



Newark & Sherwood Water Cycle Study

Update 2016

Newark & Sherwood District Council

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Prepared on behalf of WYG Engineering Limited.




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Executive Summary

Newark and Sherwood district is expected to experience a significant increase in housing provision over the period to 2031. This growth represents a challenge in ensuring that both the water environment and water services infrastructure has the capacity to sustain this level of growth and development proposed.

This Water Cycle Study (WCS) update does not replace the Newark and Sherwood District 2010 WCS but reviews the existing strategy in the light of developments in planning legislation, River Basin Management Plan (RBMP) updates (2016) and current water utility forward planning.

This WCS update provides information at a level suitable to ensure that there are solutions to deliver growth for the preferred development allocations, including the policy required to deliver it. The outcome is a revision of the water cycle strategy for the district and evidence to demonstrate that the growth proposals are sustainable and do not adversely impact on the water environment. The WCS review will also inform site specific and other development plan documents (DPD) in relation to the water environment and water service infrastructure (WSI) issues. These issues will need to be considered in bringing growth forward at various sites, including guidance for developers in conforming to the requirements of the strategy.

According to Severn Trent Water's (STW) Water Resources Management Plan (WRMP) details for the Newark Water Supply Zone (WSZ), proposed development within the district is not proposed to exceed that for which STW are planning. There is therefore no need to evaluate the impacts of water supply in the district independently of the Water Resource Management Plan and its assessment.

The current situation in terms of wastewater within the district concerning sufficiency or forward provision of additional wastewater conveyance and treatment is that there is generally adequacy of capacity at present apart from a number of identified exceptions. In respect of these exceptions STW have plans in place under the next AMP period to upgrade three waste water treatment works (WwTw) and improve the sewerage system in Newark in order that the wastewater network is sufficiently robust to handle predicted growth.

At present, there is no apparent significant conflict between the needs for the proposed growth against the current capacity of network and any constraint upon expansion of the network if the need arises.

The WCS review concludes that the identified issues can be adequately dealt with by local policies without the need for detailed examination of cross boundary issues.

1.0 Introduction

1.1 Study need and drivers

1.1.1 Newark and Sherwood District Council (N&SDC) is currently in the process of updating its evidence base to support the review of its existing Development Plan. The current N&SDC Water Cycle Study (WCS) was published in 2010. Given the changes in planning policy arising from the introduction of the National Planning Policy (NPPF) and the Planning Practice Guidance (Water supply, wastewater and water quality) together with development in water sector infrastructure planning the WCS requires review. This WCS Review will help identify the impact on the water environment, if any, of the sites identified by N&SDC with potential for development over the period 2016-2033. The study will assist in determining the most appropriate locations for development (with respect to the water infrastructure and the water environment).

1.1.2 The objective of the WCS update is to identify the key changes to the NPPF and PPG since 2010 and any constraints on the proposed housing growth planned up to 2033 that may be imposed by the water cycle and how these can be resolved. The WCS will ensure that appropriate Water Services Infrastructure (WSI) can be provided to support the proposed development. Furthermore, it should provide a strategic approach to the management and use of water which ensures that the sustainability of the water environment in the district is not compromised.

1.1.3 Key Objectives:

- To review the NPPF and PPG and the associated policy documents referenced to ensure that the WCS review captures the required evidence to robustly support the Local Plan Review.
- To provide an update on the long term planning by both Severn Trent Water (STW) and Anglian Water (AW) for water resource provision within and adjoining the district, drawing upon the work done by both companies from the Water Resource Management Process (WRMP) process and comparing this with the updated growth forecasts;
- Investigate the location of future sources compared with future demand, with a view to lessen the need in future to transfer significant quantities of water to the eastern part of the district;
- To investigate the capacities of existing Wastewater Treatment Works (WwTW) assets serving those settlements likely to receive significant growth allocations, in partnership with STW and the Environment Agency (EA), to establish the likely scope for accommodating such expansion and the scale of any upgrade in treatment provision for both quantity and quality of throughput in tandem with the condition and capacity of the receiving waters to accept such increases; and
- To review the main growth cluster development sites against the findings of the Strategic Flood Risk Assessment (SFRA)

1.1.1 **Study Governance**

1.1.1.1 This WCS update has been carried out with the guidance of the Steering Group and comprises the following organisations:

- Newark and Sherwood District Council;
- Nottinghamshire County Council;
- Environment Agency;

1.1.1.2 Severn Trent Water (STW) Ltd and Anglian Water (AW) have also been consulted on water and wastewater infrastructure falling within their respective areas of operation.

1.1.1.3 The steering Group met during the completion of the study to both guide and feedback on the assessments undertaken in support of the study.

1.1.2 **Report structure**

1.1.2.1 This report has been structured as follows:

- The current national planning policy as contained within the NPPF and PPG is reviewed in the remainder of Chapter 1 by way of introduction;
- Planned growth in relation to the water cycle assessment is covered in Chapter 2;
- The Water Framework Directive (WFD) and the associated River Basin Management Plans (RBMP) are briefly considered in Chapter 3;
- Water supply is considered in Chapter 4 commencing with the regulatory framework (Catchment Abstraction Management Strategy (CAMS)) which leads on to assessment of water utility water resource plans;
- Chapter 5 provides a summary of the current situation in respect of wastewater management and current future water utility planning; and
- Policy implications and other recommendations are provided in Chapter 6 with water utility RAG assessments provided as an Appendix.

1.2 **Changes to Planning Policy and Legislation**

1.2.1 **Changing planning legislation and policy**

1.2.1.1 Since the 2010 WCS was completed, there have been significant changes to the planning system. These have included:

- The abolition of regional planning and the revocation of regional plans;
- The replacement of all previous national planning guidance into a single National Planning Policy Framework (NPPF) with associated practice guidance (PPG); and
- The introduction, through the Localism Act, of a statutory duty to co-operate between local planning authorities and other bodies.

1.2.1.2 The National Planning Policy (NPPF) and Planning Practical Guidance (PPG)

The key sections of the NPPF are paragraphs 17 (Core Planning Principles), Section 10 (Meeting the challenge of climate change, flooding and coastal change) paragraph 94 and Section 11 (Conserving and enhancing the natural environment), in particular, paragraphs 109 and 120. Finally, paragraph 156, in the section dealing with 'Plan-Making' is of particular relevance as it requires the Local Planning Authority (LPA) to set out 'Strategic Priorities' for the area in the Local Plan to deliver 'the provision of infrastructure for transport, telecommunications, waste management, water supply, wastewater, flood risk and coastal change management and the provision of minerals and energy (including heat)'.

1.2.1.3 The relevant PPG is 'Water supply, wastewater and water quality' which is divided into 6 sections as follows:

- (i) Water, supply, wastewater and water quality- introduction.
- (ii) Water Quality.
- (iii) Water Supply, wastewater and water quality – considerations in plan making.
- (iv) Information about the water environment.
- (v) Water and neighbourhood planning.
- (vi) Water supply, wastewater and water quality- considerations for planning applications

1.2.1.4 Of the above, sections 1-4 are of particular relevance to the WCS review.

1.2.1.5 PPG Section 1

Section 1 makes it clear that the key legislative consideration is the EU Water Framework Directive (WFD) and therefore LPAs must have regard to the River Basin Management Plans (RBMP) that are used to implement the WFD. The N&SDC administrative area is largely in the area of the Humber River Basin Management Plan (RBMP) and straddles the 'Idle and Torne' and 'Lower Trent and Erewash' Humber RBMP sub catchments. However, a small part of the administrative area in the catchment of the River Witham to the south-east of Newark is in the Anglian RBMP. The RBMPs were updated in February 2016.

Reference is made to the 'National Policy Statement for Wastewater (NPS for WW)'. However, the NPS for WW only covers the construction of waste water treatment plants that are expected to have a capacity exceeding a population equivalent of 500,000 or alterations to

cater for a population of 500,000. As there are no plans for WwTW of this size within the N&SDC administrative area the NPS for WW is not considered to be a relevant consideration.

1.2.1.6 PPG Section 2

Section 2 (Water Quality) requires plan making to 'protect and enhance local surface water and groundwater' and to 'steer potentially polluting development away from the most sensitive areas'. In particular it is noted that in some locations 'types of sustainable drainage systems (SUDS) may not be practicable'. Information on SUDS is provided in the Strategic Flood Risk Assessment (SFRA) Review.

1.2.1.7 PPG Section 3

Section 3 identifies that the 'Local Plan will need to grapple with.... the contribution that can be made to a 'catchment-based approach' to water which will require district and county councils to work closely on any implications for new/amended 'waste-water treatment plants'.

1.2.1.8 The PPG identifies that 'Early discussions between LPAs and Water and Sewerage companies (Anglian and Severn Trent Water) are required 'so that proposed growth and environmental objectives are reflected in company business plans to ensure that the necessary infrastructure is funded through the water industry price review

1.2.2 Section 3 raises the matter of 'cross boundary concerns' noting that where such concerns are significant the affected authorities should co-operate. The catchments affected are the Idle and Torn (Humber RBMP), the Lower Trent and Erewash (Humber RBMP) and the River Witham (Anglian RBMP). In terms of cross boundary concerns with other LPAs this could potentially introduce interfaces with Mansfield District Council (upstream on the Idle and Torn), Bassetlaw District Council (downstream on the Idle and Torne and the Trent), Gedling Borough Council, Rushcliffe Borough Council and Melton District Council (upstream on the Trent), North Kesteven District Council and South Kesteven District Council (downstream and upstream respectively on the River Witham).

1.2.2.1 It is also stated that 'Plan making may need to consider' water and quality considerations in a strategic environment assessment and sustainability appraisal. 'Sustainability appraisal objectives could include preventing deterioration of current water body status, taking climate change into account and seeking opportunity to improve water bodies'.

1.2.2.2 PPG Section 4

Section 4 identifies that the RBMPs prepared by the EA as responsible authority under the WFD are the primary information source in relation to the water environment. However, other information sources include: water utility WRMPS, water and sewerage company business plans and Water Cycle Studies (WCS).

1.2.2.3 The PPG states that a WCS is a voluntary study that helps organisations work together to plan for sustainable growth. It uses water and planning evidence and the expertise of partners to understand environmental and infrastructure capacity. It can identify joined up and cost effective solutions that are resilient to climate change.

1.2.2.4 The study provides evidence for Local Plan and sustainability appraisals and is ideally done at an early stage of plan-making. Local authorities (or groups of local authorities) usually lead water cycle studies, where the chief aim is to provide evidence for sound Local Plans. Other partners often include the Environment Agency and water companies.

1.2.2.5 The NPPF requires that all new local plans are 'deliverable' and have considered the likely infrastructure requirements that arise from the proposals. The new local plan will be supported by an evidence based Infrastructure Delivery Plan (IDP) that has been prepared concurrently with the SFRA Review and this WCS Review. The IDP identifies the key projects and interventions that will be required to support the proposed Local Plan development scenario

1.2.2.6 Taking these factors into account, this review tests the implications on the water environment of a 'preferred development scenario' for the district. It is important to be clear that this provides an estimate only of the quantum and locations of future development that may take place in order to meet development targets.

1.2.2.7 Building Regulations

The government updated part G of the Building Regulations in April 2010. In terms of water consumption for new development this set a whole building standard of 125 litres per person per day (l/p/d) for domestic buildings. This comprised of 120 l/p/d (in line with the Code for Sustainable Homes (CSH) Levels 1 and 2) plus an allowance of 5 l/p/d for outdoor water use.

1.2.2.8 Following the Housing Standards Review, the government have introduced a new, tighter level of water efficiency into the Building Regulations, at 110 l/p/d. This has been achieved through an amendment to Part G of the Building Regulations and applied since October 2015. The optional higher level can only be applied in areas of water stress. An outcome of this WCS Review will be to establish whether or not the N&SDC area should be considered as an area of water stress.

1.3 Summary

1.3.1 Summary Statement

The WCS Review is required to provide an evidence base which demonstrates that the impact of implementation of the revised Local Plan on the water environment will be acceptable when considered in relation to the requirements of the NPPF and PPG.

The preliminary review of the changes in planning legislation since production of the 2010 WCS has identified the following key issues which require consideration:

- (i) Strategic concerns in relation to the water environment that are identified as arising from the Local Plan Review that could impact on delivery of WFD objectives in the N&SDC administrative area and within neighbouring authorities;
- (ii) Whether or not the issues arising from (i) above are of sufficient magnitude to warrant a further WCS review that incorporates a more extensive consideration of cross boundary issues;
- (iii) In addressing the above, it is necessary to consider the water utility plans (ST and AW) and where these constrain the implementation of the revised Local Plan proposals pending the completion of improvements to existing water infrastructure. Where infrastructure improvements are identified as constraining development this will almost certainly be on account of potential threats to the delivery of WFD objectives.

Given the above inter-relationships it is proposed to firstly set out the Proposed Growth scenario and then identify the headline issues from the RBMPs before moving to consider the water infrastructure planning of STW and AW. STW and AW have provided 'RAG' assessments for each of the potential allocations which are provided as an Appendix to this WCS Review. The review then summarises the findings in the conclusions and recommendations section.

2.0 Proposed Growth

2.1 Preferred Growth Strategy

2.1.1 Introduction

2.1.1.1 Newark & Sherwood has a fully adopted Development Plan formed by the Core Strategy and Allocation & Development Management Development Plan Documents (DPDs) which were adopted in March 2011 and July 2013 respectively. The Inspector who examined the Allocations & Development Management DPD concluded that because the plan had been prepared during the recession an early review should be conducted to test if the market had recovered enough to continue to deliver the various elements of the plan. The Council is therefore reviewing the adopted Plan with the aim of ensuring that the allocations and policies contained within the two DPDs continue to be appropriate, up-to-date and effective.

2.1.1.2 The results of the Strategic Housing Market Assessment and the Employment Land Feasibility Study have identified housing and employment land figures for the District for the period 2013 to 2033 (the new Plan period). The objectively assessed housing need for the District is 9,080 dwellings over the plan period. In terms of employment 83 hectares of additional employment land is required.

2.1.2 Spatial Strategy

2.1.2.1 The current Spatial Strategy contained within the adopted Core Strategy sets out the following approach to growth:

- The focus for growth will be the larger settlements in the District: Sub-Regional Centre of Newark Urban Area, the Service Centres of Southwell, Ollerton & Boughton, Clipstone, Rainworth and the Principal Villages of Collingham, Sutton-on-Trent, Farnsfield, Lowdham, Bilsthorpe, Edwinstowe, Blidworth.
- The principals of distribution of growth are, Supporting the Sub-Regional Centre, Regeneration and Securing Sustainable Communities.
- The Council is required to plan for 14,162 dwellings and 97-106 hectares of new employment land.
- Housing development is split 70% in the Sub-Regional Centre, 20% in service centres and 10% in Principal Villages. Employment development is divided across the 5 plan areas and is roughly equivalent in percentage terms to the housing growth of the settlements within these areas.

2.1.3 **Review of Sites and Additional Sites**

2.1.3.1 The Council has reviewed the performance of plan allocations including an initial sense check of the continuing deliverability of the sites included within the adopted DPDs. The Council has concluded that the delivery of some sites is no longer certain enough for them to be included within a plan allocation and a number of these sites may therefore need to be de-allocated. Other sites where delivery is uncertain will not be relied upon as part of the plan but will still be taken into account in technical assessments.

2.1.3.2 A call for sites resulted in a small number of new sites coming forward, including Thoresby Colliery in Edwinstowe. For the purposes of the technical work the Council has termed former allocations which could come forward and new sites as 'Opportunity Areas'.

2.1.4 **The Development Scenario**

2.1.4.1 For the purposes of setting out a broad development scenario the following assumptions were applied by the Council:

- The Core Strategy housing and employment splits for development continue to apply
- Further development could occur on allocations and opportunity areas and this should be taken into account in the plan review
- Thoresby Colliery should be taken into account in the plan review

2.1.4.2 The development scenario therefore comprises three elements; the amount of deliverable development which has the benefit of planning permission, development on allocated sites and the potential for development in opportunity areas. It is acknowledged that if the Council were to seek to allocate Thoresby Colliery then that may well change the assumptions made. However, because the scenario takes into account Thoresby Colliery as an opportunity area its impacts are already under consideration as part of this work.

2.1.4.3 A summary of the residential and employment growth proposed in the development scenario is as follows.

Table 1 – Residential & Employment Growth

Settlement	Number of Dwellings	Employment Site Area (Ha)
Sub-Regional Centre		
Newark, Balderton & Fernwood	9,370	127.91
Service Centres		
Ollerton & Boughton	935	6.75
Clipstone	800	12.00
Rainworth	368	5.50
Southwell	339	5.29
Principal Villages		
Bilsthorpe	302	23.76
Blidworth	202	1.00
Collingham	189	0.75
Edwinstowe	740	11.00

Farnsfield	208	-
Lowdham	10	-
Sutton-on-Trent	57	-
Other – not in or around major settlements	-	0.97
Totals	13,520	194.93

2.1.4.4 No dwellings are proposed in other villages within the District and a comparison with the residential growth proposals assessed for the 2010 IDP shows that the overall level of residential growth across the District has reduced by 981 dwellings, with the biggest reduction (478 dwellings) being in Newark-on-Trent

2.1.4.5 A comparison with the employment growth proposals assessed for the 2010 IDP shows that the overall level of employment growth across the District has increased by 95 Ha (gross site area), with the largest increases being in Newark-on-Trent (+48 Ha), Bilsthorpe (+24 Ha) and Edwinstowe (+11 Ha).

3.0 Water Framework Directive

3.1.1 The European Water Framework Directive's (WFD) main objectives are to protect and enhance the water environment whilst ensuring the sustainable use of water resources for economic and social development. This requires the analysis of objectives for surface waters and groundwater in a combined approach for each river basin area. The River Basin Management Plan (RBMP) is a detailed account of how the objectives set for the river basin (ecological status, quantitative status, chemical status and protected area objectives) are to be reached within the timescale required. The plan will include all the results of the above analysis: the river basin's characteristics, a review of the impact of human activity on the status of waters in the basin, estimation of the effect of existing legislation and the remaining "gap" to meeting these objectives; and a set of measures designed to fill the gap. One additional component is that an economic analysis of water use within the river basin must be carried out.

As noted above the N&SDC administrative area is largely in the area of the Humber River Basin Management Plan (RBMP) and straddles the 'Idle and Torne' and 'Lower Trent and Erewash' sub catchments. However, a small part of the administrative area in the catchment of the River Witham to the south-east of Newark is in the Anglian RBMP.

The **Water Framework Directive** sets out clear deadlines for each of the requirements which add up to an ambitious overall timetable. The key milestones are listed below.

Year	Issue	Reference
2000	Directive entered into force	Art. 25
2003	Transposition in national legislation	Art. 23
	Identification of River Basin Districts and Authorities	Art. 3
2004	Characterisation of river basin: pressures, impacts and economic analysis	Art. 5
2006	Establishment of monitoring network	Art. 8
	Start public consultation (at the latest)	Art. 14
2008	Present draft river basin management plan	Art. 13
2009	Finalise river basin management plan including programme of measures	Art. 13 & 11
2010	Introduce pricing policies	Art. 9
2012	Make operational programmes of measures	Art. 11
2015	Meet environmental objectives First management cycle ends	Art. 4

	Second river basin management plan & first flood risk management plan.	
2021	Second management cycle ends	Art. 4 & 13
2027	Third management cycle ends, final deadline for meeting objectives	Art. 4 & 13

It can be noted from the above that the 'second RBMPs' were published in February 2016 and form the evidence base for this WCS Review.

The RBMPs can be found in full on the government website. RBMPs are high level documents that provide detailed statistics in relation to the current status of the water bodies within the RBMP area together with identified measures to achieve the WFD objectives for the RBMP area. In England the original RBMPs were completed in 2009 in line with the WFD timetable and have recently been updated.

3.2 The Humber River Basin Management Plan

3.2.1 The area of the Humber RBMP is shown below along with its sub-catchments.



Figure 1: The Humber RBMP and its Sub-Catchments

3.2.2 The Humber RBMP identifies local measures which have been suggested by catchment partnerships and reflect local priorities which can often be around achieving 'multiple benefits' for shared outcomes through collaborative working. Multiple benefits include improved water quality, habitat and biodiversity as well as contributing to some flood and climate resilience.

Catchment partnership local measures in the Idle and Torn catchment [See Humber RBMP page 74]

3.2.3 The Idle catchment is led by the Nottinghamshire Wildlife Trust and the Torn catchment partnership is led by the Yorkshire Wildlife Trust.

3.2.4 The priority river basin management issues to tackle in the catchment are:

- Rural diffuse pollution
- Urban point source and diffuse pollution
- Hydromorphological issues relating to land drainage

3.2.5 Contribution to environmental outcomes for 2021

- The Nottinghamshire Wildlife Trust will lead projects on Rainworth Water and Rivers Meden and Ryton to reduce phosphate and triclosan. It will also create Biodiversity Action Plan priority riparian habitats to improve ecological status.
- The Yorkshire Wildlife Trust will lead engagement, monitoring and Site of Special Scientific Interest (SSSI) re-wetting interventions on tenanted farms in Sandall Beat Park and the Sandbeck Estate. This will provide improvements in phosphate and ammonia, dissolved oxygen and invertebrate populations. Wetland and riparian habitat will also be created and restored through bank stabilisation.
- Additional projects led by Nottinghamshire Wildlife Trust include Clumber Lake scoping and a sit survey and modelling on the lower River Idle.

3.2.6 Future Aims

- Both partnerships have developed and agreed action plans, which include a list of potential future projects. These cover 5 areas: farming, nature, community, industrial and urban and water management.
- Projects likely to go ahead include production of an opportunity map for a softer approach to capital improvement works at Keadby Pumping station; riparian buffer strips for water quality and habitat improvements at Hatfield Chase ditches; in-channel habitat improvements and fish passage on weir at Mill Dam, Tickhill.

- Employ a full-time catchment officer to identify and implement projects, work with landowners and communities to prevent pollution reaching the river system.

3.2.7 Ideas for additional measures:

- Tackle large scale historical issues relating to heavy metal pollution, subsidence from mining and dredging of lakes
- Implement interventions at Keadby pumping station such as river restoration to improve habitat, river ecosystem function and flood resilience
- Undertake selective de-silting of the River Idle for ecological benefits and implement the Idle Washlands SSSI water level management plan

Catchment partnership local measures in the Lower Trent and Erewash catchment [See Humber RBMP page 76]

3.2.8 The Lower Trent and Erewash partnership is made up of Severn Trent Water, Trent Rivers Trust, Groundwork Greater Nottingham and the Environment Agency.

3.2.9 The priority river basin management issues to tackle in the catchment are:

- diffuse pollution from rural and urban areas
- fish passage
- channel modification

3.2.10 Contribution to environmental outcomes for 2021

- the partnership has developed an opportunity map, overlaying areas of maximum ecosystem service benefits with opportunities to meet catchment objectives. A number of projects as described below have emerged from the opportunity mapping.
- Two projects, one focusing on urban and one on rural diffuse pollution will result in improvements in the status of phosphate and invertebrates in the urban Ouse Dyke (Gedling) and measures to prevent deterioration in phosphate in the largely agricultural Dover Beck catchment (largely within the administrative area of N&SDC).
- Further projects include the Day Brook urban wetland creation (Nottingham City council) to mitigate flood risk, reduce phosphates and re-naturalising channels. In addition, Severn Trent Water are funding a 'Cash for Catchment' programme for local community groups to bid for grants matched by local businesses to deliver environmental projects.

3.2.11 Future Aims

- Woodborough Wetland; a bid to raise funds for a flagship farm wetland is in place to increase biodiversity, reduce siltation and provide flood resilience benefits to Woodborough
- Engage communities and businesses to take ownership of their local water environment and provide access to the water environment by supporting the development of Waterside care groups and local initiatives including Bottesford Beck Improvement Group
- Work with Coal Field Restoration Trust to identify and support work to restore and reduce impacts from historic pollution.
- Formalise and present the partnership opportunities map to engage the public and promote ideas to partners to ensure shared delivery of actions. Use the opportunity map to develop and support projects that tackle both rural and urban diffuse pollution

3.2.12 Ideas for Additional measures

- Work with developers, engineers and hydropower companies, particularly at Cromwell Weir, to help fund fish passage projects to resolve fish failures
- Work with the RSPB in the Lower Trent corridor to restore and reconnect old quarry workings. This will resolve failure in invertebrates and macrophytes; contribute to resolving phosphate failures; elevate flood alleviation capacity; increase recreational opportunities and contribution to Biodiversity 2020 targets.

3.3 The Anglian River Basin Management Plan

3.3.1 A small part of the N&SDC administrative area lies within the area of the Anglian RBMP and more specifically within the Witham sub-catchment. The area of the Anglian RBMP is shown below along with its sub-catchments.

3.3.2 The Witham catchment lies largely within the county of Lincolnshire. The Witham rises south of Grantham, passes through Lincoln and drains into the Wash at Boston. The catchment benefits from the Trent Witham Ancholme River Transfer Scheme which is a key infrastructure link for managing water resources, maintaining summer water levels and meeting agricultural, public water supply and industrial needs. Whilst four key issues for the catchment are identified, none of these are of particular relevance to this WCS review.

Figure 2: Management catchments within the Anglian river basin district



Anglian river basin management plan. Part 1

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Figure 2 Anglian RBMP and its Sub-Catchments

3.4 Summary

- 3.4.1 It can be seen that the RBMPs and the specific objectives of these for the relevant sub catchments within the N&SDC administrative area identify a number of priority issues which warrant further consideration in this WCS review.
- 3.4.2 Tackling 'urban point source and diffuse pollution' is of particular relevance to this WCS review as a contribution to this objective could be secured by Local Plan Policies that encourage or stipulate the use of sustainable urban drainage systems (SUDS) including those SUDS which include water quality measures.
- 3.4.3 In considering the key RBMP priorities, cross boundary issues do not emerge as a major issue that would justify specific consideration in this WCS review.
- 3.4.4 Finally, it should be noted that water utility planning is undertaken within a regulatory framework that necessarily includes consideration of the RBMPs and the identified measures necessary to achieve the WFD objectives.

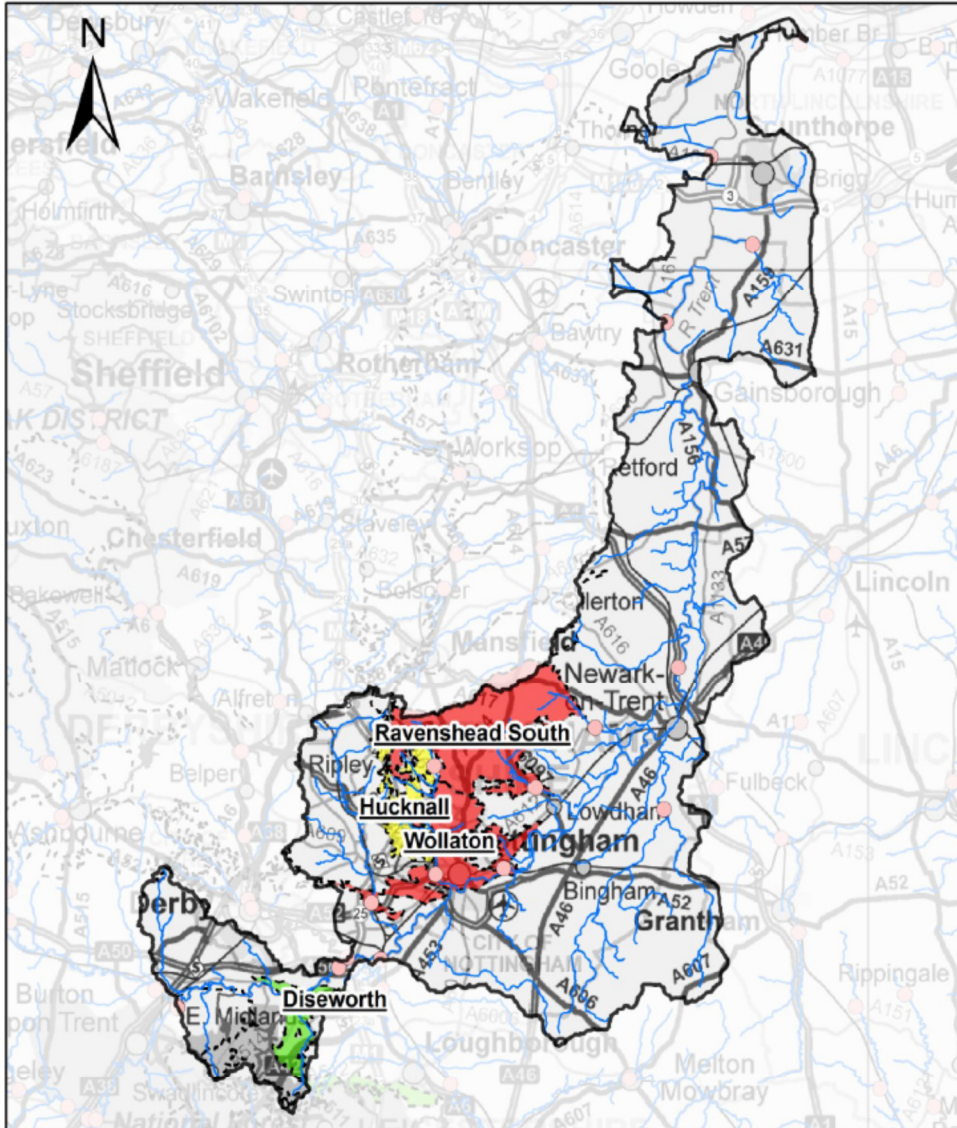
4.0 Water Supply Strategy Update

4.1 Introduction

- 4.1.1 Water supply in the majority of the Newark and Sherwood District Council area is provided by STW, with a small area to the north east being provided by Anglian Water. Given that Anglian Water (AW) supply only a small proportion of the area, the water supply assessment is largely based on the STW supply situation; however, data provided by AW is considered in section 4.3 below that covers the Catchment Abstraction Management Strategy (CAMS) for the Witham.
- 4.1.2 This WCS has used the final version of the STW's Water Resource Management Plan (WRMP) 2014 to determine available water supply against predicted demand and has considered how water efficiency can be further promoted and delivered for new homes beyond that which is planned for delivery in STWs WRMP.
- 4.1.3 However, before going on to consider the STW WRMP it is first necessary to consider the regulatory framework that controls the abstraction of water from the natural environment. The key documents in this respect are the Catchment Abstraction Management Strategies (CAMS) that are published by the EA in 2013. The CAMS identify the available water for abstraction from surface waters (i.e. rivers and watercourses) and groundwater. As CAMS are part of the overall approach to achieving the WFD objectives, the associated catchments generally reflect or combine the RBMP sub-catchments.
- 4.1.4 There are three CAMS relevant to this WCS review: (i) The Lower Trent and Erewash CAMS area which largely reflects the local catchment of the River Trent within the N&SDC administrative area; (ii) The Idle and Torn CAMS which matches the Idle and Torn RBMP sub catchment within the N&SDC administrative area; and (iii) The Witham CAMS. The Lower Trent and Erewash CAMS and the Idle and Torn CAMS primarily impact on STW supplies whereas the Witham CAMS is largely relevant in respect of AW supplies.
- 4.1.5 Catchment Abstraction Management Strategies (CAMS) set out how the EA manage the water resources of a catchment and contribute to implementing the WFD. As responsible body for securing the WFD objectives by means of the RBMPs the EA will not promote a CAMS that is contrary to any RBMPs that may be impacted by abstraction.
- 4.1.6 CAMs provide a water resource assessment of rivers, lakes, reservoirs, estuaries and groundwater referred to as water bodies under the WFD; identify water bodies that fail to flow conditions expected to support good ecological status; prevent deterioration of water body status due to new abstractions and provide results which inform River Basin Management Plans.

4.2 Lower Trent & Erewash CAMS Area


- 4.2.1 As noted above the Lower Trent & Erewash (LT&E) CAMS area is dominated by the River Trent. The Trent enters the LT&E CAMS area immediately downstream of its confluence with the River Dove and flows steadily north eastwards until it reaches Newark where it turns northwards and continues until it flows into the River Humber. A plan of the LT&E CAMS is provided below.



Legend

GW Resource Assessment

- Water Available for Licensing
- Restricted Water Available for Licensing
- Water Not Available for Licensing
- Lower Trent & Erewash CAMS APs
- Lower Trent & Erewash Rivers
- Groundwater Management Units

 Kilometres
0 2.5 5 10 15 20 25

Creation date 4th February 2013

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Environment Agency 100026380. 2012.

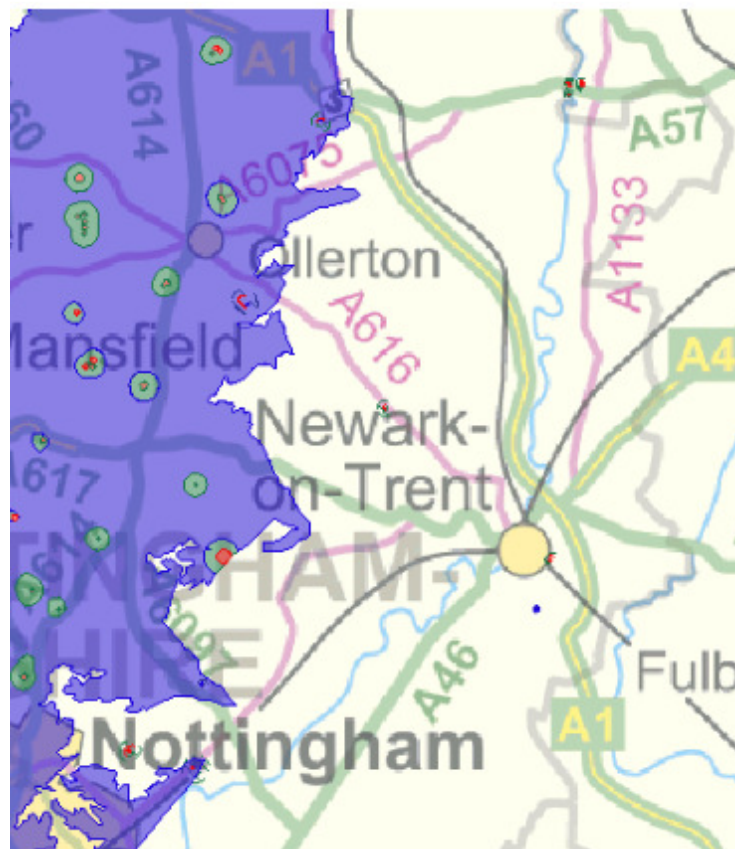
Some features of this map are based
on digital spatial data licensed from the
Centre for Ecology and Hydrology, © CEH.

Map 2: Groundwater resource availability for the Lower Trent & Erewash CAMS ([back](#))

Figure 3 Groundwater resource availability for the Lower Trent & Erewash CAMS. Sourced from the Environment Agency

4.2.1.1 Public water supply abstracts water from both the groundwater (Sherwood sandstone) and from surface waters, although surface water abstraction is limited to the River Trent. The catchment also receives imported water from Derbyshire. The main basis of the district's water supply is a series of aquifer abstractions in a corridor extending northwards from Nottingham through Mansfield and towards Worksop.

The abstraction points are identified as EA source protection zones on the plan below which covers both the Lower Trent and Erewash CAMS and the Idle and Torn CAMS inasmuch as these lie within the N&SDC administrative areas.



EA Source Protection Zones

4.2.2 **Surface Waters**

4.2.2.1 The EA assess surface water availability at specific 'Assessment Points' (AP) which are significant points on a river, often at the confluence of two major rivers or at a gauging station. Comments are provided below from the CAMS in relation to a number of key APs.

4.2.2.2 AP7, River Greet

For AP7 River Greet Catchment, water is not available for licensing.

The catchment is therefore closed to any further consumptive abstraction from both surface water and groundwater and new licenses are not available, there is a presumption that existing licences will be renewed.

4.2.2.3 AP8, River Devon

For AP8, River Devon catchment, the is water available for licensing subject to a 'Hands off flow', HOF, condition of 2,650Ml/d at North Muskham (River Trent). New abstraction licenses must be constrained and there is a time limit of 31st March 2027. There is a presumption that existing licences will be renewed.

4.2.2.4 AP9, River Trent (North Muskham)

For AP9, the River Trent from cowlick to North Muskham, there is water available for licensing subject to a 'Hands off Flow', HOF, condition of 2650Ml/d at north Muskham (River Trent). New abstraction licenses must be constrained and there is a time limit of 31st March 2027. Again, there is a presumption that existing licences will be renewed.

4.2.3 **Ground Water**

4.2.3.1 The Sherwood Sandstone is a principle aquifer of strategic importance. It provides a large area of Nottinghamshire and surrounding areas with a potable water supply and sustains industrial and many agricultural abstractions. It outcrops within the centre of the catchment north of the River Trent. There is also a small outcrop in the south west of the catchment. As it has a large outcrop area, the Sherwood Sandstone has been split into a number of different groundwater management units.

4.2.3.2 The Magnesium Limestone is an important principal aquifer – although not as strategically important as the Sherwood Sandstone, it provides many agricultural abstractions with a sustainable source of water. It is situated immediately to the west of the Sherwood sandstone.

4.2.3.3 Water supply schemes which make use of aquifer storage in conjunction with surface water are encouraged. The high storage capacity of the aquifers provides a means to restore sustainability.

Groundwater Body	Groundwater management unit	Water resource availability	Licence restriction
Lower Trent Erewash PT Sandstone Wollaton	Ravenshead South	Water Not available for licensing	Closed to protect baseflows. See table 7 for trading options
	Wollaton	Water Not available for licensing	Closed to protect baseflows. See table 7 for trading options
	Diseworth	Water available for licensing	A HOF of 2,650 MI/d will be applied to applications found to be in continuity with the river
Lower Trent Erewash Magnesian Limestone	Hucknall	Restricted water available for licensing	Closed to protect baseflows. See table 7 for trading options
Superficial Deposits		Water available for licensing	Further abstraction from these deposits is available in the catchments that have water available (AP1, 2, 5, 8-10). A HOF of 2,650 MI/d will be applied to applications found to be in continuity with the river

Table 2: Licence restrictions on groundwater abstractions in the lower Trent & Erewash CAMS area. Sourced from the Lower Trent and Erewash CAMS

4.2.4 Idle & Torne CAMS Area

- 4.2.4.1 The catchment of the Idle and Torne rivers covers an area approximately 1200km². Nottinghamshire and South Yorkshire are the principle counties.
- 4.2.4.2 The River Idle is a significant tributary of the River Trent. The rivers Maun, Meden and Poulter meet near Gamston, south of Retford to form the River Idle, joined downstream by the River Ryton. At Bawtry, north of Retford, the river Idle turns eastwards to its confluence with the River Trent at the village of West Stockwith, north of Gainsborough. The River Torne rises near Tickhill and flows north-eastward around the south east of Doncaster, through the heavily drained area of Isle of Axholme, to its confluence with the River Trent at Keadby.
- 4.2.4.3 The Chesterfield Canal enters the catchment to the west of Worksop and traverses towards and through Retford before continuing to and entering the River Trent at West Stockwith. The Stainforth and Keadby Canal traverses the catchment but has no hydrological interaction with the Idle and Torne catchment.
- 4.2.4.4 The Idle & Torne is a predominantly moderate to lowland catchment. Much of the northern half of the CAMS area is drained by pumps and high level carriers. Here the land is at or below sea level.

4.2.4.5 Public water supply in the catchment is primarily sourced from the principal aquifer of the Sherwood Sandstone with multiple borehole sites located throughout the catchment. However, the catchment also receives imported water for Derbyshire. Public water supply places the biggest pressure on groundwater levels as well as agriculture.

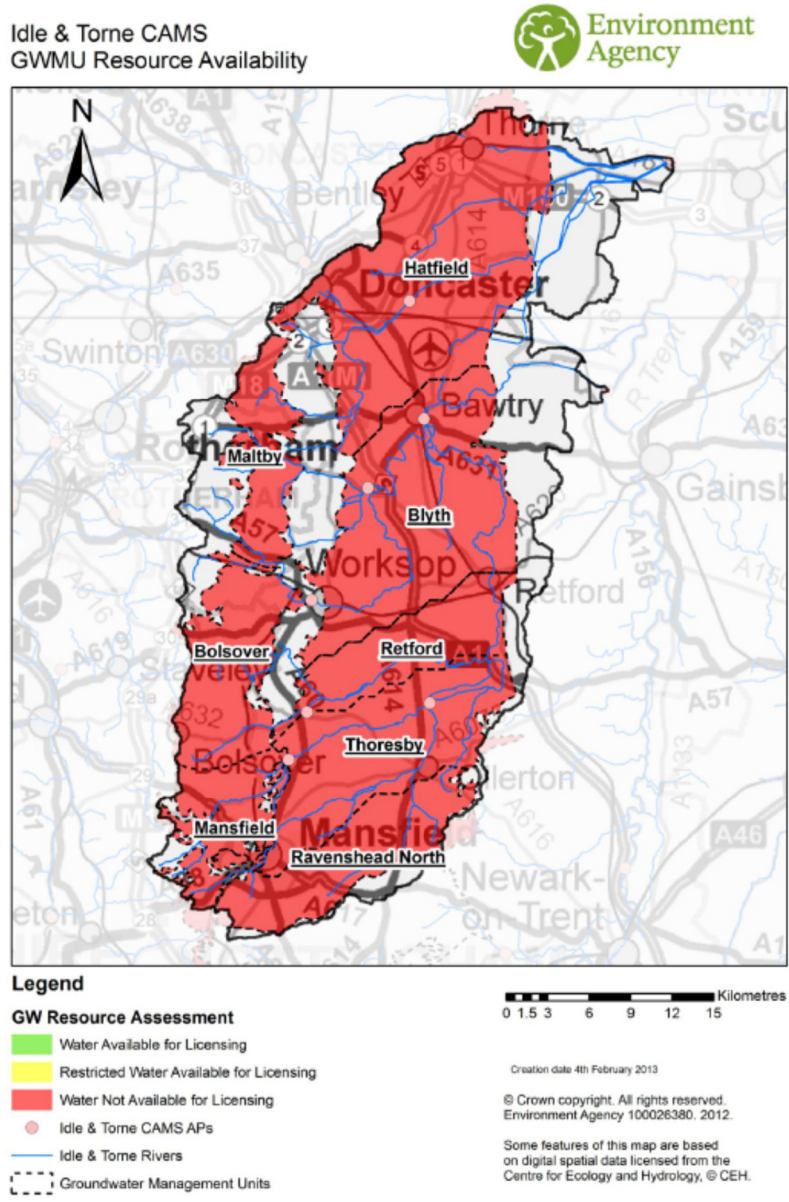


Figure 4 Water resource Groundwater availability for Idle & Torne CAMS. Sourced from The Environment Agency.

4.2.5 **Surface Waters**

4.2.5.1 On account of the need to avoid unacceptable pressures on the surface waters contained in the rivers (and lakes) of the CAMS during drought conditions, surface water is not available for licensing. The catchment is therefore closed to any further consumptive abstraction for both surface water and groundwater (see section 4.2.6 below). The implications of this situation are considered in section 4.4 which sets out how ST plan to ensure the future supply of water to both existing developments and planned development over the next 25 years.

4.2.6 Groundwater

Groundwater Body	Groundwater management unit	Water resource availability	Licence restriction
Idle Torme PT Sandstone Nottinghamshire & Doncaster	Ravenshead North	No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options
	Thoresby	No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options
	Retford	No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options
	Blyth	No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options
	Hatfield	No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options
Idle Torme Magnesian Limestone	Mansfield	No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options
	Bolsover	No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options
	Maltby	No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options
Superficial Deposits		No Water Available for licensing	Closed to protect baseflows. See table 7 for trading options

Table 3 – Licence restrictions on groundwater abstractions in the Idle & Torn CAMS area. Sourced from the Idle & Torn CAMS

4.3 Witham CAMS

4.3.1.1 The geology of the catchment is varied and has influenced the patterns of surface water drainage and the availability of groundwater. The main geological features are the Lincolnshire Limestone outcrop, the eastern and western clay vales, and the Spilsby Sandstone. The Lincolnshire Limestone is the major aquifer within the catchment. The low lying clay vales are drained by both rivers and an extensive network of artificial dykes and drains, creating the fens landscape. Anglian Water (AW) are the utility with responsibility for water supplies within the Witham CAMS.

- 4.3.1.2 The major river in the catchment is the River Witham which rises in the south of Grantham, passes through and discharges in to the Wash at Boston. The Witham becomes an embanked channel in its lower reaches where it crosses the fens. Levels in the embanked channel are maintained by a tidal sluice at Boston. Other significant rivers in the catchment include the Rivers Brant, Sleas and Barlings Eau.
- 4.3.1.3 The largest surface water abstraction in this CAMS area is part of the Trent Witham Ancholme Transfer Scheme, which enables the transfer of water into the neighbouring Ancholme catchment to meet demand for the public water supply.

4.4 Water Resource Planning

- 4.4.1 Water companies have historically undertaken medium to long term planning of water resources in order to demonstrate that there is a long term plan for delivering sustainable water supply within its operational area to meet existing and future demand.

- 4.4.2 As of 2007, it became a statutory requirement for water companies to prepare and maintain WRMPs which demonstrate how water companies are managing the balance between available supply and future demand over a 25 year plan. These plans are subject to consultation and approval by secretary of state every five years, but must be updated on a yearly basis.

WRMPs are a key document for a WCS as they can set out how demand for water from growth within a water company's supply area can be met, taking into account the need to for the environment to be protected. As part of the statutory approvals process, the plans must be approved by both the Environment Agency and Natural England (who take into account the WFD objectives and RBMPs) and hence the outcomes of the plans can be used directly to inform whether growth levels being assessed with the WCS can be supplied with a sustainable source of water supply.

- 4.4.3 Water companies manage available water resources within key zones, called Water Resource Zones (WRZ). These zones share the same raw resources for supply and are interconnected by supply pipes, treatment works and pumping stations. The zones share the same 'surplus of supply' of water when it is freely available, but also share the same risk of supply when water is not as freely available during dry periods. Severn Trent Water has 15 water resource zones of varying sizes. The strategic grid zone supplies most customers and smaller zones supply the smaller populated areas. Water companies undertake resource modelling to predict the likely surplus or deficit of available water in each WRZ over a 25 year period, once additional demand from growth and other factors such as climate change are taken into account.

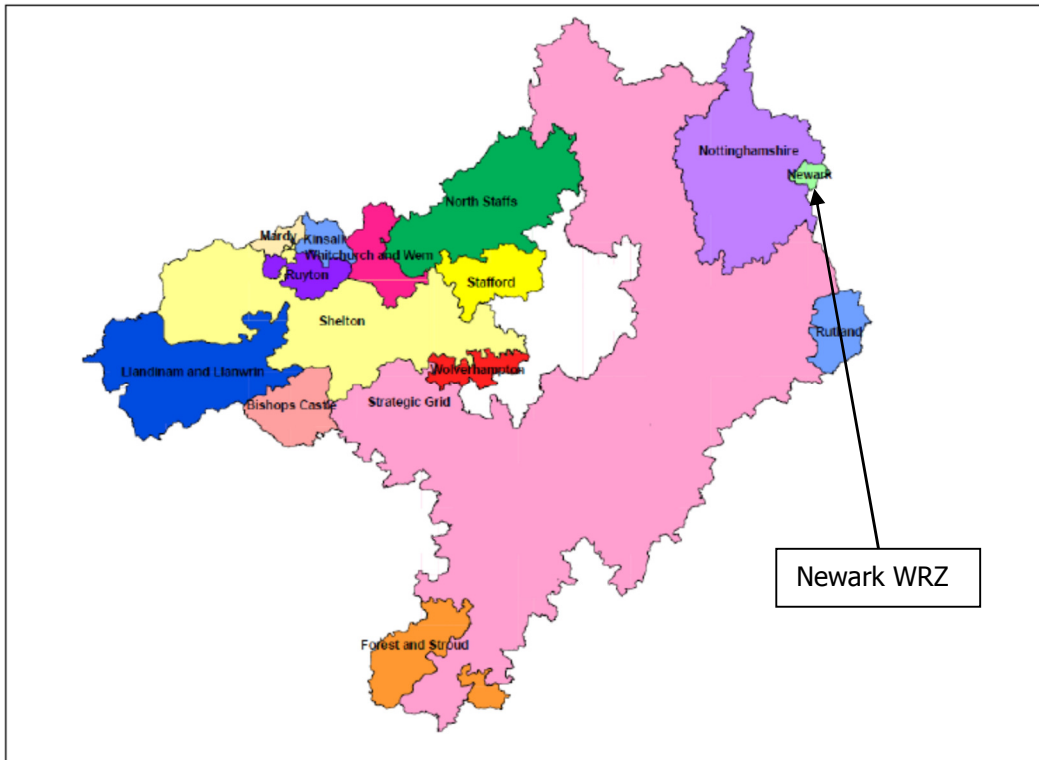


Figure 5 Severn Trent Water’s water resource zones. (Sourced from STW Final WRMP 2014 page 8)

- 4.4.4 It can be seen from Fig 5 above, that the Newark and Sherwood District Council (N&SDC) administrative area is covered by two Severn Trent (ST) Water Resource Zones (WRZs): the Newark WRZ (introduced and discussed above at 4.2.1.1) and the Nottinghamshire WRZ which extends beyond the boundaries of N&SDC. STW’s WRMP states that without investment, the Newark WRZ and the Nottinghamshire WRZ and the supporting strategic grid face some significant supply shortfalls in the long term as a result of the need to reduce abstraction from unsuitable sources (as identified in the discussion above in respect of the CAMS) and the potential impacts of climate change. These two zones will require the implementation of measures to increase the amount of water available to customers.
- 4.4.5 The other thirteen water resource zones are less impacted by the need to reduce unsustainable abstractions, and modelling shows they are more resilient to the impacts of future climate change risks. Long term plans for these zones are to optimise the operation of existing sources and manage demand through water efficiency and leakage control measures.
- 4.4.5.1 The Newark WRZ serves the majority of the population of Newark and Sherwood District Council. This WRZ is largely currently supplied by two abstraction catchments, the Lower Trent and Erewash Catchment Abstraction Management Strategies (CAMS) area and the Idle and Torn CAMS area.

4.4.6 The headline strategy, as set out in the ST WRMP (Dec 2014) to ensure that ST can meet the needs of its customers across the area it serves, including the N&SDC administrative area, is as follows:

- (i) A continuation of the existing leakage reduction strategy, reducing leakage by around 6% by 2020, which is more ambitious than the 3% target set by the government;
- (ii) Customer support to help reduce demand by promoting current water efficiency activities;
- (iii) Increasing customer awareness of the benefits of metering which has the consequence of reducing demand;
- (iv) Increasing the deployable output of the ST strategic grid by improving the flexible operation of the system by creating new strategic links and where CAMS allow, providing new sources of water supply; and
- (v) Make new strategic links to neighbouring water supply companies and beyond, thereby making better use of existing resources and improving supply resilience.

4.4.7 The diagrams below show how implementation of leakage control will allow future demand to be met across the Newark WRZ:

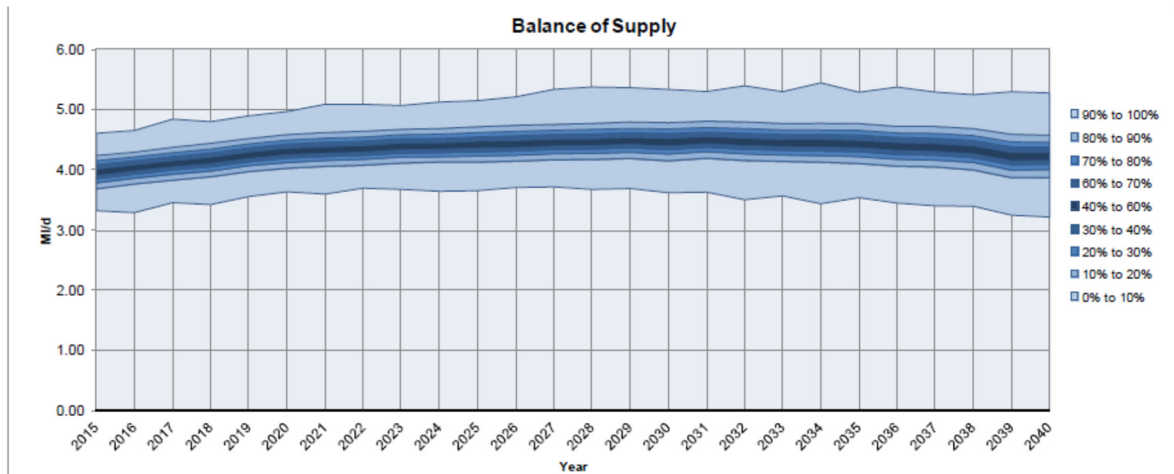


Figure 6 Newark zone supply/demand balance. (Sourced from STW Final WRMP 2014 page 42)

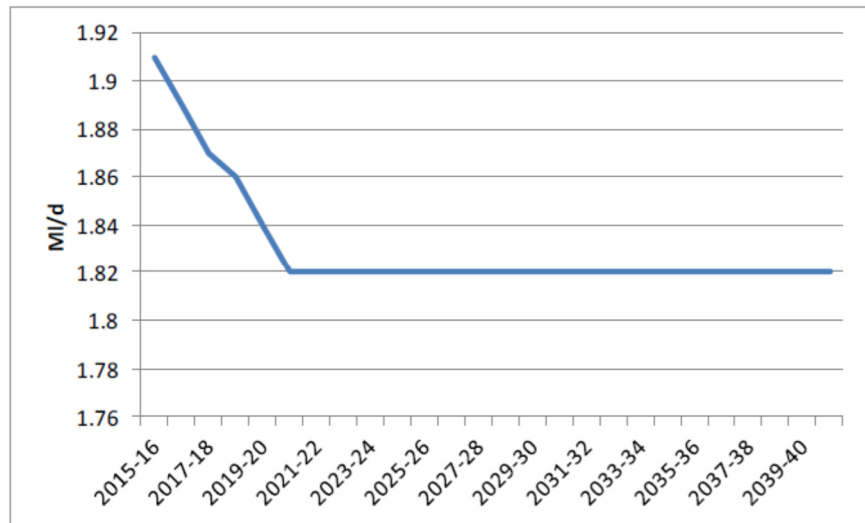


Figure 7 Newark WRZ future leakage profile. (Sourced from STW Final WRMP 2014 page 42)

- 4.4.8 According to the STW WRMP the Newark WRZ is forecast to have a deployable demand of 10.63MI against a deployable supply of 15.03MI.
- 4.4.9 Adopting the measures set out at 4.4.6 above will also allow supplies to be provided across the part of the N&SDC administrative area that lies within the Nottinghamshire WRZ.
- 4.4.10 Accordingly STW have confirmed that the proposed development within the district is not proposed to exceed that for which STW are planning, and as a result there is therefore no need to evaluate the impacts of water supply in the district independently of the Water Resource Management Plan and its assessment. In other words, by implementation by ST of the wider strategic measures outlined in section 4.4.6 above, water supplies for the proposed development can be accommodated whilst maintaining compliance with the CAMS established by the EA.
- 4.4.11 Only a small, part of the N&SDC administrative area, to the south east of Newark, is supplied by Anglian Water (AW). As noted above pressures on the Witham CAMS are not acute and AW have indicated that no problems are envisaged in providing water supplies to the proposed development.
- 4.4.12 Although the CAMS relevant to the N&SDC administrative area indicate that there are significant pressures on both groundwater resources and surface waters, the STW WRMP (which takes account of the CAMS and therefore the RBMP) demonstrates that water supply is not a constraint to the development proposed in the local plan review.

5.0 Water Treatment Assessment Update

- 5.1.1 Wastewater treatment in the district is provided via several WwTWs operated and maintained by STW. There are some cross-boundary routes into the AW network. Each of these WwTWs is fed by a network of wastewater pipes (the sewerage system) which drains wastewater generated by property to the treatment works. The network of pipes and conduits is defined as the WwTWs 'catchment'.
- 5.1.2 Due to the dispersed nature of development within the District (and the costs and energy required to pump wastewater over large distances), each settlement tends to have its own designated WwTW.
- 5.1.3 STW have WwTWs at the following locations within the district: Alverton, Amen Corner (Caunton), Balderton, Bilsthorpe, Boughton, Clifton, Collingham, Crankley (Newark), Cromwell, Eakring, Edwinstowe, Elston, Farndon, Farnsfield, Halam, Harby, Kirklington, Kneesall, Laxton, Perlethorpe, Rainworth, Staunton in the Vale, Southwell and Thorney. AW have a sewage treatment plant at Barnby in the Willows. Main WwTw are shown on the map included in Appendix A.
- 5.1.4 STW advise that the present sewerage and treatment facilities are generally operating within their design limits. The previous WCS noted problems in Newark where parts of the sewer network are overloaded during storm conditions.
- 5.1.5 Severn Trent Water are currently developing plans for a wastewater network improvement scheme in Newark, which will provide flooding storage capacity during severe rainfall and increase the capacity of the towns sewers to accommodate a predicted 45% increase in population over 25 years. This scheme is expected to be completed in 2019.
- 5.1.6 Severn Trent Water have planned upgrade works to three sewerage treatment works in the current planning period (2015-2020), these are:
- Boughton – these are WFD related improvements to reduce phosphorus and ammonia discharges as well as treat the loads from future growth in the catchment. The plan is to install tertiary polishing technologies to remove ammonia and phosphorus and refurbish the current works.
- Balderton – this scheme is less progressed and has been complicated by the significant growth in the catchment. There are also WFD drivers here as well as an Urban Wastewater Treatment Directive (UWWTD) driver for phosphorus removal. A number of options are

currently being examined some of which are dependent on the timing of growth in the catchment.

- 5.1.6.1 Southwell – This scheme is still at the optioneering phase and only has an UWWTD driver. The main options are to remove phosphorus with chemical dosing or pump part of the catchment into the Stoke Bardolph catchment thereby reducing loading on the WwTW.
- 5.1.6.2 Severn Trent have not identified any further works necessary to WwTW to accommodate the predicted growth in the region.

6.0 Preferred Growth Strategy Assessment

6.1 Introduction

- 6.1.1 Earlier sections of this report have considered the revised policies of the Humber and Anglian River Basin Management Plans in relation to specific sub catchments within the N&S DC administrative area. It has been explained that the RBMPs are the primary vehicle by which the Water Framework Directive objectives of the water bodies in this locality will be achieved. The CAMS set out a regulatory water abstraction framework which is consistent with the RBMPs and seeks to ensure all future abstractions are sustainable. The Severn Trent WRMP is prepared on the basis of compliance with the CAMS and demonstrates that water supply to support the Local Plan Review growth proposals is available and is neither a constraint nor a matter that requires more detailed cross boundary consideration.
- 6.1.2 However, wastewater treatment issues (which in some cases require investment on account of RBMP and WFD 'drivers') do present an immediate, but not long term constraints, on development within the catchments of Boughton, Balderton and Southwell Wastewater Treatment Works.
- 6.1.3 In addition, Severn Trent and Anglian Water have each undertaken a 'Red/Amber/Green' ('RAG') assessment for each of the sites to be considered in the proposed local plan growth scenario. In this assessment, which is provided as Appendix B to this report, GREEN indicates 'development is likely to be possible without upgrades'; AMBER indicates 'Pumping stations or pipe size may restrict growth, a pre-development inquiry is recommended before planning permission is granted'; and RED Indicates 'There is limited capacity in the network, hence solution required to prevent further CSO discharges or sewer flooding'. The specific issues in connection with wastewater treatment and conveyance are considered in more detail below.
- 6.1.4 In addition the RBMPs identify that point source and diffuse pollution is an issue across the N&SDC administrative area. Whilst such point source pollution may have a wide variety of sources, a specific source which could be addressed in this Local Plan Review is in relation to surface water discharges where water quality could be economically improved by the incorporation of water quality elements of SUDS in new development proposals.

6.2 Wastewater Network

- 6.2.1 The wastewater strategy to cater for growth requires an assessment of the capacity of **the** wastewater network (sewer system) to accept and transmit wastewater flows from the new development to the WwTw for treatment. It is assumed that capacity within the existing sewer network will be used first prior to new sewers being commissioned.

- 6.2.2 The capacity of the existing sewer network is an important consideration for growth, as in some cases the existing system is already at, or over its design capacity. Further additions of wastewater from growth would result in sewer flooding in the system, affecting property or infrastructure, or the increase in the frequency with which overflows of dilute sewage from combined sewer overflows (CSOs) to river systems occur resulting in ecological impact and deterioration in water quality.

- 6.2.3 When proposing new development, developers consult with water utilities to enable points of connection to be identified where there is available capacity to permit the connection to be made. In the event that additional capacity is required to remove 'pinch points' or new pipelines are required across third party lands, S98 of the Water Industry Act (WIA) 1991 allows developers to 'requisition' crossings across third party lands or for additional capacity to be provided. S98 includes a mechanism which allows the increase in sewerage rates generated by the new development over its first 12 years to be discounted from the cost of providing the requisition.

6.3 Review of RAG assessments

- 6.3.1 The RAG assessments identify specific issues at a number of locations. Some of the 'RED' designations relate to concerns that surface water from certain developments might be connected into combined sewers which have insufficient capacity (Rainworth and Ollerton). However, this is a matter which can be controlled by appropriate planning condition and should not prevent allocation.
- 6.3.2 ED' issues are also identified for sites that are within the catchment of the Balderton WwTW. ST have confirmed that there are two distinct elements to the issues in the catchment: (i) issues at the WwTW itself and (ii) in respect to conveyance capacity at a number of small pumping stations adjacent to the A1.
- 6.3.3 ST have undertaken improvements at the treatment works as part of the Asset Management Plan (AMP) 5 (2010-2015) and have an ongoing project in AMP 6 (2015-2020) to allow compliance with a tighter phosphorous consent that is required to achieve WFD objectives captured by the Humber RBMP and, in particular, in relation to Middle Beck which is a small tributary of the River Devon. Occupancy rates of consented new development indicate that the available headroom will not constrain new development in the period prior to completion of the AMP 6 project and on completion of the AMP 6 project headroom will no longer be an issue for the proposed allocations.
- 6.3.4 Issues of conveyance capacity are normally resolved by developers requisitioning new capacity using S98 of the Water Industry Act. As such, insufficient conveyance capacity of itself, does not render allocation of new development within the Balderton WwTW catchment inappropriate, although any costs associated with requisitioning capacity will need to be taken into account by developers.
- 6.3.5 Finally, on account of the number of properties proposed within allocation reference 'NAP 2B' a red designation is given due to current concerns about conveyance capacity in Newark upstream of the Crankley Point WwTW that should be resolved by 2019. This also issue results in an AMBER designation for many of the sites within Newark that drain to Crankley Point. However, as noted above improvement works are ongoing which are planned to be complete by 2019.

7.0 Surface Water Management

- 7.1.1 Surface water drainage methods that take account of run-off rates, water quality, pollution control, biodiversity and amenity issues are collectively referred to as Sustainable Drainage Systems (SuDS). Sustainable surface water management takes account of long term environmental and social factors in designing a surface water drainage system that avoids the problems of flooding, pollution or damage to the environment that may occur with conventional surface water management systems. As noted above the implementation of SuDS in conjunction with new development has the potential to contribute to the reduction in diffuse pollution from point sources as required by the RBMP.
- 7.1.2 The National Planning Policy Framework requires that major proposed development should not increase flood risk elsewhere. This requires that run-off rates from the development are no greater than pre-development rates.
- 7.1.3 In addition, the Southwell Neighbourhood Plan has specifically developed local policies including guidance on the run-off rates (See SFRA Review section 4.2).

7.2 Adoption and Maintenance of SuDS

- 7.2.1 Under schedule 3 of the Flood Water Management Act, Lead Local Flood Authorities (LLFAs) were to be required to establish SuDS Approved Bodies (SAB) which would have required them to approve and adopt SuDS for new developments. In December 2014, the Government announced that schedule 3 would not be enacted and SuDS would be dealt with by strengthening planning policy instead. This change, which took effect on April 6th 2015, requires local planning authorities to ensure that where practicable SuDS are included on new developments.

7.3 SuDS and Groundwater Protection

- 7.3.1 When considering SuDS, developers should consider the following with respect to protection of groundwater quality in the study area. The water environment is potentially vulnerable and there is an increased potential for pollution from inappropriately located and/or designed infiltration SuDS.
- 7.3.2 There are Environment Agency designated Source Protection Zones around Southwell and Farnsfield. These zones show the risk of contamination from any activity that might cause pollution in the area, the closer the activity, the greater the risk.
- 7.3.3 The inner zone is defined as the 50 day travel time from any point below the water table to the source.
- 7.3.4 The outer zone is defined as the 400 day travel time from a point below the water table.
- 7.3.5 Total catchment zone is defined as the area around a source which all groundwater discharge is presumed to be discharged at the source.

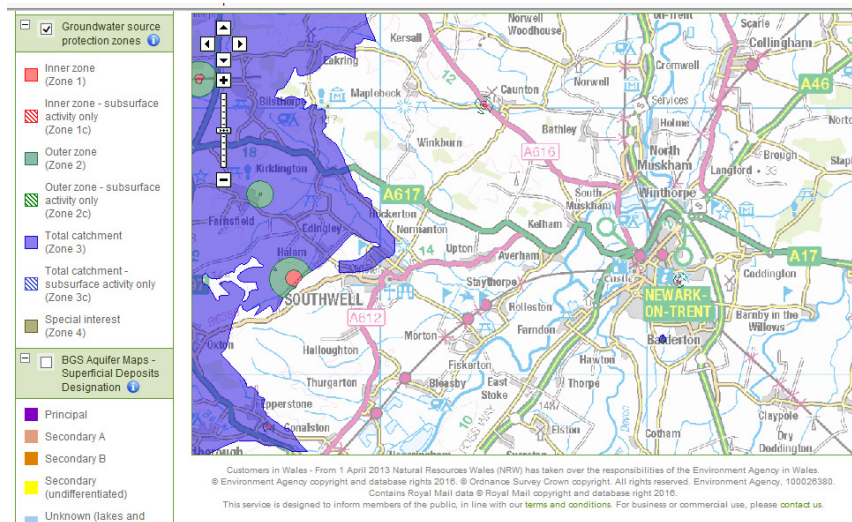


Figure 8 Groundwater source protection zones sourced from The Environment Agency

7.3.6 In general the following should be taken into account with respect to infiltration SuDS:

- Soakaways and other infiltration SuDS must not be constructed in contaminated ground. The use of infiltration drainage would only be acceptable if a phased site investigation showed the presence of no significant contamination. The use of non infiltration SuDS may be acceptable subject to agreement with the environment Agency.
- The Environment Agency considers that deep boreholes and other deep soakaway systems are not appropriate in areas where groundwater constitutes a significant resource. Deep soakaways increase the risk of groundwater pollution.

7.3.7 Further information on the geology and hydrogeology of the N&SDC administrative area can be found in the Level 1 SFRA (July 2009) at paragraphs 4.10.1 – 4.10.7 and the detailed WCS (September 2009) at paragraphs 5.32 – 5.34.

7.4 Water Cycle Strategy Review Conclusions and Recommendations

- 7.4.1 The following conclusions have been reached in undertaking this WCS review. In addition, recommendations are made that take account of potential short term limitations in respect of water infrastructure and options to support the RBMP objectives.
- 7.4.2 Overall, the WCS review concludes that the local plan review development scenario will not adversely impact the water environment or be detrimental to the achievement of WFD objectives as set out in the RBMPs. However, restriction on the rate of occupation of new development will be required until the planned upgrade of wastewater assets are completed as set out below.
- 7.4.3 Concerns in respect of Water supply resources do not impact on the proposed growth associated with the Local Plan review. However, improving water efficiency is clearly beneficial where this can be reasonably achieved.
- 7.4.4 The use of SUDS in conjunction with new development, in particular those SUDS which improve water quality, will contribute to the key RBMP issue of 'reducing diffuse pollution'.
- 7.4.5 The nature of the specific WCS issues in the N&SDC administrative area does not justify wider cross boundary consideration in order to support the Local Plan Review.

7.5 Wastewater

- 7.5.1 In the following areas it is known that there are issues in respect of treatment capacity, and in some instances, network conveyance capacity:

Boughton WwTw: Walesby, Ollerton and Boughton
Balderton WwTw: Newark, Fernwood and Balderton
Southwell WwTw: Southwell, Thurgarton and Hockerton

However, in all of the above locations, ST are either undertaking WwTW upgrade works or such works are planned in AMP 6. Where the problems are on account of conveyance capacity, this matter can be resolved by developers requisitioning the required capacity using the mechanism provided by S98 of the Water Industry Act 1991.

Therefore, any planning consents in these locations should include a pre commencement condition requiring the submission of an acceptable strategy for foul and surface water drainage which has been developed in discussion with ST, and, where appropriate, the EA.

7.5.2 Development at sites indicated in the WCS (Amber) to have potentially limited sewer network capacity should be subject to a pre-development enquiry with STW (or AW where necessary) to determine upgrades needed prior to planning permission being granted.

7.6 Water Supply

6.2.1 In order to move towards a more 'water neutral position' and to enhance sustainability of development coming forward, a policy should be developed that ensures all housing is as water efficient as possible, and that new housing development should go beyond Building Regulations, equivalent to reaching the old Code for Sustainable Homes level 3/4. Non-domestic building should as a minimum reach 'Good' BREEAM status.

8.0 Surface Water Management and Flood Risk

8.1.1 Developers should ensure foul and surface water from new development and redevelopment are kept separate where possible. Surface water should be discharged as high up the following hierarchy of drainage options as reasonably practicable, before a connection to the foul network is considered.

- Into the ground (infiltration)
- To a surface waterbody
- To a surface water sewer, highway drain or another drainage system
- To a combined sewer

- 8.1.2 Where sites which are currently connected to combined sewers are redeveloped, the opportunity to disconnect surface water and highway drainage from combined sewers must be taken.

8.2 SuDS and Green Infrastructure

- 8.2.1 Developers should ensure linkage of SuDS to green infrastructure to provide environment enhancement and amenity, social and recreational value. SuDS design should maximise opportunities to create amenity, enhance biodiversity and contribute to network of open space.

8.3 SuDS and Water Efficiency

- 8.3.1 Developers should ensure linkage of SuDS to water efficiency measures where possible, including rainwater harvesting.

8.4 Linkages to SWMP and SFRA

- 8.4.1 Developers should ensure SuDS design supports the findings of the Nottinghamshire Council Council flood Risk Management Strategy and the Newark and Sherwood District SFRA.

8.5 Water Quality Improvements

- 8.5.1 Developers should ensure, where possible, that discharges of surface water are designed to deliver water quality improvements in the receiving watercourse or aquifer where possible to help meet the objectives of the Water Framework Directive.

9.0 Further Recommendations

9.1 Stakeholder Liaison

- 9.1.1 It is recommended that key partners in the WCS maintain regular consultation with each other as development proposals progress.

9.1.2 WCS Periodic Review

- 9.1.2.1 The WCS should remain a living document and [ideally] be reviewed on an annual basis as development progresses and changes are made to the various studies and plans that support it:

- Five year reviews of STW's WRMP (the next full review is due in 2019, although interim reviews are undertaken annually)
- RBMP updates
- Periodic review 2019 (PR19) (STW's business plan for AMP7 – 2020 – 2025)
- CAMS yearly updates provided, date of next full review unknown



Potential impact of proposed developments on sewerage infrastructure assets

Date: 27 June 2016

NOTE: The purpose of these desktop based assessments are to indicate where proposed development **MAY** have a detrimental impact on the performance of the existing public sewerage network taking into account the size of the development proposals.

For most new development provided the surface water is managed sustainably through use of a SuDS the additional foul only flows will have a negligible impact on existing sewer performance but where there are pre-existing capacity constraints additional capacity improvements may be required.

Where subsequent detailed modelling indicates capacity improvements are required such work will be phased to align with development occupancy with capacity improvement works will be funded by Severn Trent Water. However, whilst Severn Trent have a duty to provide additional capacity to accommodate planned development, we also have a requirement to manage our assets efficiently to minimise our customers' bills. Consequently to avoid potential inefficient investment we generally do not provide additional capacity until there is certainty that the development is due to commence. Where development proposals are likely to require additional capacity upgrades to accommodate new development flows it is highly recommended that potential developers contact Severn Trent as early as possible to confirm flow rates and intended connection points. This will ensure provision of additional capacity can be planned into our investment programme to ensure development is not delayed.

Note: These are desktop assessments using readily available information and have not been subjected to detailed hydraulic modelling

Site Ref	Settlement	Size	Units	Sewage Treatment Works	Sewerage Comment				Potential impact on sewerage infrastructure
					Known constraints	network	Assumed connectivity	Surface disposal	
Bilsthorpe									
Bi-003	Bilsthorpe	9.7	Hectare	BILSTHORPE	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Site likely to require a combination of gravity and pumped connection	to	Assume site to be drained by sustainable means. Connection combined sewer to be avoided	Low - No issues identified



Bi/E/1	Bilsth pe	2.7	Hectare	BILSTHORPE	Site likely to discharge to existing sewage pumping station off Brail Wood Road. Capacity issues are not envisaged but further assessments will be required once flow rates are confirmed.	Greenfield site. Assume connection to existing SPS asset north of the site on Brailwood Road	Assume site runoff to be managed by sustainable means with discharge to existing watercourse running through the site.	Low - Subject to SPS capacity assessments once flow rates are confirmed.
14/01782/FULM	Bilsth pe	14.0	Hectare	BILSTHORPE	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Brownfield site, no existing site drainage identified. Assume existing site drains to a septic tank	Assume site run off will be drained by sustainable means with discharge to existing water course running through the site	Low - No risks identified
Bi/MU/1	Bilsth pe	75	Dwellings	BILSTHORPE	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Site likely to require a combination of gravity and pumped connection	Assume site to be drained by sustainable means. Connection combined sewer to be avoided	Low - No issues identified
Bi/Ho/1	Bilsth pe	8	Dwellings	BILSTHORPE	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Site likely to require a combination of gravity and pumped connection	Assume site runoff will be managed by sustainable means discharging to existing watercourse within site. Connection to FW sewer to be avoided	Low - No issues identified
14/01855/FUL	Bilsth pe	5	Dwellings	BILSTHORPE	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Assume connection to existing combined sewer in Kirlington Road	Assume site runoff will be managed by sustainable means. Connection to combined sewer in Kirlington Road to be avoided	Low - No issues identified
Bi/Ho/2	Bilsth pe	100	Dwellings	BILSTHORPE	Existing sewer performance indicates the connection of additional flows from 100 dwellings may require some localised capacity upgrades.	Brownfield site. No sewer connection identified, assume unrecorded	Assume site runoff will be managed by sustainable means discharging to existing watercourse within site.	Medium - Localised capacity improvements may be required once flow rates and connection points are confirmed.



					Further modelling work will be required once flow rates and connection points are confirmed.	private drain connection into head of sewer in Kirlington Road	Connection to FW sewer to be avoided	
05/00775/FULM	Bilsthorpe	7	Dwellings	BILSTHORPE	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Brownfield site, assume connection via existing combined drain within site	Assume site runoff will be managed by sustainable means. Connection to combined sewer to be avoided	Low - No risks identified

Blidworth

Bl/E/1	Blidworth	0.8	Hectare	RAINWORTH	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, no sewer network identified, assume sewers uncharted, assume connection via existing FW sewers in Leach Way	No existing water course identified, no SWS identified, assume site runoff to be managed by sustainable means. Connection to FW sewer to be avoided	Low - No risks identified
10/00342/FUL	Blidworth	0.3	Hectare	RAINWORTH	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Brownfield site, assume connection via existing FW sewer in Belle Vue Lane	No existing water course identified, no SWS identified, assume site runoff to be managed by sustainable means. Connection to FW sewer to be avoided	Low - No risks identified
13/00989/FUL	Blidworth	5	Dwellings	RAINWORTH	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume connection to existing FW sewer in The Crescent	No SW sewer identified. Assume site runoff to be drained by sustainable means. Connection to FW sewer to be avoided.	Low - No risks identified

Bl/Ho/1	Blidworth	55	Dwellings	RAINWORTH	There are historic reports of external sewer flooding in the downstream sewerage system along Dale Lane. Whilst the additional foul only flows from this development will have negligible impact on this risk more detailed assessments will be required once flow rates and connection points are confirmed. To reduce future impact on this risk it is essential that surface water run-off is managed sustainably and is not connected to the foul/combined sewerage system.	Assume connection to existing combined sewer in Dale Lane	Greenfield site, no water course identified, assume site runoff to be managed by sustainable means. Connection to combined sewer to be avoided	High - Known capacity issues and flooding
Bl/Ho/3	Blidworth	100	Dwellings	RAINWORTH	Whilst there are no reports of sewer flooding in the vicinity of this development, modelled sewer performance data indicates potential capacity constraints in the downstream sewers. Whilst the additional foul only flows from a development of 100 dwellings are envisaged to have a negligible impact on capacity, it is recommended that further modelling work be undertaken once flow rates and connection points have been confirmed. As an existing 150mm dia sewer currently passes through the development, it may be appropriate to provide additional attenuation	Greenfield site, assume connection via existing combined sewer running through the site	No water courses identified, assume site runoff to be managed by sustainable means. Connection to combined sewer to be avoided	Medium - Predicted capacity issues downstream of this development which may require localised capacity improvements.



					storage as part of any diversion works.			
Bl/Ho/2	Blidworth	20	Dwellings	RAINWORTH	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, no sewer network identified, assume sewers uncharted, assume connection via existing FW sewers in Gilbert Way	No existing water course identified, no SWS identified, assume site runoff to be managed by sustainable means. Connection to FW sewer to be avoided	Low - No risks identified

Carlton-on-Trent

06/01847/FUL	Carlton-on-Trent	8	Dwellings	SUTTON ON TREN - CROMWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Brownfield site, assume connection via existing site drainage connecting into FW sewer in Old Bell Lane	Assume runoff managed by sustainable means. Connection to FW to be avoided, modelling may be required if sustainable discharge not possible	Low - No significant risks identified
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Clipstone

14/01242/FUL	Clipstone	8	Dwellings	EDWINSTOWE	Based on topography is envisaged that this development would drain south to the main trunk sewer using local drainage and avoid known capacity issues with the main sewer along Mansfield Road.	Assume connection via existing FW sewer serving properties to the south of the plot	No SWS identified, assume site runoff to be managed by sustainable means. Connection to FW sewer to be avoided	Low - Known capacity issues in Mansfield Road but assumed the site would drain by gravity to the main trunk sewer to the south via local drainage.
08/01905/OUTM	Clipstone	531	Dwellings	EDWINSTOWE	Under Construction	Under Construction	Under Construction	Under Construction



13/00458/OUTM	Clipstone	100	Dwellings	EDWINSTOWE	Additional flows from this development may require localised upsizing to Mansfield Road SPS. Further capacity assessments will be undertaken once flow rates and connection points are confirmed.	Assume connection to existing FW sewers in Portland Way and Waterfield Way	Greenfield site No SWS identified, assume site run off to be sustainably managed. Connection to FW sewer to be avoided.	Medium - Capacity improvements may be required at a downstream pumping station.
15/00035/FUL	Clipstone	6	Dwellings	EDWINSTOWE	Based on topography is it envisaged that this development would drain south to the main trunk sewer using local drainage and avoid known capacity issues with the main sewer along Mansfield Road.	Assume connection via existing FW sewer serving properties to the south of the plot	No SWS identified, assume site runoff to be managed by sustainable means. Connection to FW sewer to be avoided	Low - Known capacity issues in Mansfield Road but assumed the site would drain by gravity to the main trunk sewer to the south via local drainage.
CI/MU/1	Clipstone	120	Dwellings	EDWINSTOWE	This development will drain into the an existing 375mm diameter trunk sewer crossing through the southern edge of the site. Due to the proximity of a downstream sewer overflow additional capacity may be required to ensure the additional flows do not adversely affect performance. More detailed modelling will be required once flow rates and connection points are confirmed.	Assumed connection to existing combined valley sewer	Assume site runoff to be sustainably managed with discharge to Vicar Water.	Medium - Potential detriment to Baulker Lane sewer overflow performance. Hydraulic modelling assessment required
CI/MU/1	Clipstone	27.6	Hectare	EDWINSTOWE	This development will drain into the an existing 375mm diameter trunk sewer crossing through the southern edge of the site. Due to the proximity of a downstream sewer overflow additional capacity may be required to ensure the	Assumed connection to existing combined valley sewer	Assume site runoff to be sustainably managed with discharge to Vicar Water.	Medium - Potential detriment to Baulker Lane sewer overflow performance. Hydraulic modelling assessment required



					additional flows do not adversely affect performance. More detailed modelling will be required once flow rates and connection points are confirmed.			
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Collingham

Co/MU/1	Collingham	140	Dwellings	COLLINGHAM	Majority of site would drain to existing SPS asset COLLINGHAM - BREMER ROAD (SPS) - Proposed development would double the size of catchment draining to asset therefore asset reinforcement likely to be required	Assume new connection into BREMER ROAD (SPS)	Assume site runoff would be managed by sustainable means and discharge into existing watercourse running along the west boundary of the site	Medium - Bremer Road SPS likely to be under capacity to accommodate full development
Co/MU/1	Collingham	7.4	Hectare	COLLINGHAM	Majority of site would drain to existing SPS asset COLLINGHAM - BREMER ROAD (SPS) - Proposed development would double the size of catchment draining to asset therefore asset reinforcement likely to be required	Assume new connection into BREMER ROAD (SPS)	Assume site runoff would be managed by sustainable means and discharge into existing watercourse running along the west boundary of the site	Medium - Bremer Road SPS likely to be under capacity to accommodate full development
10/01158/FULM	Collingham	14	Dwellings	COLLINGHAM	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Assume connection via existing site drainage connecting into FW sewer in Low Street.	Assume runoff drained via existing SWS within site discharging to existing watercourse 'The Fleet'	Low - No significant risks identified

Eakring

11/00219/FUL	Eakring	8	Dwellings	EAKRING	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not	Assume connection into existing FW sewer in Kirklington Road	Assume site runoff to be managed by sustainable means. Discharge to existing FW sewer to be avoided	Low - No significant risks identified
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					expected to have any capacity constraints			
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Edwinstowe

Ed/Ho/2	Edwinstowe	50	Dwellings	EDWINSTOWE	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints	Assume gravity connection to existing FW sewer in Mansfield Road	No existing watercourse identified, assume site runoff to be sustainably managed and	Low - No significant risks identified
Site 1	Edwinstowe	600	Dwellings	EDWINSTOWE	This development is located opposite Edwinstowe sewage treatment works and so no sewerage capacity issues are envisaged.	Brownfield site, assumed private drainage. If no existing drainage connection then new outfall to treatment work will be required	Assume site runoff will be sustainably managed with discharge to existing on site ponds/water course	Low - No significant risks identified
Site 1	Edwinstowe	197.6	Hectare	EDWINSTOWE	This development is located opposite Edwinstowe sewage treatment works and so no sewerage capacity issues are envisaged.	Brownfield site, assumed private drainage. If no existing drainage connection then new outfall to treatment work will be required	Assume site runoff will be sustainably managed with discharge to existing on site ponds/water course	Low - No significant risks identified
Ed/Ho/1	Edwinstowe	72	Dwellings	EDWINSTOWE	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Assume gravity connection to existing FW sewer in Rufford Road	No existing watercourse identified, assume site runoff to be managed by sustainable means. Avoid connection to existing FW sewer.	Low - No risks identified

Epperstone



05/01839/FULM	Epperstone	6	Dwellings	STOKE BARDOLPH	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection via existing FW sewers in Main Street	Assume site run off to be managed by sustainable means, connection to existing SW sewers in Main St	Low - No risks identified
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Farnsfield

Fa/Ho/1	Farnsfield	60	Dwellings	FARNSFIELD	There is a known flooding problem in downstream catchment which may require localised capacity improvements to accommodate the additional foul only flows from this development. Further modelling work will be required once flow rates and connection points are confirmed but it is vital to ensure surface water run-off is not connected to the foul/combined sewers.	Greenfield site, assume connection to existing sewers in either Brickyard Lane or Mildale Road	Greenfield site, no watercourse identified, assume site run off to be managed by sustainable means. Connection to FW sewer to be avoided	Medium - Known flooding in downstream catchment
Fa/MU/1	Farnsfield	88	Dwellings	FARNSFIELD	Under Construction	Under Construction	Under Construction	Under Construction
13/00423/FUL	Farnsfield	1.0	Hectare	FARNSFIELD	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Brown field site, No existing site drainage, assume plot currently drains to septic tank	Assume site to be drained by sustainable means	Low - No risks identified

South Newark, Balderton & Fernwood



NUA/Ho/10	Newark	80	Dwellings	BALDERTON	This site is located immediately upstream of Balderton STW and so is expected to connect to the main inlet sewer just upstream of the inlet works.	Greenfield site neighbours existing FW and SW sewers within Mead Way	With no existing sewers within the green field site it is assumed that the site will be drain by sustainable means to the existing SWS in Mead Way.	Low - Sewerage capacity issues not envisaged due to proximity to Balderton STW.
14/00579/FUL	Balderton	9	Dwellings	BALDERTON	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Connectivity via existing sewer connection into Main Street sewer	Assume existing site runoff is drained into existing combined sewer. Assume sustainable drainage measures will be adopted to remove runoff to combined sewer system.	Low - Small development
14/01714/FUL	Balderton	9	Dwellings	BALDERTON	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Connectivity via existing sewer connection into Main Street sewer	Assume existing site runoff is drained into existing combined sewer. Assume sustainable drainage measures will be adopted to remove runoff to combined sewer system.	Low - Small development
12/00665/FUL	Balderton	8	Dwellings	BALDERTON	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Existing combined sewer crosses site.	Assume sustainable drainage measures will be taken to remove runoff to the combined sewer system	Low - Small development
07/01840/OUTM	Balderton	210	Dwellings	BALDERTON	Capacity for this development is being provided at Balderton STW and discussions are ongoing with the developer to integrate the developers on-site drainage proposals into the existing sewerage network. Sewer capacity	Existing combined sewer crosses site.	Assume sustainable drainage measures will be taken to remove runoff to the combined sewer system	Low - Brown field site, DWF likely to be less than existing use. SUDS opportunity to reduce surface runoff to sewers.

					assessments indicate the need for capacity upgrades in the existing sewerage system just upstream of Balderton STW but this is not expected to affect delivery of this development.			
3920421	Fernwood	0	Dwellings	BALDERTON	Existing drainage in this area to the east of the A1 consists of small pumping stations which pump flows to Balderton WWTW. Existing pumping capacity will not be sufficient to accommodate the significant levels of development proposed in this area. Discussions are already ongoing with the developers to ensure additional pumping capacity can be provided.	Site is partially developed and serviced with a sewer network which is pumped to Balderton STW.	Site is partially developed. Sewer records incomplete but indicates some SWS network.	High - Significant levels of development proposed in an area of the sewerage catchment with limited capacity.
06/01776/RMAM	Fernwood	3.8	Hectare	BALDERTON	Existing drainage in this area to the east of the A1 consists of small pumping stations which pump flows to Balderton WWTW. Existing pumping capacity will not be sufficient to accommodate the significant levels of development proposed in this area. Discussions are already ongoing with the developers to ensure additional pumping capacity can be provided.	Existing FWS serving the site discharging to TPS which connects direct to BALDERTON (STW)	Existing SWS serving the site with outfall to local water course	High - Significant levels of development proposed in an area of the sewerage catchment with limited capacity.
Ba-002	Newark	12.6	Hectare	BALDERTON	Existing drainage in this area to the east of the A1 consists of small pumping stations which pump flows to Balderton WWTW. Existing pumping capacity will not be	Existing FWS serving the site discharging to TPS which connects direct to	Existing SWS serving the site with outfall to local water course	High - Significant levels of development proposed in an area of the sewerage catchment with limited capacity.



					sufficient to accommodate the significant levels of development proposed in this area. Discussions are already ongoing with the developers to ensure additional pumping capacity can be provided.	BALDERTON (STW)		
NAP 2C (Residential)	Newark	2990	Dwellings	BALDERTON	Existing drainage in this area to the east of the A1 consists of small pumping stations which pump flows to Balderton WWTW. Existing pumping capacity will not be sufficient to accommodate the significant levels of development proposed in this area. Discussions are already ongoing with the developers to ensure additional pumping capacity can be provided.	This Greenfield site will need to be pumped in order to connect to the nearest sewerage system draining to Balderton sewage treatment works. It is assumed that this site would pump into neighbouring development sites REF 03920421, and NAP 2C (Employment site)	There are no existing surface water sewers in the existing site. Site likely to drain east to existing water course through sustainable means.	High - Significant levels of development proposed in an area of the sewerage catchment with limited capacity.
NAP 2C (Employment)	Newark	16.1	Hectare	BALDERTON	Existing drainage in this area to the east of the A1 consists of small pumping stations which pump flows to Balderton WWTW. Existing pumping capacity will not be sufficient to accommodate the significant levels of development proposed in this area. Discussions are already ongoing with the developers to ensure additional pumping capacity can be provided.	This Greenfield site will need to be pumped in order to connect to the nearest sewerage system draining to Balderton sewage treatment works. It is assumed that this site would pump into neighbouring development sites REF 03920421, and NAP 2C (Residential site)	There are no existing surface water sewers in the existing site. Site likely to drain east to existing water course through sustainable means.	High - Significant levels of development proposed in an area of the sewerage catchment with limited capacity.



10/01586/OUTM (Residential)	Newark	3150	Dwellings	523-009 BALDERTON	Capacity for this development is being provided at Balderton STW and discussions are ongoing with the developer to integrate the developers on-site drainage proposals into the existing sewerage network. Sewer capacity assessments indicate the need for capacity upgrades in the existing sewerage system just upstream of Balderton STW but this is not expected to affect delivery of this development.	Discussions ongoing with the developer to with regard to drainage to Balderton STW.	Greenfield site with no existing SWS sewer network. Assume site to be drained by sustainable means to existing watercourse crossing through the site.	Medium - capacity upgrades required
10/01586/OUTM (Employment)	Newark	278.1	Hectare	523-009 BALDERTON	Capacity for this development is being provided at Balderton STW and discussions are ongoing with the developer to integrate the developers on-site drainage proposals into the existing sewerage network. Sewer capacity assessments indicate the need for capacity upgrades in the existing sewerage system just upstream of Balderton STW but this is not expected to affect delivery of this development.	Discussions ongoing with the developer to with regard to drainage to Balderton STW.	Greenfield site with no existing SWS sewer network. Assume site to be drained by sustainable means to existing watercourse crossing through the site.	Medium - capacity upgrades required

Harby

05/02562/FUL	Harby	4	Dwellings	Not known - Site resides in Anglian Water catchment	Not known - Site resides in Anglian Water catchment	Not known - Site resides in Anglian Water catchment	Not known - Site resides in Anglian Water catchment	Not known - Site resides in Anglian Water catchment
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Hockerton



12/01608/FUL	Hockerton	7	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Not known. No existing sewer network identified, assume property is drained via private drainage to septic tank	Assume site run off to be managed by sustainable means.	Low - No risk identified
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Lowdham

Lo/Ho/2	Lowdham	4	Dwellings	STOKE BARDOLPH	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Brownfield site, assume connection via existing FW drain serving the site	Assume site run off to be managed by sustainable means. Connection to FW drain to be avoided.	Low - Whilst there is significant flood risk in the downstream catchment the additional flows from this small development will have negligible impact assuming surface water run-off is managed sustainably.
Lo/Ho/1	Lowdham	5	Dwellings	STOKE BARDOLPH	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Brownfield site, assume connection via existing FW drain serving the site	Assume site run off to be managed by sustainable means. Connection to FW drain to be avoided.	Low - Whilst there is significant flood risk in the downstream catchment the additional flows from this small development will have negligible impact assuming surface water run-off is managed sustainably.

Newark

NUA/Ho/2	Newark	0	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
13/01489/FUL	Newark	0.1	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to	Low - No issues identified



					expected to have any capacity constraints		confirm capacity, connection to combined sewer to be avoided.	
15/00068/FUL	Newark	0.2	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
11/01572/FULM	Newark	0.3	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
12/00928/FUL	Newark	0.5	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
14/01022/OUT	Newark	0.5	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified



07/01085/FULM	Newark	0.6	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
NUA/E/3	Newark	1.5	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
NUA/MU/2	Newark	4.7	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
14/00292/FUL	Newark	5	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
04/02239/FUL	Newark	5	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require	Low - No issues identified



					expected to have any capacity constraints		hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	
13/00918/FUL	Newark	6	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
04/01444/FULM	Newark	8.6	Hectare	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
11/00228/FUL	Newark	9	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
11/01046/FUL	Newark	9	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified



01/01496/FUL	Newark	10	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
12/00301/FULM	Newark	11	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
05/01789/FULM	Newark	11	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
08/02221/FULM	Newark	11	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
03/01386/OUTM	Newark	11	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require	Low - No issues identified



					expected to have any capacity constraints		hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	
NUA/E/2	Newark	12.2	Hectare	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned fro completion in 2019.
02/01094/FULM	Newark	14	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
Ne-006	Newark	15.6	Hectare	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned fro completion in 2019.
05/02257/FULM	Newark	16	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified



11/00697/FULM	Newark	18	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
NUA/MU/1	Newark	21.8	Hectare	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
NUA/Ho/3	Newark	24.0	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
12/00572/FULM	Newark	32	Dwellings	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
07/00954/OUTM	Newark	60	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.



					next few years to address these issues with final completion expected in 2019.		hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	
Site 2	Newark	65	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned fro completion in 2019.
NUA/Ho/8	Newark	66	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned fro completion in 2019.
04/03121/FULM	Newark	82	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned fro completion in 2019.
05/02004/OUTM	Newark	90	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned fro completion in 2019.



05/01984/FULM	Newark	99	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
NUA/MU/4	Newark	115	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
NUA/MU/3	Newark	150	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
NUA/Ho/9	Newark	150	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
10/01256/FULM	Newark	189	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.



					next few years to address these issues with final completion expected in 2019.		hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	
NUA/Ho/5	Newark	200	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
NUA/Ho/4	Newark	230	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
Site 1	Newark	600	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Medium - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019.
NAP 2B	Newark	1000	Dwellings	CRANKLEY POINT	There are known widespread capacity issues across the Newark sewerage network. Significant investment has been committed over the next few years to address these issues with final completion expected in 2019.	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	High - Known capacity issues across Newark are subject to significant strategic improvement scheme planned for completion in 2019. Specific capacity is being provided to accommodate this development.

North Muskham

04/02777/FUL	North Muskham	2	Dwellings	SUTTON TRENT CROMWELL ON -	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assumed connection via existing site drainage connecting into FW sewer in Main Street.	Assume runoff managed by sustainable means. Connection to FW to be avoided, modelling may be required if sustainable discharge not possible	Low - Net reduction in number of dwelling compared to existing plot
12/00402/FUL	North Muskham	0.9	Hectare	SUTTON TRENT CROMWELL ON -	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assumed connection via existing site drainage connecting into FW sewer Bathley Lane	Assume runoff managed by sustainable means. Connection to FW to be avoided, modelling may be required if sustainable discharge not possible	Low - No significant risks identified

Ollerton & Boughton

OB/MU/1	Ollerton & Boughton	225	Dwellings	BOUGHTON	This development is expected to drain to an existing pumping station off Maida Lane. Provided surface water on this development is not connected to the foul/combined sewerage system no capacity issues are envisaged subject to more detailed assessments once flow rates and connection points are confirmed.	Existing combined sewer running through site	Assume site to be sustainably drained with outfall to the River Maun.	Low - Subject to further modelling once connection points are confirmed.
01/00875/OUT	Ollerton & Boughton	28.4	Hectare	BOUGHTON	There are historic reports of sewer flooding affecting several properties along Newark Road. It is therefore vital that surface water on new development in managed sustainably and is	Brownfield site with existing connection to combined sewer in Newark Road	No SWS network identified, assume new site will drain by sustainable means. Avoid connection to FW or combined sewers.	High - Significant flooding in downstream catchment. Feasibility work currently ongoing to alleviate the flood risk.

					not connected to the foul/combined sewerage system. Feasibility work is ongoing to understand flood risk in this area to alleviate the flood risk and provide capacity for planned development. This also applies to sites 01/00875/OUT and 05/02273/FULM.			
14/01240/FUL	Ollerton & Boughton	0.3	Hectare	BOUGHTON	Whilst there is known flood risk in the downstream catchment the additional flows from this small development will have negligible impact assuming surface water run-off is managed sustainably.	Brownfield site with existing connection to combined sewer in Newark Road	No SWS network identified, assume new site will drain by sustainable means. Avoid connection to FW or combined sewers.	Low - Whilst there is known flood risk in the downstream catchment the additional flows from this small development will have negligible impact assuming surface water run-off is managed sustainably.
OB/MU/2	Ollerton & Boughton	120	Dwellings	BOUGHTON	Topography indicates that this development would drain north east to an existing small diameter sewerage system where modelled performance data indicates limited capacity. It is therefore envisaged that localised capacity improvements will be required and further modelling work will be required once flow rates and connection points are confirmed.	Existing FW sewer constructed through the development site	Assume site to be sustainably drained. May require hydraulic assessment of existing SWS capacity	Medium - known capacity issues downstream
06/00635/RMA	Ollerton & Boughton	5	Dwellings	BOUGHTON	The additional foul only flows from this development are expected to have negligible impact on the downstream sewerage network provided surface water is managed sustainably.	Brownfield site, assume connection via existing site connection	No SW sewers identified, assume site to be drained by sustainable means. Avoid connection to existing FW sewers	Low - No risks identified provided surface water is managed sustainably



05/02273/FULM	Ollerton & Boughton	169	Dwellings	BOUGHTON	There are historic reports of sewer flooding affecting several properties along Newark Road. It is therefore vital that surface water on new development in managed sustainably and is not connected to the foul/combined sewerage system. Feasibility work is ongoing to understand flood risk in this area to alleviate the flood risk and provide capacity for planned development. This also applies to sites 01/00875/OUT and 05/02273/FULM.	Brownfield site with existing connection to combined sewer in Newark Road	No SWS network identified, assume new site will drain by sustainable means. Avoid connection to FW or combined sewers.	High - Significant flooding in downstream catchment. Feasibility work currently ongoing to alleviate the flood risk.
OB/Ho/1	Ollerton & Boughton	147	Dwellings	BOUGHTON	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Current records show FW sewers have been constructed	Current records show FW sewers have been constructed	Low - No risks identified
OB/Ho/2	Ollerton & Boughton	25	Dwellings	BOUGHTON	Whilst there are no reports of flooding in the immediate vicinity of this development, sewer modelling indicates potential capacity issues in downstream network. Whilst the additional foul only flows from 15 dwellings will have negligible impact on sewer capacity it is vital that surface water from the development is managed sustainably.	Greenfield site, connection most likely to existing FW sewer in Newlands Avenue	No watercourse identified, assume site runoff to be managed sustainably, avoid connection to FW sewer	Low - No risks identified provided surface water is managed sustainably



OB/Ho/3	Ollerton & Boughton	88	Dwellings	BOUGHTON	Already under construction	Already under construction	Already under construction	Already under construction
OB/E/3	Ollerton & Boughton	3.9	Hectare	BOUGHTON	Whilst there are no reports of flooding in the immediate vicinity of this development, sewer modelling indicates potential capacity issues in downstream network. Whilst the additional foul only flows from 15 dwellings will have negligible impact on sewer capacity it is vital that surface water from the development is managed sustainably.	Assume pumped connection into Maun Way	Assume sustainable management of runoff with discharge to Boughton Dyke	Low - No risks identified provided surface water is managed sustainably
11/00704/OUT	Ollerton & Boughton	5	Dwellings	BOUGHTON	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Assume gravity connection to existing combined sewer in Wellow Road	No watercourse identified, assume site runoff to be sustainably managed. Avoid connection to combined sewer	Low - No risks identified
03/00588/OUTM	Ollerton & Boughton	63	Dwellings	BOUGHTON	There are historic reports of sewer flooding affecting several properties along Newark Road. It is therefore vital that surface water on new development in managed sustainably and is not connected to the foul/combined sewerage system. Feasibility work is ongoing to understand flood risk in this area to alleviate the flood risk and provide capacity for planned development. This also applies to sites	Greenfield site, assume gravity connection to existing combined sewer in Newark Road	No watercourses identified, assume site runoff to be sustainably managed. Connection to combined sewer to be avoided	Medium - Known flooding in downstream catchment. Feasibility work currently ongoing to alleviate the flood risk.



					01/00875/OUT and 05/02273/FULM.			
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Ossington

53891091	Ossington	2	Dwellings	Ossington is not connected to the public sewerage system.	Ossington is not connected to the public sewerage system.	No sewer network identified - Assume property drains via private sewers to septic tank	Assume site runoff to be managed by sustainable means	Ossington is not connected to the public sewerage system.
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Rainworth

Ra/Ho/2	Rainworth	260	Dwellings	RAINWORTH	Whilst there are no reports of sewer flooding in the vicinity of this development, modelled sewer performance data indicates potential capacity constraints in the downstream sewers. Whilst the additional foul only flows from a development of 260 dwellings are envisaged to have a negligible impact on capacity, it is recommended that further modelling work be undertaken once flow rates and connection points have been confirmed.	Greenfield site, possible connection via Tudor Crescent, Eaton close but sewers are small combined. Larger sewer in Warsop Lane	Greenfield site, no watercourse identified. Assume site runoff to be managed by sustainable means. Connection to combined sewers to be avoided	Medium - Known flooding in downstream catchment
Ra/E/1	Rainworth	5.5	Hectare	RAINWORTH	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume connection via existing combined sewer crossing site	No SW sewers identified. Assume site to be drained by sustainable means with discharge to watercourse Rainworth Water.	Low - No risks identified



Ra/Ho/1	Rainworth	54	Dwellings	RAINWORTH	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume connection via existing combined sewer crossing site	No SW sewers identified, no watercourse identified. Assume site to be drained by sustainable means. Connection to combined sewer to be avoided	Low - No risks identified
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South Muskham

06/01180/FULM	South Muskham	15	Dwellings	23-107 NEWARK & SHERWOOD RESIDUAL - Receiving treatment works SUTTON ON TRENT - CROMWELL (STW)	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assumed connection via existing site drainage connecting into FW sewer in Main Street.	Assume runoff managed by sustainable means. Connection to FW to be avoided, modelling may be required if sustainable discharge not possible	Low - No significant risks identified
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South Scarle

14/00510/FUL	South Scarle	6	Dwellings	523-107 NEWARK & SHERWOOD RESIDUAL - Receiving treatment works COLLINGHAM (STW)	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assumed connection via existing site drainage connecting into FW sewer in Church Lane	Assume runoff managed by sustainable means. Connection to FW to be avoided, modelling may be required if sustainable discharge not possible	Low - No risks identified provided surface water is managed sustainably
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Southwell

So/Ho/3	Southwell	34	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume gravity connection to existing combined sewer running through the site	Greenfield site, assume site run off to be managed by sustainable means with discharge to the Potwell Dyke to the north of the development site	Low - No risks identified provided surface water is managed sustainably
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So/Ho/7	Southwell	15	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Brownfield site, assume connection to existing combined sewer in Fiskerton Road / Church Street	Assume site run off to be managed by sustainable means. Connection to combined system to be avoided.	Low - No risks identified
So/Ho/2	Southwell	38	Dwellings	12/00752/FUL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume gravity connection to existing combined sewer north of the site	Greenfield site, assume site run off to be managed by sustainable means with discharge to the Potwell Dyke to the east of the development site	Low - No risks identified provided surface water is managed sustainably
12/00752/FUL	Southwell	0.5	Hectare	12/00752/FUL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Brownfield site, no drainage identified. Assume site drains to a septic tank	Assume site run off is managed by sustainable means	Low - No risks identified
So/E/2	Southwell	2.7	Hectare	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume gravity connection to existing combined sewer to the NE of the site	No existing SWS or watercourses identified within or close to the development site. Assume site run off to be managed by sustainable means. Connection to combined to be avoided.	Low - No risks identified
So/Ho/4	Southwell	45	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume connection to existing combined sewers, north to Lower Kirlington Road or South to Kirlington Road	No existing SWS or watercourse identified within the site. Assume site run off to be managed by sustainable means. Connection to combined sewer to be avoided.	Low - No risks identified.



So/Ho/5	Southwell	60	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, site likely to partially drain to existing combined sewer in Lower Kirlington Road with some draining to existing pumping station asset, SOUTHWELL - RIDGEWAY (SPS)	Greenfield site, no existing watercourses identified. Assume site run off to be managed by sustainable means. Connection to combined sewer to be avoided.	Low - No risks identified
12/01024/FUL	Southwell	15	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Existing combined sewer crossing the proposed development site	Assume site run off to be managed by sustainable means and discharge to the River Greet to the NE of the site	Low - No risks identified
So/Ho/1	Southwell	68	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume connection to existing FW sewers in Vicarage Road to the south of the site.	Assume site runoff to be managed by sustainable means and discharge to existing SWS within NE corner of the site.	Low - No risks identified
So/Ho/6	Southwell	32	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Brownfield site assume connection to existing combined sewers SE and NE of the site	Assume site run off will be managed by sustainable means	Low - No risk identified
So/E/3	Southwell	2.2	Hectare	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Greenfield site, assume gravity connection into neighbouring development site So/E/2	No existing SWS or watercourses identified within or close to the development site. Assume site run off to be managed by sustainable means. Connection to	Low - No risks identified



								combined to be avoided.	
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Sutton on Trent

ST/MU/1	Sutton on Trent	50	Dwellings	SUTTON ON TRENT - CROMWELL	There are reports of historic flooding in the vicinity of this development which may require localised capacity improvements to accommodate this development. However provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to require significant capacity upgrades.	Site may require pumped discharge into existing sewers on Hemplands Lane	Assume run off will be managed by sustainable means discharging to existing watercourse north east corner of site	Medium - Known flooding in downstream catchment
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Thurgarton

14/01262/FUL	Thurgarton	5	Dwellings	SOUTHWELL	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Assumed connection via existing site drain connection into Nottingham Road	Assume site run off to be managed by sustainable means. Connection to FW sewer to be avoided	Low - No risk identified
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Walesby

14/01943/FULM	Walesby	15	Dwellings	BOUGHTON	Whilst there are no reports of flooding in the immediate vicinity of this development, sewer modelling indicates potential capacity issues in downstream network. Whilst the additional foul only flows from 15 dwellings will have negligible impact on sewer	Assume gravity connection to existing FW sewer at rear of Retford Road properties	No existing water course identified. Assume site run off to be sustainably drained. Avoid connection to existing FW sewer	Low - No risks identified provided surface water is managed sustainably
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					capacity it is vital that surface water from the development is managed sustainably.			
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Weston

14/00854/FUL	Weston	0.1	Hectare	523-107 NEWARK & SHERWOOD RESIDUAL	None identified	No sewers identified - Existing property assumed to be drained by private drainage to septic tank	Assume site to be managed by sustainable means	Low - No risks identified
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Winthorpe

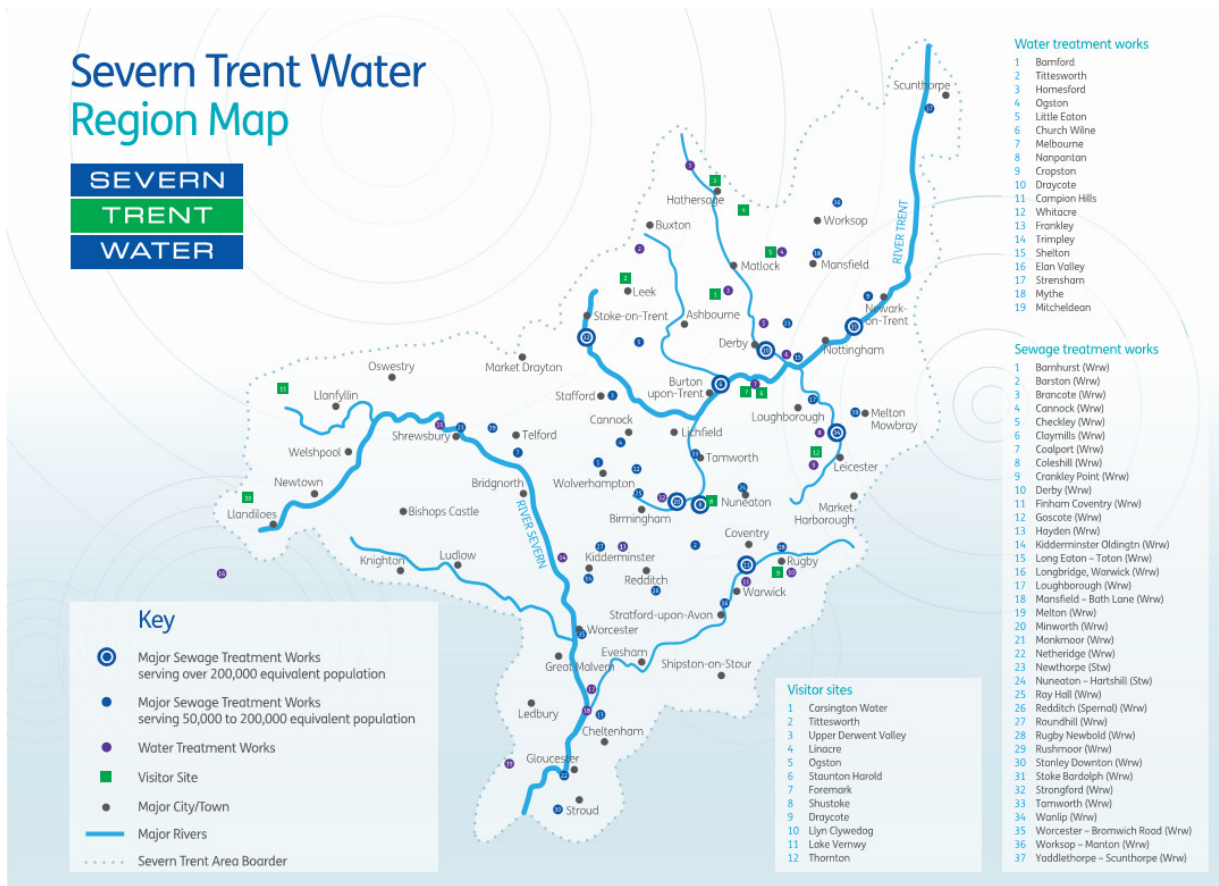
08/00235/OUTM	Winthorpe	4.4	Hectare	CRANKLEY POINT	Provided surface water from this development is managed sustainably, the additional foul only flows from this small development is not expected to have any capacity constraints	Assume connection to existing sewer networks within development site	Assume runoff to be managed by sustainable means, connection into existing SWS may require hydraulic modelling to confirm capacity, connection to combined sewer to be avoided.	Low - No issues identified
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Upton

5981282	Upton	7.0	Dwellings	523-107 NEWARK & SHERWOOD RESIDUAL - Receiving treatment works SOUTHWELL (STW)	Provided surface water from this development is managed sustainably, the additional foul only flows from this development is not expected to have any capacity constraints.	Assumed connectivity via existing connection to FW sewer in The Green	Assume site runoff will be managed by sustainable means. Connection to FWS to be avoided.	Low - No risks identified provided surface water is managed sustainably
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Appendix A – Severn Trent Water Region Map

Severn Trent Water Region Map



Key

- Major Sewage Treatment Works serving over 200,000 equivalent population
- Major Sewage Treatment Works serving 50,000 to 200,000 equivalent population
- Water Treatment Works
- Visitor Site
- Major City/Town
- Major Rivers
- Severn Trent Area Boarder

Visitor sites

- 1 Carsington Water
- 2 Tittesworth
- 3 Upper Derwent Valley
- 4 Lincase
- 5 Ogston
- 6 Staunton Harold
- 7 Foremark
- 8 Shustoke
- 9 Draycote
- 10 Lyn Cywedog
- 11 Lake Venny
- 12 Thornton

Water treatment works

- 1 Bamford
- 2 Tittesworth
- 3 Homesford
- 4 Ogston
- 5 Little Eaton
- 6 Church Wilne
- 7 Melbourne
- 8 Nanganton
- 9 Crapston
- 10 Draycote
- 11 Cornpion Hills
- 12 Whitacre
- 13 Frankley
- 14 Trimpley
- 15 Shelton
- 16 Elan Valley
- 17 Strensham
- 18 Mythe
- 19 Mitcheldean

Sewage treatment works

- 1 Barnhurst (Wrw)
- 2 Barsdon (Wrw)
- 3 Brancote (Wrw)
- 4 Cannock (Wrw)
- 5 Checkley (Wrw)
- 6 Claymills (Wrw)
- 7 Coalport (Wrw)
- 8 Coleshill (Wrw)
- 9 Cranley Point (Wrw)
- 10 Derby (Wrw)
- 11 Finham Coventry (Wrw)
- 12 Goscote (Wrw)
- 13 Hayden (Wrw)
- 14 Kidderminster Oldington (Wrw)
- 15 Long Eaton - Toton (Wrw)
- 16 Longbridges, Warwick (Wrw)
- 17 Loughborough (Wrw)
- 18 Mansfield - Bath Lane (Wrw)
- 19 Melton (Wrw)
- 20 Minworth (Wrw)
- 21 Morkmoor (Wrw)
- 22 Netheridge (Wrw)
- 23 Newthorpe (Stw)
- 24 Nuneaton - Hartshill (Stw)
- 25 Roy Hall (Wrw)
- 26 Redditch (Spemal) (Wrw)
- 27 Roundhill (Wrw)
- 28 Rugby Newbold (Wrw)
- 29 Rushmoor (Wrw)
- 30 Stanley Downton (Wrw)
- 31 Stoke Bardolph (Wrw)
- 32 Strongford (Wrw)
- 33 Tamworth (Wrw)
- 34 Wanlip (Wrw)
- 35 Worcester - Bromwich Road (Wrw)
- 36 Worksop - Manton (Wrw)
- 37 Yoddlethorpe - Scunthorpe (Wrw)