Cheshire West and Chester Council

Water Cycle Strategy

Non Technical Summary

June 2010










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Water Cycle Strategy Non Technical Summary

Growth in Cheshire West and Chester is part of wider growth plans across the North West of England. Cheshire West and Chester Council (CWaC) is exploring growth options to deliver 2,700 new homes between 2007/8 and 2016/17 (on top of the requirement for 11,853 homes set out in the North West Regional Spatial Strategy), as part of the plan to deliver significant and prosperous economic growth in the region. The area has been awarded Growth Point status by the department for Communities and Local Government, attracting government funding to support the growth. One condition of that award is the completion of a water cycle study, required to demonstrate that the growth proposals are sustainable. At the time of writing, the new government has announced its intention to abolish Regional Spatial Strategies. CWaC are still working to those figures and the growth point proposals.

1.1 Purpose of the Water Cycle Strategy

The Water Cycle Strategy for Cheshire West and Chester was developed in two stages; a Scoping Study and an Outline Study, both of which were prepared in accordance with the Environment Agency Water Cycle Studies guidance.

The Scoping Study collated and reviewed existing information on the water environment within the CWaC area and identified key issues for the Outline stage. The Outline report builds on the findings of the Scoping Study and examines how water resources and water supply infrastructure, wastewater treatment, water quality, sewerage and flood risk could constrain growth across the study area. The location and severity of these constraints are presented together with recommendations that could resolve the constraints and an evaluation of the implications for growth. It provides strategic level advice on water infrastructure and environmental capacity to inform the development of the Core Strategy and a preferred spatial strategy.

The strategic objectives for the Outline Water Cycle Study were to:

- Identify whether environmental resources can cope with further development, with particular reference to key water legislation (such as to Water Framework Directive targets) and latest climate change projections;
- Identify if, where, and when development might overload existing infrastructure, and if capacity exists for development without the need for additional infrastructure;
- Identify if, where, and when new infrastructure or management interventions are needed to allow development;
- Establish effective liaison with adjoining Growth Point areas to enable any potential cumulative impacts on the water environment to be identified;

- Identify any potential impacts of development on the nationally and internationally designated sites of nature conservation importance within and outside the West Cheshire area (e.g. Dee Estuary, the River Dee and Bala Lake), resulting from additional abstraction and wastewater discharge; and

- Contribute to the evidence base for CWaC's Local Development Framework Core Strategy, the Infrastructure Plan and the Habitats Regulations Appropriate Assessment.

This report has been produced for the purpose of providing a non technical summary of the Water Cycle Strategy for Cheshire West and Chester.

1.2 Approach

The study was delivered through a project steering group formed of CWaC, United Utilities, D• r Cymru Welsh Water, Dee Valley Water, and the Environment Agency. The project steering group provided information and guidance during the completion of this study. A wider stakeholder group was identified and kept informed of study progress at key delivery stages. This group included adjoining Councils, the Countryside Council for Wales, Natural England, the Highways Agency and British Waterways.

The Council is at an early stage in developing its spatial strategy and has not yet identified specific sites for development. The outputs of this study will inform development of the spatial strategy and identification of particular sites. The study has been based on an initial assessment of potential suitable sites that comply with the existing planning strategy for the area, with growth focused on previously developed sites in the existing urban areas of Chester, Ellesmere Port, Northwich and Winsford. Outside of the four main growth areas, development is likely to be concentrated in the larger villages, and an allowance for small scale development spread through settlements across the Borough has been assessed. It represents a snapshot of the best information available at the time of the study being undertaken. It does not represent the Council's preferred strategy which has yet to be developed based on studies like this and other evidence.

The Water Cycle Strategy brings together environmental and water infrastructure information from publicly available sources and from the Environment Agency and the water companies. The water companies were provided with the initial assessment of potential suitable sites and asked to identify where there may be potential water and wastewater infrastructure capacity issues (i.e. possible constraints to development). Potential solutions were identified where development may exceed current water cycle capacity.

1.3 Findings

The key findings of this study are summarised below. The reader is strongly advised to refer to the full document for further details and supporting information, and reminded that this is a study to provide strategic level advice in respect of an initial assessment of potential suitable sites.

The findings that are relevant to the whole of the study area are presented in the bullets below, with the findings that are specific to the four existing urban areas of Chester, Ellesmere Port, Northwich and Winsford presented in Table 1. Also shown in Table 1 are findings relating to specific locations elsewhere within the study area.

A review of water company Water Resources Management Plans and Environment Agency Catchment Abstraction Management Strategies found that growth throughout the study area was found not to be constrained by water resource availability. Liaison with the water supply companies found that local water supply infrastructure is also unlikely to constrain growth. Some lead in time may be required for United Utilities and Dee Valley Water to prepare connections infrastructure but no major enhancements are anticipated.

Water quality at many locations within the study area is assessed as being of 'Poor' ecological status in the River Basin Management Plans produced for the Water Framework Directive. The poor quality is a result of current and historical industrial activity in the area, point sources of pollution (e.g. sewage treatment works discharges) and diffuse pollution (e.g. agricultural pollution). Water quality is not a direct constraint to growth but the Council should liaise with the Environment Agency to explore any opportunities that development may provide to contribute to the actions in the River Basin Management Plans and to ensure that the developments it approves are not contrary to the actions that are proposed.

Most of the development sites assessed in this study do not lay within groundwater source protection zones[1], although a small number of potential development sites (e.g. in the Saltney, Neston, Hooton and Eddisbury area) are within or close to source protection zones. This is not a major constraint, but development needs to consider appropriate mitigation measures to prevent any contaminants entering the groundwater (e.g. lining subterranean storage facilities, installing filter drains, petrol interceptors, and installing a series of drainage elements such as filter drains, swales, and reed beds).

The rainfall patterns in the study area and high percentage of surface water resources are likely to be particularly vulnerable to climate change impacts in the immediate term. Furthermore, agricultural demand for water will be increased as temperature rises in addition to reduced summer rainfall; this is likely to affect some rural parts of the study area, particularly where restrictions to the supply of water exist to protect low flows. Increased winter rainfall and more intense summer storms will increase flood risk. The climate change flood zones presented in the Strategic Flood Risk Assessments take account of these risks.

Sites of national and international nature conservation importance are located within and near the study area. For each site, potential risks from development on water cycle are described and potential sources of risk identified. The risks include surface runoff from new development, wastewater discharges and water abstraction. Development sites that are either planned or being considered across Cheshire West and Chester area provide significant opportunities to enhance environmental networks and contribute to green infrastructure objectives.

[1] Areas defined by the Environment Agency to protect groundwater sources (wells, boreholes and springs) used for public water supply. The Environment Agency uses these zones to establish pollution prevention measures and monitor the activities of potential polluters nearby.

Table1 Summary of issues identified at specific locations

Area	Summary of study findings
Chester	All developments allocated are outside flood zones mapped in Strategic Flood Risk Assessment (SFRA) When finalising site allocations for currently unallocated development (locations not yet determined), the Council needs to consider the constraints identified in the SFRA All housing growth in Chester will be served by the Chester wastewater treatment works (WwTW), which has capacity to absorb extra wastewater from new developments assessed in this study.
Ellesmere Port	Allocated development sites are not within the flood risk sites identified in the SFRA. A comprehensive Dockside development flood risk assessment is required before the first of the housing developments are given planning permission. The Ellesmere Port and Helsby WwTWs are forecast to have capacity to meet existing and proposed demand until 2015 at which point capacity could be exceeded, United Utilities has indicated that it will be able to increase the capacity at these works but that it needs to undertake detailed modelling to determine what expansion is actually required.
Northwich	Central Northwich is at high risk of flooding and the area has been subject to detailed Area Flood Risk Assessments (AFRAs) and ongoing negotiation with the Environment Agency. Measures for upstream flood storage and flood defence in the town have already been explored. The onus will now be on developers to demonstrate through planning applications how the flood risk can be mitigated through site specific designs. New housing developments will be served by the existing Northwich WwTW, which has sufficient capacity to serve projected demands as it was rebuilt extensively in 2010. A small amount of unallocated, annual growth may be directed to Cuddington WwTW, which currently has a very small spare capacity and may require expansion. Potential capacity issues to accommodate growth in the sewerage network were identified in the Wincham area and investment in network capacity is likely to be required. It is therefore recommended that the Council prioritises further development of its plans for this area and liaises closely with United Utilities to allow the Company to investigate its existing infrastructure, model projected demands, and develop an implementation plan to ensure existing and new developments are supported by a robust sewerage service.
Winsford	The SFRA concluded that higher levels of flood risk are found in north Winsford, near the extensive potential future housing allocations and that consideration should be given to putting less vulnerable developments closer to the river and residential further back. The risk of flooding is serious and so development plans here should include mitigation measures to protect people and property. Development in the area would be served by Winsford WwTW. United Utilities considers that the increased effluent from new development will be largely offset by a gradual reduction in flows from a specific trader, and forecasts that there will be capacity at the works, at least until 2015. The majority of growth in Winsford is projected between 2015 and 2020 and United Utilities has stated that detailed modelling is needed to assess the impacts of growth beyond 2015. As with Northwich, it is therefore important that the Council develops its plans (or scenarios) and liaises with United Utilities to ensure sufficient time to undertake its modelling and develop its asset implementation plan. Land is available to expand the Winsford WwTW if required.

Area	Summary of study findings
Rest of study area	A review of the flood risks over this area shows that most of these sites are not within an identified flood risk zone. However, one exception is any development between Elton and Helsby, as this is close to a flood risk 3 zone. This means that development proposals may need an additional flood risk assessment to ensure that the development does not extend into a flood risk zone, or increase the shape of the flood risk zone through its presence. This area is within the green belt and so development here will be extremely limited. Growth in the more rural parts of the study may be constrained by connectivity to treatment works. Development in or around Neston is likely to be constrained by the capacity at Neston WwTWs. D• r Cymru Welsh Water has confirmed that this works is already close to its discharge consent, and options to increase the consent may be limited as it discharges into the Dee Estuary which is an important designated site. Alternative treatment works are available, but are some distance from the development and significant pumping would be required. It is strongly recommended that the Council liaise with D• r Cymru Welsh Water regarding provision of wastewater treatment for development in this area. Elsewhere, the small amount of growth near the Oakmere WwTW will contribute to the existing problems of hydraulic capacity. The Council needs to discuss its proposals for a small amount of additional housing between 2015 and 2020 with United Utilities, to determine the extent of this constraint, and whether there is sufficient time to resolve it. There are no realistic alternative treatment works in the area. Burwardsley is a rural ward and development here would be dispersed (barn conversions, etc). The potential development in the trajectory investigated in this study reflects recent development levels. New houses in this area are likely to be served by private facilities, such as septic tanks, as Burwardsley area is not within an existing treatment works catchment. United Utilities anticipates that additional enhancements would be required at Tarporley treatment works from 2015 onwards to meet potential demand in that area.

1.4 Recommended Actions

Following the completion of this outline stage Water Cycle Strategy, the recommendations set out below are made.

Recommendation 1: Collaborative working

The water cycle study opens up communications between the Council and the water utility providers. The review of constraints and potential solutions has shown that in order to develop and implement housing and infrastructure plans these communications need to continue and extend to include adjacent Councils. The water companies need to be kept informed of revisions to all the housing development plans when developing their investment plans. Ongoing communication and liaison with these organisations is essential.

Collaborative working has been successful elsewhere, for example collaboration between the Environment Agency, the East of England Development Agency, and Anglian Water has led to a suite of guidelines for planners and developers. These guidelines are applicable to planners across the country. They set out what policies for sustainable development should contain. The guidelines focus on water efficient buildings but can be applied to other sustainability elements. The guidelines say that LDF policies should:

- Refer to a nationally agreed sustainable building standard such as the Code for Sustainable Homes (CSH) for households, or Building Research Establishment Environmental Assessment Method (BREEAM) standards for non-domestic buildings. This presents standards against which development can be monitored;

- Include a stepped approach to allow the standards to be implemented progressively over time;
- Reflect the content of local sustainability strategies and the evidence base within the water cycle study to prioritise water efficiency and flood mitigation measures in new developments; and
- Policies should refer developers to available guidance, set out monitoring systems and enforcement, and refer to the feasibility of options (i.e. extra costs are only relevant to achieving the very highest standards of sustainability).

Recommendation 2: Single flood risk assessment for Ellesmere Port docks

The report has shown how flood risk varies across the study area, how this might be exacerbated in the future due to climate change, and how modern sustainable drainage techniques can be employed to help mitigate the risks. An SFRA has been completed for the study area, and AFRAs have been completed for Winsford and Northwich. It is recommended that a single flood risk assessment is undertaken to consider all the proposed developments around the Ellesmere Port Docks. This should be undertaken before the first developments commence.

Recommendation 3: Include requirement for SuDS in new developments

It is recommended that the Development Plan Documents include policies that promote sustainable drainage techniques (SuDS) in all new developments, as opposed to traditional piped systems. Sustainable drainage will support the Water Frameowork Directive objective to improve ecological status across the entire study area. Encouraging the use of SuDS through local planning policy will provide a robust basis for establishing more sustainable drainage patterns and incorporation of green infrastructure.

Local policies should consider the future maintenance of SuDS at the planning stage, particularly for larger housing developments. The Council should develop a clear policy regarding its position on adopting SuDS once developments have been completed.

Recommendation 4: Develop SWMPs for Chester and Neston

Based on the concentrations of sewer flooding incidents, and the surface water flooding extents shown by the Environment Agency's indicative surface water flood maps, it is recommended that Surface Water Management Plans (SWMPs) are prepared for Chester and Neston.

In addition, notable concentrations of sewer flooding incidents and areas potentially at risk from surface water flooding occur in Northwich and at Ellesmere Port. Sewer flooding events are also concentrated at Frodsham, Tarvin and Kelsall, although indicative surface water flooding maps show less extensive areas of potential surface water flooding in these areas. It is recommended that the SWMPs scope is focussed on these seven areas (rather than the whole study area), perhaps with an initial focus on Chester and Neston, followed by subsequent studies in the other areas.

This is an indicative assessment based on available data, and further discussions should be undertaken between the Environment Agency, CWaC, United Utilities and D• r Cymru Welsh Water to determine the location and scope of SWMPs. The information presented in this Water Cycle Strategy should be used in conjunction with the existing SFRA and AFRAs to inform any SWMPS prepared.

Recommendation 5: Include water efficiency in local development policies

The study has shown that water demand management is a vital component of the water companies' strategies to secure public water supplies into the future. The study has also shown the sensitivity of demand in the study area to alternative levels of growth and water efficiency scenarios. Water neutrality is not considered appropriate given the current state of water resources in the North West, but that through encouraging water efficiency in new and existing development, the Council will be actively minimising the amount of additional water taken from the environment in order to meet development goals. The conclusion is that the Local Authority should support the water companies' options to increase metering and raise levels of awareness among local residents of the need to use water wisely.

The water companies currently meter all new properties (commercial buildings and new households). They also offer free meters to customers who opt for one, although levels of promotion and thus take up vary between the two companies. It is recommended that the Council supports the activities of United Utilities and Dee Valley Water in promoting water efficiency in existing households. This can be achieved by:

- Distributing leaflets and information about the financial and environmental benefits of metering and water efficiency measures;
- Leading by example and installing water efficient devices in Council owned or Council managed properties; and
- Providing links from the Council website to direct the public to existing water efficiency information on water company and Environment Agency websites.

The Local Authority has a major role in ensuring that all new homes are built to high levels of water efficiency. In this area it is appropriate for new housing to be built to meet water consumption levels as defined by level 3/4 of the CSH (105 litres/person/day) as a minimum. It is recommended that the Core Strategy should be developed to include requirements that developers design and build new homes to meet this water use standard. This level of consumption can be achieved without the need for rainwater harvesting or greywater recycling systems. It is not regarded as excessive or unachievable.

The Council should support opportunities to develop homes to meet CSH level 5/6 (80 litres/person/day) – as 'exemplars' of water efficient design. However, these levels will require some element of non potable source, e.g. rainwater harvesting and/or greywater recycling. Due to the significant extra costs that are incurred when fitting these types of installations, developers and residents' current levels of understanding of these technologies, and the

low level of water stress in this area, it is not recommended that the Council specifies all new developments to meet this target, at the current time.

Recommendation 6: Continue working with water companies to align growth and wastewater asset plans

It is recommended that the Council liaises with D• r Cymru Welsh Water, United Utilities, and the Environment Agency to confirm growth projections in the catchments served by wastewater treatment works that are at or are close to exceeding their discharge consents and/or hydraulic capacity, e.g. Neston WwTW, Oakmere WwTW, Tarporley WwTW, and Cuddington WwTW.

The Council should liaise with United Utilities regarding the future development in Ellesmere Port and the subsequent need for wastewater infrastructure.

Recommendation 7: Include policy requirements to contribute to environmental enhancements

The Council should develop policies that will require new development to contribute to environmental enhancements. For example, SuDS are primarily a tool for managing surface water but also have an important role to play in the creation of green infrastructure. SuDS features such as swales and attenuation ponds lead to habitat creation and the provision amenity space within new development and these benefits should be considered as the Council develops its green infrastructure strategy.

The requirements for enhanced levels of water efficiency in new developments will also have wider environmental benefits. The inclusion of water efficiency measures in new development will contribute towards ensuring that water resources are managed effectively, but can also have wider environmental benefits associated with reductions in energy use. For example, recent studies have shown that measures that reduce domestic hot water use can contribute significantly towards managing greenhouse gas emissions.

The Council should liaise with the Environment Agency to explore any opportunities that development may provide to contribute to the actions in the Middle Dee/Weaver Gowy catchments (Dee/North West RBMPs) and to ensure that the developments it approves are not contrary to the actions that are proposed.

Development of a detailed water cycle study

The Outline study has highlighted some issues that could potentially constrain development and where further analysis would be beneficial. However, it is not thought necessary to undertake a Detailed Water Cycle Study at this stage. Once site allocations have been confirmed then it might be necessary to examine the precise levels of constraint for specific development sites. Depending on the locations that are selected for development, further detailed study would:

- Determine the water supply and wastewater infrastructure requirements for specific development sites. This study has identified that further investigation may be required for sites in the Northwich and Wincham areas;
- Identify feasible options for achieving level 3/4 of the CSH (water consumption);
- Assess locally specific interactions between suppressed household consumption, sewerage, and discharge effluent volumes;
- Undertake a cost/benefit analysis of development options; funding streams, including financial contributions from developers;
- Assess the sustainability of preferred options with regard to carbon emissions;
- Develop the water cycle strategy for the area; and
- Continue the stakeholder engagement through regular steering group meetings and promote ongoing dialogue between the local authorities and the water companies for monitoring and assessing the impacts of growth on the water resources management in the study area.