacity Planning & LPA engagement



- **Failure to accommodate increased demand will increase incident risk which impact on our targets agreed with Ofwat.**
- **We have Service Level Agreements to deal with new connection requests from developers**

WATER CYCLE STUDIES

- We input into LPA Water Cycle Studies.
- We use our SMP knowledge to advise where exiting capacity could constrain new development
- High level RAG assessments to indicate potential constraints than may require capacity upgrades
- ‘Red’ sites do not mean development cannot be accommodated
- Not all Councils do WCSs. Severn Trent happy to be involved but does not overrule our Section 94 duty
- Early understanding of potential scale, location and timing of development helps with understanding development likelihood and investment planning.

Charnwood Borough Council Broad Growth Areas			
Potential impact of proposed Strategic Urban Extension on sewerage infrastructure assets			
24th November 2016			
Note: These are desktop assessments using readily available information and have not been subjected to detailed hydrologic modelling			
Site Name	Area	Sewerage Treatment Works	Potential Impact on sewerage infrastructure
Leeghbrook SUE	2500	Leeghbrook	<p>There is additional capacity available at Leeghbrook STW to accommodate the level of development proposed at this site.</p> <p>The site is located in a valley and it likely to drain to the east with a connection to the existing sewer network to be the existing brook that passes through the site (Thorp Brook). There are a number of potential sewerage locations for this site, though all are relatively small options and capacity improvements are likely to be required to accommodate flows from the proposed development. The proposed sewerage location will depend on the site layout / development. Hydrologic modelling will be required to assess the impact on the sewerage network, including the Leeghbrook Pumping Station, and determine the scale of capacity improvements required. Surface water should be suitably managed on site using SuDS and as well as in the brook passing through the site should be considered.</p> <p>Severn Trent Water enhance the opportunity to work with the Local Authority and developers to discuss the level of development within the site (local layout) and development phasing so that the level of development proposed at this site. However, there are a number of other strategic sites planned in the Walsley catchment and if other large sites were forward, capacity improvements may be required.</p>
Thorncliffe SUE	3250	Walsley	<p>There is a number of potential sewerage locations in the east of the site and the sewerage will depend upon the level of development within the site. The existing options are relatively small and improvements for the capacity of the existing sewer network are likely to be required to accommodate the level of development proposed at the site. The main pumping station may be required to drain the site to the existing network. Hydrologic modelling will be required to assess the impact on the sewerage network, including Gals Road Pumping Station, and determine the scale of capacity improvements required. Surface water should be suitably managed on site using SuDS.</p> <p>Severn Trent Water enhance the opportunity to work with the Local Authority and developers to discuss the level of development within the site (local layout) and development phasing so that the level of development proposed at this site. However, there are a number of other strategic sites planned in the Walsley catchment and if other large sites were forward, capacity improvements may be required.</p>
North Dore Hill Strategic for Growth	15,000 - 2,000-15 Ha	Walsley	<p>The main brook runs to Walsley STW via through the middle of this proposed site. This is an 1800mm pipe that will be able to carry the site's full peak flows to the treatment works. Provided surface water is managed suitably and not connected to the foul network water courses, the additional peak flows generated from this development are not envisaged to have any capacity issues. However, there is the possibility that the site may be subject to small scale flooding in the future as it is situated very close to the brook water course.</p> <p>Severn Trent Water enhance the opportunity to work with the Local Authority and developers to discuss the level of development within the site (local layout) and development phasing so that the level of development proposed at this site. However, there are a number of other strategic sites planned in the Walsley catchment and if other large sites were forward, capacity improvements may be required.</p>
Principal Urban Area - to be allocated	143 - 643 (depending on scale of North Dore Hill)	Walsley	<p>The main brook runs to Walsley STW via through the middle of this proposed site. This is an 1800mm pipe that will be able to carry the site's full peak flows to the treatment works. Provided surface water is managed suitably and not connected to the foul network water courses, the additional peak flows generated from this development are not envisaged to have any capacity issues. However, there is the possibility that the site may be subject to small scale flooding in the future as it is situated very close to the brook water course.</p> <p>Severn Trent Water enhance the opportunity to work with the Local Authority and developers to discuss the level of development within the site (local layout) and development phasing so that the level of development proposed at this site. However, there are a number of other strategic sites planned in the Walsley catchment and if other large sites were forward, capacity improvements may be required.</p>
Waterford Regeneration Corridor	6,250 m ² of urban - 15.25% of overall	Walsley	<p>There is additional capacity available at Walsley STW to accommodate the level of development proposed at this site. However, there are a number of other strategic sites planned in the Walsley catchment and if other large sites were forward, capacity improvements may be required.</p> <p>Flows will have to be pumped from this proposed site to the treatment works. The site is on a higher level than the sewerage network and the location is probably in a flood plain which would have a higher risk of flooding. This would require the location to be elevated to a level above the flood plain. This would require the location to be elevated to a level above the flood plain. This would require the location to be elevated to a level above the flood plain.</p>
Leeghbrook Science and Enterprise Park	58 ha of low-rise based and high buildings	Leeghbrook	<p>This site is located in the west of Leeghbrook. Ground topography suggests the site will drain east towards the sewer network. Provided the sewer network is managed suitably and not connected to the foul network water courses, the additional peak flows generated from this development are not envisaged to have any capacity issues. However, there is the possibility that the site may be subject to small scale flooding in the future as it is situated very close to the brook water course.</p> <p>Severn Trent Water enhance the opportunity to work with the Local Authority and developers to discuss the level of development within the site (local layout) and development phasing so that the level of development proposed at this site. However, there are a number of other strategic sites planned in the Walsley catchment and if other large sites were forward, capacity improvements may be required.</p>
Reliance Strategic	500	Shepshed	<p>Due to the lack of location information available as to where this potential site will be positioned, it is difficult to assess the impact of this site. Overall, Shepshed sewer system is subject to some external flooding, with a combination of flooding at the centre of the catchment and the north of the catchment. Flows may have to pass through the north of the catchment, and on each the sewer system in the north will require hydrologic modelling to understand the flooding risk and the potential impact of external flows through the sewerage network. The north of the Shepshed catchment is within the 100 year flood plain as specified by the EF flood plain map. Consideration should be given to this before any further work is undertaken on this site.</p> <p>Severn Trent Water enhance the opportunity to work with the Local Authority and developers to discuss the level of development within the site (local layout) and development phasing so that the level of development proposed at this site. However, there are a number of other strategic sites planned in the Walsley catchment and if other large sites were forward, capacity improvements may be required.</p>
Silky and Snyke		Walsley	<p>Due to the lack of location information available as to where this development will be positioned, it is difficult to assess the impact of this site. Flows will be pumped to the treatment works and hydrologic modelling will be required to assess the potential impact of this development.</p>

SEWAGE TREATMENT

- All sewage works are consented by Environment Agency taking into account river quality standards.
 - Volume: Determines total daily discharge
 - Quality: Minimum quality standards (e.g. BOD, Ammonia, Suspended Solids, Phosphorus, metals)
- Failure to comply with consents can lead to prosecution
- Applications to revise consents usually result in tighter quality standards
- Need for additional capacity assessed when EA request tighter quality parameters, when we rectify asset condition issues or when measured performance data indicates early consent compliance warning.
- Level of additional capacity based on Local Plan, planning approvals, statistical population data and the type of sewage treatment processes

QUESTIONS

Severn Trent Water
Severn Trent Centre
2 St John's Street
Coventry
CV1 2LZ

