



BRECKLAND STAGE 2 DETAILED WATER CYCLE STUDY INCORPORATING A LEVEL 2 STRATEGIC FLOOD RISK ASSESSMENT FOR THETFORD

Tender Specification

1. Introduction

1.1 Breckland Council wish to appoint a suitably qualified consultant to undertake a study to ensure that:

- water supply,
- water quality,
- sewerage,
- habitats,
- flood risk management, and
- drainage issues

can be addressed in the Breckland area to enable growth planned to 2021 in line with the Regional Spatial Strategy (RSS) and to set the context for growth for a further period of five years to 2026. Breckland has been identified by the RSS for one of the highest levels of housing growth in the East of England. The study will be a key part of the evidence base for Breckland's Local Development Framework (LDF) both in terms of the Site Specific Policies and Proposals DPD, the Attleborough and Snetterton Heath Area Action Plan and the Thetford Area Action Plan. The study will build on work undertaken at the Stage 1 (Scoping and Outline) Water Cycle Studies for Breckland and Thetford and the Level 1 Strategic Flood Risk Assessment for the entire District.

1.2 This Brief has been prepared by Breckland Council in consultation with the Environment Agency, Natural England, Anglian Water and Norfolk County Council.

1.3 The consultant's work will be managed by Breckland Council and guided by a Project Group.

2. Breckland District

2.1. The Breckland district is located in central Norfolk and extends over an area of 1,300sqkm (500 square miles). The district includes the five towns of Attleborough, Dereham, Swaffham, Thetford and Watton together with a wide range of other settlements. Breckland is a predominantly rural district with a total population of 121,600 living within 113 civil parishes.

- 2.2 Water resources are not only vital to the communities in Breckland in terms of meeting domestic requirements but water also sustains a number of economic activities in the District. Agriculture remains a key strand of the rural economy in Breckland. The predominantly arable nature of farming in the District requires a significant water resource to grow crops such as sugar beet and root vegetables and water is also required for the associated processing industries located in the District.
- 2.3 The climate of Breckland is one of relatively cold winters and dry summers. The Brecks, an area of arid heath and forest in the south west of the District (from which the District derives its name) is one of the driest parts of the British Isles with average rainfall recorded below 632mm per annum. Projections around climate change indicate that the dry nature of summers in the District is likely to be exacerbated, although winters are likely to become wetter and warmer. East Anglia is 34% drier and 6% hotter than the average for England and Wales.
- 2.4 The underlying geology of the District is chalk and consequently there is a significant aquifer. Groundwater provides three-quarters of public water supply in East Anglia, however abstractions have increased by 78.37% since 1995. Summer surface water is already committed to existing abstractions and Breckland is one of two areas in Norfolk where winter surface water is not generally available (where the chalk headwater catchments result in a limited total resource). Drainage within the District is mixed with free-draining sands and loam in the south and west of the District and impermeable clays to the north and east. Localised flooding as a result of poor land drainage is regarded as a significant local issue for several communities in Breckland. Large parts of the District are identified by the Environment Agency as Nitrate and Groundwater Vulnerable Zones.
- 2.5 Breckland is divided by a watershed which dissects the District along the clay plateau which runs north-south through the District. The Rivers Nar, Gadder, Wissey, Thet and Little Ouse flow west into the Fens and the basin of the River Great Ouse. Oppositely, the Rivers Wensum, Tud and Yare flow east through Norwich and ultimately to the sea at Breydon Water near Great Yarmouth. The River Wensum is identified as a SSSI and a European SAC site. Tributaries of the Wensum and Thet also host European SAC sites and in the south of the District, Lopham Fen on the River Little Ouse is designated as an international RAMSAR site. The River Nar is also a SSSI and chalk rivers such as the Nar, Wensum and Gadder are a priority habitat in the Norfolk Biodiversity Action Plan.
- 2.6 Breckland's geographical position on the watershed and on the upper reaches of these watercourses means that the scale of fluvial flooding is limited. A number of towns and larger villages have historically developed at the watershed and conversely the small channel volume of watercourses near to these settlements presents challenges in terms of waste water discharge within environmentally acceptable limits. A PPS25 compliant Level 1 Strategic Flood Risk Assessment (SFRA) for Breckland has recently been signed off by the Environment Agency.

3. Study Context

Strategic Planning Policy

3.1 The period to 2021 and beyond will see Breckland become one of the fastest growing areas in the East of England. Breckland as a district is required to accommodate 15,200 new homes between 2001 and 2021. At present this is the eighth highest district housing requirement in the East of England. Additionally, the Norfolk Economic Growth Study which has been prepared to inform the RSS identifies a need for 6,000 net jobs in Breckland to 2021.

3.2 The Regional Spatial Strategy (RSS) for the East of England identifies Thetford as a Key Centre for Development and Change (Policy TH1). Specifically, 6,000 additional houses are to be delivered between 2001 and 2021 in the town along with a significant proportion of the 6,000 net jobs for Breckland. The scale of planned growth for Thetford resulted in the town being designated as a National Growth Point in 2006.

3.3 Elsewhere in Breckland, the Proposed Submission version of the Core Strategy will plan ahead for a period to 2026 and consistent with the RSS and national planning policy will focus most of the growth to sustainable locations where services, jobs and infrastructure exist. The document identifies the following levels of growth by location between now and 2026.

6500-7000 additional homes and between 5000 new jobs in Thetford
4,000 additional homes and between 1500-2000 new jobs for Attleborough;
1,000 additional homes and between 900-1800 new jobs for Dereham;
700 additional homes and 650 new jobs for Swaffham
500 additional homes and 350 new jobs for Watton
500-1500 new jobs at Snetterton Heath Employment Area

3.4 The strategic spatial objectives of the Breckland Core Strategy relevant to this study include:

- Minimising risk of flooding to existing and new developments
- Preventing groundwater contamination and a deterioration in water quality
- Require the efficient use of water resources
- Minimise the amount of waste produced and promote sustainable waste management
- Protect and enhance the quality and distinctiveness of the biodiversity, geology and landscape of the District.
- Require high quality design that meets high environmental standards
- Address infrastructure deficits and infrastructure capacity issues.

These objectives have been informed by baseline evidence contained in the relevant plans and strategies of the Environment Agency and data available from Anglian Water.

- 3.5 In addition to the Core Strategy and Development Control Policies Development Plan Document, the Council is in the process of preparing the following Development Plan Documents to deliver sustainable development across the District:
- A Thetford Area Action Plan to deliver strategic growth and regeneration in the town.
 - An Attleborough and Snetterton Area Action Plan which will allocate sites for housing, employment, and other uses in Attleborough and new employment areas in Snetterton.
 - A Site Specific Policies and Proposals document which will allocate land for housing, employment and other uses in the rest of the District.
- 3.6 The Stage 2 Detailed Water Cycle Study and Level 2 Strategic Flood Risk Assessment will be a key part of the evidence base underpinning the preparation of these Development Plan Documents.

Relevant Studies and Information

- 3.7 The key relevant studies to this study are as follows:
- Stage 1 Breckland Water Cycle Study (Scoping and Outline) (November 2008) (Scott Wilson for Breckland Council)
 - Stage 1 Thetford Water Cycle Study (Scoping and Outline) (March 2008) (Scott Wilson for Breckland Council)
 - Breckland Strategic Flood Risk Assessment (Level 1) (February 2008)

All of these documents can be found at:

<http://www.breckland.gov.uk/brecklandcouncil/environment/planning/planningpolicy/supportingdocuments.htm>

Stage 1 Breckland Water Cycle Study

- 3.8 The Stage 1 Breckland Water Cycle Study consisted of the Scoping and Outline stage of the study. It covered the towns of Attleborough, Dereham, Swaffham and Watton. The study assessed the elements of the water cycle which may be affected by the scale and location of development, which led to the identification of the key constraints to development from the water environment. The study also identified the capacity constraints of water related infrastructure and whether any new infrastructure would be required to accommodate the needs of the planned growth.
- 3.9 The key conclusions emerging from the Stage 1 study is that subject to further testing, the planned growth set out in the Proposed Submission Core Strategy and Development Control Policies is deliverable with improvements to the existing waste water infrastructure. Development levels in Attleborough will require expansion to the waste water treatment works. There are currently issues with levels of Dissolved Oxygen downstream of Attleborough

and Dereham waste water treatment works. The Stage 1 study identifies some solutions to this issues, however, these will need further testing in the Stage 2 study. There will need to be improvements to all waste water treatment plants in order to meet the more stringent requirements of the Water Framework Directive. By the end of plan period water supply to all towns in the District with the exception of Watton will be deficient. A solution to this provided in the Stage 1 study is the Great Ouse Groundwater Scheme. However, the feasibility of this and appraisal of alternatives will need to be tested further.

Stage 1 Thetford Water Cycle Study

- 3.10 The Stage 1 Thetford Water Cycle Study consisted of the Scoping and Outline stage of the study. The scope of the study was focused entirely on the town of Thetford. The study assessed the elements of the water cycle which may be affected by the scale and location of development, which lead to the identification of the key constraints to development from the water environment. The study also identified the capacity constraints of water related infrastructure and whether any new infrastructure would be required to accommodate the needs of the planned growth.
- 3.11 The key conclusions emerging from the Stage 1 study indicate that subject to further testing up to 2021 there is sufficient water quality capacity in the receiving watercourse to accommodate the increase in development. After 2021, improvements to the waste water treatment works will be needed to accommodate the additional growth and comply with the Water Framework Directive. Up to 2021 there is sufficient capacity in terms of water supply to accommodate the planned development. Post 2021 growth will require potential groundwater recharge schemes.

Breckland Strategic Flood Risk Assessment (Level 1)

- 3.12 The Breckland Strategic Flood Risk Assessment (SFRA) is a Planning Policy Statement 25 (PPS25) compliant study signed off by the Environment Agency. It covers all the potential growth locations of the District (Thetford, Attleborough, Dereham, Swaffham, Watton, Banham, Great Ellingham, Harling, Mattishall, Narborough, Necton, North Elmham, Old Buckenham, Saham Toney, Shipdham, Swanton Morley, Weeting). The Level 1 study provides the basis of applying the Sequential Test as detailed in PPS25. The study concludes that from the development areas tested there is adequate land for in Flood Zone 1 to cater for the District's development requirements up to 2026.
- 3.13 In addition to the above 3 studies Breckland Council and its partners have already a number of projects that underpin the evidence base for the LDF. There are a number of these projects which are of particular relevance to the Breckland Water Cycle Study and Level 2 SFRA for Thetford. These include:
- East of England Capacity Delivery Study: Phase One, Halcrow Group Ltd on behalf of EA, EERA and GO-East, Dec 2006.
 - Great Ouse Catchment Flood Management Plan (Consultation Draft) EA January 2007.

- The Cam and Ely Ouse Catchment Abstraction Management Strategy, EA, March 2007.
- Broadland Rivers Catchment Flood Management Plan (Consultation Draft), EA, June 2006
- Broadland Rivers Catchment Abstraction Management Strategy, EA, March 2006 (Annual Update produced March 2008).
- Consultation on the Draft River Basin Management Plan Anglian River Basin District, EA , December 2008

3.14 Also of relevance are the following studies and information:

- Environment Agency Flood Maps.
- The Environment Agency Review of Consent Process.
- Asset Management Plan (AMP4) investigations.
- Regional Spatial Strategy for the East of England (RSS); The East of England Plan (May 2008)
- Any related research into this issue conducted in other regions/areas.
- Any other relevant Catchment Abstraction Management Strategy/ies or Catchment Management Plans;
- DCLG and EA Guidance including Planning Policy Statement 25 and its companion guide.
- Regional Strategies/County Strategies.
- Breckland Core Strategy and Development Control Policies DPD – Proposed Submission Document (January 2009)
- Thetford Area Action Plan Emerging Preferred Options (February 2009)

4. **Main Objectives of the Study**

- 4.1 The **overall objective** of the study is to **complete an Integrated Water Cycle Study for Breckland** and a **Level 2 Strategic Flood Risk Assessment of Thetford** to ensure that water supply, water quality, sewerage, flood risk management and drainage issues can be addressed.

This will ensure:

Water infrastructure is provided to support the housing, employment and related service growth planned for Breckland to 2026;

The risk of flooding is managed and reduced

There is a strategic approach to the management and usage of water.

There are no adverse effects on European Habitats and other designated sites.

4.2 The study will be a key part of the evidence base for the forthcoming Site Specific policies and Proposals DPD, Attleborough and Snetterton Area Action Plan DPD and the Thetford Area Action Plan DPD of the Breckland Local Development Framework (LDF). It will also provide information necessary for the Appropriate Assessment of European Habitats which needs to accompany all Development Plan Documents. The study will have to build on the outcomes of the Stage 1 Breckland Water Cycle Study, the Stage 1 Thetford Water Cycle Study and the Level 1 Strategic Flood Risk Assessment of Breckland.

4.3 The study should meet the needs of partner organisations and stakeholders involved in the growth of Breckland including Breckland Council, Norfolk County Council, the Environment Agency, Natural England, Anglian Water and key landowners, these being to:

- Consider potential impacts of climate change particularly in relation to flooding;
- Give a clear view on Strategic and Key water supply and sewerage requirements;
- Lead to provision of safe, secure reliable and maintainable water infrastructure;
- Ensure growth and development allow continued compliance with all appropriate environmental quality standards;
- Provide a framework for meeting water consumption targets;
- Identify if and when, additional wastewater capacity is required. Provide details of allowable discharge amounts/rates from WWTW and capacity of receiving watercourses. Assessment will be needed on the environmental capacity of receiving watercourses to take the additional volumetric load being required of it. There will be a close correlation between this aspect of the study and the need to reduce the risk of flooding when assessing the ability to increase consented flows from existing levels.
- Reduce the risk of flooding and assist with the delivery of the requirements of the Strategic Flood Risk Assessment;
- Advise on Strategic and Key Water Infrastructure requirements and investment priorities and amounts required to support growth;
- Give clarity and certainty on Section 106/tariff requirements for Strategic and Key Water Infrastructure and payments required from developers to fund the infrastructure to enable development and to inform policy making;
- Give specific advice on other water infrastructure (other than Strategic and Key) requirements for key development sites e.g. Sustainable Drainage Schemes (SuDS);
- Give clear recommendations concerning phasing of the key development sites;
- Ensure the quality of Breckland environment is maintained and enhanced;
- Provide a strategy for development that reduces the likelihood of Environment Agency objections to specific housing and employment sites; and
- Take into account other growth plans outside the District which could impact upon the water cycle.

5. Scope of the Study and Consultancy Services

- 5.1 The study will need to be completed in two phases. The first Phase will be the completion of a Level 2 Strategic Flood Risk Assessment (SFRA) to cover Thetford town centre.

Phase 1 - Level 2 SFRA for Thetford Town Centre

- 5.2 The Level 1 SFRA concluded that there are areas in Thetford town centre that are within Flood Zones 2 and Flood Zones 3a. Options developed for the Thetford Area Action Plan to date indicate that some development will occur in this area. Although the majority of housing can be accommodated in Flood Zone 1 the town centre is sequentially preferable in terms of Planning Policy Statement 6 for certain types of development. Therefore a Level 2 SFRA is required for Thetford town centre.
- 5.3 Planning Policy Statement 25 and its Practice Guidance set out the scope of what should be included in a Level 2 SFRA.
- 5.4 The consultancy services required for the preparation and completion of a Level 2 SFRA will consist of:
- Project Management
 - Data collection, collation and review, working closely with the Environment Agency
 - A consideration of the detailed flood hazard within Flood Zones 2 and 3 of Thetford town centre which takes into account; flood probability; flood depth; flood velocity and rate of onset of flooding.
 - Identification and appraisal of flood risk management infrastructure and an appraisal of the feasibility of new infrastructure such as compensatory flood storage in order to reduce risk
 - Detailed mapping of the functional floodplain
 - Detailed mapping of the distribution of flood risk across flood zones from all sources of flooding which take climate change into account.
 - Identification of the location of critical drainage areas and identification of the need for Surface Water management plans.
 - Guidance on the preparation of Flood Risk Assessments for sites of varying risk across the flood zones, including information about the use of Sustainable Urban Drainage System techniques.
 - Guidance on the preparation of policies for sites which satisfy parts a) and b) of the Exception Test , and requirements to consider at the planning application stage to pass part c) of the Exception test as detailed in PPS25
 - Recommendations on a local flood risk policy for Thetford Town centre or potential town centre allocations in the Thetford Area Action Plan.

Phase 2 - Stage 2 – Detailed Water Cycle Study for Breckland

- 5.5 The Stage 2 Water Cycle Study will need to build on the outcomes of the Stage 1 study for both Breckland and Thetford (Scoping and Outline study). The geographical scope of Stage 2 will cover Thetford, Attleborough, Dereham, Swaffham and Watton and the surrounding areas.
- 5.6 The consultancy services required for the preparation and completion of a Stage 2 Water Cycle Study will consist of:
- Project Management;
 - Data collection, collation and review, working closely with the Environment Agency, Natural England and Anglian Water Services
 - Continuation of wider stakeholder consultation and consideration of public exhibitions at the draft report stage for Phase 2;
 - Consider options for innovative wastewater treatment by undertaking Monte Carlo analysis modelling of the requirements for reduced effluent discharge concentrations following assessment of the impacts of the future discharges against proposed WFD standards. In the case of Thetford, particular regard will need to be had to the requirements for reduced ammoniacal-N concentrations at the Thetford sewage treatment works.
 - Define the process capacity of Attleborough, Dereham, Swaffham, Thetford and Watton WWTW as opposed to relying on volumetric capacity alone.
 - Undertake sewerage modelling of the existing wastewater catchment to confirm the capacity conclusions for the five towns from the two Outline Studies to determine the level of growth that can be accommodated without the need for strategic mains provision. The model will need to consider the percentage of town centre network which is combined. The sewerage model should model proposed options for providing new strategic mains for remaining development;
 - Consider the overall catchment considerations for reducing Phosphate concentrations in the Breckland District by making use of, or building on previous catchment based modelling and, specifically for the waste water treatment works (WWTW), define the significance in the catchment management of Phosphate pollution
 - Investigate the impacts of and mitigation measures for low Dissolved Oxygen concentrations in the River Thet (Downstream from Attleborough WWTW) and Wendling Brook (Downstream from Dereham WWTW) to allow capacity for future effluent discharges; mitigation measures could include implementing reed beds, installing weirs, water aeration schemes etc.
 - Use outputs of consultation draft of WRMP09 to confirm capacities in existing licences and to assess options for providing additional water resource in more detail.
 - Consider more detailed representation of employment/industrial water demand.

- Determine the potential spare capacity in groundwater sources feeding the Breckland District Development towns
 - Determine the potential spare capacity in groundwater source feeding Cambridge Water's sources south east of Thetford
 - Investigate the growth proposed for Wymondham (outside of the Breckland District) and Attleborough and the impact of this on available water resources; this will require integration between Breckland and the Greater Norwich studies
 - Undertake water supply network modelling to confirm timings for the provision of new mains, reinforcement of existing mains and layout of new development for chosen scenarios.
 - Further investigate the feasibility of the Great Ouse Groundwater Scheme to deal with potential water supply deficiencies in the later years of the plan. Also identify and appraise feasible alternatives to the Great Ouse Groundwater Scheme.
 - Work up a detailed water efficiency plan for existing development and new development areas
 - Costings to be worked up in detail for the chosen development scenarios/locations for all water cycle infrastructure and management and identify developer contributions to deliver the required infrastructure. Findings should be presented in a way that they can be adopted into a tariff based approach.
 - Further develop the detail of the developer checklist in the Stage 1 study to make it site specific to ensure it forms a guide through the planning process with respect to the Water Cycle
 - Undertake Habitats Regulation Assessment in relation to the effects of planned development and proposed water infrastructure on European habitats. This should include an assessment of the impact of abstraction from Two Mile bottom on Thetford Golf Course and Marshes SSSI and the component part of Breckland SAC.
 - Develop site specific water cycle study policies for inclusion in the Site Specific policies and Proposals DPD, the Thetford Area Action Plan and the Attleborough and Snetterton Heath Area Action Plan
- 5.7 Results in relation to Thetford will need to be reported first to inform the preparation of the Proposed Submission version of the Thetford Area Action Plan. Second to this the priority will be to report on wastewater process capacity at Attleborough. The tender submission should reflect these priorities.
- 5.8 In terms of costing these outputs, the tender submission will need to provide separate costs for the Level 2 Strategic Flood Risk Assessment and the wider Stage 2 Water Cycle Study. If possible the costs for the Stage 2 Water Cycle

Study should include separate estimates for the outputs in relation to Thetford, Attleborough and the rest of the District.

Timing

- 5.9 The Council is seeking to commission the 'Stage 2 Detailed Water Cycle Study Incorporating a Level 2 Strategic Flood Risk Assessment For Thetford' by the end of March 2009. The study should be completed by 14th December 2009. However, draft findings which include the outputs of the Level 2 Strategic Flood Risk Assessment should be reported by the 28th August 2009. There will be flexibility within the timescale on priorities and draft outputs and the exact priorities and draft outputs will be discussed and established at an inception meeting.

6. Extent of Study Area

- 6.1 The study area for the Stage 2 Detailed Water Cycle Study will cover the entire Breckland District focussing on the growth proposals for the 5 market towns of Attleborough, Dereham, Swaffham, Thetford and Watton. In addition the Study Area will cover the water systems/catchments that influence the water cycle in Breckland including wider areas that might be impacted on in supplying water through abstraction. The Level 2 Strategic Flood Risk Assessment should be focused on Thetford Town Centre.

7. Management of the Study

Management

- 7.1 The study will be managed by Breckland District Council. Timescales for the Study are set out in Section 14 of this Brief.

Project Group

- 7.2 The study will be overseen by a Project Group. The Project Group will comprise of representatives from Breckland Council, Norfolk County Council, Natural England, Anglian Water and the Environment Agency.
- 7.3 The Draft Final Report will be reported to the Overview & Scrutiny Panel at Breckland Council which is overseeing the preparation of the Local Development Framework.

8. Consultation

- 8.1 A method statement of consultation and communication will be agreed at an early stage of the process. The statement will identify the appropriate participants and mechanisms for engagement at the key milestones within the Study. The statement will be signed off by the Project Group and will take into account the following requirements:
- 8.2 The proposed methodology will need to allow for continuous consultation/engagement with each of the following bodies (Key Consultees):
- Environment Agency
 - Anglian Water
 - Natural England

- 8.3 Consultation will also be required with other bodies and organisations including:
- Relevant Inland Drainage Boards (to be determined following identification of the study area);
 - Cambridge Water Company;
 - Norfolk County Council;
 - Suffolk County Council;
 - Highways Agency;
- 8.4 Liaison should also be undertaken with the consultants carrying out the Water Cycle Studies for the Greater Norwich Area and in particular to ensure consistency between the studies where appropriate.

9. Funding & Contracting

- 9.1 The Study will be funded by Breckland Council. Other stakeholders will provide technical inputs to the study (i.e. modelling).
- 9.2 Breckland Council will act as the contracting body for the study on their behalf.