Telford & Wrekin Council

Scoping Water Cycle Study

Final Report

Hyder Consulting (UK) Limited
2212959
5th Floor
The Pithay
All Saints Street
Bristol BS1 2NL
United Kingdom
Tel: +44 (0)117 372 1200
Fax: +44 (0)117 37
www.hyderconsulting.com

Telford & Wrekin Council

Scoping Water Cycle Study

Final Report

Author	Heather Taylor	
Checker	Liam Foster / Aimee Hart	
Approver	Heather Taylor	
Report No	1	
Date	5th September 2012	

This report has been prepared for Telford & Wrekin Council in accordance with the terms and conditions of appointment for Final Report dated 3rd March 2012. Hyder Consulting (UK) Limited (2212959) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

CONTENTS

Appendices

1 Executive Summary

1.1 Water Cycle Study

1 Hyder was commissioned by Telford and Wrekin Council to undertake a Water Cycle Study (WCS) Scoping Report for the Council area. This Scoping Report was undertaken to:

- Gather the relevant planning information from the Local Planning Authority (LPA) – Telford & Wrekin Council to help define the study area based on likely discharge points and abstraction sources
- Undertake a review of the existing work and studies undertaken to date, as well as existing plans to define key issues
- Confirm the development scenarios and planning data with all stakeholders
- Define the programme for further works needed to assess the Water Cycle, as noted in the Environment Agency's WCS Guidance and identify the data sources
- Identify the objectives of the WCS and which plans and strategies it will be used to inform and draw from
- Identify if further work is needed to inform strategic planning decisions and agree a project scope and project plan for further work if needed

2 Water Cycle Studies are not a statutory requirement. However, the Environment Agency strongly recommend a Water Cycle Study as being the most effective method of ensuring that development and growth is sustainable with respect to the water environment and water infrastructure. A Water Cycle Study does not replace a local authority's statutory requirements, such as responsibilities under the Flood Risk Regulation 2009 or the 2010 Flood and Water Management Act.

The three growth scenarios of housing target set for Telford and Wrekin Council (TWC) are required to be appraised within this Water Cycle Study. A Water Cycle Study is required to ensure that the water supply, wastewater collection and wastewater treatment infrastructure in the TWC area can accommodate the required growth levels, whilst minimising flood risk and impact on the water environment.

Three Growth Scenarios options have been tested in this WCS:

Option 1: Completion Led targets of 10,400 based on 85% growth concentration in Telford, 10% in Newport and 5% in rural areas.

Option 2: Housing Growth Led targets of 15,560 based on 85% growth concentration in Telford, 10% in Newport and 5% in rural areas;

Option 3: Regional Spatial Strategy Led of 26,500 Growth based on 85% growth concentration in Telford, 10% in Newport and 5% in rural areas

3 At this time, TWC are unable to provide Employment Growth Trajectories. However, the impact of these employment areas on the water environment will be in keeping with the impacts from the residential sites and will require mitigation accordingly. It is recommended this is explored when future work is undertaken as part of an Outline WCS Study.

4 As this WCS has looked at a range of development options, TWC will be required to undertake additional work prior to submitting their Shaping Places Local Plan, once they have finalised their Preferred Option, to ensure that the final development option decided upon has a robust evidence base.

5 TWC will be unable to make an informed decision on their Shaping Places Local Plan Preferred Option until the developers promoting the potential new settlement locations have liaised with the water companies and the EA, and provided sufficient detail of the wastewater treatment/ sewerage solutions that they intend to utilise on site.

6 This Scoping Report was unable to draw firm conclusions about water resource environmental capacity due to the ongoing derivation of future water company plans that determine water resource strategy (Water Resource Management Plans or WRMP). It is important that the Water Cycle Study does not pre-empt or repeat the WRMP. Therefore, further assessment is recommended to incorporate the emerging findings of the PR14 WRMP documentation.

7 Additionally, it is recommended that the Water and Sewerage Company, Severn Trent Water Limited, STWL, liaise further with TWC to identify and incorporate the likely demands identified during this study from the three scenarios investigated to identify what level of growth could be supported by current and sustainable investment into the asset infrastructure.

8 It is therefore recommended that continual liaison takes place to confirm that the level of growth being assessed by the WCS is consistent with the assumptions in the water resources management plan. Because of the current scrutiny of the plans, it should be assumed that this is the case unless the WCS identifies that it is incorrect.

9 Furthermore, it is relevant for the Outline WCS to provide and recommend policy and planning measures that can be implemented either by TWC through the development planning process, or in partnership with the Environment Agency and the water companies through joint awareness campaigns to help achieve and deliver demand management measures required by the WRMP, when finalised.

10 The Scoping Level WCS has undertaken an initial review of the data available to highlight the current and likely environmental and infrastructure capacity for growth with respect to wastewater drainage, treatment and water quality and water supply, through a Traffic Light System of Red, Amber and Green.

11 It is advised that the Outline WCS further derives this assessment system in light of a review of current and future evidence being produced during the current asset management planning period, in partnership with the water companies who have responsibility for water services infrastructure in the study area.

12 Whilst the Scoping Report has not found any absolute constraints to the scale of development assessed based on flood risk, a broad assessment of surface water management potential should be undertaken for each of the development growth areas to provide a more detailed understanding of the constraints to and opportunities for sustainable surface water management in the areas of future growth. Chapter 6 reviews the current flood risk and surface water management policy context, providing guidance and advice on what activities need to be carried out to provide the evidence base for development management.

13 Based on a combined assessment of the water cycle, the Scoping Report has not identified any absolute constraints to growth, other than to limit growth in the Rural Parishes in line with Scenario A and focus development on the major settlements, with respect to environmental capacity.

14 However, it has not been able to confirm that there are no absolute constraints to development based on the water cycle. Chapter 7 identifies a number of activities that need to be undertaken in an outline WCS to provide this certainty. The WCS needs to be undertaken in partnership with a number of organisations to succeed, and we have recommended the composition of the steering group in Chapter 7. All recommended members of the steering group, including the Environment Agency, Severn Trent Water, Natural England and the Strine Integrated Drainage Board, were invited to assist the production of this document, and all have had the opportunity to comment on the final scoping document.

2 Introduction

2.1 Background to Study

15 Hyder Consulting (UK) Ltd was commissioned by Telford and Wrekin Council to undertake a Water Cycle Study (WCS) Scoping Report. As part of the Strategic Environmental Assessment of the Development Plan process the implications of development on the water environment must be taken into account. Unmitigated, further development as well as climate change will adversely affect the environment and the water supply capabilities in the area.

16 A WCS will provide the required evidence, together with an agreed strategy to overcome any constraints and to identify suitable mitigations. A WCS is of importance to the soundness of a Development Plan Document (DPD), in respect to its robust evidence base, appropriate policies, delivery and monitoring. Local Authorities are, therefore, advised to prioritise the different stages of the WCS to integrate with their Local Development Scheme (LDS) programme.

17 Telford and Wrekin Council's (TWC) current Core Strategy (2007) runs to 2016. TWC are in the process of updating their LDF documents and their evidence base. Since the revocation of the Regional targets (July 2010), TWC are tasked with planning for growth based on local evidence. The LDF will comprise statutory (and optional) documents that translate national and regional planning policy to a local level strategy as framed out in recent Government documents, including the recent National Planning Policy Framework.

18 Considerable work was undertaken by TWC and key stakeholders to inform and support the 2007 Core Strategy and LDF. However, to support the next period of Plan coverage, further work is required to update and undertake other studies to help assist in delivering sustainable growth. This includes the need to provide a holistic, integrated and sustainable plan for water services aligned to the planned development aspirations.

19 It is of critical importance to the delivery of the LDFs that the stakeholders not only address the provision of water services infrastructure in a strategic manner, but also that they demonstrate their commitment to this provision by embedding the principles into the formal planning processes.

20 An integrated WCS provides an ideal means by which to address this need. It will identify the demands of the agreed levels of growth on existing water services infrastructure and establish its ability to deal with it. It will consider the key areas of flood risk management, water resources and supply, foul drainage and wastewater treatment, and other relevant aspects such as demand management, wetlands ecology and guidance for developers.

21 It should be noted that this WCS was commissioned at a time when finalised development quantums had not been determined therefore the Scoping WCS is intended to inform TWC of the possible constraints and opportunities to various development options. It is clear, that additional work will be required to further assist the identification of final development options following their forthcoming Preferred Options Consultation, to provide the evidence needed to fully support the Shaping Places Local Plan Strategy and Options submission document.

22 It is imperative that the developers promoting new developments liaise with the STWL, the EA and TWC during and following the Shaping Places Local Plan Preferred Options Consultation, prior to the Shaping Places Local Plan Pre Submission stage. Without this information there is a risk that the stakeholders may not support the TWC Shaping Places Local Plan.

23 The aims of this Scoping WCS are to ensure that:

- Identify current data gaps and areas of further work
- There is a strategic and sustainable approach to the management and use of water by all stakeholders throughout the Council area; and
- The water infrastructure required to support the housing and employment growth planned for the Telford and Wrekin area is identified, along with any constraints that may prevent this, so that this can be further investigated at the Outline and subsequent Detailed WCS stage.

24 Key objectives of this WCS will be to:

- Identify any water infrastructure services provision and usage constraints based on natural or anthropogenic changes, whilst testing and scoping for the potential impact of TWC plans on the water environment;
- Develop a sustainable framework that enables the phased delivery of the key infrastructure needs and adaptation of future developments, in line with the aspirations and environmental demands of the local area, to support TWC in achieving the Construction Lead targets;
- Inform the planning process to mitigate for any negative effects whilst maximising environmental gains through positive planning approaches;
- Promote a reduction in the risk of flooding from all sources, fluvial, surface water and groundwater etc, and incorporate within designs ideas such as Sustainable Drainage Systems (SUDS) to help reduce this threat and further manage the water cycle;
- Provide an evidence base for infrastructure requirements to inform the business plans of the water companies;
- Provide a basis to implement effective solutions to reduce the water demand within the area, helping to reduce the environmental impact of over-abstraction and ease the stress on the infrastructure demands; and
- Consider any biodiversity issues and how the water cycle impacts upon designated sites, both now and into the future, including the capacity of watercourses and ecosystems to absorb additional discharge from new developments.

25 The development of this WCS has involved consultation with the following stakeholders:

- Severn Trent Water Limited (STWL);
- Environment Agency (EA);
- Natural England (NE);
- Strine Internal Drainage Board (Strine IDB); and
- Telford & Wrekin Council

2.2 What is a Water Cycle Study (WCS)?

26 A Water Cycle Study[1] is:

- A method for ensuring that the most sustainable water infrastructure is provided where and when it is needed;
- A risk based approach ensuring that town and country planning makes best use of environmental capacity, adapts to environmental constraints and makes best use of environmental opportunities;

- A way of ensuring that all stakeholders have their say, preventing any unexpected infrastructure constraints that could delay or prevent development;
- The process that brings all the available knowledge and information together to help make better, more integrated, risk based planning decisions; and
- A way of ensuring compliance with BERR (now the Department for Business Innovation and Skills "Regulator's Compliance Code" to ensure that risk assessment precedes and informs all aspects of their approaches to regulatory activity.

27 This Scoping Report was undertaken to identify the environmental and water services infrastructure opportunities and constraints in the study area based on the potential development across Telford & Wrekin.

28 Most of the data and information used in a Water Cycle Study will already exist within the organisations that have responsibility for operating, regulating and managing the water environment. This highlights one of the key benefits of a partnership approach to a WCS which is unlocking this understanding and information and making it readily available.

2.2.1 Water Cycle Study Approach

30 It is of essential to the delivery of a Shaping Places Local Plan that the stakeholders not only address the provision of water services infrastructure in a strategic manner, but also that they demonstrate their commitment to this provision by embedding the principles into the formal planning processes.

31 WCS provides an ideal means to apply a holistic approach by which to address this need. It will identify the demands of the agreed levels of growth on existing water services infrastructure and establish its ability to deal with it. It will consider the key areas of flood risk management, water resources and supply, foul drainage and wastewater treatment, and other relevant aspects such as demand management, wetlands ecology and guidance for developers.

32 The Environment Agency Water Cycle Study (WCS) guidance (2009) aims to provide a 'roadmap' for the process and individual Council's should interpret this in such a way as to best suit its own area's issues. Section 2.1 above has set out the scope for this Scoping WCS. The outcome of the Scoping WCS should advise on further requirements (if necessary) to undertake further work and providing this level of information will allow an Outline Water Cycle Study to be undertaken.

33 The Water Cycle Study guidance states that an Outline Water Cycle Study should;

- Identify environmental risks and constraints;
- Identify if environmental resources can cope with further development;
- Identify if the development would overload the existing infrastructure;
- Identify if major new systems are needed to allow development;
- Help pinpoint if there is water cycle capacity for new development without needing to build major new infrastructure;
- Provide the evidence base for local planning authority's Local Development Framework's, and;
- Provide an outline Water Cycle Study agreed by all partners, where appropriate.

34 In addition, the guidance identifies that a detailed Water Cycle Study, where required, will;

- Identify what water cycle management measures and infrastructure are required, and where and when they are needed;
- Identify who is responsible for providing the systems, and by what deadline, and;
- Guide planners and developers on site specific requirements (for example SuDS requirements).

35 A WCS is of benefit to stakeholders involved in the planning of development, those responsible for managing water related assets and infrastructure and those responsible for the protection and enhancement of the environment.

2.3 Study Area

36 Telford and Wrekin Council TWC is located in the north western part of the West Midlands and is almost entirely located within Shropshire Council boundary, The TWC area is predominantly rural in nature, although it includes the market towns of Wellington and Newport, and the key service centre of Telford. There are 47 rural settlements varying in size with 8 of these settlements having more than 500 residents. Telford is bordered by Staffordshire to the East and Shropshire to the South, North and West.

37 In 2004, the population of the Borough was estimated to be 161,013 residents. This represents an increase of 19,513 residents, or 13.8%, since 1991, an increase of 26% over the last twenty years and six times the national average. The Borough's population is forecast to grow by around 1% per annum, reaching approximately 182,100 by 2016[2].

38 The Council area lies within the Severn River Basin District which covers an area of 21,590km^2 and is very much rural in nature. There are three catchments

- Shropshire Severn Catchment (River Tern, Meese, Roden and Strine) Catchment.
- Worcestershire Severn (River Worfe tributaries).
- Severn Corridor (River Severn, Lyde brook Catchment (includes the Coalbrookdale Brook).

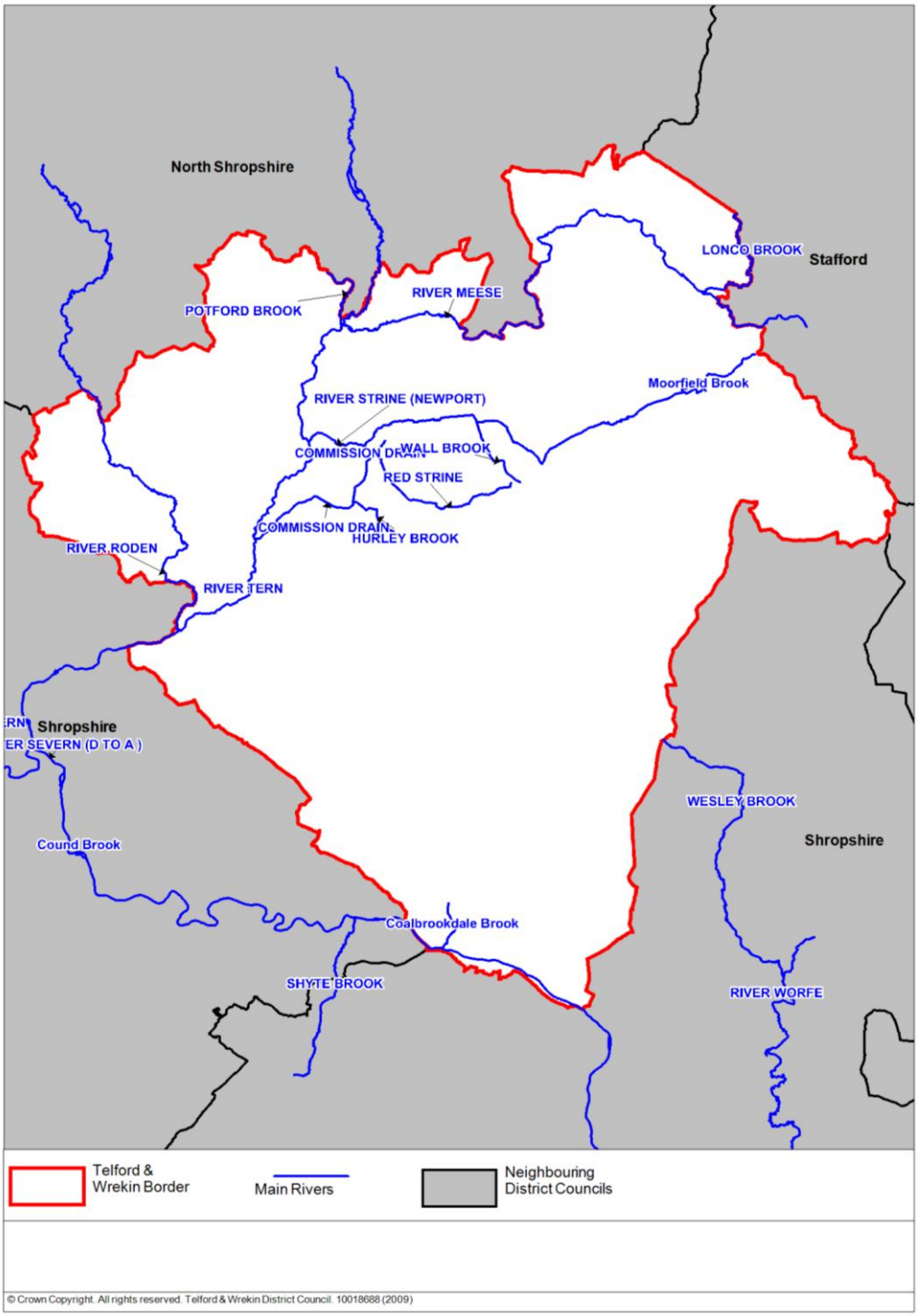

Figure 2-1 Location of Study Area

39 Figure 2-2 below illustrates the locations of the main watercourses within the catchment in relation to the larger settlements. These river catchments are described in more detail in Section 7, and illustrated in Figure 2-2.

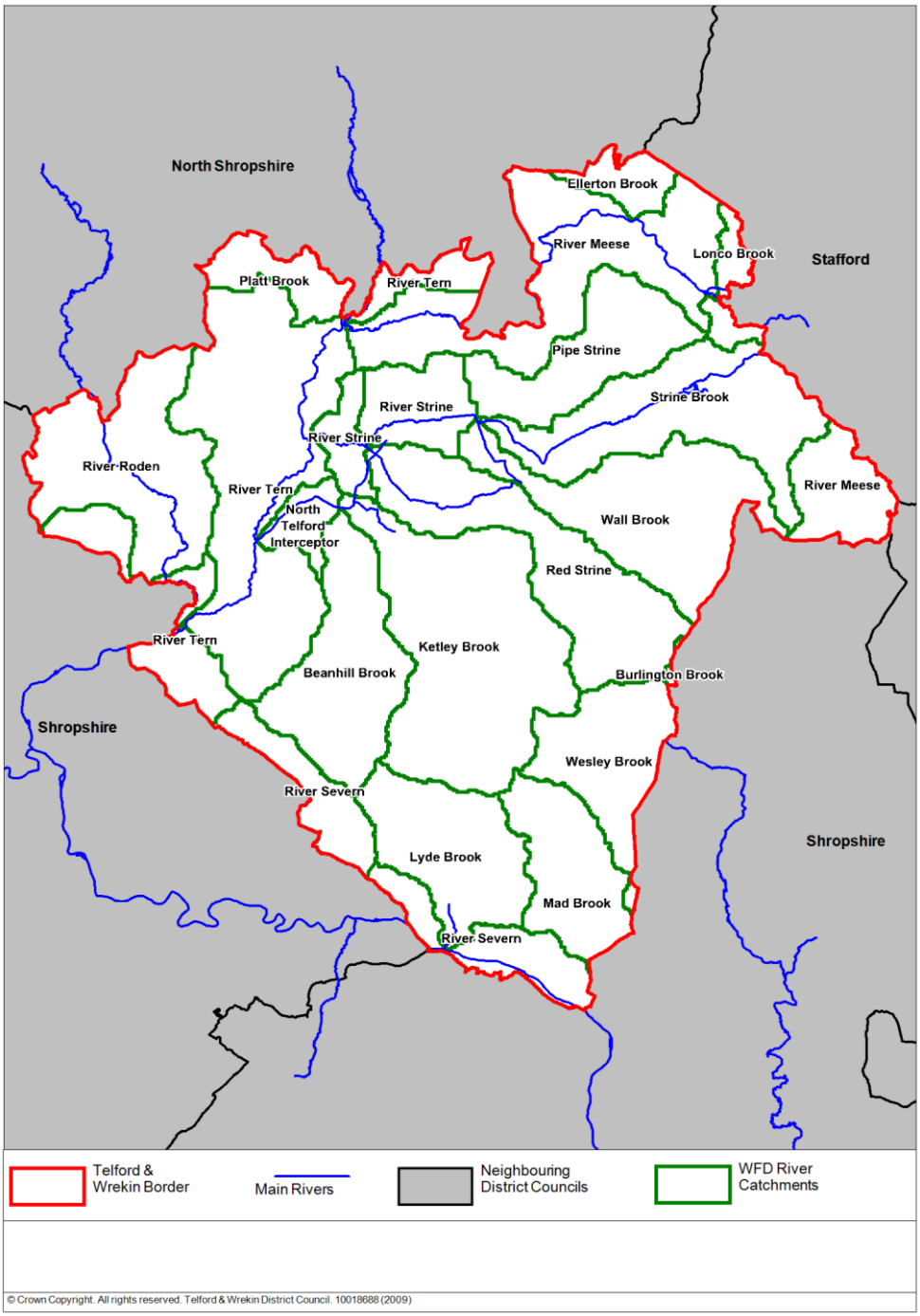

Figure 2-2 River catchments in the TWC area

40 The northern and eastern part of the Council area is underlain by Sandstone aquifers (a major store of the UK's groundwater resources) and overlain with sands and gravels. More information regarding ground and surface water is included in Sections 7.1.

41 Potable water is supplied to the District by STWL. Telford and Wrekin lies completely within STWL's newly created Shelton Water Resource Zone (WRZ). This WRZ is supplied via a number of groundwater abstractions from underlying aquifers. A number of aquifers in the area are currently over licensed or over abstracted. As such, current actual abstraction is such that no surface water is available at low flows or abstractions. More information regarding potable water supply is included in Section 7.2.

42 STWL is responsible for collecting and treating wastewater across the TWC area, more information is included in Section 6.1.

43 Sources of flood risk within the District were identified in the Telford and Wrekin District Strategic Flood Risk Assessment (SFRA)[3]. Key messages from this report, and other relevant flood risk policies, are highlighted and built upon in Section 8.13.

2.4 The Water Cycle

44 The natural water cycle is the process by which water is transported throughout a region. The process commences with some form of precipitation, be it rain, snow, sleet or hail. This is then intercepted by the ground and either travels overland through the process of surface runoff to rivers or lakes, or percolates through the surface and into underground water aquifers.

45 The presence of vegetation can also intercept this precipitation through the natural processes that plants carry out, such as transpiration and evapo-transpiration. The water will eventually travel through the catchment and will be evaporated back into the atmosphere along the way, or will enter the sea where a large amount will be evaporated from the surface. This evaporated water vapour then forms into clouds and falls as precipitation again to complete the cycle.

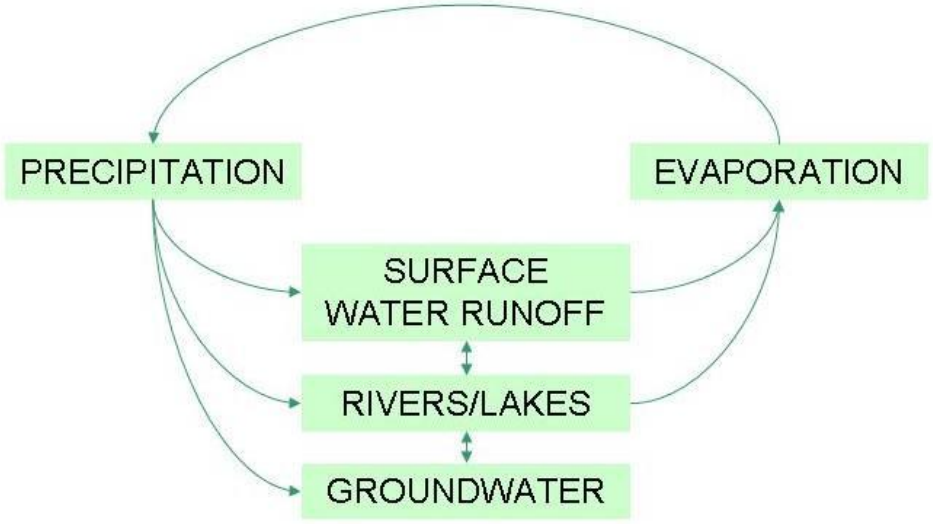

Figure 2-1 The natural Water Cycle

46 Urbanisation creates a number of interactions with the natural water cycle. Abstraction of water, from both surface water and groundwater sources for use by the local population, interacts with the water cycle by reducing the amount of water that is naturally held within the aquifers. Following treatment at a water treatment works (WTW) this water, now potable, is transported via trunk mains and distribution pipes to the dwellings in the area. The potable water is then used by the population within the dwellings for a number of different purposes, which creates large volumes of wastewater.

47 The use of tarmac and other surfaces in this development also reduces the amount of water that is able to percolate through the ground to the groundwater aquifers. This therefore increases the rate of surface water runoff, which leads to flooding and increased peak discharges in rivers.

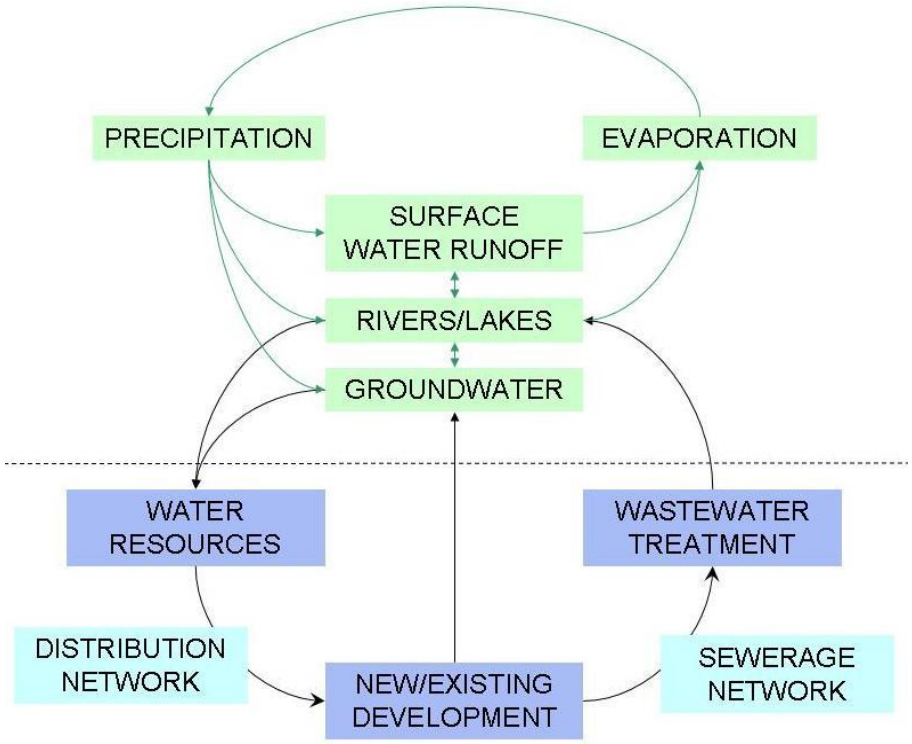

Figure 2-2 The wider Water Cycle

48 The wastewater from the developments is transported via the sewerage network to a wastewater treatment works (WwTW), where the water is screened, treated, and then discharged back into the rivers or groundwater.

2.5 Current Funding

49 Water companies primarily receive funding through their customer bills. Amongst other things, Ofwat regulate how much these bills can increase, and what the funds are spent on. Asset Management Periods (AMP) are five yearly cycles that look at the improvement and upgrade works required for water company assets. The current AMP 5 (2010-2015) and the water companies will be soon in the process of preparing their programme and capital expenditure plan for the next period, AMP 6 (2015-2020).

50 Due to commercial considerations, water companies are generally reluctant to disclose their plans to external parties until the necessary financial approvals are received from Ofwat. The availability of funds, and the prices that can be set by each water company, are assessed by Ofwat during the Price Review (PR) process. PR09 is currently being finalised and, once approved by Ofwat, will set the amount that water companies can charge for water and wastewater services for AMP 6, in order to fund the operation, maintenance and upgrade of assets.

51 The AMP6 process to 2020 that may dictate the constraints on capital project planning and funding that could influence the phasing of the planned development. Therefore it is essential that the future infrastructure requirements are accurately factored into the water companies' AMP proposals to accommodate the proposed growth in the District.

52 Prior to each PR process, the EA publishes its National Environment Program, which is a list of environmental improvement schemes. This guides the water companies on areas where they need to undertake, or investigate, an improvement to the way in which there business interacts with an aspect of the water cycle. The EA expects that the water companies will progress with such projects, without exception, and Ofwat will therefore take these requirements into account when approving funds.

53 Under the recent Water White Paper, customers will have to meet the cost of financing new infrastructure, so it is essential that the regulatory regime incentivises companies to select low cost options and to only invest in measures that are needed to deliver secure and sustainable supplies.

54 Getting access to water and sewage infrastructure is essential for development to proceed. A recommendation from the paper is for developers to receive higher standards of service and Water Companies to increase the transparency of infrastructure and requisition charges. Market codes and charging schemes are being introduced to increase transparency and negotiations around bulk supply and sewerage service arrangements for new building developments. This will be of particular value for developers of Greenfield sites.

3 Policy context

55 The following sections introduce a number of national, regional and local policies that must be considered by TWC, water companies and developers within the District. Key extracts from these policies relating to water consumption targets and mitigating the impacts on the water environment from new development are summarised below.

3.1 National policy

3.1.1 National Planning Policy Framework

56 In March 2012, Planning Policy Statements (PPS) and Planning Policy Guidance Notes (PPG) were superseded by the National Planning Policy Framework (NPPF). This national planning document provides guidance to local authorities on planning policy. Local authorities should ensure that planning documents consider these policies, and may be able to use some of the policies contained within NPPF to make decisions on individual planning applications.

57 The key themes in NPPF most relevant to this WCS are:

- Delivering Sustainable Development (and the 2007 Supplement entitled Planning and Climate Change);
- Housing;
- Biodiversity and Geological Conservation;
- Planning and Pollution Control; and
- Development and Flood Risk.

58 Relevant topics that consistently occur within the above mentioned NPPF are:

- Resilience to climate change;
- Conservation / biodiversity;
- Sustainable use of resources;
- Mitigation of flood risk and the use of SUDS;
- Suitable infrastructure capacity; and
- Protection of groundwater and freshwater.

3.1.2 Code for Sustainable Homes

59 The Code for Sustainable Homes (CSH) was introduced in England in April 2007. The code sets a framework, and acts as a tool, for developers to create homes to higher environmental standards than previously.

60 The CSH Levels require different levels of performance regarding water use, particularly per capita consumption (PCC). These are:

- Levels 1/2 – 120 l/p/d;
- Levels 3/4 – 105 l/p/d; and
- Levels 5/6 – 80 l/p/d.

It became mandatory for new homes to be assessed under the Code from May 2008; however, the achievement of a certain CSH Level is only a requirement for social housing.

61 As of April 2007, all housing built on English Partnerships land and from April 2008 all social housing funded through the Housing Corporation has to be built to CSH Level 3, a performance standard of **105 l/p/d**, representing current best practice in water efficiency without requiring water reuse or rainwater harvesting.

62 The timetable for the implementation of the CSH requires that new homes are built to Level 3 from 2010 onwards and Level 6 from 2016[4], however for the purposes of this study, we have informed our analysis on the current levels of consumption and the aspiration to deliver new housing to Code Level 3 from 2016 onwards.

3.1.3 Building Regulations

63 The Building Regulations prescribe the required performance of new dwellings (and alterations to existing dwellings) in England and Wales. According to Defra[5], the UK Government will amend the Building Regulation by October 2009, to require new buildings to achieve a calculated whole building performance (PCC of potable water) of **125 l/p/d**. This is equivalent to CSH Levels 1 and 2, with an additional allowance of 5 l/p/d for outside use.

This will be reinforced with amendments to the Water Supply (Fittings) Regulations 1999, which set performance levels for individual fittings.

3.1.4 Future Water

64 The UK Government's strategy for water in England is described in Defra's Future Water[6] document. This strategy sets out an aspirational target for average PCC, across all dwellings, of **130 l/p/d**. Defra predict this target can be achieved by 2030 through a combination of water efficiency and demand management measures, such as low consumption appliances and fittings, and changes in metering and tariffs. Defra suggest that **120 l/p/d** may also be achievable dependant on new technological developments and innovation.

3.1.5 Water for People and the Environment

65 In 2009 the Environment Agency published its strategy for managing water resources in England and Wales to 2050 and beyond, entitled Water for People and the Environment[7]. This strategy supports the 130 l/p/d PCC target aspired to by Defra, and shows that the average PCC for England and Wales could be reduced from around 150 l/p/d to close to 120 l/p/d by 2030. To achieve this, PCC for new dwellings would have to meet CSH Level 3 (105 l/p/d plus 5 l/p/d for outside use) and near universal metering of properties in water stressed areas would be required by 2020.

66 The EA strategy concludes that the above demand management approach has the potential to be cost effective when compared to the development of new resources or desalination plants.

67 The EA also suggest that, as metering becomes more widespread and incentives to use water efficiently increase, rainwater harvesting and grey water recycling systems will become more cost-effective and could play an increasingly important part in managing water resources in the future.

68 In addition, the EA strategy suggests that all planning applications for significant new housing developments should be accompanied by a water cycle strategy.

3.1.6 Flood and Water Management Act 2010

69 The Flood and Water Management Act, passed into statute in April 2010, sets out a number of changes to the way that new development and water infrastructure will interact, including the proposed future mechanism for utilising SuDS where practical. SuDS assist in reducing the rates (and potentially volumes) of surface water arising from new developments and therefore reduce the impacts on the existing water cycle. This is important in ensuring that existing flood risks do not increase as a consequence of new developments, and can reduce (or even eliminate) the need to use existing sewerage systems to convey surface water. This reduces unnecessary expenditure in the uprating of existing sewers and WwTW and can delay the requirement to consent increased flows from WwTW.

70 The Act establishes a SuDS Approving Body (the "SAB") at county or unitary local authority levels, which will have responsibility for the approval of proposed drainage systems in new developments and redevelopments. This approval must be given before the developer can commence construction.

71 In order to be approved, the proposed drainage system would have to meet new national standards for sustainable drainage (currently being drafted). The National Standards will set out the criteria by which the form of drainage appropriate to any particular site or development can be determined, as well as requirements for the design, construction, operation and maintenance of SuDS.

72 Where planning permission is required applications for drainage approval and planning permission can be lodged jointly with the planning authority but the SAB will determine the outcome of the drainage application.

73 The Act also makes the right to connect surface water drainage from new development to the public sewerage system conditional on the surface water drainage system being approved by the SAB. Before determining an application the SAB must consult, amongst others, any sewerage undertaker with whose public sewer the new drainage system will connect to and the EA, if the drainage system directly or indirectly involves the discharge of water into a watercourse.

74 The right to connect newly built foul sewers to the public network remains, but an adoption agreement must be in place with the relevant sewerage undertaker. The sewerage undertaker will be obliged to adopt and maintain new foul sewers connecting to the public system, and those (very few) surface water sewers with no SuDS alternative connecting to the public system, where this has been approved by the SAB.

3.2 Regional Policy

3.2.1 Regional Spatial Strategy

75 It is the Government's policy intention to revoke existing regional strategies outside London. However, this is subject to the outcome of environmental assessments and will not be undertaken until the Secretary of State and Parliament have had the opportunity to consider the findings of the assessments.

76 However, the RSS policies still have a role, highlighting important features and aspirations of the region that need to be safeguarded. The RSS aims to achieve the following policies:

- Take a common approach to biodiversity and nature conservation issues along strategic river corridors and tributaries of the Severn river catchment as highlighted by EA local plans (i.e. RBMP, CAMS);
- Protect or improve water quality and necessary significantly reduce the risk of pollution especially to vulnerable surface and groundwater;
- Manage demand, conserve supply, promote local recycling of water and multiple use of water resources;
- Ensure that abstraction from aquifers does not exceed sustainable levels
- Reduce adverse effects of development on the water environment by encouraging consideration of sustainable drainage systems;
- Ensure the timing and location of development respects the potential economic and environmental constraints on water resources;
- Maintain and enhance river and inland water corridors as key strategic resources, particularly helping to secure the wider regional aims of regeneration, tourism and conservation of the nature, built and historic environment;
- Development that poses unacceptable risk to the quality of groundwater or surface water should avoided.

3.3 Local Policy

3.3.1 Telford and Wrekin Shaping Places Local Plan

77 The vision for the Shaping Places Local Plan is to achieve a sustainable balance between water supplies and demand. The current Core Strategy Local Plan [8]adopts the following key themes on policies. It is expected that these will be brought forward into the Shaping Places Local Plan to make sure development:

- Protect the environment, by minimising pollution on land, in water and in the air;
- Where appropriate and consistent with the policies of the Development Plan and local strategies, development will integrate measures for sustainable water management;
- Reduce flood risk;
- Protect countryside, open space, natural resources and flood-risk areas from unnecessary development; and
- Promote the highest standards of resource and energy efficiency.

4 Methodology

4.1 Assessment of Existing Situation

4.1.1 Water Resources and Environmental Capacity

78 The status of water resources supporting TWC has been assessed through a review of the EA Catchment Abstraction Management Strategy (CAMS) documents, for the three catchments described in Section 7.1. This gives an indication of the likelihood of any new abstraction licences for public water supply. The CAMS documents are currently being updated by the EA and should be reviewed at Outline Stage.

79 The capacity of the environment, most notably the capability of the receiving watercourses to receive greater discharges from WwTW, has been assessed through a review of the EA River Basin Management Plans (RBMP). These describe the current water quality of the watercourses, and proposed remedial actions for the future. Environmental constraints have been assessed through the review of data on important sites collected from Natural England and Local Wildlife Sites.

80 Flood risk within the TWC area is assessed through a review of the Level 1 and Level 2 TWC Strategic Flood Risk Assessments (SFRA) and the EA Catchment Flood Management Plans (CFMP) consultation documents, and through consultation with TWC.

4.1.2 Water Infrastructure

81 The capacity of the existing water infrastructure to accept the demands from the proposed development, including any impacts due to future climate change and tightened legislation/ environmental standards, has been assessed through consultation with STWL.

82 This allows for an understanding of the limitations of the current system, and the improvements being planned by the water companies to accommodate the proposed development, mitigate possible impacts of climate change, and maintain or improve current levels of service. High-level information was also available from the water company business plans and draft Water Resource Management Plans (WRMP).

4.2 Assessment of Impact from Development

83 The impact on water resources and infrastructure from the proposed development does not solely depend upon the number of dwellings constructed. Demographic changes, i.e. changes in population and occupancy rates, will influence the impact of each new dwelling. Behavioural changes such as changes in per capita consumption (PCC), in both new and existing dwellings, will also affect the impact that the development has on the water infrastructure.

84 Between 1991 and 2001 the population of Telford grew by some 13.6% or 15,960 people. Similarly, the number of households over the same period grew significantly, by some 22.4%. These different rates of change resulted in the average household size in Telford falling from 2.7 to 2.5 people. [9]

85 In the 2001 census, total occupied dwellings in the District were estimated at 65,521[10]. Since 2001 the population of the Borough has grown by 11,700, an average of 1,300 people per year, slower than the annual average growth of 1,700 people seen between 1991 and 2001. [11]

86 In 2004, the population of the Borough was estimated to be 161,013 residents. This represents an increase of 19,513 residents, or 13.8%, since 1991, an increase of 26% over the last twenty years and six times the national average. The Borough's population is forecast to grow by around 1% per annum, reaching approximately 182,100 by 2016. [12]

87 The TWC housing trajectory indicates that approximately 550 actual dwellings were completed in, lower than the projected target for this time period of 750 dwellings. Comparing these figures with the estimates gives the following predictions of population and housing within the study area.

Telford and Wrekin District	2001	2010	2026
Total Dwellings 2001 Census	*65,521*		
Total Dwellings	*53,940*	*68,891*	*80,191*
Population estimate	*133,523*	*170,300*	*196,300*
Occupancy rate at end of period	*2.5*	*2.4*	*2.4**

Table 4-1 Population estimates for Telford and Wrekin District

*Taken from STW's current day estimate as future Occupancy rates have not been projected

88 Projected occupancy rates have not been available for use in this study. Therefore, an estimate of changes in occupancy rate between the above periods has not been possible at this stage. Two scenarios, dependant on PCC rate projections, have been developed to assess the potential impact of the proposed development:

Scenario	PCC of Existing Dwellings	PCC of New Dwellings
Best Case	PCC reduces to DEFRA aspirational target of 130 l/p/d	CSH Level 3 present – 2016 CSH Level 6 post 2016
Business Plan Case	Reducing in line with STW predictions of 132 l/p/d	130 l/p/d present – 2016 CSH Level 3 post 2016

Table 4-2 Development Impact Scenarios

89 Due to the predicted population growth and subsequent increase in dwellings it is predicted that the proposed development within the District will have an impact on the water infrastructure. However, data limitations at the scoping stage have not enabled an assessment based on the PCC rate projections to be reported. It is anticipated that the assessment will be made during the next stage.

4.3 Limitations

90 To assess the impact of the proposed development within the District on the water infrastructure, an estimate of the predicted population and dwellings amounts, and hence occupancy rate, is required. Due to the following limitations the impact of the proposed development has not been undertaken within the scoping phase.

- Limited information was available at the scoping stage regarding projected occupancy rates and current PCC data. The data constraints during the scoping phase related to the unavailability of the existing population that is served by each WwTW. This data forms the baseline for all further assessments.

- Due to data limitations a high level estimate of the potential impact of future development has not been made at the scoping stage. It is expected this information will be made available for the Outline assessment stage.

5 Development Options

91 In July 2010, The Regional Spatial Strategy (RSS) was revoked by the Government. TWC have therefore been tasked with locally determining their housing targets. TWC are in the process of revisiting their Local Plan preparation and examining three different growth options in order to determine future land supply to meet their targets up to 2031.

5.1 Residential Development

92 Three residential Growth Scenarios options are being put forward by TWC to be considered as part of this Scoping WCS:

Option A: Completion Led targets of 10,400 based on 85% growth concentration in Telford, 10% in Newport and 5% in rural areas;

Option B: Housing Growth Led targets of 15,560 based on 85% growth concentration in Telford, 10% in Newport and 5% in rural areas;

Option C: Regional Spatial Strategy Led of targets 26,500 based on 85% growth concentration in Telford, 10% in Newport and 5% in rural areas.

93 These three scenarios have been used in order to carry out the assessments against a range of dwelling targets to help identify potential water infrastructure issues at this stage. These do not constitute the Council's preferred growth options at this time.

94 The growth options targets are broken down by ward and summarised below:

Growth options	85% concentrated			
(2011-2031)	**Telford**	**Newport**	**Rural**	**Total**
Completions-led	8840	1040	520	10,400
Housing growth	13226	1556	778	15,560
RSS-led	22525	2650	1325	26,500

Table 5.1 Growth Scenario Targets

95 The development growth options have been reported by Ward in the WCS. In order to facilitate future planning at a Parish level, the proposed dwellings were approximately apportioned to the Parishes within the Borough as shown in Table 5.2. The M54 motorway was used to define the boundary between North and South Telford.

Parish	Parish
Newport	***Rural***
Newport	Chetwynd Aston and Woodcote
North Telford	Chetwynd
Hadley and Leegomery	Church Aston
Ketley	Edgmond
Lilleshall, Donnington and Muxton	Ercall Magna
Oakengates	Eyton upon the Weald Moors
St. Georges and Priorslee	Kynnersley
Wellington	Preston upon the Weald Moors
Wrockwardine Wood and Trench	Rodington
South Telford	Tibberton and Cherrington
Dawley Hamlets	Waters Upton
Great Dawley	Wrockwardine
Hollinswood and Randlay	
Lawley and Overdale	
Little Wenlock	
Madeley	
Stirchley and Brookside	
The Gorge	

Table 5.2 Growth Areas Split by parish

96 Currently 8,192 dwellings have planning permission and are expected to be completed, the current distribution of this is summarised below:-

Location	Planned by Ward
North Telford	2746
South Telford	5312
Newport	65
Rural	69
	8,192

Table 5.3 Expected Completions with Planning Permission

97 This leaves a remainder of **2,208** dwellings for Scenario A, **7,367** for Scenario B and **18,308** for Scenario C as summarised in Table 5-4 below.

Additional targets	A: Completions Led	B: Housing Growth	C: RSS Growth
North Telford	396.5	2589.5	7239
South Telford	396.5	2589.5	7239
Newport	975	1491	2585
Rural	440	698	1245
Remaining Totals	**2208**	**7368**	**18308**
Total inc. planned	10400	15560	26500

Table 5.4 Additional Housing Targets when completions are accounted for

98 TWC has provided indicative phasing of this new development for all three options, to allow the assessment of likely WCS impacts and Scoping strategy preparation and outlined in Figure 5.1 below and the anticipated phasing provided by TWC in Table 5-5.

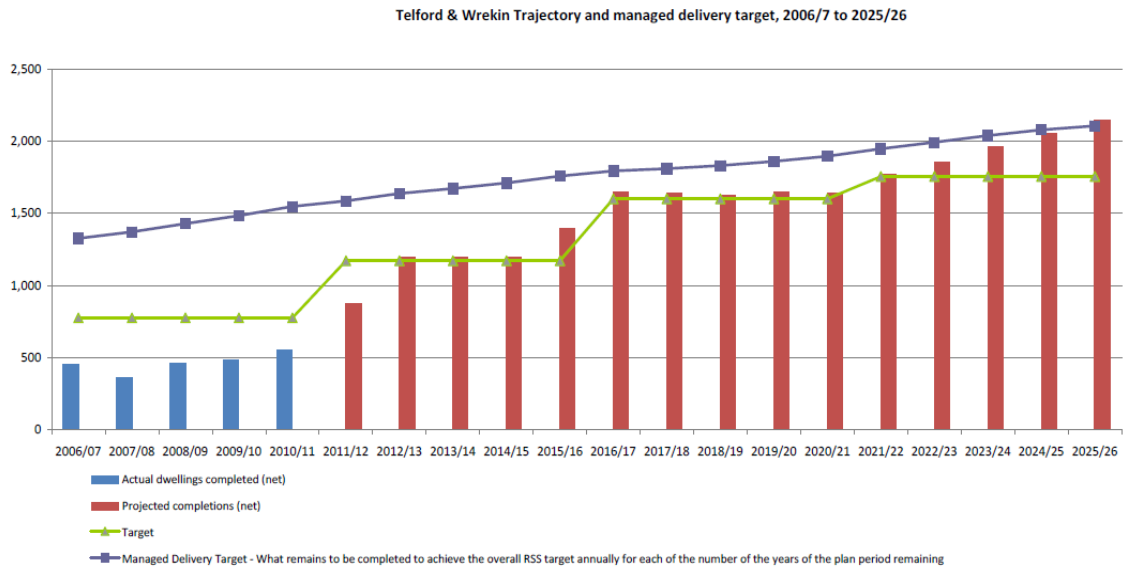

Figure 5.1: TWC Trajectory and managed delivery targets

99 Whilst it is important for the WCS to incorporate the dwelling numbers at these allocated sites into infrastructure impact calculations, little strategic guidance can be given as the majority of the sites are already under construction.

100 The additional sites that will be required, on top of those previously allocated, to meet the Growth Scenario targets, will require an assessment of possible infrastructure solutions and strategic guidance to be provided.

101 TWC has provided an estimate of how this development might be accommodated, but this will be the subject of further consultation and should only be considered indicative for the purposes of this study.

102 A summary of the areas of development required to meet the different growth scenario options, is included in the table below.

		Scenario A	Scenario B	Scenario C
2012-2015	Newport	208.0	311.2	434.6
	North Telford	630.2	1068.8	1638.9
	South Telford	1137.8	1576.4	2055.2
	Rural areas	104	155.6	217.3
		2080	**3112**	**4346**
2016-2020	Newport	260	389.0	663
	North Telford	788	1336.0	2498
	South Telford	1422	1970.5	3133
	Rural areas	130	194.5	331
		2600	**3890**	**6625**
2021-2025	Newport	260	389.0	701
	North Telford	788	1336.0	2642
	South Telford	1422	1970.5	3313
	Rural areas	130	194.5	350
		2600	**3890**	**7007**
2026-2030	Newport	260	389.0	710
	North Telford	788	1336.0	2678
	South Telford	1422	1970.5	3358
	Rural areas	130	194.5	355
		2600	**3890**	**7102**
2031	Newport	52	77.8	142.0
	North Telford	157.55	267.2	535.7
	South Telford	284.45	394.1	671.7
	Rural areas	26	38.9	71.0
		520	**778**	**1420**
	Totals	**10400**	**15560**	**26500**

Table 5-5 Summary table of phasing for new development by Option

103 Any major water infrastructure, or water environment, constraints or opportunities, which may preclude or support the choice of these new settlement locations and villages, have been identified in Sections 7, 8, and 6, and are summarised in Section 9.

104 The potential impact of these housing and employment areas on the water infrastructure and wider water environment has been identified in Sections 6.3 and 7.6.

5.2 Employment Area Development

105 TWC are currently drafting a new Economic Development Strategy and Employment Land Review. These will help to inform the amount and different types of employment development to be delivered by the new Development Plan over the next 20 years. Traditionally the borough has had around 200 hectares of employment land available for development, the vast majority of which is former New Town development land within Telford.

106 The Council will be seeking to balance housing and employment growth to ensure that development will be ambitious, but sustainable. The impact of employment development on the water environment will be in keeping with the impacts from the residential sites and will require mitigation accordingly. It is recommended that the findings of the new Economic Development Strategy and the Employment Land Review are explored and fully taken in to account in future work undertaken as part of an Outline Water Cycle Study.

6 Wastewater Collection, Treatment and Water Quality

6.1 Existing Situation

107 As illustrated in Figure 6-1, there are 13 Wastewater Treatment Works (WwTW) and one to the south of the Council area (Coalport) all of which are owned and operated by Severn Trent Water.

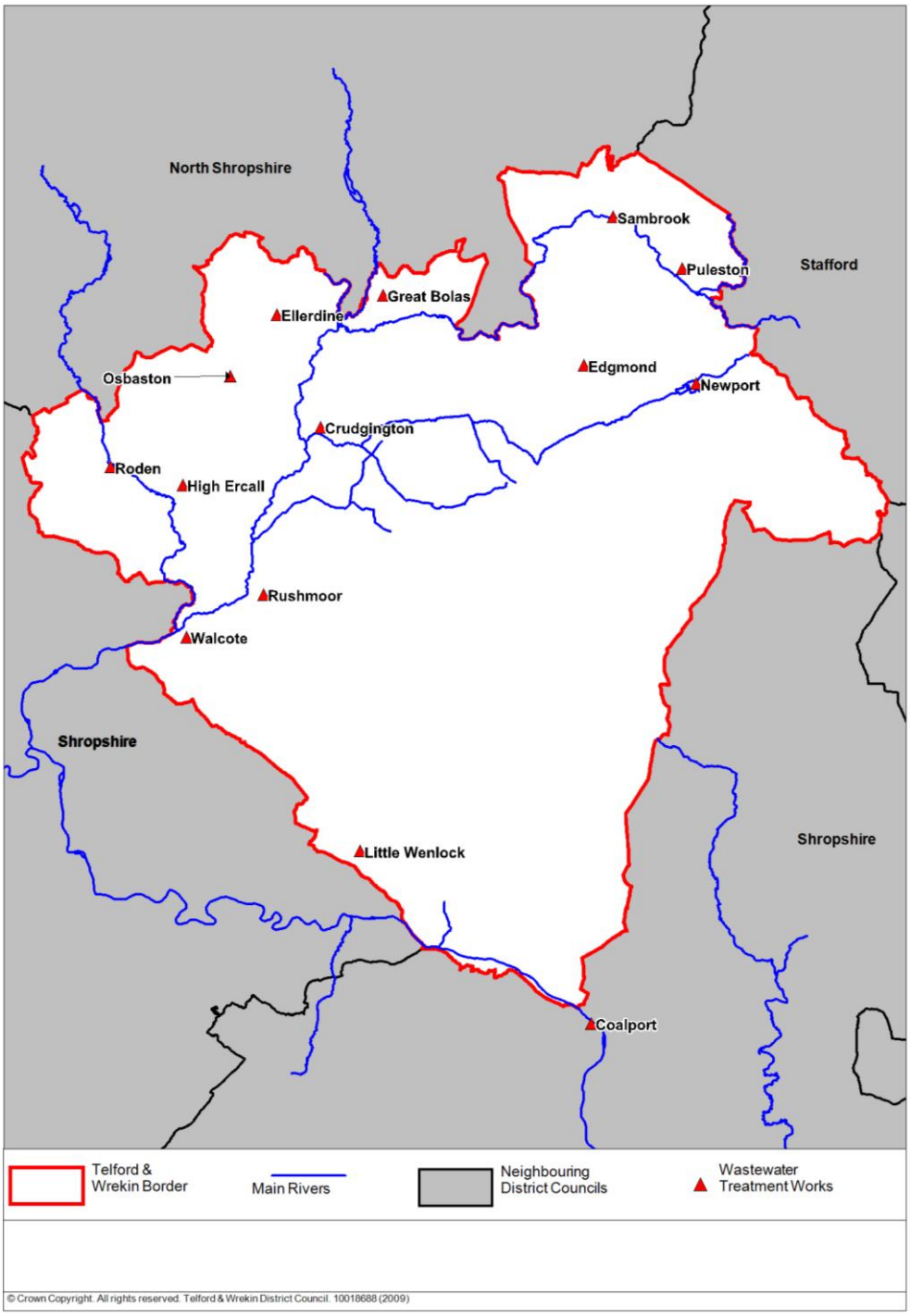

Figure 6-1 WwTW in the TWC area

108 Appendix A shows which WwTW catchment areas the potential development locations fall under, and to which watercourses the treated effluent is discharged.

109 STWL also have the responsibility for the operation and maintenance of the existing public sewer network. It is also responsible for the surface water drainage from roofs, driveways and hard standings relating to properties and private sewers if they are connected directly to the public sewer system or if the surface water system has been adopted by STWL. It is not responsible for soakaways, land drainage, highway drainage, Sustainable Urban Drainage (SUDS) or private water systems.

110 The wastewater that we produce from our homes and businesses is collected by the drainage system below ground from where it is transported by gravity or via pumps to wastewater treatment works. This drainage system is known as the sewerage system, and can be either a separate or combined sewerage system.

111 A separate system comprised a foul system which conveys wastewater or foul drainage only to the wastewater treatment works, and a surface water system that collects roof and highway runoff and discharges the clean runoff into rivers and coastal waters. Combined systems collect both rainfall runoff and foul water, and in times of very heavy rainfall can be at risk of being overwhelmed and causing dilute sewage to flood above ground.

112 A Combined Sewage Overflow (CSO) is a discharge of combined foul and storm sewage, to a watercourse. A CSO acts as a relief valve during times of very heavy rainfall and allows dilute storm sewage to be discharged into river and coastal waters. The design of such overflows ensures that discharges only occur during times of very heavy rainfall when there is sufficient dilution in the receiving water to prevent the discharge causing pollution or environmental damage. All CSOs are regulated by the EA through environmental permits and issued to the Water Undertaker.

113 New residential developments and new employment areas that connect to the existing sewerage system can cause an increase in foul flooding and surface water flooding, and an increase in discharges from combined sewer overflows in combined sewerage systems, therefore it is important to understand the nature and capacity of the downstream sewerage system when allocating land for development.

114 Incapacity in the sewerage system is unlikely to be an absolute showstopper to development; where there is incapacity, upgrades to the existing sewerage system or new strategic sewer mains can provide additional capacity, subject to funding being provided. However, the time required to plan, finance and deliver sewerage upgrades depends on the length of upgrade required, and the land use below which the existing or new system would drain. STWL estimates that the provision of upgrades for sewerage systems can take 12 – 24 months to plan and deliver. Major upgrades through the existing urban area can cause significant disruption and hence take longer to plan and deliver than new strategic systems through greenfield land. However, new strategic solutions can be significantly more costly.

6.2 Environmental Capacity

6.2.1 Water Framework Directive

115 Water quality has always been an important consideration; however, more stringent standards on surface and groundwater quality (and hence discharges into rivers from WwTW) than present are likely to be applied by the EA, as the Water Framework Directive (WFD) is gradually implemented at regional and local levels.

116 The WFD sets out a strategy for **protecting and enhancing** the quality of groundwater, rivers, lakes, estuaries and coasts. It introduces the integrated approach to river basin management that the EA is currently applying to the 11 River Basin Districts in England and Wales; identifying and characterising the water bodies and protected areas in each district, and the pressures and risks upon them.

117 The main objective of the WFD is to bring all water bodies up to 'good status' by 2015. The actual parameters for the assessment of a river have been set by the UK Technical Advisory Group (UK TAG)[13]. A requirement of the WFD is that a **no deterioration** policy is adopted for the WFD parameters, which could have potential implications for future developments.

118 River Basin Management Plans (RBMP) have been developed by the various regional offices of the Environment Agency and were consulted on from December 2008 until June 2009, and final plans submitted to the Secretary of State for approval in September 2009 ahead of publication in December 2009.

119 The RBMPs set out a strategy, including a Programme of Measures, for each catchment to comply with the requirements of the WFD. An assessment of the current status of the rivers has be made, showing the rivers and lakes that currently fall below the 'good' status required to meet the WFD. The documents then set out those rivers that should be at 'good' status by 2015 with the remainder being at 'good' status by 2027.

120 As with the CAMS designations, Telford and Wrekin falls within the Severn RBMP area. Further information on the WFD, the current status, and future targets, of TWC's watercourses can be found in the Severn district RBMP. .

121 Reviewing the RBMPs reveals that, all of the majority of the watercourses within the TWC area **cannot currently achieve 'good' status** (or GEP). According to the RBMPs[14], throughout the Area the main barriers to achieving 'good' status are:

- Excessive Phosphate concentrations;
- Low Dissolved Oxygen concentrations;
- Poor overall biological quality
- Failure to adequately mitigate the impacts of modification

122 Discharges from WwTW and industry, and surface water runoff (in particular from agricultural areas) can lead to nutrient enrichment, or eutrophication, of the receiving watercourses. High levels of nutrients such as phosphorous or nitrates can encourage excessive algal growth. This can adversely affect the biodiversity of the watercourse, particularly as it decreases the oxygen levels in the water that other life forms depend upon.

123 The EA recognise that phosphorous removal at all WwTW[1*] is not cost effective and may not be immediately achievable. For this reason WwTW that are negatively impacting conservation sites, or causing watercourses to become evidently eutrophic, will be prioritised for detailed investigation in the period to 2015.

124 Whilst the EA is the 'competent body' tasked with implementing the WFD in England and Wales, other stakeholders will have an important part to play. The Programmes of Measures included in the RBMPs (currently out for consultation) will contain integrated solutions requiring input and action from Natural England, the water companies, TWC, Wildlife Trusts, River Trusts and developers.

125 It has been identified that new resource development would be difficult to achieve as a result of the current Licensing status within the study area, as well as the drivers associated with WFD. The groundwater resource within the study area is also identified as being of 'Poor Ecological Status' and works are required to improve the current status.

126 In particular it should be noted that there are potential environmental capacity constraints at Newport STW due to the already tight permit conditions and the low dilution afforded by the River Strine.

[1*]WwTW that serve a PE of more than 10,000 are required to employ phosphorous removal processes under the Urban Wastewater Treatment Directive

No Deterioration

127 The first principle of the WFD is to prevent deterioration in aquatic ecosystems. No deterioration must be met in all but very exceptional circumstances. Exceptional circumstances apply when the deterioration is caused by physical modifications or the result of sustainable new human development activities. Even in such cases it is necessary to demonstrate that there was no better way to achieve the desired development.

128 No deterioration requires that a water body does not deteriorate from its current ecological or chemical classification, and applies to individual pollutants within a water body. For example, if phosphorous levels were currently classified as moderate status, then the first principle of the WFD would be to ensure no deterioration from moderate class

6.2.2 Diffuse Pollution

129 Of particular importance will be dealing with pollution of watercourses other than WwTW discharges. Policies and practices must also be developed to deal with diffuse pollution from urban and rural surface runoff. Ensuring that all new development includes features such as SUDS to attenuate (and possibly treat) such runoff can help to improve water quality by preventing pollutants being transported from highways, hard standing and farmland into rivers.

130 With regard to new urban developments, this source of pollution is considered significant and requires consideration and mitigation measures, the use of SUDS in new developments is still at an early stage and has limitations

131 In addition, within the Council area may result in point source pollution from farmyard runoff, and diffuse pollution following the application of slurry or other fertilizers to land. By being aware of this it may be possible to incorporate possible solutions into TWC's plans and policies. Reducing diffuse pollution from agriculture is being promoted by Defra through the Catchment Sensitive Farming Initiative[15]. Defra is already delivering guidance to 50 priority catchments, and will be imposing regulation in the future. This includes:

- Managing the use of fertilisers, manures and pesticides;
- Promoting good soil structure and rain infiltration to avoid run-off and erosion;
- Protecting watercourses from faecal contamination, sedimentation and pesticides;
- Reducing stocking density;
- Managing stock on farms to avoid compaction and poaching of land; and
- Separating clean and dirty water on farms.

132 In areas that are not priority catchments there is much that still can be achieved to address diffuse water pollution from agriculture; guidance on management options and good practice are available from Defra.

133 Integrated Constructed Wetlands (ICW) can be used to manage diffuse pollution from agriculture. ICW are comprised of a series of shallow lagoons or ponds, with suitable wetland vegetation, which can be used to mix, dilute and balance flows from various sources. Nutrients and other pollutants are removed via natural physical, chemical and biological processes.

134 ICW can form an important link in any future "green" infrastructure proposals by TWC, and can promote and enhance biodiversity in addition to improving water quality and reducing flood risk. TWC should therefore explore the possibility of constructing ICW on the fringes of urban development areas, to intercept, attenuate and treat runoff from both the urban area and surrounding agricultural land through wider initiatives and strategies.

135 There is a concern regarding the effect the increase in non mains foul drainage could potentially have on water quality in the study area. Guidance recommends that future development should avoid environmental, amenity or public health problems which could arise from the use of non-mains sewerage systems, particularly those incorporating septic tanks (Circular 03/99). The use of non mains drainage has the potential to detrimentally affect the surface water and groundwater environment; this can occur if raw or partially treated sewage enters the environment. This has been highlighted as a potential issue on the periphery of urban areas and in populated rural areas in the Telford and Wrekin study area.

6.2.3 Sites of Environmental Importance

136 The majority of water dependant sites of environmental importance, which may be affected by the potential development, are situated along the **Rivers Strine** and **River Roden**. Figure 6-2 and 6-3 below illustrate the Sites of Special Scientific Interest (SSSI) on these rivers that may be influenced by the potential development.

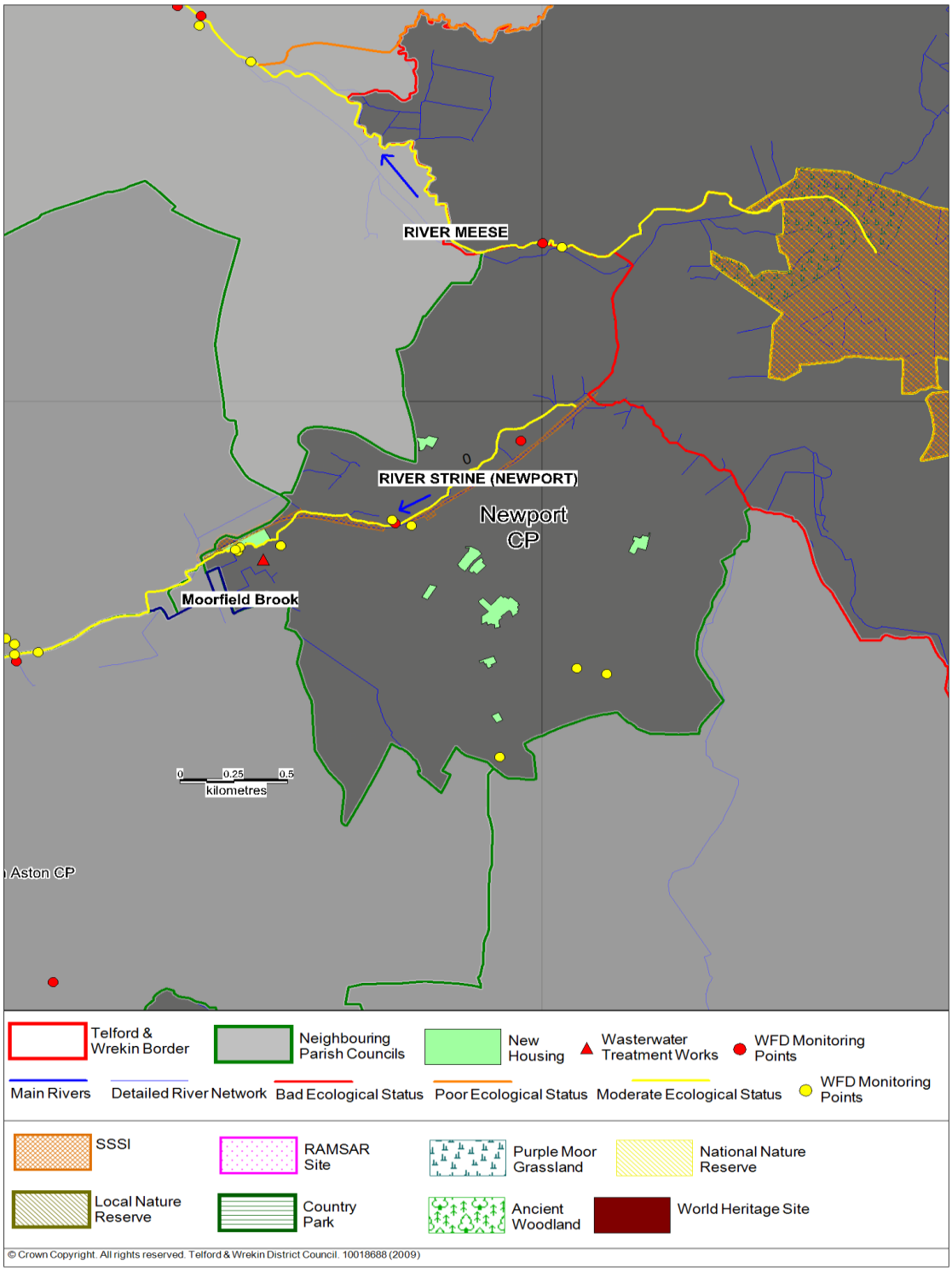

Figure 6-2 Environmentally important sites on the River Stine

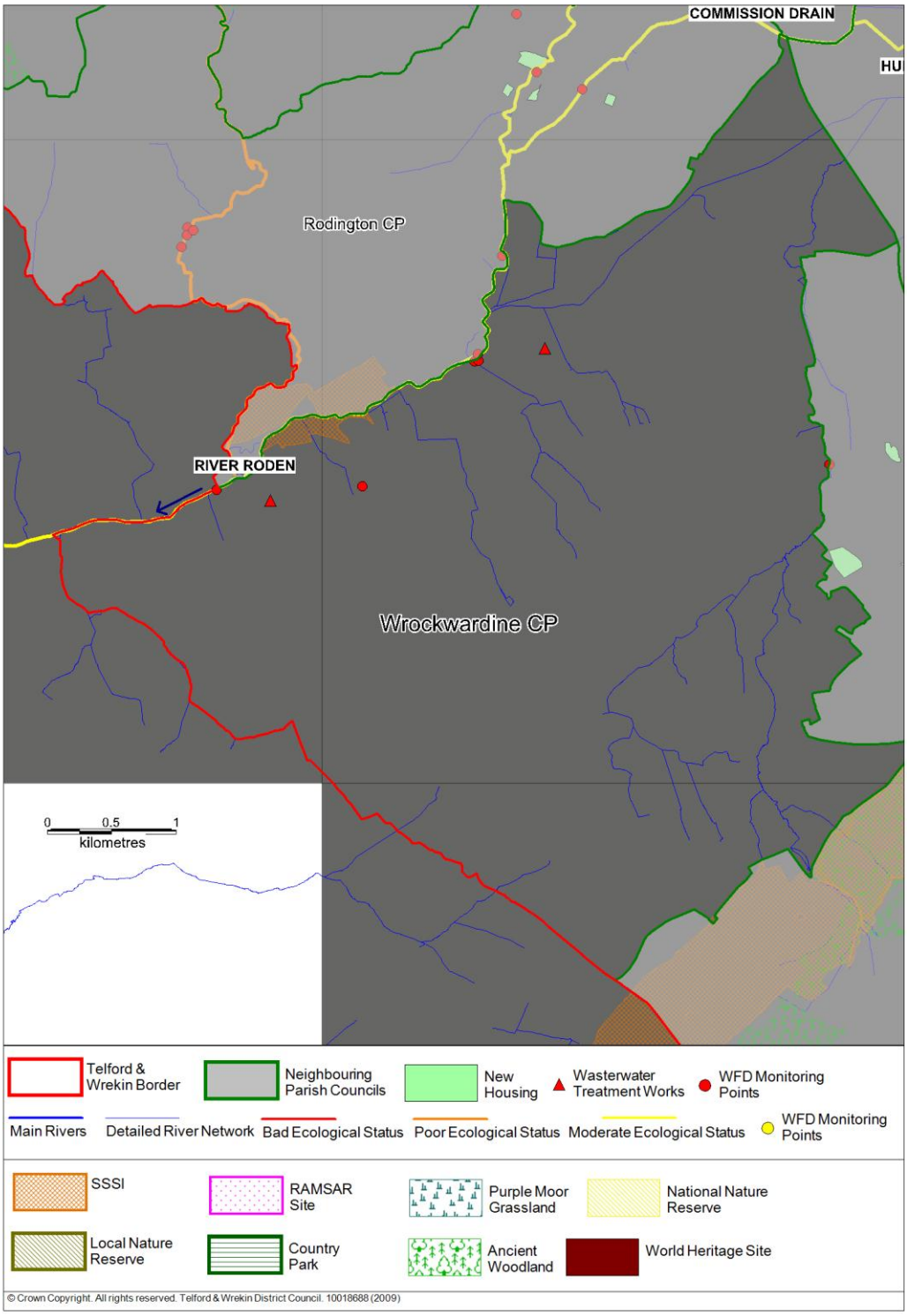

Figure 6-3 Environmentally important sites on the River Roden

Sites of Special Scientific Interest

137 The condition of any Sites of Special Scientific Interest (SSSI) within the Council area that are 'water dependant' has been assessed, by reviewing the latest data published by Natural England (NE).

138 Newport Canal SSSI, along the Strine Brook and Newport Canal is length of about 2 km of disused canal which is one of the best localities for aquatic plants in Shropshire. There is a

range of submerged and broad-leaved plant communities, a continuous narrow fringe of marginal swamp and, in some places, more extensive areas of fen. An area of the site is located downstream from the Newport WwTW, however the Strine Brook passes under the canal or runs parallel to the canal and there is no connection between the WwTW and the canal.

139 The River Meese is eutrophic, and includes the SSSI at Aqualate Mere near Newport. A suspected cause of eutrophication is storm overflows and fully treated effluent discharge from Barnhurst WwTW (near Wolverhampton) which discharges into the Shropshire Union Canal and overflows into the Staffs/Worcester Canal. The SW Canal overflow into the Wood Brook is location at Norbury Junctionwhich subsequently flows into the River Meese. It is understood that Natural England has submitted a £3m project for de-silitng the Aqualate Mere to help remove some of the contributing sediments.

140 Allscott Settling Ponds SSSI, borders the River Tern and River Roden. Adjacent to the River Roden are a series of water-filled lagoons of various sizes and depths. They support a bird community of county importance. However, this site is downstream of Rushmoor WwTW so there is a potential to be affected by development. It is likely that the water quality issues here are caused by agricultural runoff. In light of the closure of the British Sugar Site, there is uncertainty in link between the River Tern and the settling ponds. It is recommended that water quality and biodiversity requirements need to be considered as part of any redevelopment in line with the WFD.

141 None of the other water dependant SSSI, are listed by NE as having problems with water quality. However, changes in volumetric discharges from WwTW, coupled with possible reductions in river flow due to climate change, have the potential to alter the concentration of determinands[2*] in the watercourses, and hence negatively impact upon the SSSI. Variations in river flows, again from changes to WwTW discharges, and the runoff of surface water from new developments, may also be of detriment to the sites. As illustrated in Figure 6-2 and Figure 6-3, the water dependant SSSI where this risk must be mitigated are:

- Newport Canal SSSI
- Allsott Settling Ponds

142 TWC, the EA and Shropshire Wildlife Trust have been successful in their bid to receive funding as part of the Catchment Restoration Fund to investigate and look for schemes to help improve the receiving water environments on the Mad Brook (Madeley CP, South Telford) and the Lyde Brook (Dawley and the Gorge CP, South Telford).

6.3 Proposed Growth Considerations

6.3.1 Infrastructure Capacity

143 It is assumed that WwTW where there are only current allocations are not of concern to this WCS, as the water companies will already be aware of these and it is likely that any upgrades will already be planned or completed.

144 Where large scale growth through extensions, intensification or new settlements, is required to meet the RSS targets, the current volumetric flow consent figures, measured or calculated DWF figures, and estimated population equivalent (PE) will need to be assessed. The capacity of

[2*] See Discharge Consent in Technical Glossary for description of determinands

each WwTW to receive wastewater flows from additional development has been estimated for this study, through high-level assessment and consultation with STWL. These include:

- Newport
- Edgmond
- Sambrook
- Great Bolas
- Ellerdine
- Waters Upton
- Crudgington
- Roden
- High Ercall
- Rushmoor
- Walcote
- Little Wenlock

145 Through consultation with STWL, Table 6-1 shows the available process and volumetric headroom comments for the major works. Unfortunately, at this stage, the capability for some of the more rural WwTWs to accept further growth is undetermined as little detail exists for the potential locations and quantum of development that may drain to these smaller works. This will need to be confirmed during the Outline WCS, when there is a firmer picture of the potential site allocations.

Wastewater Treatment Works	Approximate Parishes Served [*1]	Dwellings with Planning Permission	Potential Growth (Scenario C)	Current observed Dry Weather Flow (m^3/d)	Estimated spare hydraulic capacity Dwellings [*2]	Comments
Coalport	Southern Telford	5312	7239	15983	4470	
Newport	Newport	65	2585	2256	640	2 mg/l "P" standard by Sept 2012.
Rushmoor	Northern Telford	2746	7239	15895	19860	2 mg/l "P" standard by Sept 2012.

Note 1 – Several Rural Parishes are served by Newport and Rushmoor WwTW – however the sewerage asset detail has not been supplied for this Scoping Study to enable the specific allocation of where new development may impact the current performance of the WwTW..

Note 2 – Data produced by STWL – Unable to determine if these values are inclusive or exclusive of the dwellings with current planning permission – therefore to err on the side of caution it is assumed that these DO NOT include those dwellings with planning permissions.

Table 6-1 Identification of Major WwTW and their current Consent status and headroom

146 The capacity of the WwTW and sewerage networks where only village scale growth is proposed it is proposed it would be best assessed through a qualitative discussion with water company representatives, as models do not exist for many of these locations.

147 Information provided by STWL provides the following evidence for the proposed development areas (and included in Appendix B).

Proposed Development Areas

Newport Parishes

148 Comparison of measured flow against the current consent issued by the Environment Agency indicates that Newport WwTW currently has spare headroom to accommodate approximately

670 new dwellings within its current discharge consent. This indicates that there is spare headroom to accommodate the early phases of the proposed development for each of the Scenarios presented, within the existing consent. However, there are key current issues which relate to the Newport WwTW and the sewerage infrastructure, as well as the status of the receiving watercourses.

149 There is a requirement that phosphate stripping at the WwTW achieved the UWWTD requirements by March 2012. The WwTW discharges to the Strine Brook and the watercourse is identified as being eutrophic with high levels of phosphates. The Brook is identified as having a low flow dilution of the WwTW effluent.

150 There are known environmental capacity constraints at Newport WwTW due to the already tight permit conditions and the low dilution afforded by the River Strine. The existing ammonia limit on the environmental permit for Newport WwTW is considered stringent. The Outline WCS will investigate the environmental capacity at the WwTW and determine the indicative permit limits to investigate whether or not permit limits can be tightened within the boundaries of conventional treatment to achieve no deterioration of water quality.

151 To accommodate, even the lower potential growth figures, identified in Scenario A, a new consent would be required – this would be set to achieve 'No Deterioration' status for the receiving watercourse. STWL are currently investigating the growth planned in Newport and Telford through studies on the water supply and sewerage networks, as a result of the proposed scale of development and known sewerage capacity limitations currently on the network. Other the current investigations, STWL at this stage have indicated that they do not envisage any issues in accommodating the higher growth levels within the works, however the WwTW would be required to maintain a Constant Load to help achieve WFD elements within the receiving watercourse.

North Telford Parishes

152 A comparison of the measured and consented DWF consent indicates there is **significant** hydraulic capacity available. Should any additional treatment capacity could be accommodated in dealing with future growth demand, there would be an obligation to meet a new 2 mg/l Phosphate standard by 2012. The majority of the North Telford parishes contribute to Rushmoor WwTW. However, several of the Parishes have recorded issues of sewerage capacity and as such, future growth could exacerbate the problems and studies would be required to identify the scale and solution requirements.

153 Within the Lilleshall and Donnington area it has been identified that the Wall Brook has been suffering from high phosphate levels and it is likely that the WwTW's on the MOD site were key factors in determining phosphate levels. There are no known plans for development and it is expected that the MOD would retain the site throughout the development plan period, hence the water quality issues in this area would likely not be excarbated by the future development plan for TWC. The EA is to undertake a detailed investigation to identify the cause of these issues and will develop solutions to help prevent further deterioration of the Brook.

154 The Wellington area the Bean Hill Brook has been identified to be suffering from Diatoms, the likely cause for this has not been determined to date. It is suspected that a large surface water sewer, incorporating a combined sewer overflow (CSO) could be having an impact on the brook. This CSO is permitted and regulated by the EA and discharges to the brook via two large tanks in Wellington during prolonged storm events. An investigation of the Beanhill Brook is currently being undertaken.

South Telford Parishes

155 A comparison of the measured and consented DWF consent indicates there is significant hydraulic capacity available. Should any additional treatment capacity could be accommodated in dealing with future growth demand, there would be an obligation to meet a new 2 mg/l Phosphate standard by 2014. Wastewater within the South Telford Parishes drains to Coalport WwTW. It is understood that there is capacity for approximately 4,500 dwellings in relation to the hydraulic capacity and against the current consent.

156 Several of the Parishes have recorded issues of sewerage capacity and as such, future growth could exacerbate the problems and studies would be required to identify the scale and solution requirements. Little Wenlock, Great Dawley and Dawley Heights Parishes contribute surface water to the Lyde Brook, which flows into Coalbrookedale Brook and onto the River Severn. There are two tributaries of the Lyde Brook, the Eastern tributary is currently failing on Invertebrates and is subject to a recent submission for investigation and works from the Shropshire Wildlife Trust. Within the Madeley Parish the Mad Brook failing on the grounds of dissolved oxygen levels and invertebrates. The Shropshire Wildlife Trust has been success in their bid to obtain funding for a feasibility study on the Mad Brook.

Rural

157 The three scenarios assume an identified range of between 520 and 1325 dwellings are planned for completion in the remaining rural parishes. Several of the proposed developments are constrained by sewerage network and WwTW capacity, if growth is expected in these areas. If any additional treatment capacity could be accommodated in dealing with future growth demand, there would be an obligation to meet a new 2 mg/l Phosphate standard by 2014.

158 Areas where constraints are predicted are Edgmond Parish, which has its own WwTW and the receiving watercourse is known to be Eutrophic. It is estimated that further development is feasible in relation to the consent however there may be the need for phosphate stripping which would work towards improvements (based on Best Available Technology for a WwTW with a current PE of approx. 2,600).

159 STWL have identified that there is no capacity for development occurring within the catchment areas for Great Bolas and Walcot WwTW, due to the nature of the current WwTW. Improvements or provision of new infrastructure to accept new growth would be un-economic, unless funding from other sources is identified.

6.3.2 New Settlements

160 The treatment of wastewater from the potential new settlement locations would have to be accommodated at an existing WwTW. The feasibility will need to be discussed at the Outline WCS assessment phase. *An alternative would be treatment on site with a new WwTW discharging to a nearby watercourse, or the possible on site reuse of treated effluent for water supply*. This is discussed further in Section 8.4.

6.3.3 Water Quality and Environmental Capacity

161 The major impact of the potential development sites on the water environment will be the variations in water **quality** and **quantity** discharged to receiving watercourses from the WwTW that serve the sites.

162 Where discharges from WwTW will increase, it is likely that the chemical constraints included within these consents will be tightened by the EA, to achieve an overall Constant Load to help protect existing watercourses and to achieve a no deterioration status for the receiving watercourses. When assessing possible consent changes the EA will take account of any sensitive sites and species downstream of the discharge, as well as the current dilution available from the river flow, and the possible benefits of increased flows.

163 In some cases the chemical limits required for some of the WwTW discharges may be tightened, to meet the WFD requirements, to limits that require the water companies to operate at Best Available Technology[3*] (BAT), or beyond in the future. As water companies primarily obtain funding from the public through Ofwat, it may not be economically feasible for them to build and operate WwTW processes at this level, due to the increased costs (in both financial and energy/ carbon terms). Instead, it may be more feasible for water companies to plan to operate at Best Available Technology Not Entailing Excessive Cost* (BATNEEC), as there are less risks associated with releasing funds for achieving this. However, this will still require discussion and agreement with both the EA and Ofwat.

164 As described in Section 6.2.1, the majority of receiving watercourses already exhibit high levels of phosphate, which cause them to be classed as not achieving good ecological status (or GEP) under WFD. This will require ongoing cooperation between water companies, the EA and other parties such as Defra to overcome this issue.

165 It will be necessary to assess and investigate if certain development options under the worst case scenario will cause the existing volumetric discharge consent to be exceeded at the WwTW within the study area.

6.3.4 Flood Risk

166 The connection of new sites to the existing sewerage network and WwTW can increase the risk of flooding in two ways:

- New development connected to the existing sewerage network may exceed the capacity of certain network capacity bottlenecks, causing surcharging of sewers, increased spills at CSOs, and the risk of properties being flooded with wastewater. This risk will be increased during storm events, as increased infiltration of surface water from the existing catchment area will also add to the flows in addition to any direct storm flows in combined systems; and
- DWF at WwTW will be increased following the connection of new dwellings to the network. Whilst some flows may be stored on site during peak flows, an increase to the volumetric flow rate of the discharge is likely. This may be within the existing volumetric discharge consent, as stipulated by the EA. However, discharges in excess of this, which will require an updated consent, may increase the fluvial flood risk to properties on the watercourse downstream of the discharge point.

167 Both of these risks will be more likely for the new settlement and larger extension/ intensification proposals, due to the larger flow increases associated with these sites.

168 Regarding sewerage network capacity and sewer flooding, priority sites for further assessment will be:

[3*] See Technical Glossary for definition of BAT and BATNEEC

- Newport
- Edgmond
- Sambrook
- Great Bolas
- Ellerdine
- Waters Upton
- Crudgington
- Roden
- High Ercall
- Rushmoor
- Walcote
- Little Wenlock

169 These potential sites require further assessment during subsequent stages to ensure that network capacity, and hence sewer flooding, does not become a constraint to development (unless new sewers are used to bypass the existing networks).

170 Ongoing discussions between TWC and SWTL, throughout the Development Plan process, will be required to ensure that adequate sewerage network upgrades can be implemented prior to the commencement of the development sites. Additional network models may become available to the water companies to allow this risk to be better quantified in the Outline WCS.

Known Flood Incidents

Newport Parishes

171 There are known flooding issues in parts of Newport and STWL are currently progressing a capital scheme to provide additional capacity for growth. The Moorfield Brook was identified as currently experiencing some flooding issues; however some investigations are underway to understand the risk and causes. High groundwater levels are a potential concern, however, it has been confirmed that groundwater levels are variable and monitored and dependent on abstraction and rainfall. Any new development should investigate the groundwater level and mitigate, to avoid groundwater ingress into any proposed surface water attenuation structures to avoid capacity being reduced.

North Telford Parishes

172 Isolated flooding has occurred in the past and the area is drained by several watercourses, which are either transferred into the River Tern catchment via the north Telford Interceptor channel discharging close to Rushmoor WwTW or via the Hortonwood Open Interceptor Channel taking flow towards the Red Strine catchment.

173 There are known capacity issues to the north west of Muxton and records of minor flooding to the west of Donnington and in the Ketley Bank area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.

South Telford Parishes

174 Isolated flooding has been reported within parishes in the west, which contribute surface water to Coalbrookdale Brook and the Mad Brook to the east. Any development within the Coalbrookdale Brook catchment would be required to manage surface water to help benefit the catchment. The catchment is designated as a Rapid Response Catchment and hence any new development would be expected to go beyond current requirements for surface water management.

175 Within the Hollinswood and Randley Parishes flooding has been experienced in and around the Hollinswood School. It is understood that surface water flows from St Georges and Priorslee via the Priorslee Balancing Lake, contribute to flows in Wesley Brook and flooding in the Shifnal

area. Development within this area would need to look to provide suitable mitigation to reduce flows downstream.

176 Within the Stirchley and Brookside Parishes there are known flooding issues to north of Holmer Lake and potential downstream of the lake. Holmer Lake overtopped during 2007 flooding event and subsequently the Shropshire Wildlife Trust submitted a submission for funding to help open up culvert north of Holmer Lake to reconnect floodplain and watercourse. It is understood that the Holmer Lake provides some compensation flow into Mad Brook.

177 Within the Lawley and Overdale Parishes past applications for outline planning permission have had stringent conditions regarding surface water management. Subsequently TWC are working with developers to try and achieve a sensible balance and to achieve betterment on the outline planning permissions. Development within the parishes could result in flooding issues downstream. However, it is felt the Culvert under M54 represents a significant control structure and this could prevent issues transferring further downstream.

Rural

178 There is one record of minor flooding of properties in Ercall Magna parish. There are no records of properties flooding in the other rural parishes. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.

6.4 Summary and Issues for next stages

179 A summary of the constraints are noted in Table 6-1 below.

Ward	Key Issues
Newport Parishes	Newport WwTW has limited capacity for growth under current consent and there is a requirement for phosphate stripping at works to achieve UWWTD requirements for completion. The WwTW discharges to the Strine Brook and the watercourse is identified as being eutrophic with high levels of phosphates
North Telford Parishes	Several of the Parishes have recorded issues of sewerage capacity. Within the Lilleshall and Donnington area it has been identified that the Wall Brook has been suffering from high phosphate levels. Within the Wellington area the Beanhill Brook is potentially eutrophic based on diatom data. A major surface water sewer outfall, incorporating a CSO, is currently under investigation.
South Telford Parishes	Madeley Parish , Little Wenlock, Great Dawley and Dawley Heights Parishes have issues of sewerage capacity and as such, future growth could exacerbate the problems and studies would be required to identify the scale and solution requirements.
Rural Parishes	Areas where constraints are predicted are Edgmond Parish, which has its own WwTW and the receiving watercourse is known to be Eutrophic.

Table 6-1: Summary of constraints (information provided by STWL- Appendix B)

180 This analysis has only been able to assess sites that have been provided with a clear location and spatial extent, Where uncertainty exists with respect to the specific location of development,

for example where the housing requirement is a requirement for a whole authority area, and that area is served by several treatment works, it will be necessary to estimate what proportion of the requirement will drain to each WwTW in the outline Water Cycle Study.

181 It was not possible to undertake an environmental capacity assessment at this stage, because uncertainties exist in terms of the likely scale of development being served by each of the available WwTW was not provided. Without undertaking the environmental capacity water quality assessment, it is not possible to identify a risk of there being absolute constraints to growth based on WFD compliance. This water quality environmental capacity assessment needs to be undertaken as a matter of priority as part of an outline Water Cycle Study.

182 The further work required to be undertaken in an Outline WCS includes:

- Working with STWL and TWC to determine where the development elements may be located and what impacts this could have on WwTW and sewerage network capacity for all of the key development locations
- For areas, where there may be a need for increasing volumetric discharge consents, then there is a need to consult further with the EA and STWL to assess the affected WwTW, considering water quality, environmental constraints and flood risk issues;
- Confirming the necessary key strategic sewerage and WwTW upgrades (or new WwTW), including the production of intervention charts and approximate costs in collaboration with the water companies, following confirmation of the preferred development option through the LDF process.

7 Water Resources and Supply

7.1 Water Resources Policy and Practice

183 The Environment Agency manages water resources at a local level through Catchment Abstraction Management Strategies (CAMS), which have previously been prepared on a 6 yearly cycle.

184 The CAMS process has changed to better feed into the Water Framework Directive and will become a live strategy with information available on the Environment Agency web site. The CAMS products will be more customer focused with customers both within the Environment Agency and external, such as current and future abstraction licence holders.

185 Within the CAMS areas the Environment Agency's assessment of water resource availability is based on a classification system for the perceived status of water resource availability, indicating:

- The relative balance between the environmental requirements for water and how much is licensed for abstraction;
- Whether water is available for further abstraction;
- Areas where abstraction needs to be reduced.

186 The categories for resource availability status, shown in Table 7-1, are based upon assessments of the ecological sensitivity to abstraction-related reduction of individual Water Resource Management Units (WRMU), which may be either surface water or groundwater sources. An assessment is made of each of the WRMUs located within each CAMS area

187 The classification can be used to help assess the potential for additional water resource abstraction opportunities. The Environment Agency recommends that, due to the pressures facing water resources availability that the following measures should be adopted:

- Efficient use of water in all new homes with water efficiency set at 105 litres per head per day (i.e. level 3/4 for water within Code for Sustainable Homes) or better;
- That all growth point plans liaise with water companies to ensure that company have the water resources and associated environmental infrastructure (such as new resources and adequate distribution) now, and in the future, to meet planned development;
- All new buildings, including flats, must be metered;
- Whenever possible developments should consider the benefits of rainwater harvesting and water recycling in new developments;
- Use of low water use landscaping and gardens; and
- Local authorities to follow their duties, as noted in the Water Act 2003 (part 3 sections 81 & 83), that 'the relevant authority must, where appropriate, take steps to encourage the conservation of water'.

7.1.1 Hydrology

188 As illustrated in Figure 7-1, Telford and Wrekin area lies on the boundary between three river catchments, each covered by a separate EA Catchment Abstraction Management Strategy, namely.

- Shropshire Middle Severn

- Severn Corridor
- Worcestershire Middle Severn

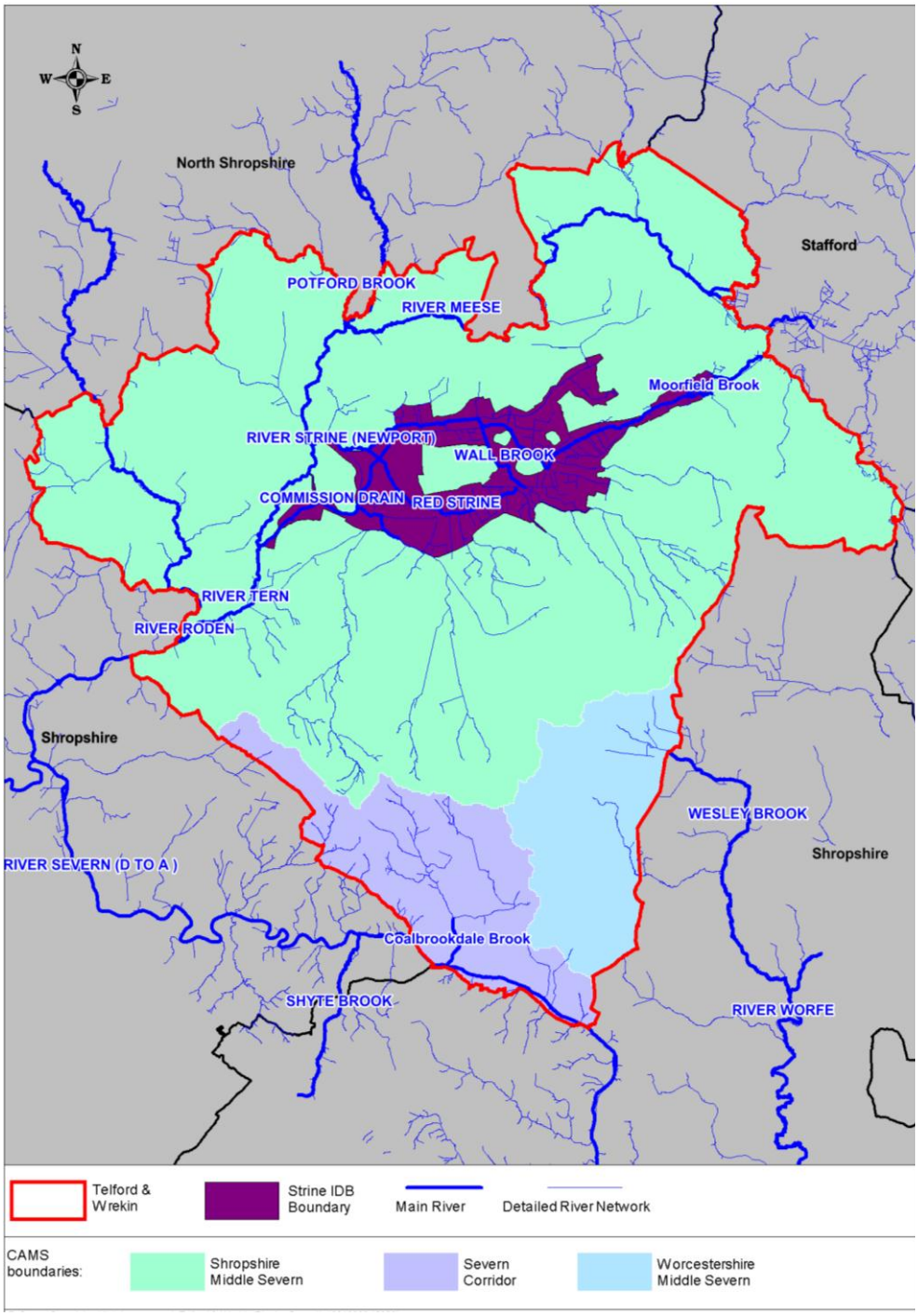

Figure 7-1 CAMS boundaries within the TWC area

189 The Rivers **Tern, Meese, Strine and Roden** lie within the Shropshire Middle Severn catchment Water Resource Management Unit 2. These watercourses are described below:

- The River Tern flows south through rural landscape before confluencing with the River Severn and is fed by a number of tributaries, namely, the Meese, Roden and Strine. There is the potential for the Tern to be susceptible to low flows during the summer months due to groundwater abstractions;.
- River Meese flows across the north of the district from east to west and is a tributary of the River Tern. The Meese is susceptible to low flows during the summer months due to

groundwater abstractions. The River Meese is eutrophic, and includes the SSSI at Aqualyte Mere near Newport.

- The River Strine is a left bank tributary of the River Tern and is in a rural catchment primarily used for agricultural purposes and is maintained by Strine IDB. There is the potential for the River Strine to be susceptible to low flows during the summer months due to groundwater abstractions;
- The River Roden cuts through the western side of the TWC area and confluences with the River Tern. There is the potential for the River Roden to be susceptible to low flows during the summer months due to groundwater abstractions in the catchment;

190 The River **Severn and Coalbrookdale Brook** lie within the Severn Corridor catchment Water Management Unit 3: Buildwas to River Worfe Confluence

- The River Severn flows west to east passing through the southerly tip of the district and drains acts as a receiving watercourse along the south west of the district and the River Tern catchment.
- The Coaldale Brook flows north to south where it confluences with the River Severn. The catchment is designated as a Rapid Response Catchment – hence new development would be expected to go beyond current requirements for surface water management.

191 Tributaries of the **River Worfe and Wesley Brook** lie within Worcestershire Middle Severn Water Resource Management Unit 2. Surface water flows from Stafford Park contribute to flows in Wesley Brook and flooding issues in Shifnal. All the watercourses in the Severn catchment could be susceptible to low flows during the summer months due to groundwater abstractions within the catchment. However, during low flow conditions flows in the catchment are artificially maintained through the conjunctive release of surface water and groundwater storage to balance the demands of abstractors with the ecological needs of the river.

7.1.2 Hydrogeology

192 The northern part of the TWC area is underlain by a Principal Sandstone aquifer, with a variety of superficial deposits such as sand, gravels and till deposits. The Triassic Sherwood Sandstone aquifer is a Principal Aquifer, in that it is a highly productive stratum, which is regionally important for strategic water supply. Furthermore, it can provide water for commercial, agricultural and domestic purposes and is important for summer base flows to watercourses.

193 The southern half of the district is underlain by a complex mixture of sandstone, shale and mudstone and overlain by till superficial deposits or is exposed bedrock. The southern half of the district is predominately is classed as a Secondary A aquifer with small portion of Secondary B, in that they may be variably permeable but important for local water supplies and provide base flows to watercourses.

194 The Sandstone aquifer in the district is extensively used for water abstraction. Groundwater within the sandstone feeds many of the rivers, streams and wetlands of the area. In the upper reaches of the Rivers Tern, Meese, Roden winter rainfall percolates into the underlying sandstone aquifer where it is stored. The sandstone aquifer releases the stored groundwater slowly as base flow to these watercourses, attenuating the response of river flows to rainfall events. In some areas, long term groundwater abstraction has resulted in the groundwater levels falling below the watercourses. As a result, the rivers can leak and the summer base flow is no longer present and this can lead to low flows

195 The extent of the Principal and Secondary aquifers within the District is most clearly illustrated by mapping the EA's bedrock Aquifer Maps in Figure 7-2. The Groundwater Vulnerability (GWV) zones (see Figure 7-3) demonstrate the vulnerability of the soils within the district. These zones were created based on existing soil maps and databases, and provide an

indication of the vulnerability of the underlying groundwater resources to pollution from surface contaminants, as high, intermediate or low. This EA classification of the land surface reflects the ability of contaminants to leach through the covering soils and pose a potential risk to groundwater at depth. The maps also indicate areas where the presence of low permeability drift may provide additional groundwater protection.

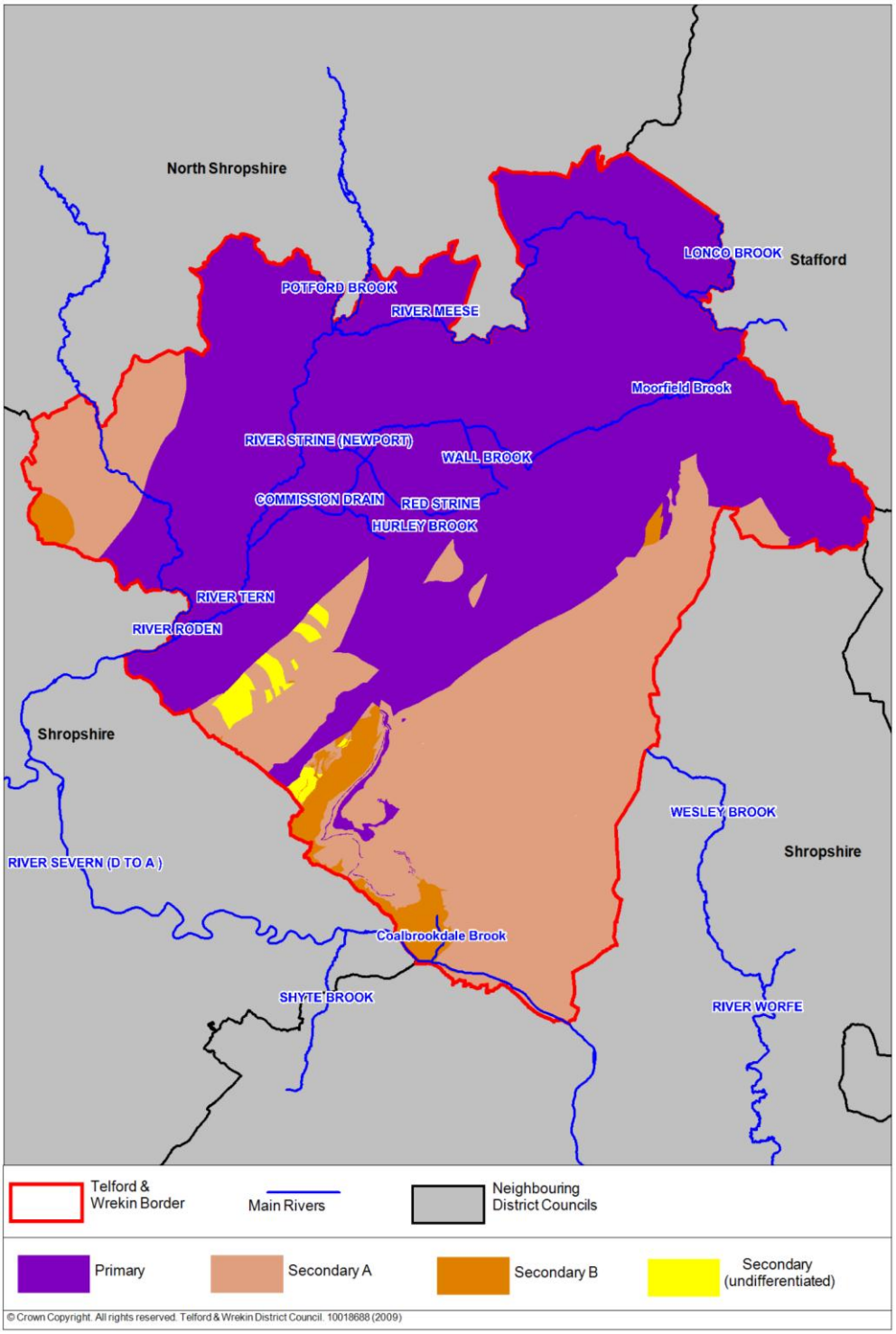

Figure 7-2 Bedrock Aquifers within the District, as depicted by the EA Aquifer maps

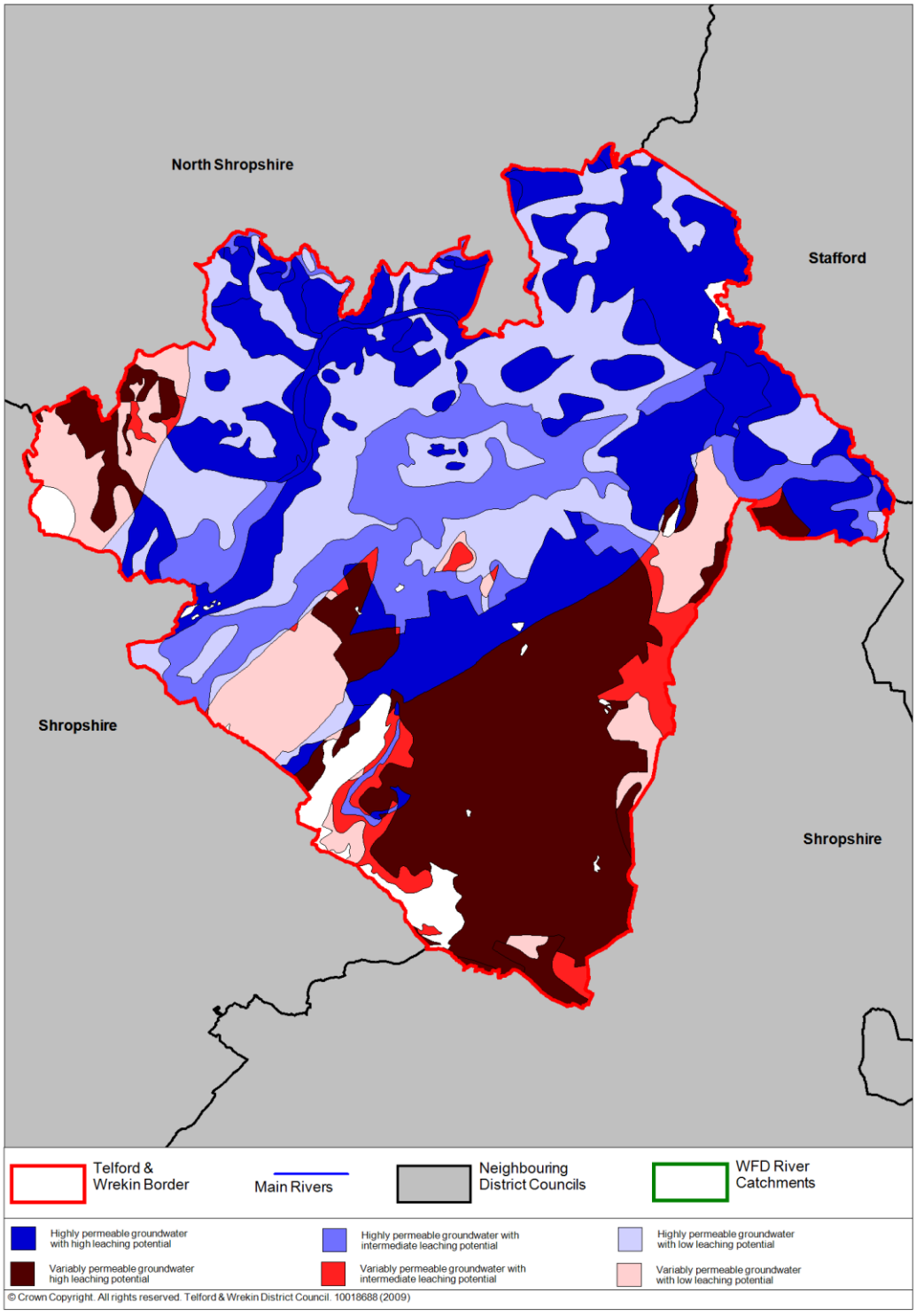

Figure 7-3 Groundwater Vulnerability Zone maps

196 Flow rates within the sandstone aquifer vary from location to location due to the large number of fissures and composition variation within the rock. This presents difficulty in modelling the groundwater flow using conventional methods, and increases the risk of contamination from polluted surface water entering boreholes and wells without being percolated through the rock matrix.

197 The risk of contaminating the sandstone aquifer with pollutants from infiltration based SUDS is a key risk that must be mitigated by local onsite tests and choice of methods. This is discussed more in Section 8 4.1.

7.1.3 Summary of Current Resources

198 The Shropshire Middle Severn and Worcestershire Middle Severn CAMS cover most of the geographical area covered by Telford, Newport and the rural areas. Each CAMS uses Water Resource Management Units (WRMU) to make integrated assessments of groundwater and surface water resources.

199 There are four categories that the Environment Agency adopt to indicate water resource availability for abstraction and described in Table 7-1.

Indicative Water Resource Availability	Licence Availability
Water available	Water is likely to be available at all flows including low flows. Restrictions may apply
No water available	No water is available for further licensing at low flows. Water may be available at higher flows with appropriate restrictions
Over licensed	Current actual abstraction is such that no water is available at low flows. If existing licences were used to their full allocation they could cause unacceptable environmental damage at low flows. Water may be available at high flows, with appropriate restrictions
Over abstracted	Existing abstraction is causing unacceptable damage to the environment at low flows. Water may still be available at high flows, with appropriate restrictions

Table 7-1 Indicative Water Resource Availability

200 Information taken from the relevant CAMS and WRMU for the District, and highlights the availability of water for further abstraction in Table 7-2.

CAMS catchment	WRMU reference	Telford & Wrekin Rivers Affected	Resource Availability Status
River Tern	2: (Tern catchment & associated Groundwater units)	Tern and tributaries River Meese, River Roding and Strine	Over-licensed, (the underlying aquifer is assessed as Over-abstracted)
Severn Corridor	4: Buildwas to River Worfe Confluence	Tributaries of the River Severn, Mad brook & Coalbrookdale	Water Available
Worcestershire Severn	2: Rivers Worfe, Stour and Salwarpe	Wesley Brook and tributaries of the River Worfe	Over-abstracted (the underlying aquifer is assessed as Over-abstracted)

Table 7-2 Resource Availability in the WRMU around Telford and Wrekin

201 As shown in Table 7-2, none of the WRMUs in the vicinity of Telford are assessed as having water available; there is no additional water available for abstraction from surface or groundwater resources at low flows. There may be an opportunity to abstract additional water at times of high flow, although this will be subject to a number of restrictions and parameters being met in accordance with EA guidance. A 'hands off flow' (HOF) restriction may be applied to new abstraction points. This restricts abstraction to periods when at least a minimum river flow is obtained at a nearby gauging point.

River Tern WRMU

202 For the River Tern WRMU, for surface water; abstractions would be permissible for high flow periods and subject to a hands-off flow restriction, stating that abstraction from the Rivers Tern, Meese, Roden, Strine and their tributaries must cease when the low flow threshold is met as measured by Walcot gauging Station on the River Tern.

203 For Groundwater; licences will be available from three of the groundwater aquifers in this Management Unit (Radmoor, SambrookWest and Wistanswick) on a short term basis. In recognition of the unique way in which the Shropshire Groundwater Scheme (SGS) has been licensed and developed, the EA propose to issue time limited licences with an end date of the next cycle of CAMS (2013). Unlike normal practice there will be no presumption of renewal. This approach will therefore enable short-term development of groundwater resources allocated to Shropshire Groundwater Scheme for the benefit of the abstractor[16]. Licences within this unit which are due for renewal will only be renewed subject to the applicant demonstrating that all reasonable measures have been taken to ensure the water is used efficiently and only water required will be licensed.

Buildwas to Worfe Confluence WRMU

204 This extends from below Buildwas gauging station to just above where the Rivers Worfe and Severn meet. There are no main tributaries. There are five abstraction licences within this unit and no designated conservation sites. The result of the resource assessment for this unit is 'water available[17]'. Licences within this unit which are due for renewal will only be renewed subject to the applicant demonstrating that all reasonable measures have been taken to ensure the water is used efficiently and only water required will be licensed.

Rivers Worfe, Stour and Salwarpe WRMU

205 The strategy for this WRMU is to prevent the situation from deteriorating any further by only granting all new surface water licences with a restrictive hands-off flow (HOF). The EA will actively seek a reduction in quantities licensed and abstracted in this unit. Licences within this unit which are due for renewal will only be renewed subject to the applicant demonstrating that all reasonable measures have been taken to ensure the water is used efficiently and only water required will be licensed.

206 For existing licences there will be no increase in abstraction consents during low flow conditions and increases will be subject to HOF but overall, a reduction in abstraction will be sought.

207 There are no proposals for this CAMS to reduce to an "over licensed" status as the reduction in actual abstraction quantities is beyond the scope of this CAMs and would involve financial compensation[18].

7.1.4 Future CAMS recommendations

208 As previously stated, the CAMS documents are in the process of being updated.

209 Sections 7.3.1- 7.3.3 is based on the current CAMS document. In this interim period, Information on current abstraction information has been provided by the EA which draws from the Telford & Wrekin Sustainability Appraisal Scoping Report and current information being put forward for the next CAMS documents as detailed below.

210 *No more groundwater resources are available from the Principal Aquifers in the Telford and Wrekin area. Historical over-abstraction has occurred, causing low flows and poor ecological status in many surface watercourses. The Water Framework Directive classes these aquifers as poor status and the EA want to recover resources to achieve good ecological status under WFD by 2027. Any development proposals should take this into account when they consider how to provide water supply to new housing.*

211 *The EA are in the process of revising the existing surface water licensing policy. Although the policy is not yet available, and is due to be published by December 2012, the conclusions must be applied to all new licence applications. In future, more restrictive conditions (HOF condition) will be placed on surface water licences so that new licences will be prevented from abstracting at increasingly higher flows.*

212 *Abstraction licences are also time limited to enable a future review of the licence and their impact on the environment. For surface water licences the CAMS common end date (CED) is 2013. As the CAMS CED approaches, the EA have the opportunity to skip a CAMS CED. Therefore any licences applied for within 6 years of a CAMS CED can be skipped to the following CED. New licences can therefore be tied to a CED of 2025 if there are no issues surrounding the application which would justify a shorter time-frame being applied.*

213 *Development of storage reservoirs is encouraged to capture high flows for use during the year.*

Low flow operations

214 *Some rivers suffer more than others during low flows. The Environment Agency have identified sites where low flows are made worse by licensed abstractions nearby and are considered to have significant affect on the environment, such as at sites of Special Scientific Interest (SSSI's). Water is added to these rivers by pumping groundwater from a nearby borehole at times of low flows. One such operation is called the River Strine low flow alleviation scheme, where:*

215 *"Flows in the River Strine are augmented by discharges from STW boreholes at Newport (18/54/04/0465) and Edgmond (18/54/04/1169). This water provides compensation for water abstracted from the groundwater unit underlying the River Strine at the following STW abstraction boreholes: Edgmond (18/54/04/1169); Newport (18/54/04/0465); Lilleshall (18/54/04/0293) and Rodway (18/54/04/1008). Compensation flow requirements depend on trigger flows at the Walcot Gauging Station."*[19]

7.1.5 Shropshire Groundwater Scheme

216 The Shropshire Groundwater Scheme is a vital component of River Severn Regulation Scheme where flows in the River Severn are artificially supported during times of low flow. The scheme is made up of groups of boreholes, which draw water from groundwater reserves naturally stored within the sandstone underlying much of North Shropshire. This water is pumped out and released to the River Severn to enhance flows in the river. This allows the ecological needs of the river to be counterbalance abstraction demands.

217 When flows in the River Severn start to fall additional water is released into the river from various sources. This allows water users to continue taking water from the river, and protects wildlife habitats. Initially, water will be released from Llyn Clywedog and Lake Vyrnwy, reservoirs

in the headwaters of the River Severn catchment. If the low flows continue for a long period, there is not enough water in these reservoirs to maintain the required releases.

218 The River Severn is a vital source of water for the West Midlands. It provides water for public supply, industry and agriculture. During summer months, when river flows are insufficient to meet these needs and in order to ensure that the needs of the ecology of the river are supported, flows are artificially maintained by releasing water from the three storage components of the River Severn Regulation System. These are Llyn Clywedog, Lake Vyrnwy and The Shropshire Groundwater Scheme.

219 The Shropshire Groundwater Scheme abstracts groundwater via large diameter boreholes drilled deep into the sandstone aquifer. Pumped groundwater is delivered through a network of buried pipelines, either directly to the River Severn or via one of its major tributaries such as the rivers Perry, Roden or Tern.

220 The Groundwater Scheme boreholes are only used for short bursts during periods of prolonged low rainfall. It is estimated that the Scheme will only be operated for two out of every five years, averaging between five to fifteen weeks pumping per year. This is based on weather patterns observed over the past fifty years. Most years the flow releases from Llyn Clywedog and Lake Vyrwny alone were able to maintain sufficient flow in the River Severn to meet water abstraction demands and the needs of the ecology.

221 The scheme is owned and operated by the Environment Agency and is the largest groundwater regulation scheme in the UK.

7.2 Water Company Water Resource Management Planning

222 Water companies have a statutory duty to maintain adequate supplies of wholesome water. The preparation and maintenance of WRMPs became a statutory requirement in April 2007 under the Water Industry Act 1991 as amended by the Water Act 2003. This sets out the requirement for preparation and publication of a WRMP, describes what the WRMP should address and the need for review and revision. The Water Resources Management Plan Regulations 2007 ("the 2007 Regulations") set out the consultation process including the handling of representations and the companies' statements of response as well as the power of the Secretary of State to hold an inquiry or hearing. In addition to the legislative framework, Defra requires water companies to follow the Environment Agency's water resources planning guideline. This guideline provides a framework for water companies to follow in developing and presenting their WRMPs, including the following policy framework.

7.2.1 Water Resource Management Plan

223 A WRMP shows how a water company intends to maintain the balance between supply and demand for water over the next 25 years. The WRMP is complemented by the water company's drought plan, which sets out the short-term operational steps the company will take as a drought progresses.

224 Companies should set out a forecast of the demand for water that shows the need for households and non-households (such as manufacturing or agricultural requirements) and what they expect to leak from their network of pipes. This initial forecast that they need to calculate is called the "baseline". This should show what happens to the demand for water over the next 25 years and should include:

- the effect of the company not changing its current practices or policies (business as usual).
- any effects of forthcoming changes to legislation relating to demand management and related policies that Defra set out to be implemented in the 25 year period and
- a description of how climate change may alter household and business use of water over the 25 year period.

225 This should then be compared against a baseline forecast of available water supply, assuming current resources and future changes that are known about. Companies also should consider the impact of climate change on supply and forecast the required level of headroom to allow for uncertainty in the assessment. Headroom is a buffer between supply and demand designed to cater for specified uncertainties.

226 This gives a calculated surplus or deficit of water for each year. This is known as the baseline supply-demand balance and companies aim not to have a deficit. Where there is a deficit, companies should choose water management options to meet the difference. A company's WRMP should consider the costs and benefits of a range of options and justify the preferred option set. These options should include existing as well as new measures.

227 The company should then prepare a final supply-demand balance, taking into account its preferred options for water management, to demonstrate that the WRMP meets the forecast demand.

228 A company's WRMP should be a stand-alone document that provides a realistic strategic plan for managing water resources. Companies should provide evidence in their WRMPs in support of their preferred strategy and full details of the assumptions they have made. Companies should demonstrate a clear understanding of the performance of their systems, the main factors affecting their supply-demand balance, and how their preferred WRMP is both flexible and robust to the various risks and uncertainties, including the potential impacts of climate change.

229 Once a WRMP has been finalised the water company must keep it under review and report any changes in its annual review to the Secretary of State. If there is a material change at any point in the WRMP, the company must start the process of forming a new WRMP again.

7.2.2 Impact of the WRMP on the Local Development Plans

230 Whilst strategic plans for meeting future demand over a 25 year period are set out in the WRMP, detailed design of schemes is not undertaken until works have been granted funding by Ofwat,.

231 Any improvements to the water services infrastructure needs to be programmed into a water company's capital programme, which runs in five year Asset Management Plan (AMP) cycles.

232 The current AMP5 period is 2010 – 2015. Water companies will begin the process of preparing for its next submission to Ofwat, to determine its allowable capital expenditure for AMP6 in 2013.

233 This funding cycle and its associated constraints can have implications for the phasing of development, and it is important that STWL is involved in the planning process to ensure that infrastructure can be provided in time. Section 5.4.1 proposes a mechanism to do this as part of an outline Water Cycle Study.

7.3 Current Infrastructure

234 As stated previously, the District lies entirely within STWL Shelton Water Resource Zone (WRZ). This is a newly created WRZ not yet reported as part of the STWL WRMP (June 2010). The 2010 Water Resource Management Plan identified the need to revise the WRZ's from six to fifteen, helping STWL to achieve better supply and demand management and comply with the EA definition of *"The largest possible zone in which all resources, including external transfers, can be shared and hence the zone in which all customers experience the same risk of supply failure from a resource shortfall".*

235 The current WRMP (2010) shows that Telford and Wrekin lie within the 'Staffs and East Shropshire' WRZ. DEFRA allowed STW to issue the WRMP and revise the WRZ during the current AMP5 period. . The Stafford and East Shropshire WRZ includes the urban areas of Telford, Stafford and Stoke on Trent and incorporates the upper River Trent and several of its tributaries. In 2009/10 the Zone had a population of approximately 814,100 people. The Zone had a Deployable Output (DO) of 243.7 Ml/d with a Water Available for Use (WAFU) of 236.9 Ml/d. Raw water abstracted within this zone was 204.6 Ml/d. The zone includes four large treated water reservoirs around Stoke that have distribution links between them.

236 5STWL have not provided details of the current infrastructure network details or further details from their emerging WRMP document for this Scoping Study, but would support ongoing studies to develop the Water Cycle Strategy.

237 Potable water is supplied to Telford and Wrekin District via the STWL trunk main network. Mapping of the sewer and water supply network has not been supplied for use in the scoping study, so it is uncertain at this stage the exact route of the STWL trunk main network. Due to the growth planned across Telford and Wrekin and the identified potential issues within the WRMP from 2010, it is recommended that the current and future infrastructure within the study area is investigated further as part of the Outline WCS, giving the opportunity to influence and identify potential issues resulting from planned development in TWC to suit the development of the 2015 WRMP, currently on-going.

7.4 Development Impacts

238 Calculations will need to be undertaken based on the two PCC scenarios (described in Section 4.2) and results will need to be provided regarding the potable water demand from the existing domestic population within Telford and Wrekin District. This will be undertaken as part of the Outline WCS.

239 Telford and Wrekin Council is currently within the STWL Staffordshire and East Shropshire Water Resource Zone (WRZ2). Water resource issues within the Resource Zone are mainly related to groundwater, where there are over abstracted and over licensed aquifers around the Telford area.

240 The current Water Resources Management Plan[20] (WRMP) sets out the challenges STWL face with supplying their customers with potable water over the next 25 years. The WRMP investigated the demand pressures over the 25 year period and it is estimated that the household demand will be +99 Ml/d by 2035.

241 Within the WRMP it is predicted there will be 767,000 new household by 2035, this is in line with the housing growth rates set out in the RSS. However, it is predicted that by 2035 there will be an overall PCC reduction of 3.6 litres per head per day. This assumes that the water use and efficiency standards develop in line with Government Standards. The long term projection is that

overall normal year PCC will reach around 132 litres per head per day by 2030, which compares favourably with Government's target of 130 litres / head / day as set out in Future Water.

242 Table 7-3 illustrates the projected household and population increases for the Staffs and East Shropshire WRZs in the STWL area and the relevant CAMS areas. Projections of population increase and housing growth are essential for assessing the environmental effects of, the WRMP by identifying areas where demand for water resources, and therefore associated pressures on water resources are likely to increase.

Severn Trent WRZ	Catchment Abstraction Management Strategy (CAMS) areas	Household Projection (% increases)		Population Projection (% increase		Growth Points
		2015	2020	2015	2020	
Staffs and East Shropshire	Shropshire Middle Severn CAMS, Staffordshire Trent Valley CAMS ,Dove CAMS	8.2%	13.3%	1.7%	2.8%	Telford

Table 7-3: Population and Housing Growth

243 The STWL WRMP Strategic Environmental Assessment (SEA) predicted that population increase and housing growth is expected to lead to an increased demand for water, in particular public water supply. This increase in demand, unless managed appropriately through the emerging WRMP could have significant adverse effects on the environment. The main areas of concern in terms of environmental effects include:

- Water quantity (surface and groundwater)
- Water quality (reductions in general quality and increased susceptibility to pollution and eutrophication etc)
- Designated Sites (designated sites of International, European (Natura) and National conservation importance, in particular water related or water dependent sites)
- Biodiversity (Protected Species, Biodiversity Action Plan (BAP) species and habitats)
- Fishing

244 In terms of future demand, the SEA identified that the main growth point within the Staffs and East Shropshire WRZ is Telford, which is located in the Shropshire Middle Severn and Worcestershire Middle Severn CAMS areas. Telford is currently supplied by groundwater and not surface water. The two main rivers near Telford are the River Worfe and River Tern, both of which are designated as being 'over abstracted' at times of low flow which indicates that existing abstractions are causing unacceptable damage to the environment during low flow periods.

245 The SEA identified that other water sources within the Worcestershire Middle Severn CAMS include the River Stour, River Salwarpe and the Triassic Sherwood Sandstone Aquifer all of which have been identified as being 'over abstracted'. To improve the status of these water sources the EA has identified that no new licences will be granted for abstraction at times of low flow and any new licences will be subject to restrictive (HOF) conditions during dry periods.

246 In the Shropshire Middle Severn CAMS, the key WRMUs include Rea Brook, Cound Brook, River Perry and River Tern and associated groundwater units and Coley Brook and the Aqualate GWMU. Of these units, the Coley Brook and Aqualate GWMU are over abstracted. Consequently the Aqualate GWMU is now closed to abstractions. Only short term abstraction licences will be granted for the River Perry and River Tern catchments which are over licensed. All rivers in the Worcestershire Middle Severn CAMS and the Shropshire Middle Severn CAMS drain into the River Severn which has been identified as having 'no water available' at low flow.

247 There are a number of water related designated sites of nature conservation importance within both the Worcestershire Middle Severn CAMS and the Shropshire Middle Severn CAMS and along the Severn Corridors. On the basis that Telford, which has been identified as a 'growth point' is located within an area where key water resources are already subject to over abstraction and over licensing during low flows, it is highly likely that the proposals to increase water metering penetration in this WRZ would help to reduce the gap in the supply/demand balance in this area. The findings of the SEA suggest this would have significant positive effects on the environment by reducing the demand for further abstractions in this zone.

7.4.1 Newport Parishes

248 The Newport canal SSSI lies within the parish and therefore population increase and the associated increase in water demand within the catchment could have an impact on designated sites. Outline calculations have been undertaken to assess the impact of development on water demand in the Newport Parishes. The calculations use the predicted figures from new development within Section 4.2 and assume an occupancy rate of 2.4. The calculations are presented in Table 7.4.

	Newport Total Dwellings		
	Scenario A	Scenario B	Scenario C
Additional Dwellings identified present to 2016	260	389	567
Consumption l/p/d present to 2016 *(based on perceived existing level of 130 l/p/d)**	81,120	121,368	176,935
Number of dwellings post 2016	780	1167	2083
Consumption l/p/d post 2016 *(based on CSH Level 3 of 105 l/p/d)**	196,560	294,084	524,891

*** Consumption levels adopted based on current new development deliverability and aspirational improvement**

Table 7-4: Newport Predicted Water Demand

249 The constraints matrix provided by STWL specifies that there are known issues in the catchment and the CAMS indicates that the catchment is currently over abstracted. There is no water available within the catchment therefore any further development in the catchment is likely to increase the pressure on the existing water resources. Post 2016 it is predicted that PCC will decrease from 130 l/p/d to 105 l/p/d it is anticipated that the increased water demand will have an impact on resources in the catchment.

7.4.2 North Telford Parishes

250 Within North Telford sites with environmental designations are present within the Ketley and Lilleshall, Donnington and Muxton Parishes. In these catchments particular care needs to be taken to ensure that development and the increased demand for water does not have an adverse effect on the environmentally designated sites. Outline calculations have been undertaken to assess the impact of development on water demand in the North Telford

Parishes. The calculations use the predicted figures from new development within Section 4.2 and assume an occupancy rate of 2.4. The calculations are presented in Table 7.5.

	North Telford Total Dwellings		
	Scenario A	Scenario B	Scenario C
Additional Dwellings identified present to 2016	788	1336	2139
Consumption l/p/d present to 2016 *(based on perceived existing level of 130 l/p/d)*	245,778	416,832	667,246
Number of dwellings post 2016	2363	4008	7855
Consumption l/p/d post 2016 *(based on CSH Level 3 of 105 l/p/d)*	595,539	1,010,016	1,979,433

Table 7-5: North Telford Predicted Water Demand

251 Within the ward the only parish where the CAMS indicate that water is available is St Georges and Priorslee. Within all other parishes the CAMS specifies that there are known issues in the catchment and the CAMS indicates that the catchment is currently over abstracted. Further development within the catchments is likely to increase the pressure on the existing water resources. As the majority of catchments are currently over abstracted, despite the predicted decrease in PCC post 2016 it is that the increased water demand will have an impact on resources in the catchment.

7.4.3 South Telford Parishes

252 Within South Telford sites with environmental designations are present within the Great Dawley, Hollinswood and Randlay, Stirchley and Brookside and The Gorge Parishes. In these catchments particular care needs to be taken to ensure that development and the increased demand for water does not have an adverse effect on any sites with environmental designations. Outline calculations have been undertaken to assess the impact of development on water demand in the South Telford Parishes. The calculations use the predicted figures from new development within Section 4.2 and assume an occupancy rate of 2.4. The calculations are presented in Table 7.6.

	South Telford Total Dwellings		
	Scenario A	Scenario B	Scenario C
Additional Dwellings identified present to 2016	1422	1971	2682

Consumption l/p/d present to 2016 *(based on perceived existing level of 130 l/p/d)*	443,742	614,796	836,703
Number of dwellings post 2016	4267	5912	9850
Consumption l/p/d post 2016 *(based on CSH Level 3 of 105 l/p/d)*	1,075,221	1,489,698	2,482,139

Table 7-6: South Telford Predicted Water Demand

253 Within the ward the parishes where the CAMS indicate that water is available is Great Dawley, Hollinswood and Randlay, Madeley, Stirchley and Brookside and The Gorge. Within all other parishes the CAMS specifies that there are known issues in the catchment and the CAMS indicates that the catchment is currently over abstracted. Further development within the catchments is likely to increase the pressure on the existing water resources. Post 2016 it is predicted that PCC will decrease from 130 l/p/d to 105 l/p/d it is anticipated that the increased water demand will have an impact on resources in the catchment, as the majority of catchments are currently over abstracted.

7.4.4 Rural Parishes

254 Within the Rural Parishes the sites that have recorded environmental designations are present within the Ercall Magna, Rodington and Waters Upton Parishes. In these catchments particular care needs to be taken to ensure that development and the increased demand for water does not have an adverse effect on the sites with environmental designations.

255 Outline calculations have been undertaken to assess the impact of development on water demand in the Rural Parishes. The calculations use the predicted figures from new development within Section 4.2 and assume an occupancy rate of 2.4. The calculations for the Rural Parishes are presented in Table 7.7.

	Rural Total Dwellings		
	Scenario A	Scenario B	Scenario C
Additional Dwellings identified present to 2016	130	194.5	284
Consumption l/p/d present to 2016 *(based on perceived existing level of 130 l/p/d)*	40,560	60,684	88,468
Number of dwellings post 2016	390	584	1041
Consumption l/p/d post 2016 *(based on CSH Level 3 of 105 l/p/d)*	98,280	147,042	262,445

Table 7-7: Rural Parishes Predicted Water Demand

256 Within the ward the CAMS indicates there are no parishes where water is available. Within all parishes the CAMS specifies that there are known issues in the catchment and the CAMS

indicates that the catchment is currently over abstracted. Further development within the catchments is likely to increase the pressure on the existing water resources and care needs to be taken to minimise the impact of the development. As there is no water currently available within the ward, despite the predicted decrease in PCC post 2016 it is that the increased water demand will have an impact on resources in the catchment.

7.4.5 Water neutrality

257 The concept of offsetting the potable water demand from new development by increased water efficiency and reduced demand in existing buildings is referred to as water neutrality. This concept allows the new development to be served without impacting on water resources (and in some cases the supply network), and therefore minimises the risks to supply from future climate change.

258 Water neutrality allows water to remain in the environment for ecological and leisure purposes and negates the need for the development of new resources such as reservoirs. As the amount of water in the supply system is not increased, there are no increases in the energy (and hence carbon footprint) required to supply the water.

259 Water neutrality also benefits sewerage and wastewater treatment, as the hydraulic assets involved in these processes do not have to deal with increased flows from new development in the long term. However, as the proliferation of water efficient fittings reduces the volumes of water released into the sewerage network, there will be an increased risk of settlement and blockages in areas of shallow gradient.

260 In addition, WwTW process will have to deal with more concentrated wastewater, which could have implications on the treatment methods and operational costs required in order to meet environmental standards. As this is an issue affecting all water companies, and driven by national policy, it is outside of the scope of the WCS.

261 Achieving the required reductions in PCC to move towards water neutrality will require multiple stakeholder engagement. The consumer awareness required, particularly to encourage the installation of water efficient fittings into existing dwellings and adoption of water saving practices, will need to be generated by STWL working in cooperation with the local community. Particular emphasis will also need to be placed on encouraging occupants of new dwellings to retain their water efficient fittings, as there is a risk that occupants may revert back to higher usage fittings due to consumer preference.

262 Calculations will need to be undertaken based on the two PCC scenarios (described in Section 4.2) and results will need to be provided to assess if the proposed development can achieve water neutrality. This will be undertaken as part of an Outline WCS.

263 Water efficiency is the responsibility of all potential stakeholders to help increase water efficiency, reduce demand and pro active in managing water resources carefully. It is recommended that TWC develop appropriate policies and practices into their Shaping Places Local Plan.

7.5 Assessment of water supply infrastructure capacity

264 The Outline WCS will require an assessment of the water supply network infrastructure capacity, which has not been made available as part of the Scoping WCS, due to the level of detail available surrounding the development information not being sufficient to undertake this assessment. The works that should be promoted on receipt of firmer indications of potential development locations and quantum, are to confirm that there is sufficient existing or planned

network capacity to deliver the five year housing supply. It is the responsibility of the water company to provide this information to the Water Cycle Study to inform the RAG assessment.

265 Through liaison with STWL, the Outline WCS should also attempt to identify that there is a reasonable prospect of delivery of water supply infrastructure over the Development Plan period, through the potential identification of scheme feasibility, design development programme and timeline to deliver the infrastructural requirements. To assist TWC in determining the viability and potential sustainability of their development plan, it is recommended that through the Outline WCS, STWL provide clear trigger points for the planning stage and delivery stage of additional infrastructure and confidence that the funding sources to deliver any enhancements are deliverable.

7.6 Summary and Issues for next stage

Area	Key Issues
Newport Parishes	The residential growth scenario assumes between 975 – 2585 new dwellings in the ward. The ward is identified as an area for significant growth and is located within an area where key water resources are already subject to over abstraction and over licensing during low flows. There are known issues in the catchment and the catchment are currently over abstracted. There is no water available within the catchment therefore any further development in the catchment is likely to increase the pressure on the existing water resources.
North Telford Parishes	The residential growth scenario assumes between 397 – 7239 new dwellings in the ward. The ward is identified as an area for significant growth and is located within an area where key water resources are already subject to over abstraction and over licensing during low flows. Sites with environmental designations are present within the Ketley and Lilleshall, Donnington and Muxton Parishes. Care needs to be taken to ensure that development does not have an adverse effect on the environmentally designated sites. The only parish where the CAMS indicate that water is available is St Georges and Priorslee. Within all other parishes the CAMS specifies the catchment is currently over abstracted. Further development within the catchments is likely to increase the pressure on the existing water resources.
South Telford Parishes	The residential growth scenario assumes between 397 – 7239 new dwellings in the ward. The ward is identified as an area for significant growth and is located within an area where key water resources are already subject to over abstraction and over licensing during low flows. Sites with environmental designations are present within the Great Dawley, Hollinswood and Randlay, Stirchley and Brookside and The Gorge Parishes. Care needs to be taken to ensure that development does not have an adverse effect on the environmentally designated sites. The CAMS indicates that water is available in Great Dawley, Hollinswood and Randlay, Madeley, Stirchley and Brookside and The Gorge. Within all other parishes further development within the catchments is likely to increase the pressure on the existing water resources

Rural Parishes	The residential growth scenario assumes between 440 – 1245 new dwellings in the ward. The ward is identified as an area for growth and is located within an area where key water resources are already subject to over abstraction and over licensing during low flows. The sites that have recorded environmental designations are present within the Ercall Magna, Rodington and Waters Upton Parishes. In these catchments particular care needs to be taken to ensure that development does not have an adverse effect on the sites with environmental designations. The CAMS indicates there are no parishes where water is available and that the catchments are currently over abstracted. Further development within the catchments is likely to increase the pressure on the existing water resources and care needs to be taken to minimise the impact of the development.

266 In the current situation, where the water resources management plan is being developed and will be processed through increased public and regulatory scrutiny, we recommend that the outline WCS should not repeat work undertaken by the WRMP, and should be limited to:

- Liaison with STWL to identify that the proposed level of growth assessed within the WCS is consistent with the WRMP assumptions over development.
- Liaison with STWL Water Resources staff to identify the suitable planning policy measures that should be implemented to help STWL achieve the demand management elements included within the developing WRMP, so that TWC can help implement them through the development planning process, and working within the communities with the EA and STWL on Water Wise joint awareness campaigns.
- Liaison with STWL to determine capacity of current infrastructure to support development locations.
- Obtaining information in relation to the new WRZ from STWL as part of the current works for updating the WRMP.
- Consulting with the EA and water companies to assess the likelihood of obtaining increased abstraction or renewal of existing licences, considering the Shropshire Groundwater Scheme, water quality, environmental constraints and water level management issues.
- Obtain a better understanding of abstraction controls to assist in achieving the relevant WFD status for the relative watercourse.
- Approximate timing (including site phasing if applicable) associated with the key supply network upgrades for the new settlement options or other development option preferred by TWC and
- Provide development control and enforcement guidance for TWC and the water companies.

8 Flood risk management

8.1 Existing situation

267 The sources of flood risk within Telford and Wrekin area have been identified as:

- Fluvial flooding – due to watercourses spilling over their banks into the floodplain.
- Surface water flooding – due to the pooling and flow of surface runoff during storm events.
- Groundwater flooding – due to the level of the groundwater in an aquifer exceeding ground level.
- Sewer flooding – backing up and surcharging of wastewater in the sewerage network due to either maintenance issues or capacity being exceeded and
- Flooding from reservoirs- the flooding if a reservoir were to fail and release the water it holds.

268 TWC contains no formal flood defences (i.e. a flood defence maintained and operated by the EA). However, TWC have temporary demountable flood defences that the EA have used to protect properties on the Wharfage in Ironbridge. The Council produce a 'Deployment of Temporary Flood Defences at the Ironbridge, Wharfage - Action Plan' which is updated annually based on lessons learnt (further details on this can be explored in the future Outline Water Cycle Study).

269 There are a number of weirs, sluices and embankments maintained by private landowners, which contribute to the management of water levels and may serve as flood defences. However, these structures can sometimes have negative implications on local flood risk and biodiversity if not managed sympathetically

270 There is a diverse responsibility of managing channel sides (both natural and modified), bridges, culverts and designated main rivers (see Figure 2-2). However, the EA have powers that allow them to carry out maintenance work in these locations.

271 The other ordinary watercourses are the responsibility of TWC and other riparian landowners. However, TWC have powers that allow them to carry out maintenance work.

8.1.1 Catchment Flood Management Plans

272 Catchment Flood Management Plans (CFMP) have been developed by the EA to understand flood risk within a river catchment, and recommended the best way of managing this risk over the next 50 to 100 years.

273 Telford and Wrekin falls within the Severn Catchment Flood Management Plan. The catchment is sub divided into nine areas, in which Telford and Wrekin fall into the “Telford, Black Country, Bromsgrove, Kidderminster and Coventry Cluster” and “Severn Corridor” sub areas.

274 A review of the CFMP consultation documents highlights that the following flood risk management strategies to implement the proposed policies which will be adopted by the EA in the Telford and Wrekin area:

- Ensure floodplains are not inappropriately developed. Follow the ‘sequential approach’ of the National Planning Policy Framework (formerly PPS25), and consider land swapping opportunities.

- Encourage compatibility between urban open spaces, and their ability to make space for rivers to expand as flood flows occur. One example of a flood-compatible use is playing fields. Develop strategies to create 'blue corridors' by developing/redeveloping to link these flood-compatible spaces.
- Encourage rural and urban best practices in land-use and in land-management to restore more sustainable natural floodplains and to reduce run-off.
- Reduce dependence on raised flood defences as this is not sustainable in the long term, by taking opportunities to restore sustainable natural storage of floodwater on undeveloped floodplains.
- Develop a better understanding of flooding from surface water, from drainage systems, and from 'non-main' watercourses. Produce a strategy for operation and investment, integrating all these with main rivers.
- Raise awareness of flooding among the public and key partners, especially major operators of infrastructure, allowing them to be better prepared. Encourage them all to increase the resilience and resistance of vulnerable buildings, infrastructure and businesses.
- Maintain and improve flood warning system and seek to improve coverage; and
- Seek ecological improvements.

8.1.2 The Pitt Review

275 Following the floods of summer 2007, an independent comprehensive review was published by Sir Michael Pitt, entitled 'Learning Lessons from the 2007 Floods.' This review contained 92 recommendations to the Government, Local Authorities and others. In December 2008, Defra published the UK Governments response[21] to the Pitt review.

276 Within this response, it is proposed that Local Authorities such as TWC will be taking on a local leadership role, including responsibility for local flood risk management including surface water risk.

277 Local Authorities will be required to co-ordinate and lead local flood management activity, they will know where all local flood risk and drainage assets are and who owns them, and they will be able to assess the needs and desires of local communities in the area. There will be clear local responsibilities and people will know to approach the Council for advice if there are problems. This will be within the context of the additional Strategic Overview role provided by the EA, which will also retain its responsibility for flooding from main rivers and the sea.

278 The Government intends that Local Authorities should be responsible for adopting and maintaining new and redeveloped sustainable drainage systems on highways and the public realm, so as to increase their uptake and effectiveness.

279 Full implementation will require appropriate resource and legislative backing from the Floods and Water Bill, the draft of which is presently open for consultation.

280 Flood risk management activity by Local Authorities is supported by the Revenue Support Grant. The need to spend more in this area was foreseen by the Government, and additional funding was provided in the local government settlement for 2008–09 to 2010–11. Further Defra funding may be made available in response to the Pitt review.

8.1.3 Strategic Flood Risk Assessment

281 When planning and designing new development, TWC must ensure that the development will not add to and should, where practicable, reduce flood risk. NPPF should be adhered to in order that new development is steered to Flood Zone 1. Where there are no reasonably available sites in Flood Zone 1, decision-makers identifying locations for development and infrastructure, allocating land in spatial plans or determining applications for development at any particular location should consider sites in Flood Zone 2. This decision should take into account the flood risk vulnerability of land uses and apply the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should decision-makers consider the suitability of sites in Flood Zone 3, again taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.

282 TWC have completed a Level 1 SFRA in 2007 and a Level 2 SFRA in 2008. The purpose of the SFRA was to be used as a planning tool to aid in the location of future development away from areas of high flood risk, therefore allowing TWC to comply with PPS25 at the time of issue. The SFRA remains valid in the context of NPPF as the key planning principals were retained. The following key issues identified from the Level 1 SFRA:

- Strine IDB indicated that the flood zones associated with the Strine between Newport and Longdon on Tern may be underestimated. Furthermore, the withdrawal of EA funding and decrease in maintenance of the watercourse may cause increases in flooding.
- The Beanhill, Hurley, Crow, Humber and Wellington Road Brooks that drain into the River Strine from the north of Telford, affect areas such as Admaston, Leegomery, Hortonwood and The Humbers.
- Other fluvial related flood incidents pertain to the Old Hall School Watercourse, Hutchinson Way in Ketley and the Furnace Lane Brook in Donnington/Oakengates.
- To the south of the district River Severn runs through the narrow Ironbridge Gorge, the Flood Zones are very narrow and include relatively few properties. The majority of those affected are to be found in Ironbridge and Coalbrookdale, where the Loamhole Brook is situated.
- In the east, the Mad Brook and the Nedge Hill Brook (a tributary of the Wesley Brook) affect a number of properties in Holmswood, Stirchley and Halesfield areas.
- Sewer flooding has affected properties within Arleston, Ketley and Newport.
- Bridgnorth and Shifnal could be affected by any increase in Surface Water discharge into the Wesley Brook.
- The behaviour of Priorslee reservoir exists upstream of Shifnal, this acts as a balancing pond for Telford. The behaviour of this balancing pond, in terms of its current discharges and the effects of future increased inflows to the pond from increased surface water from new development was to be investigated as part of the Level 2 SFRA. However, no assessment has been noted.

283 Following review of the SFRA, any major constraints to the proposed development have been identified in Section 8-3.

8.2 Strategic objectives

284 TWC should continue to refer to their 2007 Level 1 SFRA and other strategies such as this WCS when shaping development policies and documents, and when determining planning permissions. Following review of the above policies and reports, the following strategic objectives can be highlighted with regards to flood risk management in the Council area:

- Sequential steering into the lowest probability flood zone.
- If a site passes the Sequential and Exception Test, then the sequential approach should be adopted to sequentially steer within the site and where possible reduce overall flood risk.
- Where sustainability outweighs flood risk and justifies floodplain redevelopment, development should be flood resilient.
- Identify long-term opportunities to remove development from the floodplain through land swapping;
- Ensure development is 'safe'. For residential developments to be classed as 'safe', dry pedestrian egress out of the floodplain and emergency vehicular access should be possible;
- Raise floor levels above the 1 in 100 year plus climate change water level;
- Suitable Sustainable Drainage should be included on all new developments;
- Identify sites where developer contributions could be used to fund future flood risk management schemes or can reduce risk for surrounding areas;
- Existing undeveloped river corridors, particularly the Greenfield functional floodplain, should be preserved from further development;
- Avoid further culverting and building over of culverts. De-culvert of rivers for flood risk management and conservation benefit should be sought through development where possible;
- New developments should be designed to preserve and improve the conveyance and storage of fluvial and surface floodwater; and
- TWC and developers should work in partnership with the EA to look at opportunities for river restoration/ enhancement as part of developments, and to make space for water to accommodate climate change impacts; and
- "Safe access" for development should be considered in line with Sections 4.53 to 4.69 of the PPS25 Practice Guide December 2009

8.2.1 Stakeholder Information

285 During the Inception meeting, further information pertaining to the fluvial and surface water flood risk issues were captured and presented below. In addition information was provided by STWL, which assessed the potential impact of development on the sewage infrastructure:

Newport Parishes

- The Moorfield Brook was identified as currently experiencing some flooding issues and is under investigation;
- High groundwater levels were identified as a potential concern; however, these are variable and monitored dependant on abstraction and rainfall. New development should investigate this on a site specific basis.
- The potential impacts of the proposed developments on the sewage infrastructure have been assessed as high for the Newport Parish. This is due the known flooding issues in parts of Newport. STWL are currently progressing a capital scheme to support the existing issues and provide additional capacity for growth. The parish is within the Newport WwTW catchment.

- There are areas to the north and east of Newport at risk of reservoir flooding. The risk is identified as being from the Knighton Reservoir to the north and the Aston Pool to the east. However, the areas identified at risk are mainly confined to the river corridors.

North Telford Parishes

- The potential impacts of the proposed developments on the sewage infrastructure have been assessed as high in the parish of Ketley. This is due the known capacity issues in the central areas of the parish. Depending on the scale and nature of the proposed development hydraulic modelling may be required to determine the impact and any requirements for capacity improvements. The parish is within the Rushmoor WwTW catchment.
- Development within the Lilleshall, Donnington and Muxton parish is assessed as having a medium potential impact on sewerage infrastructure. There are known capacity issues to the north west of Muxton and records of minor flooding to the west of Donnington. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Rushmoor WwTW catchment.
- Within the Oakengates Parish there are known capacity issues in the south of the parish in the Ketley Bank area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is assessed as having a medium potential impact on sewerage infrastructure. The parish is within the Rushmoor WwTW catchment.
- There are known capacity issues in parts of Wellington parish, demonstrated by properties on the DG5 flooding register: to the north of Arleston, south west and north west Wellington, Haygate and north of Shawbirch. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. Development within the parish is assessed as having a medium potential impact on sewerage infrastructure. The parish is within the Rushmoor WwTW catchment.
- Development within the Hadley and Leegomery parish is assessed as having a medium potential impact on sewerage infrastructure. There are known capacity issues in the south of the parish in the Haybridge area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. Development within the parish is assessed as having a medium potential impact on sewerage infrastructure. The parish is within the Rushmoor WwTW catchment.
- Development within the Wrockwardine Wood and Trench and St. Georges and Priorslee parishes are predicted to have a low impact on the sewage infrastructure.
- The area around Hortonwood and Hadley is identified as being at risk from the Middle Pool, Apley Pool and Trench Pool. The Pools are small fishing lakes and the associated flooding appears to be hydraulically connected to the surrounding watercourses.

South Telford Parishes

- Isolated flooding has occurred in the past and the area. In particular, issues for parishes in west contributing surface water to Coalbrookdale Brook and the Mad Brook to the east.
- Any development within the Coalbrookdale Brook catchment would be required to manage surface water to help benefit the catchment. The catchment is designated as a Rapid Response Catchment – hence new development would be expected to go beyond current requirements for surface water management.

- Little Wenlock, Great Dawley and Dawley Heights CPs – contribute surface water to the Lyde Brook – which flows into Coalbrookedale Brook and onto the River Severn.
- Hollinswood & Randley CP – Flooding experienced in and around Hollinswood school. Surface water flows from Stafford Park contribute to flows in Wesley Brook and flooding issues in Shifnal. Development in this area would need to look to help reduce flows downstream.
- Stirchley & Brookside CP – Flooding issues to north of Holmer Lake and potential downstream. Holmer Lake overtopped during 2007 flooding event. Shropshire wildlife trust submission for funding to help open up culver north of Holmer Lake to reconnect floodplain and watercourse. Holmer Lake also provides some compensation flow into Mad Brook.
- Minor STWL sewer flooding has been identified to occur in the west of Stirchley CP.
- Lawley and Overdale CP - Outline permission received in past had less stringent conditions on surface water management – hence TWC are working with developers to try and achieve sensible balance and betterment to outline permissions. This could result in issues downstream as a result, that will require future effort. However, it is felt the Culvert under M54 represents a significant control structure and this could prevent issues transferring further downstream. However, TWC have worked positively with developers at both Lawley and Ketley in order to achieve the most effective and viable drainage strategies to meet best practice surface water management. To date in the region of 400 houses of the original outline permission at Lawley have been completed.
- In The Gorge CP, there are temporary flood barriers for the Wharfage area
- Development within the Lawley and Overdale parish is assessed as having a medium potential impact on sewerage infrastructure. There are records of flooding incidents in the north. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Rushmoor WwTW catchment.
- Development within the Great Dawley parish is assessed as having a medium potential impact on sewerage infrastructure. There are properties with recorded minor flooding to the south of Dawley. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Coalport WwTW catchment.
- There are no properties on the floods register in this parish. However, development within the St Gorge parish is assessed as having a medium potential impact on sewerage infrastructure. It is known that the River Severn interacts with the sewerage system and affects the operation of a number of pumping stations in the area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Coalport WwTW catchment.
- Development within the Madeley parish is assessed as having a medium potential impact on sewerage infrastructure. There are records of minor flooding in isolated areas of the parish, which may indicate capacity issues. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Coalport WwTW catchment.
- Development within the Stirchley and Brookside is assessed as having a medium potential impact on sewerage infrastructure. There are records of minor flooding in the west of the parish, which may indicate capacity issues. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact

and any requirement for capacity improvements. The parish is within the Coalport WwTW catchment

- Development within the Little Wenlock, Dawley Hamlets and Hollinswood and Randley parishes are predicted to have a low impact on the sewage infrastructure. Little Wenlock is served by its own WwTW whereas the remaining parishes are within the catchment of Coalport WwTW.
- There is a low risk of reservoir flooding and the areas of risk at reservoir flooding are constrained to the watercourses within the parishes.

Rural Parishes

- A number of parishes lie within areas of notable flood zones such as Eyton upon the Weald Moors and Preston upon the Weald Moors
- Development within the Eyton upon the Weald Moors parish is assessed as having a medium potential impact on sewerage infrastructure. This is a very small parish and rural area. Significant development (compared to the existing settlements) may have an impact on sewerage performance. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Rushmoor WwTW catchment
- Development within the Kynnersley parish is assessed as having a medium potential impact on sewerage infrastructure. Kynnersley is a small parish and there are no properties on the flooding register. However, Due to the small sub-catchment, dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Rushmoor WwTW catchment.
- Development within the Church Aston parish is assessed as having a medium potential impact on sewerage infrastructure. There are records of flooding in the downstream network in Newport. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Newport WwTW catchment
- Development within the Chetwynd Aston and Woodcote parish is assessed as having a medium potential impact on sewerage infrastructure. There are records of flooding in the downstream network in Newport. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. The parish is within the Newport WwTW catchment
- There is a low risk of reservoir flooding and the areas of risk at reservoir flooding are constrained to the watercourses within the parishes.

286 Development within the Wrockwardine Wood and Trench, Rodington, Ercall Magna, Waters Upton, Tibberton and Cherrington, Edgmond and Chetwynd parishes are predicted to have a low impact on the sewage infrastructureThe current Surface Water Area Action Plans promoted by TWC are being morphed into the Local Flood Risk Management Strategy that is in development currently. In relation to new development, TWC would expect to see Greenfield Runoff rates for greenfield sites and betterment on brownfield sites with a preference for a minimum reduction of 50%. TWC are looking into SuDS as part of the future SuDS Adoption Body role that is expected to land during 2012/13 as identified as part of the Flood and Water Management Act 2010.

287 TWC hope to provide further surface water management guidance in the near future for further Water Cycle Strategy stages, it was not available at the time of preparation of this document.

8.3 Development Flood Risk potential

8.3.1 Encroachment of development on existing watercourse floodplains

288 Development across the Parishes has the potential to encroach on the existing floodplains of watercourses. From a review of the available development information, the majority of the identified growth areas and directions are partially or wholly located in the low risk flood zone. The quantum of development proposed does lead to the potential for the developments t o be located in areas in close proximity to areas of greater flood risk and often border flood zones 2 and 3.

289 If there are sites proposed that include development within zones of higher risk, as per the NPPF, the sequential test should be applied before considering allocation of development in this location. If, having applied the sequential test, it is not possible for the development to be located in zones of lower probability of flooding; the exception test can be applied.

290 The exception test is only appropriate for use when there are large areas of Flood Zones 2 / 3, where the sequential test alone cannot deliver acceptable sites, but where some continuing development is necessary for wider sustainable development reasons. If the exception test is applied consideration will need to be given to the types of land use allowed within the areas of land in flood zone 2 and 3, based on the land use compatibility table within NPPF, to ensure that that the most vulnerable uses are not located within the highest risk areas.

291 Should development be promoted in areas adjacent to higher flood risk, it is recommended that a buffer zone to the development is established to help prevent encroachment of the development onto the floodplain. The Outline WCS should identify and consider the locations where such a buffer zone could be implemented, to help achieve the aspirations of the NPPF guidance.

8.3.2 New development surface water runoff

292 Future development across all the Flood Zones and in particular those in Flood Zone 1 should be encouraged through Planning Policy to realise the opportunities present to help reduce the overall level of flood risk in the area and beyond. This can be achieved through sensitive development focussing on the the layout and form.

293 All new development must ensure that flood risk is not increased elsewhere. This should be achieved through the development achieving Greenfield runoff rates for surface water.

294 No further action is required on this item as part of the Outline WCS – however we do suggest that each development planning application should be supported by a surface water drainage strategy as part of the Site Specific Flood Risk Assessment that demonstrates how they are contributing to the TWC aspirations to help reduce flood risk through new development.

8.3.3 New development foul flows – impact on existing sewer network performance

295 It is recommended that as per Sewers For Adoption (7th Edition) that all new development is served by separate sewer systems. This will allow STWL to receive adequate notice of development, to allow investigations and infrastructure delivery of foul sewers with sufficient capacity. In this manner the risk from increasing levels of foul flows on the potential for foul sewer flooding should be negligible.

296 It is recommended that developers and TWC liaise with STWL to identify the potential for larger strategic sites, so that STWL can advise in a timely manner of the potential impacts and determine appropriate mitigations to prevent the new development exacerbating the risks of foul flooding. In areas that are served by combined sewer systems, it is recommended that new development deliver separation of foul and surface waters to help reduce the volume of stormwater within the combined system.

8.3.4 Increased discharge from WwTW

297 There is the potential for development to increase effluent and storm discharges from WwTW, which could impact on flood risk downstream. As stated previously, NPPF requires that there is no increase in flood risk due to development. Works may be required to offset the potential increases in the frequency of spill from storm storage tanks due to additional foul flows, or through increasing the effluent volume and flow rate into the receiving watercourse, which may be particularly sensitive to changes in flows.

298 It is understood that during the determination of discharge consent applications, downstream flood risk is assessed. Therefore, we assume that the flood risks associated with the existing discharge consents are acceptable. We note, that some of the older consents may not have assessed the flood risk impact but feel that these will have been captured during the delivery of the Catchment Flood Management Plans (CFMP).

299 For the WwTW, where the potential growth may trigger a future consent application, we understand that the EA will review the flood risk impact to ensure that there is no adverse effect. Applications for future flow increases at WwTW are assessed for potential impact upon flood risk, and where there is considered to be a potential problem, compensatory measures will be introduced.

300 Therefore we recommend that the Outline WCS should identify with STWL and the EA an appropriate approach to identify locations where mitigation would be required and agree on a programme for determining that appropriate solutions exist and confirmation of how these would be funded.

301 The preliminary view of the EA is that increased discharge form WwTW's is not a major issue of concern. Discharges are investigated within the EA by a Permitting Team and the hydraulic impact is assessed by the EA. Previous findings indicate that generally the WwTW discharge is small compared to a 1% AEP fluvial flood event. Therefore, the risk of the WwTW within TWC contributing to an increased risk of flooding is not considered significant by the EA.

302 The EA have identified that a more significant issue could be the likelihood of the sewer capacity being exceeded in times of high rainfall, particularly where there are combined sewers, this would lead to risk of foul flooding.

8.4 Surface Water Management

303 Successful management of the surface water environment is essential to protect existing and future developments from the risks of flooding and has the potential to help address catchment wide problems. Failure to adequately consider surface water management during the planning and design process can result in flooding and hazard to members of the public, the environment or critical infrastructure after construction.

304 Sustainable Drainage Systems (SuDS), should be the first element considered in the management of surface water in new developments – seek to mimic natural drainage processes as closely as possible to reduce flood risk on-site as well as downstream of the development. The SuDS 'treatment train' sets out this approach, starting at the top of the hierarchy with prevention techniques and then cascading through the source control, site control and regional control, as described in Figure 8-1, and should be considered holistically in site development to help achieve a vital green infrastructure role, through the creation of amenity and habitat space, for example. This is possible if SuDs are considered sensitively and located correctly and with appropriate and agreed long term management plans in place.

305 The common method of developing SuDS schemes is through the concept of a 'management train'. The management train advocates that a combination of individual SUDS elements is required to contribute to the overall effectiveness of the SUDS scheme. Single elements such as a soak away or infiltration basin may not be suitable in a number of circumstances due to, for example, the potential to contaminate groundwater sources.

306 It is essential that the residual risks associated with Surface Water Management are integrated into the future development plans, as there will be occasions during extreme rainfall events when the system capacity will be exceeded and overland flows will be generated. It is essential that this risk is included within the designs so that the design layout can take account of these flows and to prevent insensitive development of critical infrastructure and more vulnerable development classifications. Ciria's (2006) Designing for Exceedance should be followed.

307 The EA currently suggest that the SuDS hierarchy is adopted when considering SuDS techniques for new development, showing the preferred order in which different SuDS techniques should be considered for a site. SuDS techniques at the top of the hierarchy are preferable for their potential ecological and water quality benefits, as illustrated by Figure 8-1.

	SUDS technique	Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit
Most Sustainable	**Living roofs**	✓	✓	✓
	Basins and ponds - Constructed wetlands - Balancing ponds - Detention basins - Retention ponds	✓	✓	✓
	Filter strips and swales	✓	✓	✓
	Infiltration devices - soakaways - infiltration trenches and basins	✓	✓	✓
	Permeable surfaces and filter drains - gravelled areas - solid paving blocks - porous paviors	✓	✓	
Least Sustainable	**Tanked systems** - over-sized pipes/tanks - storms cells	✓		

Figure 8-1 SUDS Hierarchy[22]

308 It is the responsibility of Local Authorities to promote the use of SUDS for the management of surface water runoff. The successful implementation of SUDS requires the early consideration of a wide range of issues surrounding their management, long term adoption and maintenance

8.4.1 SuDS Suitability

309 The following key criteria will affect the potential of successful surface water management options and must be considered in the detailed design and planning of SuDS:

- Permeability of the underlying geology
- Soil properties
- Catchment topography
- Ground water levels (water table)
- Contaminated ground conditions
- Flood risk
- Presence of aquifers
- Drinking water source protection zones (SPZ)
- Extent of existing and proposed urbanised area
- Availability of point of outfall (e.g. watercourse, sea, soak-away)
- Existing land uses that may affect SuDS techniques – for example the potential for contaminated land affecting drainage requirements which is particularly pertinent in the council area given the heritage.

310 It is recommended that a broad desk based assessment of surface water management potential, is carried out in the Outline WCS, using available data for each of the development growth areas.

311 A broad assessment will on a site specific basis will provide an indication of the constraints to and opportunities for sustainable surface water management in the areas of future growth. Detailed intrusive investigations will still be needed by developers to support their proposals as they come forward.

8.4.2 Preliminary Findings

312 As indicated in Figure 8-1, basins, ponds and wetlands are considered the most sustainable SUDS techniques (aside from living roofs), due to their inherent wildlife benefits. Wetland habitat can play an important role in mitigating the effects of climate change, including the management of floodwater and the adverse effects of low rainfall. Every opportunity should be taken by TWC and developers to incorporate techniques such as these into the potential development sites. However, the size of land needed and in some cases safety considerations, can preclude such techniques on some sites.

313 Where the use of the more sustainable SuDS is constrained, underground storage and infiltration techniques may be the only option available to developers, although it must be noted that “tanked” systems are regarded as the least sustainable option.

314 Figure 8-2 illustrates the EA Source Protection Zones[4*] (SPZ) in the District. When coupled with the GWV zones identified earlier in the report, and the soil permeability figures in the TWC Level 1 SFRA, a high-level strategic overview of the suitability, or not, of the development locations to utilise certain infiltration based SuDS techniques can be formed.

[4*] See Technical Glossary for explanation of SPZ

315 The low permeability of the drift soils, which overlies the majority of the Council area, may preclude the use of shallow infiltration SuDS techniques. However, should localised tests suggest that there is suitable permeability for a given technique, developers and TWC should consult the EA to ensure that any SuDS design takes account of any SPZ and other areas where the aquifers may be vulnerable, and ensure that the risk of pollution is adequately controlled:

- The Council area is predominantly made up of low permeability soils. The more permeable sites should have priority given to infiltration drainage techniques, as opposed to discharging surface water to watercourses or connecting to mains sewers.
- Where less permeability is found and infiltration techniques are not viable also due to a high water table which is known to vary in the area or, source protection zones are present), discharging site runoff to watercourses is preferable to the use of sewers. Integrated urban drainage should also be used throughout the design process
- The Level 1 SFRA states that the majority of the TWC area has been highlighted by DEFRA as a Nitrate Vulnerable Zone (NVZ) and a significant area in the northern half of the borough is classified as a Groundwater Source Protection Zone (GSPZ) by the EA. Any water wells should also be identified as non potable supplies and taken into account in the design process. It is important to protect all groundwater abstractions in the TWC area and therefore all types of abstractions should be also be identified and taken into account in the design process.
- Contaminated land is a prevalent issue in the Council area given its heritage. Therefore, a site investigation undertaken by the development will assist in assessing the appropriate techniques for the site.

316 Source Protection Zones dominate the northern part of the TWC area. This covers the Newport ward and northern rural parishes predominantly along the IDB controlled areas of the Rivers Strine, Meese and Tern. The rural parishes are noted as Chetwynd Aston, Longford, Preston upon the Weald Moors, Waters Upton, Crudgington and Longdon on Tern.

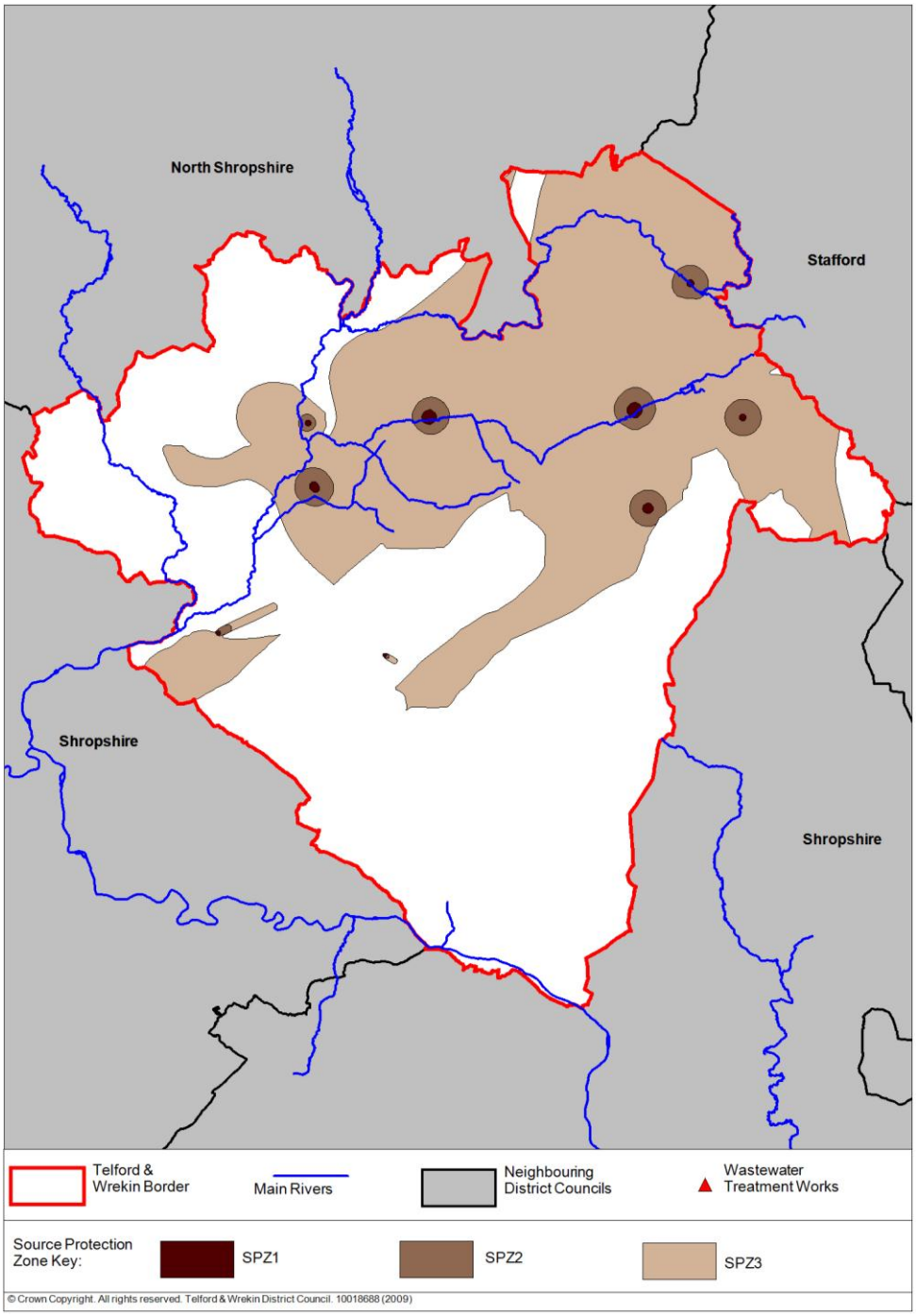

Figure 8-2 SPZ to show where certain infiltration based SUDS may not be appropriate without further investigation

8.5 Summary and Issues for the Next Stage

8.5.1 Summary

317 Following a review of the SFRA, the following key constraints to the potential large development sites have been identified. Localised sewer flooding is not included, as the postcode area scale resolution of the SFRA results does not provide the detail required to assess individual sites in a meaningful way. However, the possible impact of the development on the sewerage network, which in turn may affect the risk of sewer flooding, is discussed further in Section 6.3.

318 At this time constraints matrix is coded as 'Major or possible constraint to development' as more information is required to locate the development within a Flood Zone or related to WwTW. However, key messages in terms of flood risk constraints are outlined in Table 8-1 below.

Development Location	Flood Risk Constraint
Newport	The main source of flood risk is from the Main River Strine. Large areas across the centre of the Parish are at risk from the 1% Annual Event Probability Flood (1 in 100year) and 0.1% Annual Event Probability Flood (1 in 1000 year). Additionally there is some risk of flooding from the Main River Meese in the North of the Parish. The FMfSW shows some area where ponding of surface water could occur but does not highlight much risk of flooding from ordinary watercourses within the parish.
North Telford	There are no main rivers in the North Telford parish. The predominant source of flood risk in the North Telford catchment is from Ordinary Watercourse flooding. Both the Environment Agency Flood Map and the FMfSW identify significant flood risk from Ordinary Watercourses across the catchment. There are also areas of deep (>0.3m) surface water ponding across the parish.
South Telford	The south of the Parish is dominated by Main river flooding from the River Severn and Coalbrookdale Brook. Coalbrookdale Brook is a rapid response catchment and therefore caution should be exercised when considering new development. Elsewhere in the catchment the FMfSW shows a risk of flooding from a number of Ordinary Watercourses. In the north east and south east of the Parish there are a number of locations where ponding of surface water could occur. All new development should aim to reduce surface water runoff as part of all new developments
Rural Areas	There is significant Main River flood risk in rural areas from the River Strine. The FMfSW shows that Ordinary Watercourse tributaries of the River Strine could also contribute significantly to flood risk in the rural areas. There are a number of examples of large areas of deep water ponding across the catchment.

Table 8-1 SFRA constraints relevant to potential TWC development in terms of direct flood risk to sites, or related WwTW infrastructure

8.5.2 Recommendations

319 We recommend that TWC implement firmer policy requirements and recommendations to help deliver sensitive surface water management from new developments in line with the FWMA. In particular TWC should:

1. Develop a SuDS Approval Board policy and adoption guide for inclusion either within the developing Shaping Places Local Plan or as a Supplementary Planning Document (SPD), linking the Green Infrastructure policy recommendations to provide a holistic vision for developers and planners to follow.

2. Develop a policy to help control surface water runoff from new sites to be equal to the Greenfield runoff rate prior to development and brownfield sites should seek a minimum of a 50% betterment and include a requirement for 'No surface water connection to the foul sewer'.

3. Determine the land take required for SuDS infrastructure prior to applying development densities to help ensure that sufficient land is incorporated to deliver successful SuDS solutions.

4. Identify opportunities for strategic surface water management across areas of proposed widespread development with multiple landowners/agents – helping to deliver strategic SuDS and Green Infrastructure as opposed to piecemeal approaches from the multiple developments.

5. Through the SAB, review planning applications with view of approving only technically feasible solutions, by requiring evidence to substantiate that the solutions proposed are deliverable and will mitigate the issue.

6. Steer all new development in the urban and rural areas to be in FZ1 according to NPPF guidance, by fully applying the Sequential Test whilst considering all forms of flooding. TWC should utilise the mapping contained within the Level 1 and 2 SFRA's to assess the flood risk of any development sites that come forwards through site allocations processes, or development elsewhere. In addition, TWC should take account of the historic flooding events listed within the SFRA, as some of the previous events appear to have been in areas now listed as FZ1.

7. Identify the policy approach to helping to accrue financial support (through Community Infrastructure Levy) to assist with delivering the solutions required to offset the potential increases in effluent flows from the WwTW and their potential impact on downstream flood risk.

320 An Outline WCS, completed alongside the development of the Shaping Places Local Plan Final Submission, and other Development Plan Documents, such as Site Allocation DPDs and Supplementary Planning Policy Documents should aim to identify flood risk management solutions that not only align with the themes contained within NPPF, but also promote and enhance biodiversity

8.5.3 Outline WCS Study Requirements

321 The further work required to be undertaken in an Outline WCS includes:

- Assessments on the impact of new development on the Sewerage network infrastructure, including an assessment on the level of service for the assets and potential to exacerbate foul flooding.

- Further investigation on the viability of strategic flood risk mitigation measures to address any increases in flood risk due to increased effluent discharge from WwTW due to the proposed development, following the confirmation of TWC's preferred development option (based on this Scoping WCS and other elements of the LDF evidence base).
- Obtain site boundaries for developments to better understand flood risk issues to each development.
- Undertake a desk based SuDS suitability review for the potential development locations to help promote sustainable surface water management and to help TWC accrue catchment wide flood risk management benefits.

9 Constraints, Solutions and Opportunities Summary

322 The following summary tables illustrate how the issues and solutions identified in Section 6, 7 and 8 may constrain or facilitate the proposed development. However, this will require confirmation and investigation through further consultation with the key stakeholders during the Outline WCS strategy production. As an indicative guide, the issues are displayed and discussed using the following convention:

323 As an indicative guide, the issues are displayed and discussed using the following convention:

	Major constraint to development, requiring extensive infrastructure improvements to allow development (possible showstopper at this stage but may be reclassified following further investigation).
	Major constraint to development, requiring extensive infrastructure improvements to allow development (Not considered as a showstopper at this but requires further investigation to confirm).
	Major or possible constraint to development, although infrastructure solutions and mitigation techniques are identified and/ or judged feasible to allow development.
	No constraint to development, or minor localised improvements required to allow development

Table 9-1 Key for constraints summary tables

324 At this stage it is not possible to determine the different level of constraints between the growth Scenarios A- C. Quantitative information on each of the different growth scenarios has not been provided by STWL to determine whether

- There is sufficient hydraulic capacity and headroom at the respective WwTW.
- Whether increased discharges from WwTW would have a detrimental effect on flood risk;
- In light of the changes to the WRZ's, additional information is required from STW on their WRMP to better understand the ability to supply the different growth scenarios.

325 In addition, fluvial and surface water flood risk could be further quantified once site boundaries have been obtained.

Location	Water Resources	Potable Supply	Sewerage Network Capacity	WwTW Capacity	Flood Risk	Environment and Water Quality
Newport Parishes	Depending on the residential growth scenario it is proposed there could be between 975 – 2585 new dwellings in the ward. The ward is identified as an area for significant growth and is located within an area where key water resources are already subject to over abstraction and over licensing during low flows. There are known issues in the catchment and the catchment are currently over abstracted. There is no water available within the catchment therefore any further development in the catchment is likely to increase the pressure on the existing water resources.	The impacts are currently unknown but due to the scale of growth within the ward there is the potential for a major constraint to development.	There are key current issues which relate to the sewerage infrastructure, which are being investigated by STWL – the potential for further growth could further exacerbate this risk	Newport WwTW has limited capacity for growth under current consent and there is a requirement for phosphate stripping at works to achieve UWWTD requirements for completion. It has been reported that Newport WwTW has limited capacity for growth under current consent.	The main source of flood risk is from the Main River Strine. Large areas at risk from the 1% and 0.1% AEP event. River Meese and ordinary watercourse flood risk should be considered.	The WwTW discharges to the Strine Brook and the watercourse is identified as being eutrophic with high levels of phosphates. Further work is required to consider whether increased discharge consents are required under each growth scenario. Furthermore, under each growth scenario what would need to be done to achieve the required WFD for phosphate, ammonia, biochemical oxygen demand (BOD) and dissolved oxygen (DO) levels investigated. There are potential environmental capacity constraints at Newport STW due to the already tight permit conditions and the low dilution afforded by the River Strine
North Telford Parishes	Depending on the residential growth scenario it is proposed there could be between 397 – 7239 new dwellings in the ward. The ward is identified as an area for significant growth and is located within an area where key	The impacts are currently unknown but due to the scale of growth within the ward it is considered there is will be minimal constraints	Several of the Parishes have recorded issues of sewerage capacity. Within the Lilleshall and Donnington area it has been identified that the Wall Brook	The majority of the North Telford parishes contribute to Rushmoor WwTW. Recent studies and	There are no main rivers in the North Telford parish. The predominant source of flood risk in the North Telford	Further work is required to consider whether increased discharge consents are required under each growth scenario. Furthermore, under each growth scenario what would need to be done

	water resources are already subject to over abstraction and over licensing during low flows. The only parish where the CAMS indicate that water is available is St Georges and Priorslee. Within all other parishes the CAMS specifies the catchment is currently over abstracted. Further development within the catchments is likely to increase the pressure on the existing water resources.	to development.	has been suffering from high phosphate levels. Within the Wellington area the Bean Hill Brook is suffering from Diatoms. It is suspected that a large surface water sewer incorporating a consented CSO could be having an impact on the brook.	works have shown there is significant capacity to accommodate the additional growth planned in North Telford under the current consent.	catchment is from Ordinary Watercourse flooding. However, surface water flood risk needs to be considered.	to achieve the required WFD to phosphate and dissolved oxygen levels. Sites with environmental designations are present within the Ketley and Lilleshall, Donnington and Muxton Parishes. Care needs to be taken to ensure that development does not have an adverse effect on the environmentally designated sites.
South Telford Parishes	Depending on the residential growth scenario it is proposed there could be between 397 – 7239 new dwellings in the ward. The ward is identified as an area for significant growth and is located within an area where key water resources are already subject to over abstraction and over licensing during low flows. The CAMS indicates that water is available in Great Dawley, Hollinswood and Randlay, Madeley, Stirchley and Brookside and The Gorge. Within all other parishes' further development within the catchments is likely to increase the pressure on the existing water resources.	The impacts are currently unknown but due to the scale of growth within the ward it is considered there is will be minimal constraints to development.	Madeley Parish, Little Wenlock, Great Dawley and Dawley Heights Parishes have issues of sewerage capacity and as such, future growth could exacerbate the problems and studies would be required to identify the scale and solution requirements.	Wastewater within the South Telford Parishes drains to Coalport WwTW. It is understood that there is capacity for approximately 4,500 dwellings in relation to the hydraulic capacity and against the current consent.	Several areas of flood risk exist across South telford. Development should be undertaken with aim of providing catchment wide flood risk improvements	Further work is required to consider whether increased discharge consents are required under each growth scenario. Furthermore, under each growth scenario what would need to be done to achieve the required WFD to phosphate and dissolved oxygen levels. Sites with environmental designations are present within the Great Dawley, Hollinswood and Randlay, Stirchley and Brookside and The Gorge Parishes. Care needs to be taken to ensure that development does not have an adverse effect on the environmentally

						designated sites.
Rural Parishes	Depending on the residential growth scenario it is proposed there could be between 440 – 1245 new dwellings in the ward. The ward is identified as an area for growth and is located within an area where key water resources are already subject to over abstraction and over licensing during low flows. The CAMS indicates there are no parishes where water is available and that the catchments are currently over abstracted. Further development within the catchments is likely to increase the pressure on the existing water resources and care needs to be taken to minimise the impact of the development.	The impacts are currently unknown but due to the scale of growth within the ward there is the potential for a major constraint to development	Areas where constraints are predicted are Edgmond Parish, which has its own WwTW and the receiving watercourse is known to be Eutrophic. Growth within Kynnersley, Preston upon the Weald Moors parishes may have implications regarding the phosphorous performance and available headroom.	Several of the proposed developments are constrained by sewerage network and WwTW capacity, if growth is expected in these areas. This could lead to a major constraint to development, requiring extensive infrastructure improvements to allow development. STWL have identified that there is no capacity for development occurring within the catchment areas for Great Bolas, Walcote and Waters Upton WwTW, due to the nature of the current WwTW. Improvements or provision of new infrastructure to accept new growth would be un-economic	There is significant Main River flood risk in rural areas from the River Strine and ordinary watercourse tributaries of the River Strine. A large number of examples of deep surface water ponding are common across the parishes.	Parishes within the Strine, Meese and Roden catchments should consider environmental sensitive designations. Further work is required to consider whether increased discharge consents are required under each growth scenario. Furthermore, under each growth scenario what would need to be done to achieve the required WFD to phosphate and dissolved oxygen levels. The sites that have recorded environmental designations are present within the Ercall Magna, Rodington and Waters Upton Parishes. In these catchments particular care needs to be taken to ensure that development does not have an adverse effect on the sites with environmental designations.

Table 9-2 Constraints summary table per Ward

326 Furthermore, the following policies are recommended to be adopted part of TWC's Shaping Places Local Plan.

- TWC should ensure that all new homes delivered through the Shaping Places Local Plan should be water efficient (i.e. a minimum of Code for Sustainable Homes Level 3/4, 105 l/p/d). This should include the requirement for rainwater harvesting and grey water recycling.

- The authorities' Core Strategies should include policies to support the water companies' water efficient activities as set out in WRMPs. Policies in Core Strategies for new development should require the use of SuDS that mimic natural drainage rather than using traditional piped systems.

- Policies in Core Strategies should require that, where feasible, culverted water courses should be opened up to provide natural channels. (This would be in line with national policy, the requirements of the Severn RBMP and the SFRA).

327 TWC should seek the maximum possible reduction in run off rates:-

• For sites currently draining direct to sewer or watercourse and proposes to use the same outlet(s), a minimum of 50% reduction in peak discharge is required. Indirect drainage via the highway is not included in the calculation of existing flow.

• For sites not currently drained or to be drained to alternative outlets, peak discharge to be restricted to a maximum of 5 litres per second per hectare

10 Conclusions

328 The Constraints, Summary and Opportunities matrix outlines the potential constraints and uncertainties and underpins the requirements for further work. There are limitations to future abstraction licences, surface water licences will be restricted and there are no further groundwater abstractions that will be licensed.

329 From the Constraints matrix, one key consideration in relation to the potential growth scenarios is that of current WWTW volumetric and process capacity compliance, suggests that the total number of dwellings highlighted under Scenario C could be achieved, however there would need to be a redistribution of the potential dwelling numbers to maintain current Consent levels.

330 It is however noted that these items represent one part of the Water Cycle Study and that with sufficient time the infrastructural requirements to prevent deterioration on the receiving water environment can be accommodated with STWL's business plan, which could result in a redistribution of the phasing in relation to the planned development to delay development in certain areas to allow sufficient time for the infrastructure to be planned, financed and completed in advance of the development.

331 Based on the evidence presented above it is suggested that a level of growth between Scenario B and C could be better accommodated to allow a more sustainable and planned water infrastructure, with a figure of 18,000 appearing sensible. In relation to the current WwTW consents and the ability to concentrate development around the three major WwTWs it is recommended that a further 9800 additional dwellings (other than the 8,192 with current planning permissions) should potentially be distributed thus.

Parishes	Dwellings with Planning Permissions	Recommended Number of Additional Dwellings	Total Number of Dwellings.
Newport	65	935	1,000
North Telford	2,746	7,254	10,000
Rural	69	331	400
South Telford	5,312	1,288	6,600
Totals	8,192	9,808	18,000

Table 10-2 Recommended levels of Growth per Parish

332 It is noted once more that the location of development is wholly dependent on sites being promoted in terms of other factors, including financial viability, as such the above should be seen only as a recommendation for TWC to aspire towards in the interests of the development being potentially more sustainable in relation to the Water Environment and the ability to deliver the required infrastructure.

		Proposed Scenario
2012-2015	Newport	100
	North Telford	1,500
	South Telford	1,500
	Rural areas	50
		3,150
2016-2020	Newport	250

	North Telford	2,000
	South Telford	2,000
	Rural areas	50
		4,300
2021-2025	Newport	300
	North Telford	3,250
	South Telford	2,100
	Rural areas	150
		5,800
2026-2031	Newport	350
	North Telford	3,250
	South Telford	1,000
	Rural areas	150
		4,750
	Totals	**18,000**

Table10-2 Recommended Development Trajectory to account for Infrastructural Planning and Delivery.

333 With this proposed phasing, it is recommended that within the PR14 Business Plan for STWL, that studies are commenced and consultation undertaken with the EA to determine the timeline to deliver increased volumetric consents for the following works as a minimum: Coalport – Increasing the potential dwellings by 1200 for the current agreed Consent – representing a likely increase in PE of approximately 3,000 to be in place by 2021. *Please note that with over 5,000 dwellings with planning permission in this area, that STWL may already have commenced negotiations to increase consent and hydraulic capacity at the WwTW earlier than this – This would be confirmed at the Outline Stage.*

334 Newport - Increasing the potential dwellings by approximately 350 for the current agreed Consent – representing a likely increase in PE of approximately 850 to be in place by 2026.

335 Development within the rural parishes, serving the smaller named WwTW will also need to be captured and hence it is recommended that development in these areas is not commenced until 2021 to allow for similar discussions and agreements to be in place between the EA, STWL and TWC to permit increasing flows to the smaller WwTWs, in light of studies into the water quality of the receiving, usually smaller, watercourses.

10.1 The need for a Outline WCS

336 This Scoping WCS provides TWC with an indication of where water and wastewater infrastructure, and the wider water environment, will constrain development on a ward basis. The key infrastructure requirements associated with each development Option have been identified.

337 However, at present the range of development options available to TWC prevents the assessment of Outline site-specific infrastructure requirements. An Outline WCS should be completed alongside finalisation of the TWC Shaping Places Local Plan and potential Site Allocations document Shaping Places Local Plan, and should incorporate as a minimum the following items to provide TWC with the confidence that the proposed development is within the environmental capacity and that water services infrastructure can be funded and delivered alongside the development plan. The Outline WCS should investigate

10.1.1 Development & Housing Number

- Requirement to reconfirm the proposed scenario and obtain site allocation location areas, information on the likely occupancy rates and an analysis on where employment land is likely to be delivered/required.

10.1.2 Wastewater collection, treatment and water quality

Environmental Capacity Assessment

- It is important that TWC development plans can show that development will not cause deterioration of current WFD status, and that the proposed level of development will not jeopardise the catchment being able to achieve good status. The methodology to do this will need to be confirmed with the Environment Agency and Severn Trent Water.
- The Scoping WCS study identification of when new wastewater treatment works consents should be reviewed in light of further more detailed information as to the potential development locations. This should confirm that the infrastructure required can be delivered within the necessary timescale or suggest an alteration to the development phasing
- The Outline study will need to work with STWL to identify which growth locations occur upstream of combined sewer overflows and where there may be a growth above 10% of current contributing area, further investigations will be required by STWL to confirm that there will be no increase in discharge from combined sewer overflows, or confirm that there will be no deterioration in water quality because of the combined sewer overflow.

Infrastructure Capacity Assessment

- Wastewater treatment. If a new tighter consent is required at any of the identified WwTWS, the EA and STWL should be consulted to identify the potential for the consent change to be permitted and that STWL could provide the necessary infrastructure to meet the new consent requirements.
- Wastewater collection. An assessment sufficient for an Outline study should focus on where there are known capacity issues (identified within this scoping report) and where growth could exacerbate them. It is likely that greater information on the infrastructure funding and delivery mechanisms may be required where larger more strategic allocations are being progressed through development planning documents.
- In addition, the Outline WCS will need to identify where there may be impacts on levels of service in relation to the performance of the network and what infrastructure may be required to mitigate the risk of increasing flooding and causing pollution or increasing spills from CSOs

Increased WwTW discharge & flood risk impact

- There will be a requirement to assess the impact of increased discharges from WwTW resulting from development. Current Planning guidance is such that there should be no increase in flood risk from development and as such the Outline WCS should identify where mitigation measures would be required to offset any potential increase in flows to receiving watercourses, in particularly the rapid response catchments within South Telford, and where increased foul flows trigger a quantifiable increase in CSO spills or flooding across the catchment.

10.1.3 Water Resources and Supply

Water Resources

338 In the current situation, where the water resources management plan is being developed and will be processed through increased public and regulatory scrutiny, we recommend that the outline WCS should not repeat work undertaken by the WRMP, and should be limited to :

• Liaison with STWL to identify that the proposed level of growth assessed within the WCS is consistent with the WRMP assumptions over development.

• Liaison with STWL Water Resources staff to identify the suitable planning policy measures that should be implemented to help STWL achieve the demand management elements included within the developing WRMP, so that TWC can help implement them through the development planning process, and working within the communities with the EA and STWL on Water Wise joint awareness campaigns.

Water Supply

339 The Outline WCS will require an assessment of the water supply network infrastructure capacity, which has not been made available as part of the Scoping WCS, due to the level of detail available surrounding the development information not being sufficient to undertake this assessment. The works that should be promoted on receipt of firmer indications of potential development locations and quantum, are to confirm that there is sufficient existing or planned network capacity to deliver the five year housing supply. It is the responsibility of the water company to provide this information to the Water Cycle Study to inform the RAG assessment.

340 Through liaison with STWL, the Outline WCS should also attempt to identify that there is a reasonable prospect of delivery of water supply infrastructure over the Development Plan period, through the potential identification of scheme feasibility, design development programme and timeline to deliver the infrastructural requirements. To assist TWC in determining the viability and potential sustainability of their development plan, it is recommended that through the Outline WCS, STWL provide clear trigger points for the planning stage and delivery stage of additional infrastructure and confidence that the funding sources to deliver any enhancements are deliverable.

10.1.4 Flood risk and surface water management

341 The WCS should not seek to repeat or confirm information already published in Strategic Flood Risk Assessments, Integrated Urban Drainage Pilot, Surface Water Area Action Plans (SWAAP), Surface Water Management Plans, Preliminary Flood Risk Assessment or the developing Local Flood Risk Management Strategy (LFRAMS).

342 The WCS should avoid providing information that would be required from developers through Site Specific Flood Risk Assessments or drainage strategies. It is recommended that the Outline WCS provides guidance to assist developers and TWC to help direct development away from higher flood risk areas. This may include the need to provide clear guidance on the future role of the proposed SuDS Approval Body (SAB) as part of the Flood and Water Management Act (2010), when this is commenced, to help signal the expectations of the SAB for new development in the TWC area. We recommend that the Outline WCS should liaise with STWL and the EA to determine strong policies for Surface Water Management and to help identify appropriate mitigation where required.

343 The Outline WCS should deliver a broad assessment of surface water management potential for each of the allocated sites, where appropriate, (unless already assessed to sufficient detail

within other documents such as a LFRAMS or SWAAPs). This should be a desk study, using readily available data, based on the criteria defined in Section XX. The assessment should be based upon a desk-study of readily available data and analysis, and should not require modelling.

344 We recommend it uses a simple traffic light approach to assess the potential for SuDS, with green indicating a positive outcome, yellow indicating a notable outcome, and red indicating a critical outcome. This assessment will provide an indication of the constraints to and opportunities for sustainable surface water management in the areas of future growth. Detailed intrusive investigations will still be needed by developers to support their proposals as they come forward.

10.1.5 Biodiversity and green infrastructure assessment

345 The WCS process should help to achieve the many opportunities available for creating places where people want to live and work including attaining the multiple benefits of integrating water services and surface water management planning with green infrastructure planning wherever possible.

346 The Outline WCS should investigate the potential for deterioration of the provision of new water infrastructure on water environment, with particular focus on the local biodiversity and ecology, through a review of the information included within the developing WRMP. The Outline WCS should identify the potential for these impacts to occur as a result of the future growth.

347 A review of the physical impact of development on conservation designations or on site specific biodiversity and ecology, should not be included in the Outline WCS, as these impacts should be captured through Environmental Impact Assessments carried out by developers as well as through the likes of the Strategic Environmental Assessment for STWLs WRMP and possible TWC requirements for the Shaping Places Local Plan to undertake a Habitats Regulations Assessments (for European designations) and other sustainability appraisals.

10.2 Guidance for TWC and developers

348 Developers will continue to be required to comply with emerging TWC and regional policies, in addition to statutory national policies such as NPPF.

349 TWC should look to include the availability of water and wastewater infrastructure as a planning condition, so that planning permission is not granted until developers have consulted with STWL regarding network capacity and possible strategic solutions. Contributions towards the costs of such infrastructure may be collected through the forthcoming Community Infrastructure Levy, although this will depend on local implementation guidelines.

350 The following checklist (Table 10-1) should be used to guide policy development by TWC, and is also provided as outline guidance for developers, to enable developments to be planned whilst taking account of best practice, and conforming to the strategy and aspirations discussed throughout this WCS. This guidance will need further development in line with the Outline WCS findings in next stage.

Topic	Strategic Requirement/ Aspiration	Minimum Requirement	Actively Encouraged
Flood Risk	*Has the development been approved following an assessment under NPPF, utilising the sequential and exception tests, a FRA and Level 1 and Level 2 SFRA's where appropriate?*	ⓘ	
	Does the FRA for the development site propose measures to reduce downstream flood risk, particularly from surface water runoff following WCS guidance?	ⓘ	
SUDS	*Has the developer provided details of how surface water runoff will limited to the rate prior to development (the equivalent greenfield rate or a minimum of 50% betterment for brownfield sites), in line with EA guidance, TWC Policy and SFRA?*	ⓘ	
	Can the developer demonstrate that any planned SUDS are appropriate for the site geology, taking into account Groundwater Vulnerability and SPZ, as detailed in this WCS. Previous land use should be considered, and localised permeability tests will also be required, potentially as part of the site FRA?	ⓘ	
	Has the developer consulted with TWC regarding who will be responsible for maintenance of any SUDS features, and how this will be funded?	ⓘ	
	Is the developer proposing to integrate biodiversity features such as wetlands and green corridors into any proposed SUDS, as recommended in this WCS?		✔
Demand Management	*Has the developer provided evidence of how calculated whole building performance will be 105 l/p/d or less, as recommended in this WCS?*	ⓘ	
	Has the developer provided details of any rainwater harvesting/ grey water reuse systems to achieve PCC between 80-105 l/p/d?		✔
	Has the developer provided details of any schemes/ measures to raise the occupiers'/ community's awareness of the importance of water efficiency?		✔
Potable Supply	*Has the developer liaised with STWL to ascertain if supply can be provided, and agreed appropriate funding mechanisms?*	ⓘ	
Sewerage	*Has the developer provided evidence (following liaison with STWL) that network capacity can be provided, the receiving WwTW has adequate capacity to receive the flows, and that appropriate funding mechanisms are in place?*	ⓘ	
	Is the development location and phasing in keeping with the strategy recommended in this WCS		✔
Conservation	*Has the developer completed all relevant ecological surveys and impact assessments, and complied with all relevant planning conditions, as directed by UK/ EC law, NPPF?*	ⓘ	
	Has the developer provided details of integrated site specific solutions to enhance biodiversity in the water environment?		✔

351 Meeting the "actively encouraged" requirements will minimise the negative impacts of any development on the water infrastructure within the study area, and the wider water environment.

Appendix A

WwTW boundaries

Ward	Parish	Sewage Treatment Works Catchment
Newport	Newport CP	Newport
North Telford	Hadley and Leegomery CP	Rushmoor
North Telford	Ketley CP	Rushmoor
North Telford	Lilleshall, Donnington and Muxton CP	Rushmoor
North Telford	Oakengates CP	Rushmoor
North Telford	St. Georges and Priorslee CP	Coalport
North Telford	Wellington CP	Rushmoor
North Telford	Wrockwardine Wood and Trench CP	Rushmoor
South Telford	Dawley Hamlets CP	South - Coalport, north - Rushmoor
South Telford	Stirchley and Brookside CP	Coalport
South Telford	Great Dawley CP	Coalport
South Telford	Hollinswood and Randley CP	Coalport
South Telford	Madeley CP	Coalport
South Telford	The Gorge CP	Coalport
South Telford	Lawley and Overdale CP	Rushmoor
South Telford	Little Wenlock CP	Little Wenlock
Rural	Tibberton and Cherrington CP	Edgmond
Rural	Waters Upton CP	Great Bolas, Waters Upton, Crudgington, Rushmoor, Cherrin
Rural	Ercall Magna CP	Roden, High Ercall, Osbaston, Ellerdine, Rushmoor
Rural	Chetwynd Aston and Woodcote CP	Newport
Rural	Rodington CP	West - Monkmoor, East - Rushmoor, Sugdon
Rural	Wrockwardine CP	Rushmoor, Walcote
Rural	Kynnersley CP	Rushmoor
Rural	Preston upon the Weald Moors CP	Rushmoor
Rural	Eyton upon the Weald Moors CP	Rushmoor
Rural	Edgmond CP	Edgmond
Rural	Chetwynd CP	Sambrook
Rural	Church Aston CP	Newport

Appendix B

Severn Trent Water Information

Telford Water Cycle Study & Central Telford Area Action Plan

Potential impact of proposed developments on sewerage infrastructure assets

11 August 2010

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

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure	WQ
	Little Wenlock CP			Little Wenlock	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	TBC once site boundaries and populations are available
	Tibberton and Cherrington CP			Edgmond	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	TBC once site boundaries and populations are available
	Waters Upton CP			Great Bolas, Waters Upton, Crudgington, Rushmoor, Cherrington	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Wellington CP			Rushmoor	There are known capacity issues in parts of Wellington CP, demonstrated by properties on the DG5 flooding register: to the north of Arleston, south west and north west Wellington, Haygate and north of Shawbirch. See previous WCS assessment for site specific assessments of areas that were being considered in the past. Dependent on the scale and location of development, hydraulic	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Ercall Magna CP			Roden, High Ercall, Osbaston, Ellerdine, Rushmoor	There is one record of minor flooding of properties in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Chetwynd Aston and Woodcote CP			Newport	Records of flooding in the downstream network in Newport. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Rodington CP			West - Monkmoor, East - Rushmoor, Sugdon	There is one record of minor flooding of properties in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Wrockwardine CP			Rushmoor, Walcote	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14. Issue at Walcote
	Lawley and Overdale CP			Rushmoor	There are records of flooding incidents in the north. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure	WQ
	The Gorge CP			Coalport	There are no properties on the FLOODS register in this parish. However, it is known that the River Severn interacts with the sewerage system and affects the operation of a number of pumping stations in the area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Newport CP			Newport	Known flooding issues in parts of Newport. Severn Trent currently progressing a capital scheme to provide additional capacity for growth. See attached document.	High	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Kynnersley CP			Rushmoor	This is a small parish. There are no properties on the flooding register. Due to the small subcatchment, dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Preston upon the Weald Moors CP			Rushmoor	There are known capacity issues in the north of Preston upon the Weald Moors CP. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Hadley and Leegomery CP			Rushmoor	There are known capacity issues in the south of the parish in the Haybridge area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Eyton upon the Weald Moors CP			Rushmoor	This is a very small parish and rural area. Significant development (compared to the existing settelements) may have an impact on sewerage performance. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Wrockwardine Wood and Trench CP			Rushmoor	There are no significant recorded flooding incidents in the parish. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Oakengates CP			Rushmoor	There are known capacity issues in the south of the parish in the Ketley Bank area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. See previous WCS assessment for individual site appraisals.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	St. Georges and Priorslee CP			Coalport	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed. See previous WCS assessment for individual site appraisals.	Low	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Ketley CP			Rushmoor	There are significant capacity issues in central areas of the parish. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	High	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Hollinswood and Randley CP			Coalport	No properties on the flooding register. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Low	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure	WQ
	Great Dawley CP			Coalport	There are properties with recorded minor flooding to the south of Dawley. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. See previous WCS assessment for individual site appraisals.	Medium	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Dawley Hamlets CP			South - Coalport, north - Rushmoor	There are no records of properties flooding in the parish. See previous WCS assessment for individual site appraisals.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Stirchley and Brookside CP			Coalport	There are records of minor flooding in the west of the parish, which may indicate capacity issues. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Madeley CP			Coalport	There are records of minor flooding in isolated areas of the parish, which may indicate capacity issues. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Church Aston CP			Newport	Records of flooding in the downstream network in Newport. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Chetwynd CP			Sambrook	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	TBC once site boundaries and populations are available
	Edgmond CP			Edgmond	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	TBC once site boundaries and populations are available
	Lilleshall, Donnington and Muxton CP			Rushmoor	There are known capacity issues to the north west of Muxton and records of minor flooding to the west of Donnington. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. See previous WCS assessment for individual site appraisals.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14

Telford Water Cycle Study & Central Telford Area Action Plan

Potential impact of proposed developments on sewerage infrastructure assets

11 August 2010

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

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure	WQ
	Little Wenlock CP			Little Wenlock	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	TBC once site boundaries and populations are available
	Tibberton and Cherrington CP			Edgmond	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	TBC once site boundaries and populations are available
	Waters Upton CP			Great Bolas, Waters Upton, Crudgington, Rushmoor, Cherrington	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Wellington CP			Rushmoor	There are known capacity issues in parts of Wellington CP, demonstrated by properties on the DG5 flooding register: to the north of Arleston, south west and north west Wellington, Haygate and north of Shawbirch. See previous WCS assessment for site specific assessments of areas that were being considered in the past. Dependent on the scale and location of development, hydraulic	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Ercall Magna CP			Roden, High Ercall, Osbaston, Ellerdine, Rushmoor	There is one record of minor flooding of properties in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Chetwynd Aston and Woodcote CP			Newport	Records of flooding in the downstream network in Newport. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Rodington CP			West - Monkmoor, East - Rushmoor, Sugdon	There is one record of minor flooding of properties in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Wrockwardine CP			Rushmoor, Walcote	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14. Issue at Walcote
	Lawley and Overdale CP			Rushmoor	There are records of flooding incidents in the north. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure	WQ
	The Gorge CP			Coalport	There are no properties on the FLOODS register in this parish. However, it is known that the River Severn interacts with the sewerage system and affects the operation of a number of pumping stations in the area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Newport CP			Newport	Known flooding issues in parts of Newport. Severn Trent currently progressing a capital scheme to provide additional capacity for growth. See attached document.	High	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Kynnersley CP			Rushmoor	This is a small parish. There are no properties on the flooding register. Due to the small subcatchment, dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Preston upon the Weald Moors CP			Rushmoor	There are known capacity issues in the north of Preston upon the Weald Moors CP. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Hadley and Leegomery CP			Rushmoor	There are known capacity issues in the south of the parish in the Haybridge area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Eyton upon the Weald Moors CP			Rushmoor	This is a very small parish and rural area. Significant development (compared to the existing settelements) may have an impact on sewerage performance. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Wrockwardine Wood and Trench CP			Rushmoor	There are no significant recorded flooding incidents in the parish. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Oakengates CP			Rushmoor	There are known capacity issues in the south of the parish in the Ketley Bank area. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. See previous WCS assessment for individual site appraisals.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	St. Georges and Priorslee CP			Coalport	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed. See previous WCS assessment for individual site appraisals.	Low	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Ketley CP			Rushmoor	There are significant capacity issues in central areas of the parish. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	High	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Hollinswood and Randley CP			Coalport	No properties on the flooding register. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Low	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure	WQ
	Great Dawley CP			Coalport	There are properties with recorded minor flooding to the south of Dawley. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. See previous WCS assessment for individual site appraisals.	Medium	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Dawley Hamlets CP			South - Coalport, north - Rushmoor	There are no records of properties flooding in the parish. See previous WCS assessment for individual site appraisals.	Low	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Stirchley and Brookside CP			Coalport	There are records of minor flooding in the west of the parish, which may indicate capacity issues. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Madeley CP			Coalport	There are records of minor flooding in isolated areas of the parish, which may indicate capacity issues. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of current & consented DWF indicates that there is some hydraulic capacity. Should additional treatment capacity be required to accommodate higher levels of development then we do not envisage any issues in dealing with future growth demand.
	Church Aston CP			Newport	Records of flooding in the downstream network in Newport. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14
	Chetwynd CP			Sambrook	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	TBC once site boundaries and populations are available
	Edgmond CP			Edgmond	There are no records of properties flooding in the parish. Hydraulic modelling may be required to quantify the impact of development once the scale and location have been confirmed.	Low	TBC once site boundaries and populations are available
	Lilleshall, Donnington and Muxton CP			Rushmoor	There are known capacity issues to the north west of Muxton and records of minor flooding to the west of Donnington. Dependent on the scale and location of development, hydraulic modelling may be required to determine the impact and any requirement for capacity improvements. See previous WCS assessment for individual site appraisals.	Medium	Comparison of measured & consented DWF consent indicates sig. hydraulic capacity. Should additional treatment capacity could be accom. in dealing with future growth demand. There is an obligation to meet a new 2 mg/l 'P' standard by 30/09/14

Telford Water Cycle Study & Central Telford Area Action Plan

Potential impact of proposed developments on sewerage infrastructure assets

11 August 2010

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

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure
Arleston						
193	Land off Giles Close, Arleston	0 (based on 0.39ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Dawley						
501	Paddock Mount/Town Park Hinkshay Road, Dawley	688 (based on 38ha @ 40 density)	Dwellings	Coalport	Whilst there are no known sewer flooding problems in the vicinity of this development the location and size of this development in relation to the existing sewerage system (225mm dia sewerage) indicates that some localised capacity improvements may be required. Further hydraulic modelling would be required to confirm the extent of any improvements but the capacity improvements are not expected to be significant provided that surface water is managed sustainable and is not connected to the foul/combined sewerage system.	Low (Subject to hydraulic modelling)
562	Former EverReady site Hinkshay Road, Dawley	180 (based on 4.62ha @ 40 density)	Dwellings	Coalport	There are known isolated external sewer flooding problems in the vicinity of this development and so some localised capacity improvements may be required. Further hydraulic modelling would be required to confirm the extent of any improvements but the capacity improvements are not expected to be significant provided that surface water is managed sustainable and is not connected to the foul/combined sewerage system.	Low (Subject to hydraulic modelling)
409	Land at Heath Hill Roundabout, Dawley	48 (based on 1.07ha @ 50 density)	Dwellings	Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
436	Land north east Pool Hill Road, Dawley	24 (based on 4.46ha @ 40 density)	Dwellings	Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
539	Land at Riverside Coaches/Shropshire Pine Co. - edited Heath Hill, Dawley	19 (based on 0.84ha @ 120 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
215	Car Park Captain Webb Drive, Dawley	15 (based on 0.37ha @ 40 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
293	Land at rear of The Queens Arms Bank Road, Dawley	15 (based on 0.33ha @ 50 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
372	Land at Pool Hill Road, Dawley	14 (based on 2.77ha @ 30 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
299	Land south east of Mount Gilbert School Hinkshay Road, Dawley	12 (based on 0.44ha @ 30 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
403	Land adjacent Rose Villa Fence Road, Dawley	12 (based on 0.43ha @ 30 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
212	Car Park Burton Street, Dawley	10 (based on 0.2ha @ 50 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
213	Car Park George Street, Dawley	9 (based on 0.22ha @ 40 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
214	Land south Springhill Road, Dawley	0 (based on 0.89ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a
433	Land north Station Road, Dawley	0 (based on 0.76ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a
295	Land adjacent to Engineering Works Heath Hill, Dawley	0 (based on 0.29ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a
296	Land west of No. 5 Dawley Road, Dawley	0 (based on 0.17ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a
Dawley Hamlets						
21	Land south of Trinity Road, Dawley Hamlets	0 (based on 5ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a
Donnington						
401	Land at Cordingley Hall/adjacent to Scout Hut Wellington Road, Donnington	47 (based on 1.14ha @ 50 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
1	Car Park adj DLLC St. Matthews Road, Donnington	15 (based on 0.41ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
73	Paddock at Church Road, Donnington	0 (based on 1.55ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
444	Land off Furnace Lane, Donnington	0 (based on 1.3ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
26	Land adjacent to The Fields Bungalow The Fields, Donnington	0 (based on 0.96ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Donnington Wood						
543	Land at Redhill Claypit/Wrockwardine Wood Frome Way, Donnington Wood	80 (based on 3.8ha @ 40 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
542	Land at Redhill Claypit/Wrockwardine Wood Rookery Road, Donnington Wood	60 (based on 3.71ha @ 40 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
615	Land off Wrockwardine Wood Way/Kenwray Drive, Donnington Wood	0 (based on 2.84ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
101	Land at Lodge Road, Donnington Wood	0 (based on 0.71ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
201	Land off St. Matthews Road, Donnington Wood	0 (based on 0.19ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Dothill						
180	Land off Whitchurch Road, Dothill	14 (based on 0.35ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers. NOTE: There are two public foul water sewers crossing this site which may require diverting depending on the site layout.	Low (Subject to hydraulic modelling)
Hadley						
357	Land south Blockleys (Hadley Quarry) - edited (site reduced in size) Hadley Road, Hadley	200 (based on 24.22ha @ 50 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure
226	Hadley car park south Haybridge Road, Hadley	6 (based on 0.14ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
441	Land west of Hadley Park Road, Hadley	14 (based on 0.34ha @ 30 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
290	Open space adjacent Grainger Drive, Hadley	0 (based on 1.39ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
522	Land at Mossey Green Waterloo Road, Hadley	0 (based on 0.37ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Haygate						
167	Tan Bank Car Park Victoria Road, Haygate	10 (based on 0.2ha @ 50 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
Heath Hill						
527	Land at The Ley Ball Hill, Heath Hill	14 (based on 0.29ha @ 50 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
528	Land at The White Horse PH Balls Hill, Heath Hill	10 (based on 0.26ha @ 40 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
Horsehay						
136	Plot E Doseley Road/Pool Hill, Horsehay	45 (based on 1.25ha @ 40 density)	Dwellings	Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
206	Land off Fence Road, Horsehay	0 (based on 2.91ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a
Ketley						
13	Midlands Electricity Waterloo Road, Ketley	66 (based on 1.46ha @ 50 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
549	Ketley Business Park Waterloo Road, Ketley	163 (based on 4.34ha @ 50 density)	Dwellings	Rushmoor	There are known internal sewer flooding problems in the vicinity of this site. A project to alleviate this flooding problem is currently being assessed as part of Severn Trent Water sewer flooding programme (currently undergoing feasibility). There are also two surface water and a foul sewer crossing the site which may need to be diverted depending on the site layout.	Medium (Known flooding in immediate vicinity)
484	Depot Land Red Lees, Ketley	16 (based on 0.44ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
367	Land east of Churchill Drive, Ketley	15 (based on 0.49ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
228	Land west Margaret Court, Ketley	0 (based on 0.83ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
227	Land north of dismantled railway Copper Beech Road, Ketley	0 (based on 0.77ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
162	Nursery School and Hall off Holyhead Road, Ketley	0 (based on 0.28ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Ketley Bank						
398	Former Church Main Road, Ketley Bank	14 (based on 0.64ha @ 50 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
127	Land at Ketley Grange Bank Way, Ketley Bank	0 (based on 0.42ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Leegomery						
189	Land off Grainger Drive, Leegomery	0 (based on 1.03ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
191	Land off Leegate Avenue, Leegomery	0 (based on 0.88ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
443	Land off Eider Drive, Leegomery	0 (based on 0.78ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
190	Land off Barnes Drive, Leegomery	0 (based on 0.53ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Madeley						
233	Land west Ironbridge Road, Madeley	0 (based on 1.14ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a
Muxton						
351	Residential Park to the north of Wellington Road, Muxton	91 (based on 3.02ha @ 40 density)	Dwellings	Rushmoor	There are some isolated known sewer flooding problems downstream of sites 351, 446 and 350 and so minor capacity improvements may be required. Further hydraulic modelling will be required to confirm the extent of any capacity improvements although based on an initial desktop assessment they are not expected to be extensive.	Low (Subject to hydraulic modelling)
446	Land off Muxton Lane, Muxton	70 (based on 2.32ha @ 40 density)	Dwellings	Rushmoor	See comment for site 351	Low (Subject to hydraulic modelling)
350	Land adjacent to Mobile Home Park North of Wellington Road, Muxton	30 (based on 0.67ha @ 50 density)	Dwellings	Rushmoor	See comment for site 351	Low (Subject to hydraulic modelling)
447	Land south Saltwells Drive, Muxton	0 (based on 0.29ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Newport						
439	Land off Audley Avenue, Newport	345 (based on 11.51ha @ 40 density)	Dwellings	Newport	This site is located on the opposite site of the town in relation to the sewage treatment works (located to the west). Consequently additional foul flows from this development will need to pass via the town centre sewerage system and through several combined sewer overflows. Further hydraulic modelling will be required to confirm is any capacity improvements are required but based on an initial desktop assessment the need for capacity improvements are low.	Low (Subject to hydraulic modelling)
7	Land at Grove Farm Wellington Road, Newport	331 (based on 11.03ha @ 40 density)	Dwellings	Newport	This site is located upstream of known sewer flooding problems and so capacity improvements are envisaged to ensure the additional foul flows do not exacerbate the existing problems. Further hydraulic modelling will be required to confirm the extent of capacity improvements.	Medium (Known flooding in immediate vicinity)
520	Gateway site to the south of Newport, rear of Wallshead Way, Newport	317 (based on 10.57ha @ 40 density)	Dwellings	Newport	This site is located upstream of known sewer flooding problems and so capacity improvements are envisaged to ensure the additional foul flows do not exacerbate the existing problems. Further hydraulic modelling will be required to confirm the extent of capacity improvements.	Medium (Known flooding in immediate vicinity)

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure
374	Land off (site 42) Plough Lane, Newport	293 (based on 9.76ha @ 40 density)	Dwellings	Newport	This development is located adjacent to a small sewage pumping station which is likely to require upsizing/replacement to accommodate the additional foul flows from a development of this size. There are no known sewer flooding problems downstream of the site although further hydraulic modelling would be required to assess the impact on combined sewer overflows in the town centre.	Medium (Pumping capacity constraints)
416	Land north east (Site 41) Meadow View Road, Newport	147 (based on 4.91ha @ 40 density)	Dwellings	Newport	See comment for 439 as this is an adjoining site.	Low (Subject to hydraulic modelling)
472	Concrete works/former Audco site - edited Avenue Road, Newport	90 (based on 2ha @ 50 density)	Dwellings	Newport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
342	Land at Church Aston adj Highfield, Newport	79 (based on 2.62ha @ 40 density)	Dwellings	Newport	See comment for 520 as this is an adjoining site. NOTE: This site is crossed by a pubic foul sewer and a pressurised rising main which may need to be diverted depending on site layout.	Medium (Known flooding in immediate vicinity)
373	Land at The Old Showground off Fallow Deer Lawn/Deer Park Drive, Newport	65 (based on 1.81ha @ 35 density)	Dwellings	Newport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This site is crossed by a pubic surface water sewer which may need to be diverted depending on site layout.	Low (Subject to hydraulic modelling)
430	Land fronting south Water Lane, Newport	61 (based on 1.34ha @ 50 density)	Dwellings	Newport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This site is crossed by a pubic foul water sewer which may need to be diverted depending on site layout.	Low (Subject to hydraulic modelling)
19	Land off Ben Jones Avenue (Stafford Road), Newport	58 (based on 1.6ha @ 40 density)	Dwellings	Newport	This development is located adjacent to a small sewage pumping station but subject to further hydraulic assessments the additional flows from this site are not expected to have significant capacity issues. There are no known sewer flooding problems downstream of the site.	Low (Subject to hydraulic modelling)
478	Kings Head Mobile Homes Park Green Lane, Newport	57 (based on 1.58ha @ 40 density)	Dwellings	Newport	There are no known sewer flooding problems in the vicinity of this development although the site is located upstream of combined sewer overflows. Subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
456	Land at Wrekin View Farm Chetwynd End/Green Lane, Newport	55 (based on 1.52ha @ 40 density)	Dwellings	Newport	See comment for 456 as this is an adjoining site.	Low (Subject to hydraulic modelling)
481	Land at Vauxhall Longford Road, Newport	46 (based on 2.02ha @ 30 density)	Dwellings	Newport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
332	Land adj Chetwynd Knoll Edgmond Road, Newport	42 (based on 1.04ha @ 40 density)	Dwellings	Newport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
352	Land south (Site 34) Edgmond Road (Chetwynd End), Newport	36 (based on 2.29ha @ 50 density)	Dwellings	Newport	See comment for 456 as this is an adjoining site.	Low (Subject to hydraulic modelling)
485	Land south Beechfields Way, Newport	36 (based on 1.01ha @ 40 density)	Dwellings	Newport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This site is crossed by a pubic pressurised rising main sewer which may need to be diverted depending on site layout.	Low (Subject to hydraulic modelling)
440	Land adjoining Stafford St car-park - edited (Waitrose CP removed) Stafford Street, Newport	30 (based on 1.54ha @ 50 density)	Dwellings	Newport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
319	Builders Yard Upper Bar, Newport	22 (based on 0.48ha @ 50 density)	Dwellings	Newport	There are known internal sewer flooding problems in the vicinity of this site. A solution to alleviate this flooding has been assessed as part of Severn Trent capital programme but is currently on hold due to the high cost of the solution. There are also two surface water and a foul sewer crossing the site which may need to be diverted depending on the site layout.	Medium (Known flooding in immediate vicinity)
254	New Street Car Park New Street, Newport	15 (based on 0.3ha @ 50 density)	Dwellings	Newport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
317	Land adjacent to Newport Junior School Upper Bar, Newport	8 (based on 0.13ha @ 60 density)	Dwellings	Newport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
532	Land at Plough Farm Nursery Forton Road/Plough Lane, Newport	7 (based on 0.24ha @ 30 density)	Dwellings	Newport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
555	Centre of Newport, Water Lane - edited St Marys Street, Newport	0 (based on 0.05ha @ 0 density)	Dwellings	Newport	Not assessed as ZERO dwelling	n/a

Oakengates

355	Land off Hartbridge Road, Oakengates	61 (based on 1.89ha @ 40 density)	Dwellings	Rushmoor	There are known isolated sewer flooding problems in the vicinity of this development and some localised capacity improvements may be required. Further hydraulic modelling will be required to confirm the extent of any improvements although due to the size of this development the additional foul flows are not envisaged to necessitate significant capacity improvements.	Low (Subject to hydraulic modelling)
10	The Wrockwardine Wood School Holyhurst Road, Oakengates	56 (based on 3.11ha @ 40 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This redevelopment may permit the potential removal of existing surface water flows which may currently be connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
306	Central car park between Slaney Street & New Street, Oakengates	39 (based on 0.85ha @ 50 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This site is crossed by several pubic foul and surface water sewers which may need to be diverted depending on site layout.	Low (Subject to hydraulic modelling)
540	Land at 6 Station Hill Station Hill, Oakengates	3 (based on 0.21ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
428	Land north - edited (site extended to adjoin road buffer) Hartshill Avenue, Oakengates	21 (based on 2.61ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
305	Car Park rear of Duke of York Stafford Road, Oakengates	13 (based on 0.22ha @ 60 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
397	Land at rear Social Club Holyhead Road, Oakengates	0 (based on 0.87ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
307	Open space south of Athol Drive, Oakengates	0 (based on 0.5ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a

Priorslee

133	Land at Shifnal Road, Priorslee	11 (based on 0.5ha @ 30 density)	Dwellings	Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
142	Land adjacent to 15 Shifnal Road, Priorslee Village	0 (based on 0.22ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a

Randlay

111	Stirchley Avenue A (Site 52360) Stirchley Avenue, Randlay	281 (based on 7.49ha @ 50 density)	Dwellings	Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
112	Stirchley avenue B (Site 52340) Stirchley Avenue, Randlay	105 (based on 4.04ha @ 50 density)	Dwellings	Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
221	Land north Stirchley Avenue, Randlay	0 (based on 2.5ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a
220	Car Park off Stirchley Avenue, Randlay	0 (based on 0.71ha @ 0 density)	Dwellings	Coalport	Not assessed as ZERO dwelling	n/a

Red Lake

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure
525	Land at 88-102 Potters Bank Holyhead Road, Red Lake	23 (based on 0.64ha @ 40 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
513	Land off Shepherds Lane, Red Lake	6 (based on 0.38ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
476	Land known as Wyre Croft Shepherds Lane/Shrubbery Road, Red Lake	0 (based on 1.41ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Snedshill						
224	Land off Snedshill Way, Snedshill	26 (based on 2.49ha @ 40 density)	Dwellings	Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
St Georges						
223	Land rear of St. Georges Church Church Street, St. Georges	14 (based on 0.4ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
103	land off Cappoquin Drive, St Georges	0 (based on 1.52ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
200	Land off The Nabb, St. Georges	0 (based on 1.05ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
199	Land east St. Georges Road, St. Georges	0 (based on 0.57ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Stirchley						
117	Lord Silkin School/Three Oaks Primary School Grange Avenue, Stirchley	175 (based on 8.8ha @ 50 density)	Dwellings	Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
Trench						
118	Sutherland School Gibbons Road, Trench	49 (based on 1.37ha @ 40 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
396	Car Park off Trench Road, Trench	0 (based on 0.69ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Wellington						
138	Land at Sinclair Works, Wellington	400 (based on 19.73ha @ 50 density)	Dwellings	Rushmoor	There are known isolated sewer flooding problems in the vicinity of this development and some localised capacity improvements are likely to be required due to the size of the development. Further hydraulic modelling will be required to confirm the extent of any improvements.	Medium (Known flooding in immediate vicinity)
125	Blessed Robert Johnson Phase II off Whitchurch Drive, Wellington	130 (based on 3.47ha @ 50 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This site is crossed by a pubic surface water sewer which may need to be diverted depending on site layout.	Low (Subject to hydraulic modelling)
56	Land adjoining Haygate Road, Wellington	50 (based on 1.94ha @ 40 density)	Dwellings	Rushmoor	There are known isolated sewer flooding problems in the vicinity of this development and some localised capacity improvements may be required. Further hydraulic modelling will be required to confirm the extent of any improvements although due to the size of this development the additional foul flows are not envisaged to necessitate significant capacity improvements.	Low (Subject to hydraulic modelling)
432	Land north Bucks Head Haybridge Road, Wellington	45 (based on 4.19ha @ 50 density)	Dwellings	Rushmoor	There are known isolated sewer flooding problems in the vicinity of this development and some localised capacity improvements may be required. Further hydraulic modelling will be required to confirm the extent of any improvements although due to the size of this development the additional foul flows are not envisaged to necessitate significant capacity improvements.	Low (Subject to hydraulic modelling)
356	Bus Depot Vineyard Road, Wellington	33 (based on 0.72ha @ 50 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This site is crossed by a pubic foul water sewer which may need to be diverted depending on site layout.	Low (Subject to hydraulic modelling)
3	Rear of Swan Hotel Watling Street, Wellington	26 (based on 0.71ha @ 40 density)	Dwellings	Rushmoor	There are known internal sewer flooding problems in the vicinity of this site. A solution to alleviate this flooding has been assessed as part of Severn Trent capital programme but is currently on hold due to the high cost of the solution.	Medium (Known flooding in immediate vicinity)
175	North Car Park Victoria Road, Wellington	23 (based on 0.64ha @ 40 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
168	Health Centre Car Park Victoria Road, Wellington	19 (based on 0.41ha @ 50 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
460	Land at TCAT Bennetts Bank, Wellington	17 (based on 1.26ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
512	Land at 195 Holyhead Road, Wellington	14 (based on 0.51ha @ 30 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
174	South Car Park Victoria Road, Wellington	14 (based on 0.4ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
171	Land off Victoria Road, Wellington	14 (based on 0.23ha @ 60 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
275	Land at rear of 31 High Street, Wellington	13 (based on 0.32ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
408	Car Park off Tan Bank, Wellington	12 (based on 0.31ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
321	Land at rear Charlton Arms Hotel Church Street, Wellington	12 (based on 0.2ha @ 60 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
273	Land adjacent to The Wickets Inn Holyhead Road, Wellington	11 (based on 0.27ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
176	Market Car Park Market Street, Wellington	10 (based on 0.33ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
431	Land at High Street, Wellington	10 (based on 0.33ha @ 30 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
178	Land to rear of Masonic Hall Constitutional Hill, Wellington	10 (based on 0.25ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
596	Land at The Vicarage Church Walk, Wellington	10 (based on 0.24ha @ 0 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
170	Land off Mill Lane, Wellington	8 (based on 0.22ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
300	Land rear of Library Walker Street, Wellington	7 (based on 0.12ha @ 60 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
276	Land Between St. John Street & Glebe Street, Wellington	6 (based on 0.21ha @ 30 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)

Site Ref	Site Name	Dwellings	Units	Sewage Treatment Works Catchment	Sewerage Comment	Potential impact on sewerage infrastructure
274	Former Wellington Service Station King Street, Wellington	6 (based on 0.12ha @ 50 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
177	Tea tree Car Park Charlton Street, Wellington	4 (based on 0.1ha @ 40 density)	Dwellings	Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
192	Land east of Wrekin College Whitchurch Drive, Wellington	0 (based on 6.26ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
277	Land west Priory Close/Rosthwaite, Wellington	0 (based on 1.05ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
172	Recreation Ground Union Road, Wellington	0 (based on 0.35ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
559	Land between Roberts Road/Madeley Road/Harris's Way, Madeley - edited Whitchurch Drvie, Wellington	0 (based on 0.28ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
530	The Swan Hotel - edited Watling Street, Wellington	0 (based on 0.11ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Wombridge						
197	Land off Wombridge Road, Wombridge	26 (based on 0.71ha @ 40 density)	Dwellings	Rushmoor	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This site is crossed by an existing public surface water sewer which may require diverting depending on the site layout.	Low (Subject to hydraulic modelling)
196	Land off Hadley Road, Wombridge	0 (based on 0.6ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Wrockwardine						
157	Playing Field off Wrockwardine Wood Way, Wrockwardine	0 (based on 1.01ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
163	Land at Pinewood Avenue, Wrockwardine	0 (based on 0.8ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
194	Land off Wombridge Road, Wrockwardine	0 (based on 0.42ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
198	Land off Stafford Road, Wrockwardine	0 (based on 0.41ha @ 0 density)	Dwellings	Rushmoor	Not assessed as ZERO dwelling	n/a
Telford CTAPP						
Is this site 199?	Site Allocation 16 - Land adj Church Road St Georges (Residential)	8 dwellings		Rushmoor	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
Telford Gateway						
TC7	Site Allocation 5 – Hall Car Park (Offices)	Offices		Coalport	There are no known sewer flooding problems in the vicinity of this area and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. It is expected that the subsequent increase in impermeable areas will be addressed through use of sustainable drainage as there is likely to be limited surface water capacity.	Low (Subject to hydraulic modelling and sustainable amanagement of surface water)
TC7	Site Allocation 3 – Rampart Way (Offices)	Offices		Coalport		
TC7	Site Allocation 4 – Euston Way Park and Rail/Walk (Multi storey car park and offices)	Car park and offices		Coalport		
TC7	Site Allocation 13 – Hollinswood Gateway (Housing and amalgamation of schools)	Housing and school		Coalport		
Central Park						
CP1	Site Allocation 9 – Central Park Core (Primarily offices, plus element of housing)	32072m2 offices and 135 dwellings.		Coalport	There are no known sewer flooding problems in the vicinity of this area and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. It is expected that the subsequent increase in impermeable areas will be addressed through use of sustainable drainage as there is likely to be limited surface water capacity.	Low (Subject to hydraulic modelling and sustainable amanagement of surface water)
CP2	Site Allocation 10 – Telford Way (Offices)	15800m2		Coalport	See comment for CP2	Low (Subject to hydraulic modelling and sustainable amanagement of surface water)
CP5	Site Allocation 11 – St George's (Residential)	100 dwellings		Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
CP6	Site Allocation 12 – Holyhead Road (Residential)	30 dwellings		Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
Malinslee Area						
MA1	Site Allocation 14 – Park Road, Malinslee (Residential)	70-75 dwellings		Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
MA3	Site Allocation 17 – land at Langley and St Leonards (Residential)	30 dwellings		Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. NOTE: This site is crossed by a pubic foul and surface water sewers which may need to be diverted depending on site layout.	Low (Subject to hydraulic modelling)
MA4	Site Allocation 18 – land at rear of Church Road, Malinslee (Residential)	19 dwellings		Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
Old Park Area						
OP1	Site Allocation 6 – Old Park West (Residential & athletics stadium plus offices)	150 dwellings approx + athletics stadium and some offices		Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
OP2a	Site Allocation 7 – Park Lane, Old Park (Residential)	110 dwellings		Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)
OP2b	Site Allocation 15 - Land off the Crest, Old Park (Residential)	12 dwellings		Coalport	It is not envisaged that the additional foul flows generated from a development of this size would result in any capacity issues provided surface water is managed sustainably and is not connected to the foul/combined sewers.	Low (Subject to hydraulic modelling)
OP3	Site Allocation 8 – Central Old Park (Offices in POR – however, potential for this site to be considered as a car park for the athletics stadium at Site 8.)	If used as offices, 3,600m2		Coalport	There are no known sewer flooding problems in the vicinity of this area and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. It is expected that the subsequent increase in impermeable areas will be addressed through use of sustainable drainage as there is likely to be limited surface water capacity.	Low (Subject to hydraulic modelling and sustainable amanagement of surface water)
Town Centre Area						
TC1a/b/c	Site Allocation 1 – Southwater (Retail, Hotel, Community/public services e.g. replacement for library, Meeting Point House and health care facility, Residential)	35000m2 Retail, 7536m2 Hotel, 6800m2 Community, 900 dwellings		Coalport	There are no known sewer flooding problems in the vicinity of this area and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements. It is expected that the subsequent increase in impermeable areas will be addressed through use of sustainable drainage as there is likely to be limited surface water capacity.	Low (Subject to hydraulic modelling and sustainable amanagement of surface water)
TC4	Site Allocation 2 – Malinslee Link (Primarily residential, but could include elements such as commercial, community use or small scale retail)	100 dwellings		Coalport	There are no known sewer flooding problems in the vicinity of this development and so subject to hydraulic modelling accommodation of additional foul flows are not envisaged to require any significant capacity improvements.	Low (Subject to hydraulic modelling)

[1] Environment Agency (2009): Water Cycle Study Guidance January 2009

[2] Core Strategy Development Plan Document Adopted December 2007

[3] Halcrow Group Limited, Telford & Wrekin District Level 1 Strategic Flood Risk Assessment, 2007

[4] CLG, Greener homes for the future, 2008

[5] Defra, Action taken by the Government to encourage the conservation of water, 2008

[6] Defra, Future Water, 2008

[7] EA, Water for People and the Environment, 2009

[8] Core Strategy Development Plan Document Adopted December 2007

[9] Telford & Wrekin Population Estimates & Projections 2011

[10] ONS, 2001 Census Data, 2004

[11] Telford & Wrekin Population Estimates & Projections 2011

[12] Core Strategy Development Plan Document Adopted December 2007

[13] UK Environmental Standards and Conditions, UK Technical Advisory Group, April 2008

[14] EA, River Basin Management Plan, Severn River Basin District, 2009

[15] DEFRA catchment sensitive farming http://www.defra.gov.uk/farm/environment/water/index.htm#3

[16] EA Shropshire Middle Severn CAMS

[17] EA Severn Corridor CAMS

[18] EA Worcestershire Severn CAMS

[19] EA written communication on current status of CAMS in TWC area, 2012

[20] STWL Final Water Resource Management Plan, 2010

[21] Defra, The Government's Response to Sir Michael Pitt's Review of the Summer 2007 Floods, 2008

[22] EA, SUDS: A Practice Guide, 2006