SOUTH CAMBRIDGESHIRE DISTRICT COUNCIL

REPORT TO: New Communities Portfolio Holder 14 December 2010
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DRAFT PHASE 2 DETAILED WATER CYCLE STRATEGY TO 2031 MAJOR GROWTH AREAS IN AND AROUND CAMBRIDGE

Purpose

1. The purpose of this report is to consider the content of the emerging Phase 2 Water Cycle Strategy for the major growth areas in and around Cambridge, and to provide feedback to Cambridgeshire Horizons Board.

2. This is not a key decision, because it is reporting the findings of a study, and providing an opportunity to comment.

Recommendations

3. That the portfolio holder:

   - a) Considers the content of the Draft Phase 2 Detailed Water Cycle Strategy for the Major Growth Areas in and around Cambridge and suggest any changes to the Cambridgeshire Horizons' Board.

     b) Advises that the following issues are addressed further in the document:

     - Clarification regarding the timescales of implementing water efficiency standards and the impact on water neutrality and wastewater calculations.
     - Provide more details and examples of water efficiency measures such as greywater and rainwater recycling, and explore practicalities, in particular in small development schemes.
     - Provide more details and examples regarding the relationship between 100% above ground drainage SUDS and housing density.

4. The final study will subsequently be brought back to the portfolio holder for endorsement for use as an evidence base for the Local Development Framework and as a material consideration in planning decisions.

Executive Summary

5. Cambridgeshire Horizons has commissioned the Phase 2 Water Cycle Strategy for the major growth areas in and around Cambridge.

6. Water Cycle Strategies (WCS) are examinations of water supply capacity, wastewater infrastructure, surface water drainage and flood risk management. They are undertaken to ensure that new development can be supplied with water services infrastructure in a sustainable way. The Phase 2 Water Cycle strategy builds upon

the work in the outline Phase 1 (September 2008) which identified no insurmountable technical constraints to the proposed level of growth for the study area.

7. The Phase 2 WCS goes further than the Phase 1 study, by providing evidence in support of a more aspirational vision for water management. It aims to:
   - Aspire to water neutrality (the concept that the total water used after a new development is no more than the total water used before the development in a given wider area. This requires meeting the new demand through improving the efficiency of use of the existing water resources. This can be through making new development as water efficient as possible and retrofitting measures in existing development);
   - Improve biodiversity by protecting environmental water quality, and;
   - Protect and enhance the environment through sustainable surface water management.

8. The strategy recognises that these are ambitious aims and barriers are identified as well as possible ways to overcome the difficulties. The strategy highlights that achieving the long-term vision will require continued collaborative working between partners on the steering group and full engagement with the local community.

9. The Phase 2 WCS provides the technical evidence base and policy recommendations to support the implementation of the long-term vision for sustainable water services infrastructure. Its purpose is to provide the evidence to develop policy in the Local Development Framework and as a material consideration in planning decisions.

Background

10. Water Cycle Strategies (WCS) are examinations of water supply capacity, wastewater infrastructure, surface water drainage and flood risk management. They are undertaken to ensure that new development can be supplied with water services infrastructure in a sustainable way. Water Cycle Strategies examine when and where new water provision and water infrastructure will be required. They also assess the likely environmental and ecological impacts of future growth to ensure that new development meets legislative requirements. Water Cycle Strategies provide a costed programme of infrastructure delivery and form part of the evidence base for local authorities' Local Development Frameworks (LDFs).

11. Significant growth is being planned in and around Cambridge, including the urban extensions to Cambridge, the new settlement of Northstowe and extension of Cambourne. Delivering well planned water services infrastructure is essential and can contribute to achieving a low carbon and resource efficient society.

12. The WCS is developed over three phases: Scoping, Outline (Phase 1) and Detailed (Phase 2). The Phase 1 WCS for the Major Growth Sites in and around Cambridge was completed in September 2008 and identified the baseline infrastructure required to serve the proposed new development without detriment to the environment, in accordance with legislation at that time. This fulfilled the requirements of East of England Plan policy WAT2 which requires the timely provision of infrastructure for water supply and waste water treatment through partnership working between key stakeholders. The Phase 1 WCS identified no insurmountable technical constraints to the proposed level of growth for the study area. The Phase 1 study can be found on Horizon's website at the following link:

http://www.cambridgeshirehorizons.co.uk/documents/publications/reference/water_cycle_strategy_phase_1.pdf

13. Cambridgeshire Horizons commissioned the Water Cycle Strategy. They also brought together a stakeholder steering group to guide the WCS. This comprises representatives from Cambridge City Council, South Cambridgeshire District Council, Cambridgeshire County Council, the Environment Agency, Anglian Water, Cambridge Water, Natural England and the Swavesey, Old West and Swaffham Internal Drainage Boards.

The Phase 2 WCS

14. The Phase 2 WCS has been produced by consultants Halcrow Group Ltd. The draft Phase 2 WCS can be found at Appendix A.

15. The Phase 2 WCS goes further than the Phase 1 study, by providing evidence in support of a more aspirational vision for water management. It aims to:
    - Aspire to water neutrality (the concept that the total water used after a new development is no more than the total water used before the development in a given wider area. This requires meeting the new demand through improving the efficiency of use of the existing water resources. This can be through making new development as water efficient as possible and retrofitting measures in existing development);
    - Improve biodiversity by protecting environmental water quality, and;
    - Protect and enhance the environment through sustainable surface water management.

16. The Phase 2 WCS sets out a long-term vision to:
    - Achieve the highest levels of water efficiency in all new homes – reducing current water consumption of 125 litres per head per day (l/h/d) to 80 l/h/d
    - Aim for water neutrality through the introduction of enhanced metering, variable tariffs and the introduction of water efficiency measures in the existing building stock
    - Aim for all surface water in new development to be managed above ground where feasible through Sustainable Drainage Systems (SuDS)
    - Improve water quality in surface water runoff from new developments

17. The strategy recognises that these are ambitious aims and barriers are identified as well as possible ways to overcome the difficulties. The strategy highlights that achieving the long-term vision will require continued collaborative working between partners on the steering group and full engagement with the local community.

18. Implementation of much of the Strategy will depend upon the plan making process, with principles to be tested through consultation before being adopted in development plans. Until then, the WCS provides an evidence base albeit the WCS does not have the weight of the development plan.

19. It must be recognised that the Phase 2 WCS will have limited influence over the major development sites that have already progressed significantly through the planning system, such as the sites in the Southern Fringe, NIAB1 and Cambourne. However, that is not to say that these sites have not already made achievements in sustainable water infrastructure and there will also be further opportunities when determining reserved matters applications. The North West Cambridge Area Action Plan, which covers the University site, already has a progressive policy on water

conservation, requiring that homes meet Code for Sustainable Homes Level 5. The greatest potential is at the strategic sites in the earlier stages of planning such as NIAB 2, Northstowe, and Cambridge East.

20. In addition to the policy recommendations a pathway to sustainable water management has been identified up to 2031. The Strategy has identified opportunities and barriers that need further consideration by a broad set of stakeholders including local authorities, government, water companies and government agencies (Environment Agency and Natural England) to help deliver a sustainable water environment suitable for our future. Within this pathway are a range of initiatives that can be taken forward to support water neutrality and these will need to be considered as part of the implementation of the Strategy.

Key Findings and Recommendations

Water Resources (Chapter 3 of WCS)

21. The WCS suggests that under a business as usual scenario the new housing development across Cambridge Water's Water Resource Zone could increase the demand for water by 33% on 2006 levels by 2031. The WCS highlights that Cambridge Water Company's Water Resources Management Plan, 2010 (WRMP10) forecasts a positive supply-demand balance to 2035. However, there are significant arguments for ensuring that new development minimises the increase in demand for water, particularly as Cambridgeshire is in an area of serious water stress (as defined by the Environment Agency) and future supply could be affected by climate change and changes to abstraction licences. Therefore to minimise increases in demand, an approach is needed which both ensures that new developments are built to the highest standards of water efficiency and implements measures in the existing housing stock to offset additional demand.

22. The WCS finds that there have been significant advances in improving water efficiency for those growth sites which have already progressed through the planning system. For example, the sites in the Southern Fringe and NIAB 1 will be built to Code 3 for market homes and Code 4 for affordable homes (both at 105 litres/head/day). Homes at the University site will be built to Code level 5 (80 l/h/d). By contrast water consumption in a typical existing home without any water efficiency measures is approximately 150 l/h/d and Building Regulations currently require 125 l/h/d. In looking forward to future developments, such as Northstowe and Cambridge East (if it comes forward), the strategy explores a number of measures to build on these achievements.

23. The WCS sets out a vision of achieving the highest levels of water efficiency in all new homes through implementation of Code for Sustainable Homes (CSH) Level 5/6 for water which is a consumption of 80 l/h/d. To achieve these higher levels, measures such as further efficiency in household taps, installation of smaller capacity baths and use of greywater recycling (GWR) or rainwater harvesting (RWH) will need to be implemented. GWR involves treating and re-using water from the shower, bath and sinks for uses such as flushing toilets. RWH involves capturing rain water that lands on the roof and storing it for later use. RWH has the added advantage of reducing the volume of water leaving a site and therefore reducing flood risk. The WCS looks at the costs of implementing these measures, the savings on water bills, the pros and cons of household versus community GWR/RWH and other implications such as the increase in energy and therefore carbon costs involved in pumping the water above mains water.

24. The WCS also considers how to achieve high levels of water efficiency in non-domestic buildings, measured by the BREEAM method (Building Research Establishment Environmental Assessment Method) using similar methods to those described above for housing.

25. The WCS has an aspiration to water neutrality, and considers measures in the existing housing stock such as metering, variable tariff structures depending upon levels of water consumption and retrofitting of water efficient measures. The costs and potential barriers to these methods are highlighted. The WCS finds that water neutrality may be achievable, but would be highly dependent on behavioural change among existing residents.

26. The WCS provides recommendations on potential planning policies and other strategies to work towards achieving the vision set out. These are obviously only recommendations and the Council will develop policies in the LDF following the plan making process and with principles to be tested through consultation before being adopted in development plans. The WCS will be an evidence base to be used in this process.

Sustainable Surface Water Management (Chapter 4 of WCS)

27. The WCS recognises the benefits of well designed surface water management infrastructure in the form of sustainable drainage systems (SuDS) over conventional piped below ground drainage systems. Above ground drainage has benefits in managing flood risk, reduced capital and operational costs, reduced carbon emissions (embodied and operational), enhanced water quality treatment and opportunities to integrate SuDS into amenity areas and enhance biodiversity.

28. The vision set out in the WCS is for 100% above ground drainage for all future developments where feasible, and that above ground drainage should include environmental enhancement and should provide amenity, social and recreational value.

29. The WCS finds that progress is being made with many of the strategic development sites providing balancing ponds and swales to manage surface water and improve biodiversity. In particular NIAB 1 allows for 100% above ground drainage through a network of ‘green finger’ swales. Uncertainty over adoption and long-term maintenance of these systems is highlighted as a concern. National Sustainable Drainage Standards will help address this.

30. The type of SuDS that can be successfully used in a development is dependent upon ground conditions at a particular site. Similarly an important factor in determining the feasibility of 100% above ground drainage will be the additional land take required. SuDS can either be integrated into public open space where possible or may result in an increase in housing densities. The WCS recognises that 100% above ground drainage would be difficult in planned high density developments or on constrained windfall development sites . However, developers should look at low land take drainage measures such as green roofs, permeable surfaces and water butts.

31. The WCS sets out policy recommendations for surface water management.

Environmental Water Quality (Chapter 5 of WCS)

32. The WCS sets out a vision to ensure that development does not cause deterioration of water quality and seeks opportunities to meet 'good' status (set out by the Water Framework Directive) where feasible. The main way in which to protect water quality in receiving watercourses and groundwater from surface water runoff is through a treatment train using SuDS. The WCS follows the CIRIA SuDS Manual in recommending 1 treatment stage for roof runoff, 2 stages for residential roads, parking areas and commercial zones and 3 stages for refuse collection/industrial areas/loading bays/lorry parks/ highways. It provides details of the types of SuDS that would be suitable in the treatment stages.

Wastewater (Chapter 6 of WCS)

33. With regards to wastewater the Phase 2 WCS provides a summary of the preferred wastewater strategy and an assessment of the impact of additional wastewater treatment discharges on water quality and flood risk. Anglian Water's preferred strategy is for all development in and around Cambridge to drain to Cambridge (Milton) waste water treatment works (WWTW), and for development at Northstowe and Cambourne to drain to Utton's Drove WWTW. An assessment of the implications of growth for water quality is provided; this shows that water quality should not be a constraint to growth at Cambridge WWTW or Utton's Drove WWTW.

Ecological Assessment (Chapter 7 of WCS)

34. The WCS provides an assessment of the consequences for the water environment of proposed development within and around Cambridge. This is intended to inform future Habitats Regulations Assessments for reviews of Local Development Frameworks for the area. This assessment identifies European sites of importance which could be affected at Wicken Fen, Breckland and the Ouse Washes. However, these are screened out and it concludes that there will be no significant effect resulting from implementing the proposals identified in the WCS.

Considerations

35. The Water Cycle Strategy provides a detailed evidence base reading issues that will need to be explored through the review of the Local Development Framework. The Housing Trajectory utilised in the WCS is now not consistent with the current housing trajectory, as indicated by the latest Annual Monitoring Report. However, the principles explored by the WCS can be implemented when developments do come forward. They can also be explored in policy development regarding smaller windfall developments or new land allocations.

36. Northstowe has been designated as an Ecotown. The Ecotown Planning Policy Statement (PPS) sets high standards for water efficiency and drainage. In particular they should aspire to achieve water neutrality (in areas of serious water stress), and meet code level 5 on water consumption. The WCS does explore these issues, providing evidence to help the Council explore the issues with developers, and to provide an understanding of what could be achieved.

37. The Strategy could be clearer that the implementation of higher water efficiency water standards will require testing and implementation through the Local Development Framework. The time this process could take should be noted, and the ability to

achieve the high standards across all developments could impact on the assumptions used in the water neutrality or waste water calculations.

38. It would be helpful if the report could provide more details and examples of how water recycling measures, such as grey water and rain water recycling, have been achieved. The report does provide links and basic details to some examples, but this should be analysed to draw out the lessons learned, such as how practicalities can be addressed in smaller schemes.

39. It would also be helpful to have more examples on the relationship between achieving a 100% above ground drainage SUDS system, and housing density. This would be helpful when reviewing development plans and planning applications, such as Northstowe.

40. It would also be helpful for the WCS to explore examples of where high water efficiency policies or water neutrality have been achieved or explored elsewhere, and lessons learnt.

Implications

41.

Financial	There are no direct financial implications. The Study was commissioned by Cambridgeshire Horizons. To implement some of the aspirational objectives explored in the study could have cost implications, depending on how they were implemented.
Legal	None.
Staffing	here are no direct staffing implications arising from this report.
Risk Management	None.
Equality and Diversity	There are no direct equal opportunities arising from this report.
Equality Impact Assessment completed	No
	This is an evidence base document. Policies that result, such as through the Local Development Framework, would be subject to assessment.
Climate Change	The WCS will provide an evidence base which will inform the development of policies leading to more sustainable water services infrastructure.

Consultations

42. The report has been considered by Cambridgeshire County Council, Cambridge City Council. The report was also considered by the Joint Strategic Growth Implementation Committee (JSGIC) on 10th November.

43. The WCS will be taken through the Cambridgeshire Horizons Board on 8th December for consideration and sign-off, subject to comments from South Cambridgeshire.

Effect on Strategic Aims

44. We are committed to making South Cambridgeshire a place in which residents can feel proud to live – The evidence base will support the Council in pursuing policies towards sustainable development and combating climate change.

Background Papers: the following background papers were used in the preparation of this report:

Water Cycle Strategy Major Growth Areas in and around Cambridge, Phase 1 – Outline Strategy, October 2008, Halcrow Group Limited

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