



# BWB

CONSULTANCY | ENVIRONMENT  
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## ENVIRONMENT

CENTRAL LINCOLNSHIRE LOCAL PLAN

WATER CYCLE STUDY UPDATE

## ENVIRONMENT

### CENTRAL LINCOLNSHIRE LOCAL PLAN

### WATER CYCLE STUDY UPDATE

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## 1.0 INTRODUCTION

### Background

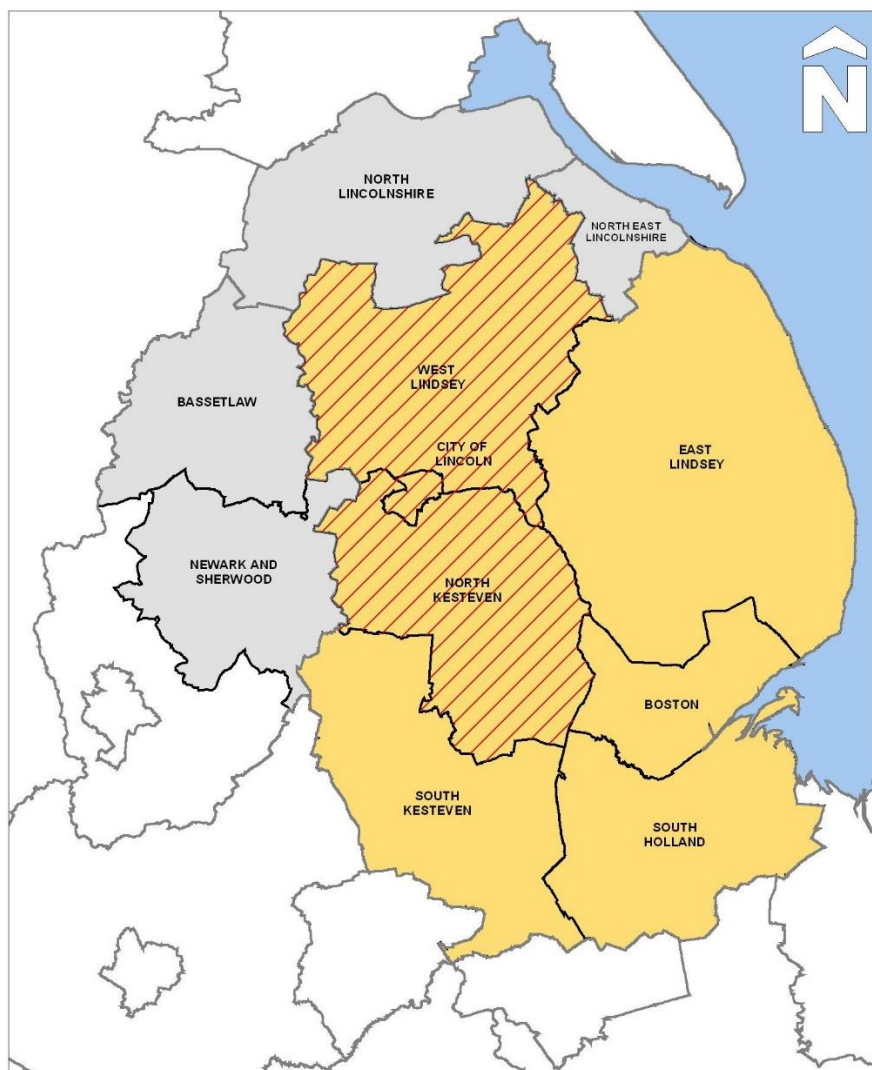
- 1.1 The Central Lincolnshire Joint Strategic Planning Committee (CLJSPC) was established in October 2009 and the Central Lincolnshire Local Plan Team, (CLLPT), previously called the Joint Planning Unit, was established in May 2010.
- 1.2 The CLLPT is responsible for producing the Central Lincolnshire Local Plan which will contain planning policies that relate to the delivery and management of development in Central Lincolnshire. The Central Lincolnshire Local Plan will progressively replace the Local Plans of the City of Lincoln, West Lindsey and North Kesteven District Councils.
- 1.3 The planning policies in the Central Lincolnshire Local Plan will be used to help determine planning applications within the Central Lincolnshire area, the policies will set out what can be built and where.
- 1.4 Two Detailed Water Cycle Studies (WCS) had previously been undertaken for the Central Lincolnshire Area in summer 2010 involving key stakeholders such as the Environment Agency, Anglian Water and Severn Trent Water. One covered Gainsborough and surrounding villages in West Lindsey (the Gainsborough WCS) and the Central Lincolnshire WCS covered the rest of West Lindsey, the City of Lincoln and North Kesteven.
- 1.5 These two WCS's provided an assessment of the key issues which needed to be planned for in respect of Water Services Infrastructure when considered against the levels of growth being proposed across Central Lincolnshire at that time.
- 1.6 The new Joint Local Plan for Central Lincolnshire is now being produced which has reached the proposed submission stage and which includes proposed development sites.

### Central Lincolnshire WCS

- 1.7 In order to support the Central Lincolnshire Local Plan and building on the previous WCS work, a qualitative review is being undertaken prior to submission of the Local Plan reflecting the revised levels of growth which are proposed in the emerging Plan.
- 1.8 To date both Anglian Water, (AW), and Severn Trent Water, (STW), have provided their summary assessments of capacity at the allocated Water Recycling Centres, (WRC), previously called Sewage Treatment Works, on a site by site basis and from this initial assessment the review will consider the implications of growth on water and waste water services and impact on water quality.

## Study Area

- 1.9 Central Lincolnshire covers the combined area of the City of Lincoln, North Kesteven and West Lindsey, totalling an area of 2116km<sup>2</sup>, with a population of 290,500 (Census 2011). The study area is hatched on **Figure 1.1** below.



**Figure 1.1 - Study Area**

## Sources of Data

- 1.10 The report is based on the following information:
- (i) Central Lincolnshire WCS Detailed Assessment AECOM June 2010
  - (ii) Gainsborough WCS Detailed Strategy AECOM July 2010
  - (iii) Start-up meeting with CLLPT 26<sup>th</sup> April 2016.
  - (iv) Meeting with CLLPT and Anglian water 12<sup>th</sup> May 2016 2015
  - (v) Meeting with CLLPT and Environment Agency 25<sup>th</sup> May 2016.
  - (vi) RAG Sheet 12698 Consultation Response, provided by Anglian Water 13<sup>th</sup> June 2016.

## 2.0 WATER RESOURCES AND SUPPLY

### Water Resources

- 2.1 Future development would be significantly constrained if there was insufficient water available to support the levels of growth, or if the water could not be supplied to the areas accommodating new development.
- 2.2 As reported in the Central Lincolnshire WCS work undertaken by AW in 2010 identified that Lincoln was projected to have deficits in water resources by 2036-37.
- 2.3 To overcome those forecasted deficits AW proposed a number of solutions to ensure that water supplies did not fall short. The selected scheme for Lincoln was a new Water Treatment Works (WTW) to be constructed during AMP5 (2010-15) to supply Lincoln with a 20 MI/d plant which could also be used for transfer to other locations.
- 2.4 AW considered that a new abstraction would be sustained by the import of water to the River Trent catchment from the River Severn catchment. After use and treatment, water would be returned to the River Witham catchment for potential re-use by abstraction downstream.
- 2.5 As well as increasing the volume of water supplied to Lincoln, AW also intended to manage the demand for water through leakage control, household metering and the promotion of water efficiency, particularly with large industrial customers.

### Hall Water Treatment Works

- 2.6 In response to the above, the Hall Water Treatment Works was opened on 2<sup>nd</sup> July 2014 and has been built close to Newton-on-Trent, taking water from the River Trent which is then purified to the very highest drinking water standards.
- 2.7 Up to 20 million litres of water is treated every day supplying homes and businesses in south Lincolnshire.

### Water Resource Management Plan

- 2.8 In 2015 AW published a Water Resource Management Plan, (WRMP), which can be found here;  
[http://www.anglianwater.co.uk/assets/media/WRMP\\_2015.pdf](http://www.anglianwater.co.uk/assets/media/WRMP_2015.pdf)
- 2.9 For the Central Lincolnshire Resource Zone, (RZ), the key points from the WRMP are;
- No deficits are forecast in the Central Lincolnshire RZ.
  - No significant climate change or levels of service sensitivities have been identified.
  - Two WTWs have been targeted for likely sustainability reductions and the deployable output at risk is equivalent to 1.8MI/d at average.
  - A number of sources in this RZ abstract from the Northern Chalk aquifer which is subject to sustainability reduction of up to 25MI/d; this has been applied to the East Lincolnshire RZ.
  - The worst case sustainability reduction risk in the Central Lincolnshire RZ is equivalent to 4.7MI/d at peak and 7.5MI/d at peak.

- Realising the worst case scenario for sustainability reductions would drive local RZ integrity issues and supply-demand investment.
- Local authority policy growth projections exceed our trend based projections by a significant amount; available and target headroom are sufficient to account for the difference and the associated supply-demand risk is minimal.

## Water Supply

- 2.10 The WRMP also considers the option to maintain the supply-demand balance and is based on a combination of demand management, transfers, trades, a reservoir recommissioning and water reuse. The demand management schemes are cost-beneficial and include the following, which will be delivered in AMP6;
- Reducing leakage from our current 2014-15 sustainable economic level of leakage, (SELL), of 211Ml/d to 172Ml/d
  - Installing around 160,000 household meters through a combination of enhanced metering, meter options, (11,922 in Central Lincolnshire), and a small number of selective (compulsory) meter installations
  - Completing 180,000 water efficiency audits with free installation of water saving devices, of which 17,937 are proposed in Central Lincolnshire.



## 3.0 FOUL WATER SEWERAGE

- 3.1 A significant increase in the number of houses across the study area will result in a significant increase in the volume of foul sewage.
- 3.2 In urban areas, surface water (rainwater) and foul sewage were historically drained by a single sewer pipe. This is known as a combined sewer. However more recent developments have installed separate foul and surface water systems.
- 3.3 AW and STW are responsible for the operation and maintenance of the public foul sewerage system.
- 3.4 Foul sewerage systems can include both separate foul and combined sewers (which accept foul and surface water flows). Combined sewers are restricted in their extent to central Lincoln (although extensive separate systems are also present). In central Lincoln, where brownfield land served by combined sewers is re-developed, AW are seeking to have the foul and surface water flows separated.
- 3.5 The removal of the surface water flows from the combined sewers will reduce overloading of the sewer and allow additional foul flows.
- 3.6 For new development, connection to the combined sewer will not be allowed and separate foul and surface water connections will be required.
- 3.7 It is reasonable for new development to assume that the foul sewerage networks were not built with inherent capacity and improvements will be needed.

### Planning Policy on Sewerage and Connection

- 3.8 The National Planning Policy Framework (NPPF), provides a framework for new development on a range of topics, including water supply and wastewater, encompassed within Paragraphs 109 and 120 of the NPPF. The Planning Practice Guidance to support the NPPF provides further detail on key topics.
- 3.9 In relation to water supply, wastewater and water quality the Planning Practice Guidance states (under paragraph 020, Reference ID: 34-020-20140306) the following;

*"In the planning system, the preparation of Local Plans should be the focus for ensuring that investment plans of water and sewerage companies align with development needs. If there are concerns arising from a planning application about the capacity of wastewater infrastructure, applicants will be asked to provide information about how the proposed development will be drained and wastewater dealt with. Applications for developments relying on anything other than connection to a public sewage treatment plant should be supported by sufficient information to understand the potential implications for the water environment.*

*When drawing up wastewater treatment proposals for any development, the first presumption is to provide a system of foul drainage discharging into a public sewer to be treated at a public sewage treatment works (those provided and operated by the water and sewerage companies). This should be done in consultation with the sewerage company of the area.*

*The timescales for works to be carried out by the sewerage company do not always fit with development needs. In such cases, local planning authorities will want to consider how new development can be phased, for example so it is not occupied until any necessary improvements to public sewage treatment works have been carried out. Further information can be found here.*

*Where a connection to a public sewage treatment plant is not feasible (in terms of cost and/or practicality) a package sewage treatment plant can be considered. This could either be adopted in due course by the sewerage company or owned and operated under a new appointment or variation. The package sewage treatment plant should offer treatment so that the final discharge from it meets the standards set by the Environment Agency.*

*A proposal for a package sewage treatment plant and infrastructure should set out clearly the responsibility and means of operation and management to ensure that the permit is not likely to be infringed in the life of the plant. There may also be effects on amenity and traffic to be considered because of the need for sludge to be removed by tankers."*

- 3.10 This provides clear guidance on how provision of water supply and wastewater infrastructure should be considered as part of the planning process for new development.

### **Water Industry Act 1991**

- 3.11 Section 106 of this act gives the owner or occupier of any premises, the entitlement to have their drains or sewer connected with the public sewer of any sewerage undertaker and thereby to discharge foul water from their premises.

## 4.0 SEWAGE TREATMENT

### Water Recycling Centres

- 4.1 Foul water taken away from homes via foul or combined sewers must be treated before it can be returned to the natural environment.
- 4.2 There are 26 Water recycling Centres, (WRC)s, in the Central Lincolnshire area that treat foul sewage from the proposed allocation before discharging the treated effluent into receiving watercourses. 25 of these WRCs are operated by AW and 1 by STW.
- 4.3 They vary in size, most are relatively small, serving small villages however Canwick and North Hykeham are the two largest WRCs in the study area with Canwick serving a considerably larger population and is the principal WRC in the area.
- 4.4 **Table 4.1** below identifies the individual WRC and the locations that each serve along with the number of Local Plan residential allocation sites and the additional indicative dwellings proposed to be treated by the WRC.

**Table 4.1 – Water Recycling Centres in Central Lincolnshire**

Water Recycling Centre	Serving	Number of Allocation Sites	Indicative Dwellings
Anwick	Ruskington	6	549
Bardney	Bardney	1	73
Bassingham	Bassingham	1	35
Billingham	Billingham	6	560
Caister	Caister	5	401
Canwick	Lincoln; Bracebridge Heath	26	3080
	NEQ Sustainable Urban Extention	1	1400
	WGC Sustainable Urban Extention	1	3200
	SEQ Sustainable Urban Extention	1	3500
Dunholme	Dunholme; Welton	6	850
Faldingworth	Faldingworth	1	41
Gainsborough	Gainsborough	21	2061
	Northern Sustainable Urban Extention	1	750
	Southern	1	1400
Heckington	Heckington	1	106

Water Recycling Centre	Serving	Number of Allocation Sites	Indicative Dwellings
Hemswell RAF	Hemswell Cliff	1	180
Hibaldstow	Scotter	2	93
Keelby	Keelby	2	190
Market Rasen	Market Rasen; Linwood	7	551
Metheringham	Metheringham	1	276
Navenby	Navenby	3	203
Nettleham	Nettleham	5	237
Nocton RAF	Nocton	1	36
North Hykeham	Lincoln and North Hykeham; Waddington	8	1021
Reepham	Cherry Willingham	3	373
Saxilby	Saxilby	1	221
Skellingthorpe	Skellingthorpe	4	562
Sleaford	Sleaford and Greylees	8	1581
	Sleaford South Sustainable Urban Extention	1	1450
	Sleaford West Sustainable Urban Extention	1	1400
South Hykeham	Lincoln and North Hykeham; Witham St Hughs	5	1660
	Grange Farm Sustainable Urban Extention	1	1600
Washingborough	Branston; Heighton; Washingborough	6	689
Undefined	Lincoln, (CL4652)	1	81

- 4.5 Information provided by AW and STW identified a Red, Amber, or Green (RAG) status for each proposed residential development site and was assessed on an individual site basis.
- 4.6 The cumulative impact from all of the proposed residential sites on the allocated WRC is not indicated by the RAG status and it should be noted that the cumulative effect of all of the identified allocated sites may require enhancement to capacity.

- 4.7 In addition to the cumulative impact from residential sites it should be noted that the Broad Locations for growth, employment and retail sites need to be assessed.
- 4.8 For the individual sites the following have been identified as having the potential to cause problems at the allocated WRC.

### ***Bassingham***

There are major constraints to the provision of treatment to serve the indicative capacity of 35 dwellings of proposed allocation CL2089, Land off Carlton Road and Whites Lane, Bassingham

### ***Canwick***

Treatment upgrades are required to serve the indicative capacity of 3200 dwellings of proposed allocation CL819, Lincoln Western Growth Corridor SUE.

Treatment upgrades are required to serve the indicative capacity of 3500 dwellings of proposed allocation CL428 Lincoln SE Quadrant SUE.

### ***Heckington***

There are major constraints to the provision of treatment to serve the indicative capacity of 106 dwellings of proposed allocation CL875, Land Opposite the Cemetery, Boston Road Heckington.

### ***Hemswell***

Treatment upgrades are required to serve the indicative capacity of 180 dwellings of proposed allocation CL4673, Hemswell Cliff.

### ***Market Rasen***

There are major constraints to the provision of treatment to serve the indicative capacity of 28 dwellings of proposed allocation CL1356, Works / Warehouses East of Charlotte Close, Market Rasen.

There are major constraints to the provision of treatment to serve the indicative capacity of 77 dwellings of proposed allocation CL1358, Land off Gallamore Lane, Market Rasen.

There are major constraints to the provision of treatment to serve the indicative capacity of 133 dwellings of proposed allocation CL1359, Land off Linwood Road & The Ridings, Market Rasen.

There are major constraints to the provision of treatment to serve the indicative capacity of 200 dwellings of proposed allocation CL1364, Caistor Road, Market Rasen.

There are major constraints to the provision of treatment to serve the indicative capacity of 30 dwellings of proposed allocation CL1369, Land to rear of Walesby Road, Market Rasen.

There are major constraints to the provision of treatment to serve the indicative capacity of 47 dwellings of proposed allocation CL4028, Field between properties known as "Mayfield" & "Wodelyn Cottage", Linwood.

There are major constraints to the provision of treatment to serve the indicative capacity of 36 dwellings of proposed allocation CL4189, Land to east of Gordon Field, South of Chapel Street, west of Market Rasen.

### ***Metheringham***

There are major constraints to the provision of treatment to serve the indicative capacity of 276 dwellings of proposed allocation CL904, Land Northwest of village Metheringham.

### ***Sleaford***

There are major constraints to the provision of treatment to serve the indicative capacity of 1450 dwellings of proposed allocation CL3036, Sleaford West Quadrant SUE.

There are major constraints to the provision of treatment to serve the indicative capacity of 1450 dwellings of proposed allocation CL1016, Sleaford South Quadrant SUE.

There are major constraints to the provision of treatment to serve the indicative capacity of 377 dwellings of proposed allocation CL1014, Land off Grantham Road, Sleaford.

There are major constraints to the provision of treatment to serve the indicative capacity of 109 dwellings of proposed allocation CL47, Former Rauceby Hospital, Grantham Road, Greylees.

Treatment upgrades are required to serve the indicative capacity of 290 dwellings of proposed allocation CL1013, Land at Poplar Farm, South of A17, Sleaford (Part A).

Treatment upgrades are required to serve the indicative capacity of 200 dwellings of proposed allocation CL1013a, Land to the East of CL1013, Poplar Farm, South of A17, Sleaford.

### ***South Hykeham***

There are major constraints to the provision of treatment to serve the indicative capacity of 1600 dwellings of proposed allocation CL4668, Lincoln SW Quadrant SUE.

There are major constraints to the provision of treatment to serve the indicative capacity of 1250 dwellings of proposed allocation CL1100, Land to the north of Witham St. Hughs.

### ***Washingborough***

There are major constraints to the provision of treatment to serve the indicative capacity of 198 dwellings of proposed allocation CL418, Land at Silver Street, Branston.

There are major constraints to the provision of treatment to serve the indicative capacity of 91 dwellings of proposed allocation CL4666, Land to the west of Station Road, Branston.

There are major constraints to the provision of treatment to serve the indicative capacity of 95 dwellings of proposed allocation CL1086, Land at Pitts Road, Washingborough.

There are major constraints to the provision of treatment to serve the indicative capacity of 185 dwellings of proposed allocation CL4469, Land east of Canterbury Drive, Washingborough.

Treatment upgrades are required to serve the indicative capacity of 73 dwellings of proposed allocation CL417, Land off Moor Lane, Branston.

## WRC Summary

- 4.9 The sites identified above will need to be discussed in detail with the water company and any planning application will need to be supported by a detailed assessment of how the constraints can be overcome.
- 4.10 The preliminary assessment has identified a total of 9 WRC sites out of the 26 within the area that would require upgrades or have major constraints on the provision of treatment with the proposed allocated sites.
- 4.11 There are major constraints to the provision of treatment for 20 of the proposed allocation sites at their respective WRC, and treatment upgrades would be required to serve a further 6 allocation sites.
- 4.12 The water industry operates on five-yearly cycles called Asset Management Plan (AMP) periods. Water recycling centre upgrades where required to provide for additional growth are wholly funded by AW and STW through their Business Plans.

## Water Quality

- 4.13 The EA have provided comments on the water quality issues of the WRCs and the Water Framework Directive (WFD), information to identify any water quality issues in the receiving watercourses.
- 4.14 The EA identified the following WRC's where there is insufficient capacity on the existing permit and for these sites permit variations and additional capacity/improved treatment may be required in order to protect water quality. Permit limits may need to be tightened in order to achieve the WFD requirements for 'no deterioration';
- Billingham
  - Caistor
  - Canwick
  - Market Rasen
  - Metheringham
  - Sleaford
  - South Hykeham
  - Washingborough
- 4.15 The EA also provided information on WFD classification, relevant to each WRC and this is shown in the EA letter in **Appendix 1**.

- 
- 4.16 In some cases there are water quality concerns where water quality downstream fails to meet WFD requirements for Good Ecological Status/Potential (although other factors will also influence this).
- 4.17 There is a potential that permit limits may need to be varied in future to fulfil requirements for 'no deterioration' and move towards Good Ecological status. Even where there is sufficient permit head room, there may be potential for increased development to impact water quality.



## 5.0 SURFACE WATER

- 5.1 Urban areas are predominantly comprised of impermeable materials. Consequently, to avoid a build-up of water on the ground surface, rainfall has historically been channelled away as quickly as possible via sewers. These sewers can be pipes carrying just surface water discharging to watercourses or combined sewers which drain to a WRC.
- 5.2 The sewers running under the streets of urban areas are of a fixed capacity therefore new development which increases the amount of water getting into the sewers could overwhelm the system resulting in surface water flooding.
- 5.3 Surface water is also drained via IDB drains and ordinary watercourses.
- 5.4 Flooding can also arise when intense rainfall cannot get into the sewers quickly enough and subsequently flows over the ground surface, or when prolonged rainfall exceeds the capacity of the sewer system. As a result of this surface water flooding can happen anywhere making it difficult to predict or manage.
- 5.5 Traditional drainage is designed to move rainwater as rapidly as possible from the point at which it has fallen to a discharge point, either a watercourse or soakaway. This approach has a number of potentially harmful effects:
- Runoff from hard paving and roofing can increase the risk of flooding downstream, as well as causing sudden rises in water levels and flow rates in watercourses.
  - Surface water runoff can contain contaminants such as oil, organic matter and toxic metals. Although often at low levels, cumulatively they can result in poor water quality in rivers and groundwater, affecting biodiversity, amenity value and potential water abstraction. After heavy rain, the first flush is often highly polluting.
  - By diverting rainfall to piped systems, water is stopped from soaking into the ground, depleting groundwater and reducing flows in watercourses in dry weather.
- 5.6 In recent years there has been a change of thinking; from the historic view of removing rainfall from urban areas as quickly as possible via the sewer network, to managing the water in-situ. This has the effect of reducing the need to upgrade the sewer networks and reduce the risk of flooding.

### Sustainable Drainage Systems

- 5.7 Sustainable Drainage Systems (SuDS) have come to the fore as a means of managing surface water at source. Government guidance in the form of the updated SuDS Manual (CIRIA 753) promotes the use of SuDS to provide protection against flooding downstream of new developments and as a means of protecting the water quality and amenity of any receiving watercourse.
- 5.8 SuDS include tried-and-tested techniques that are already being implemented on a range of projects and they incorporate cost effective techniques that are applicable to a wide range of schemes. The National Planning Policy Framework emphasises the role of SuDS and introduces a general presumption that they will be used.

- 5.9 As with other key considerations in the planning process, incorporating SuDS needs to be considered early in the site evaluation and planning process, as well as at the detailed design stage.
- 5.10 SuDS are an effective way to reduce the risk of flooding which can occur when rainwater rapidly flows into the public sewerage and drainage system.
- 5.11 The SuDS approach is about slowing down and reducing the quantity of surface water runoff at source to manage flood risk and reducing the risk of that runoff causing pollution. This is achieved by infiltrating, slowing, storing and treating runoff on site and, where possible, on the surface rather than underground.
- 5.12 On the 18 December 2014 a written statement by the House of Commons was made explaining how the existing planning system would be changed to secure SuDS. These changes came into effect on 06 April 2015.
- 5.13 To this effect, local planning authorities are expected to ensure that SuDS, for the management of runoff, are put in place on planning applications relating to major development, unless demonstrated to be inappropriate.
- 5.14 Under these arrangements, local planning authorities should consult the relevant Lead Local Flood Authority on the management of surface water. Therefore, Lincolnshire County Council as Lead Local Flood Authority is now a statutory consultee on planning applications for major developments with respect to surface water drainage and 'local' flood risk issues.

**Benefits of SuDS include:**

- protecting people and property from increased flood risk
- protecting the water quality of groundwater and surface waters from polluted runoff
- protecting natural flow regimes (and thus the ecology) in our rivers, lakes and streams
- supporting local natural habitats and associated ecosystems by encouraging greater biodiversity and connecting habitats together
- improving soil moisture and replenishing depleted groundwater levels
- providing society with a valuable supply of water
- creating attractive places where people want to live, work and play through the integration of water and green spaces with the built environment
- improving people's understanding of how runoff from their development is being managed and used, and the benefits of more sustainable approaches
- supporting the creation of developments that are more likely able to cope with changes in climate in the future
- delivering cost-effective infrastructure that uses fewer natural resources and has smaller carbon footprint than conventional drainage.

## 6.0 FLOOD RISK

### Flood Risk Planning Policy

#### *National Planning Policy Framework*

- 6.1 The NPPF sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance is also available online.
- 6.2 The Planning Practice Guidance sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible, and stresses the importance of preventing increases in flood risk off site to the wider catchment area.
- 6.3 Local Plans should be supported by a Strategic Flood Risk Assessment and develop policies to manage flood risk from all sources, taking account of advice from the Environment Agency and other relevant flood risk management bodies, such as Lead Local Flood Authorities and Internal Drainage Boards. Local Plans should apply a sequential, risk-based approach to the location of development to avoid flood risk to people and property where possible and manage any residual risk, taking account of the impacts of climate change by:
- applying the Sequential Test;
  - if necessary, applying the Exception Test;
  - safeguarding land from development that is required for current and future flood management;
  - using opportunities offered by new development to reduce the causes and impact of flooding;
  - where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to facilitate the relocation of development, including housing, to more sustainable locations.

### Central Lincolnshire SFRA

- 6.4 A Level 1 (March 2015) and a Level 2 SFRA (April 2016), have been produced for the study area written in accordance with the NPPF and the Planning Practice Guidance.
- 6.5 The Level 1 SFRA presented information to enable the CLLPT to apply the Sequential Test to potential development sites and assisted in identifying whether the application of the Exception Test was necessary.
- 6.6 The Level 1 SFRA made reference to the three previous SFRA's namely:
- West Lindsey District Council SFRA July 2009
  - Lincoln Policy Area SFRA February 2010
  - North Kesteven District Council SFRA November 2009

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6.7 In the Level 2 SFRA the proposed allocations were reviewed against readily available flood risk data as follows:

- Flood Map for Planning to identify Flood Zones.
- Historical flooding.
- Modelled fluvial and tidal flood levels.
- Modelled surface water risk including depth and velocity.
- Risk of flooding from a reservoir.
- Ground conditions as shown on the British Geological Survey maps.

6.8 The possible mitigation measures were identified to give an indication as to the suitability of the proposed allocations.

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## 7.0 CONCLUSIONS

- 7.1 This update has used a qualitative approach.
- 7.2 Water resources have been secured by the commissioning and completion of Hall WTW.
- 7.3 Proposed development should assume that improvements are needed to the foul sewerage system.
- 7.4 Cumulative impacts of the proposed allocations on the WRCs needs further consideration.
- 7.5 Significant WRC constraints have been identified for some individual sites.
- 7.6 There is insufficient capacity on the existing permit for some sites and permit variations and additional capacity/improved treatment may be required in terms of securing water quality.
- 7.7 Permit limits may need to be tightened in order to achieve the WFD requirements for 'no deterioration' and move towards Good Ecological status.
- 7.8 Lincolnshire County Council, as the Lead Local Flood Authority and statutory consultee, are promoting SuDS.
- 7.9 Level 1 and 2 SFRAs have been undertaken.



## **APPENDIX 1**

Environment Agency Water Quality Letter





Central Lincolnshire Joint Planning Unit  
District Council Offices  
Kesteven Street  
Sleaford  
NG34 7EF

**Our ref:** AN/2010/110251/OR-  
03/PO1-L01

**Date:** 22 June 2016

Dear Sir/Madam

### **Draft Central Lincolnshire Water Cycle Study**

Thank you for consulting us on the document above, on 17 June 2016.

We have been asked to comment on any individual Water Recycling Centres (WRC) where we have known capacity issues, or where we have any existing downstream water quality issues and targets for 'no deterioration'.

We are happy to provide you with the Water Framework Directive (WFD) information to show if there are any water quality issues in the receiving water course(s). We have included the information for both site and individual water body level, as sometimes with larger water bodies the overall classification can mask known issues at a particular sample point. When we calculate permit limits we would look at the site level data.

The majority of sites where we think there may be capacity issues have already been identified in the Draft Water Cycle Study that we have been consulted on. Any subsequent differences may well be down to Anglian Water (AW) having more up to date information, or some natural variation in the flow data if you have looked at different years.

You also asked us to consider tightened permit limits, and in particular to highlight where we envisaged limits might need to be tightened in future. Whilst we have tried to include information on sites where there has been a recent change in a quality limit, it is difficult to predict impacts on permit limits in the absence of detailed modelling; this is something we can't complete for you. If you wish to examine any individual sites in greater detail, you may need to come back to us for some more data.

#### Comments on Central Lincolnshire's WRC's

We have assessed each of the 26 sites against our most recent flow compliance data. This data is from 2015 and so it will not reflect recently completed developments, or any capacity which will be taken by sites which have permission but are not yet completed.

The following WRC's are the ones where our information indicates that there is insufficient capacity in the headroom, on the existing permit, when considering the indicative number of dwellings. For these sites, permit variations and additional

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capacity/improved treatment may be required in order for development to take place in order to protect water quality. Permit limits may need to be tightened in order to achieve the WFD requirements for 'no deterioration':

- Billingham;
- Caistor;
- Canwick;
- Market Rasen;
- Metheringham;
- Sleaford;
- South Hykeham;
- Washingborough.

AW may be able to provide more up to date flow information for WRCs, as well as information on capacity in the sewerage network. Please note that both Nocton and Faldingworth are small WRC's for which we have no available flow data for 2015. We strongly recommend that you contact AW for information on potential capacity issues.

The information below summarises the information on WFD classification, relevant to each WRC. In some cases there are water quality concerns where water quality downstream fails to meet WFD requirements for Good Ecological Status/Potential (although other factors will also influence this). There is a potential that permit limits may need to be varied in future to fulfil requirements for 'no deterioration' and move towards Good Ecological status. Even where there is sufficient permit head room, there may be potential for increased development to impact water quality.

- Anwick:  
Water body: Farroway Drain (GB105030056140)  
Water body status: Phosphate Moderate, Ammonia Good  
Downstream point (ANWK3): Phosphate Moderate, Ammonia Moderate
- Bardney:  
Water body: Witham 1st and 3rd IDBs draining to the River Witham (GB205030062425)  
Water body status: Phosphate Moderate, Ammonia Good  
Downstream point (WITHK): Phosphate Mod, Ammonia High
- Bassingham:  
Water body: Witham - conf Cringle Bk to conf Brant (GB105030056780)  
Water body Status: Phosphate Moderate, Ammonia High  
Downstream point (WITHC): Phosphate Poor, Ammonia High
- Billingham:  
Witham 1st and 3rd IDBs draining to the River Witham (GB205030062425)  
Water body status: Phosphate Moderate, Ammonia Good  
Downstream point (WITHK): Phosphate Mod, Ammonia High
- Caistor:  
Caistor Canal Catchment (trib of Ancholme) (GB104029061920)  
Water body Status: Phosphate Moderate, Ammonia Good  
Downstream point (CAIC1): Phosphate Moderate, Ammonia High
- Canwick:

*Note: Permit limits recently tightened (March 2015). Ammonia now 3mg/l (95%ile, previously 15mg/l). BOD now 10mg/l (95%ile, previously 15mg/l). WFD classification information uses a three year period, so downstream impacts of this change may not yet be seen in downstream water quality data*

Water body: Witham 1st and 3rd IDBs draining to the River Witham (GB205030062425)

Water body status: Phosphate Moderate, Ammonia Good

Downstream point (SIND4): Phosphate Poor, Ammonia Poor

- Dunholme:

Water body: Barlings Eau (GB105030062290)

Water Body status: Phosphate Poor, Ammonia High

Downstream point (BARE2): Phosphate Poor, Ammonia High

- Faldingworth:

Water body: Legsby Beck (GB105030062330)

Water Body Status: Phosphate Poor, Ammonia High

Downstream point (LEGSBECK): Phosphate Poor, Ammonia High

- Heckington:

Water body: Black Sluice IDB draining to the South Forty Foot Drain (GB205030051515)

Water body status: Phosphate Moderate, Ammonia Good

Downstream point SFFT1: Phosphate Poor, Ammonia High

- Hemswell RAF:

Water body: Black Dyke (trib of Ancholme) (GB104029061890)

Water Body Status: Phosphate Good, Ammonia High

Downstream point (BLACKDYK): Phosphate Good, Ammonia High

*Please note although records show there is currently capacity for proposed development, be aware that there is potential for commercial development under proposed Hemswell Cliff Food Enterprise Zone (FEZ) Local Development Order (LDO) which may impact sewerage infrastructure capacity in future.*

- Hibaldstow:

Water body: Ancholme from Bishopbridge to the Humber (GB104029067520)

Water body status: Phosphate Moderate, Ammonia High

Downstream point (ANCOC): Phosphate Moderate, Ammonia High

- Keelby

Water body: North Beck Drain (GB104029067575)

No Data available

- Market Rasen:

Water body: Rase from Market Rasen to Bishopbridge (GB104029061870)

Water Body Status: Phosphate Poor, Ammonia High

Downstream point (RASE4): Phosphate Poor, Ammonia High

- Metheringham:

Water body: Metheringham Beck (GB105030056210)

Water body: No current classification data

Downstream point (METHBKDS): Ammonia High, Phosphate Poor

- Navenby:

Water body: Brant - Lower (GB105030056770)  
Water Body: Phosphate Poor, Ammonia Good  
Downstream point (BRAN1): Phosphate Poor, Ammonia Good

- Nettleham:  
*Note: Permit limits recently tightened (March 2015). Ammonia now 4mg/l (95%ile, previously 5mg/l). BOD now 10mg/l (95%ile, previously 15mg/l). WFD classification information uses a three year period, so downstream impacts of this change may not yet be seen in downstream water quality data.*  
Nettleham Beck (GB105030062210)  
Water Body: Phosphate Poor, Ammonia Good  
Downstream point (NETB1): Phosphate Poor, Ammonia Good
- North Hykeham:  
Water body: Witham - conf Brant to conf Catchwater Drain (GB105030062370)  
Water body Status: Ammonia High, Phosphate Poor  
Downstream point (WITHD): Ammonia High, Phosphate Poor
- Reepham:  
Water body: Barlings Eau (GB105030062290)  
Water body Status: Ammonia High, Phosphate Poor  
Downstream point (BARE8): Ammonia High, Phosphate Poor
- Skellingthorpe:  
Water body: Skellingthorpe Main Drain (GB105030062390)  
Water body status: Ammonia High, Phosphate High  
Downstream point (LKS19): Ammonia Bad, Phosphate Poor
- Sleaford:  
Water body: Sleas (GB105030056670)  
Water body status: Ammonia High, Phosphate High  
Downstream point (SLEA5) Ammonia Good, Phosphate Poor
- South Hykeham:  
Water body: South Hykeham Catchwater (GB105030062460)  
Water body status: Ammonia Good, Phosphate Moderate  
Downstream point (WITH13) Ammonia High, Phosphate Poor
- Swinderby:  
*Note: Permit limits recently tightened (March 2015). Ammonia now 3mg/l (95%ile, previously 15mg/l). BOD now 12mg/l (95%ile, previously 20mg/l), suspended solids now 24mg/l (95%ile, previously 40). WFD classification information uses a three year period, so downstream impacts of this change may not yet be seen in downstream water quality data.*
- Witham - conf Cringle Bk to conf Brant (GB105030056780):  
Water body status: Ammonia High, Phosphate Moderate  
Downstream point (WITHC): Ammonia High, Phosphate Poor
- Washingborough:  
Sandhill Beck (GB105030062415)  
Water body status: No current Data

Should you require any additional information, or wish to discuss these matters further, please do not hesitate to contact me on the number below.

Yours faithfully

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# BWB

