ESSEX&SUFFOLK WATER *living water*

DROUGHT PLAN APPENDIX

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DROUGHT PLAN
APPENDIX

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APPENDIX A:

SUMMARY OF LEGAL REQUIREMENTS

A.1 Drought Related Legislation and Provisions

This section details the legal aspects of drought, the duties of the water undertakers during a drought and the powers that can be granted through provisions of the Water Resources Act (WRA) amended by the Environment Act 1995).

Table 1 details drought provisions and their location in the WRA.

Table 1: Drought provisions and their Location in the WRA

Provision	Location
Power to make ordinary/emergency drought order	Section 73 – WRA
Provisions and duration of ordinary drought order actions	Section 74 – WRA
Provisions and duration of emergency drought order under	Section 75 – WRA
Provisions of drought order restricting use of water	Section 36 - Flood and Water Management Act 2010 Water Use (Temporary Bans) Order 2010
Provisions of drought order with respect to abstractions and discharges	Section 77 – WRA
Works under drought order	Section 78 – WRA
Compensation and charges where drought order made	Section 79 and Sch. 9 – WRA
Drought permit actions	Section 79a – WRA (Amended in sch. 22 para 140 – EA)
Offences against drought order	Section 80 – WRA

A.2 Types of Drought Provision

Drought provisions may be in the form of an ordinary drought order, a drought permit or an emergency drought order. While both a drought order and a drought permit enable more water resources to be made available to the abstractor, drought orders also give water companies powers to restrict supplies to their customers. The Agency has advised ESW that a drought permit should be considered before a drought order.

The Agency's Drought Plan Guideline indicates that:

- the Agency will only consider a drought permit or drought order application once a water company has demonstrated that it has put in place significant additional demand management measures prior to an application being made. The measures include appeals for constraint and temporary use bans (TUBS).

- in broad terms the more environmentally damaging the predicted impact on the water environment of a particular drought action, the more stringent would be the measures sought to reduce demands on water resources.

- Agency policy is not to grant requests for drought permits or drought orders where the possible need for an application and any associated mitigation measures has not previously been identified in the Company's agreed drought plan.

- demand reductions could only be avoided as a precursor to a drought action where no significant environmental impacts could be demonstrated.

- where environmental problems exist or are threatened due to an exceptional shortage of rain, the Agency may seek to restrict abstractions by water companies, if not voluntarily then by the Agency applying for a drought order.

- where the Agency take the view that a water company should have applied for a drought order to make additional water resources available, but have not done so, then the Agency will make its own application where the absence of a drought order would create a significant risk of a more environmentally damaging drought order being required in the future.

A.2.1 Drought Permits

A drought permit may be defined as,

"…the mechanism by which the EA (with consent of the local Navigation Authority, if applicable) permits a water company to abstract water outside the normal terms of an abstraction licence".

Section 79a (2) of the WRA 1991 (as amended in the EA 1995 sch. 22 para 140) makes provisions for Drought Permits. Where the Agency is satisfied that an exceptional shortage of rain has or may result in a serious deficiency of supplies of water, it may issue a drought permit with a view to meeting the deficiency.

A drought permit may contain any of the following provisions:

- To take water from any source specified in the drought permit subject to any conditions or restrictions specified;
- To suspend or modify any restrictions or obligations the water undertaker is subject to as respects the taking of water, according to any conditions or restrictions specified

Where a permit affects inland navigation, consent must be obtained from the appropriate navigation authorities,

A drought permit expires six months after the permit came into force although may be extended to a maximum of one year.

A.2.2 Ordinary Drought Orders

Ordinary drought orders may be defined as,

"…a means whereby water companies and/or the EA can apply to the Secretary(ies) of State for the imposition of restrictions in the uses of water and/or which allows for the abstraction of water outside of the existing licence conditions".

Ordinary Drought orders are detailed in section 74 (2) of the WRA 1991. Water undertakers may apply for an ordinary drought order containing any of the following provisions:

- To abstract water from any source specified in the order, subject to any conditions or restrictions
- To prohibit or limit the use of water for any purpose specified in the order
- To discharge water to any place specified in the order subject to any conditions or restrictions
- To prohibit or limit the taking of water by any person (including the EA) from a source specified in the order, if this taking of water affects available supplies to the water undertaker
- To suspend or modify restrictions or obligations to which the water undertaker is subject regarding taking, discharging, supplying (whether concerning quantity, pressure, quality, means of supply or otherwise) or filtering/treating water
- To suspend, vary or attach conditions to any consent issued for the discharge of effluent by any person, including the company, which applied for the order.

An ordinary drought order expires six months after the order came into force unless extended to a maximum of one year by the Secretary of State.

Provision of Drought Order with Respect to Abstraction and Discharges

A drought order which,

- authorises the taking of water from a source which supplies water to an inland navigation;
- suspends or modifies a restriction on taking water from a source which supplies water to an inland navigation; or
- suspends or modifies an obligation to discharge compensation water into a canal, river or stream which forms part of, or which supplies water to an inland navigation,

may include provision for prohibiting or limiting the taking of water from the inland navigation.

A.2.3 Emergency Drought Orders

Section 75 (2) of the WRA 1991 makes provisions for emergency drought orders. Water undertakers are granted powers to:

- implement any of the provisions available under ordinary drought order applications, except to prohibit or limit the use of water for any purpose specified in the order;
- prohibit or limit the use of water for such purposes as the water undertaker thinks fit (including rota cut restrictions); and
- supply water by means of stand-pipes or water tanks.

Quality aspects are an important element of the Drought Order process. The Drinking Water Inspectorate (DWI) must be consulted prior to seeking an emergency drought order. Water quality issues must be addressed when commissioning new or recommissioning previous sources and when applying for an emergency drought order.

An emergency drought order expires three months after the day the order came into force, unless extended by the Secretary of State to 5 months.

A.2.4 Temporary Use Bans

Temporary bans on water use, as provided for in Section 76 of the *Water Industry Act 1991* (WIA) has been amended by Section 36 of the *Flood and Water Management Act 2010*. From this Act the *Water Use (Temporary Bans) Order 2010* and the *Drought Direction 2011* were enacted and this legislation is used to define our proposed temporary restrictions on the use of water during droughts.

The new legislation allows a company to impose restrictions ranging from whole company area down to part of a Water Resource Zone and also allows more phasing in of restrictions than was previously allowed.

A.2.5 Bulk Transfers

Agreement could be reached between water companies relating to the provision of temporary bulk transfers or temporary increases/decreases in existing bulk transfers for the overall benefit of customers, in the event of a significant drought. In the absence of such an agreement, Section 40 of the Water Industry Act 1991 (as substituted by Section 44 of the Competition and Service (Utilities) Act 1992) enables the Director General of Water Services, on application of a water undertaker, to make an order requiring another water undertaker to give a bulk supply of raw or treated water to the applicant on whatever terms and conditions are specified in the order. Agreement from the Agency is also required.

APPENDIX B:

DROUGHT OPTION SUMMARY FORMS (INC. ENVIRONMENTAL ASSESSMENT SUMMARY)

Drought Action Environmental Assessment Summary

	Essex WRZ: Increased abstraction from SAGS (drought order)	**Essex WRZ:** Increased bulk transfers from Thames Water Utilities (by agreement)	**Essex WRZ:** Cessation of Compensation flow from Hanningfield Reservoir into Sandon Brook	**Hartismere WRZ:** Reduce/stop compensation flows from Wortham borehole	**Hartismere WRZ:** Increase restricting annual quantity on Redgrave Group licence	**Hartismere WRZ:** Increase restricting annual quantity on Bedingfield licence	**Hartismere WRZ:** Merge Bedingfield and Redgrave Group Licences	**Blyth WRZ:** Increase restricting daily quantity on Saxmundham licence	**Blyth WRZ:** Cessation of compensation flows from Coldfair Green	**Northern / Central WRZ:** Increase annual licence and April to Oct quantities on Lound licence	**Northern / Central WRZ:** Increase restricting annual quantity on Ormesby / Bure licence
Likelihood of Action Use	Exceptional (extreme drought scenario)	Infrequent (not likely to occur within several decades)	Exceptional (extreme drought scenario)	Exceptional (extreme drought scenario)	Infrequent (not likely to occur within several decades)	Infrequent (not likely to occur within several decades)	Infrequent (not likely to occur within several decades)	Infrequent (not likely to occur within several decades)	Infrequent (not likely to occur within several decades)	Infrequent (not likely to occur within several decades)	Infrequent (not likely to occur within several decades)
Risk to the Environment	Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low	Low to Moderate
Summary of possible Environmental Impacts	Potential changes in river level and flow (River Stour), depletion of groundwater. Effects on local ponds and tributaries.	None (Assumes Thames has water available)	Potential reduced water level and flow in Sandon Brook. Potential to effect fish, invertebrates and aquatic habitats	Potential reduced flows and levels in Hall Farm Meadow, Hall Farm stream and Hall Farm pond. Potential reduced DO - effect on fish and the wider environment.	Potential reduced flows and levels in Rivers Dove, Waveney, Deben, Gipping. Depletion of groundwater. Potential effects on Redgrave & Lopham Fen	Potential reduced baseflows to and level/flows in River Waveney. River Done & River Deben. Depletion of groundwater.	Potential reduced flows and levels in Rivers Dove, Waveney, Deben, Gipping. Depletion of groundwater. Potential effects on Redgrave & Lopham Fen	Potential reduced baseflows to and level/flows in Rivers Alde, Fromus. Potential effects on Gromford Meadow SSSI, Cransford Meadow SSSI – ponds	Potential reduction of levels and flows in Hundred River, Leiston Stream, River Alde. Increased potential for saline incursion in the Crag aquifer	Potential reduction in water levels in Lound Ponds and Fritton Lake. No significant adverse effects envisaged.	Potential reduced River Bure flow could allow the saline interface to travel further upstream
Details of studies Undertaken & required	Groundwater monitoring	Previous experience	River flow and water quality monitoring	Water level and water quality monitoring.	Groundwater level, river flow and water quality monitoring.	Groundwater level, river flow and water quality monitoring.	Groundwater level, river flow and water quality monitoring.	Groundwater level, river flow and water quality monitoring.	Groundwater level, river flow and water quality monitoring.	Groundwater level, river flow and water quality monitoring.	Groundwater level, river flow and water quality monitoring.
Summary of Additional Monitoring Requirements	None	None	None	Level datalogger in Hall Farm Meadow BH & Pond, pond invert survey	Level datalogger in Hall Farm Meadow BH & Pond, pond invert survey	Level datalogger in Hall Farm Meadow BH & Pond, pond invert survey	None	None	None	None	None
Mitigation Measures	To be discussed with Environment Agency prior to application	None	Aeration else with draw drought action	Aeration else with draw drought action	Additional water would not be from Wortham thus no effect on Redgrave Fen SSSI. Aeration of surface water bodies else withdrawal of drought action	Potential for aeration of surface water bodies else withdrawal of drought action.	Additional water would not be from Wortham thus no effect on Redgrave Fen SSSI. Aeration of surface water bodies else withdrawal of drought action	Potential for aeration of surface water bodies else withdrawal of drought action.	Potential for aeration of surface water bodies else withdrawal of drought action.	Withdrawal of drought action if monitoring indicated significant adverse effect on the environment.	If monitoring indicated movement of the saline interface, the drought action would be withdrawn.
Impact on Other Activities	Minimal.	None	None	Amenity value of ponds	Other abstractors	Other abstractors	Other abstractors	Other abstractors	Other abstractors	Amenity / recreation value at Fritton Lake.	Recreation, navigation and amenity value.

Demand Side Drought Actions

OPTION NAME	CATEGORY 1 DEMAND RESTRICTION: APPEALS FOR RESTRAINT
Trigger(s) Or preceding actions	Resource and demand situation. Essex reservoir control curves and probability matrices. Suffolk groundwater, river and lake levels.
Demand Saving or DO of Option (Mld)[1]	Approx. 0 to 7% of peak week demand.
Location	By Water Resource Zone
Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: - 1 week to implement campaign Most effective during hot weather (late Spring and summer)
Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	None required – at water company discretion.
Risks associated with option	Customers may not respond positively depending on what the messages are and how they are phrased. Careful management required (see Communications Plan).

OPTION NAME	TEMPORARY USE BAN
Trigger(s) Or preceding actions	Category 2 Demand Restrictions
Demand Saving or DO of Option (Mld)	0 to 5 % of peak summer demand.
Location	By Water Resource Zone
Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: - 2 weeks to place adverts in newspaper and plan media communication; followed by - 3 weeks for representation after publishing on ESW's website
Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	None but liaison with EA, CCW and Defra would take place.
Risks associated with option	Customers already sufficiently water-wise that few water savings will result.

OPTION NAME	DROUGHT ORDER
Trigger(s) Or preceding actions	Category 3 Demand Restrictions
Demand Saving or DO of Option (Mld)	O to 2%
Location	By Water Resource Zone
Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: - 2 months to finalise drought order application and determination, communication with public, time to place adverts in newspaper and send prohibition notices. Maximum duration 3 months before extension required.
Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Emergency Drought Order Secretary of State Liaison with EA, CCW and Defra required.
Risks associated with option	Negative impact on affected businesses.

Supply Side Drought Actions

OPTION NAME		INCREASE THE STOUR AUGMENTATION GROUNDWATER SCHEME (SAGS) LICENSED QUANTITY BY 10%
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Exceptional (extreme drought scenario) worse than 1933/34 (Essex design drought year)
	Trigger(s) Or preceding actions	Essex reservoir trigger levels and demand situation.
	Demand Saving or DO of Option (Mld)	Highly variable range. 30 to 50 Ml/d plus losses
	Location	Essex Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 1 to 2 months – time for drought order application and determination. Secretary of State Determination: A decision will normally be made within 28 calendar days from date of application.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Order Secretary of State Liaison with Environment Agency & Natural England.
	Risks associated with option	Perceived and potentially actual negative impacts on environment.
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Moderate
	Summary of possible Environmental Impacts	Changes in river level and flow (River Stour), depletion of groundwater. Effects on local ponds and tributaries. Potential theoretical effects on Glemsford Pits SSSI and Brent Eleigh Woods SSSI.
	Details of studies Undertaken & required	Groundwater monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	To be discussed with Environment Agency prior to application.
	Impact on Other Activities e.g. Public, Industry etc	Minimal.

OPTION NAME		INCREASED BULK TRANSFERS FROM THAMES WATER UTILITIES (BY AGREEMENT)
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Infrequent (not likely to occur within several decades)
	Trigger(s) Or preceding actions	Essex reservoir trigger levels and demand situation.
	Demand Saving or DO of Option (Mld)	Up to 27 Ml/d (peak) dependent on TWU position and availability.
	Location	Essex Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 1 week.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Agreement with Thames Water required. Constraints include system constraints and WTW capacity at Chigwell WTW.
	Risks associated with option	Additional quantities not guaranteed to be available and may be highly variable
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low (assumes TWU in non-drought situation)
	Summary of possible Environmental Impacts	N/A
	Details of studies Undertaken & required	None
	Summary of Additional Monitoring Requirements	None
	Mitigation Measures	None
	Impact on Other Activities e.g. Public, Industry etc	None.

	OPTION NAME	REDUCTION OF COMPENSATION FLOW FROM HANNINGFIELD RESERVOIR INTO SANDON BROOK
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Exceptional (extreme drought scenario) worse than 1933/34 (Essex design drought year)
	Trigger(s) Or preceding actions	Essex reservoir trigger levels and demand situation.
	Demand Saving or DO of Option (Mld)[(1)]	Up to 0.9 Ml/d peak.
	Location	Essex Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 2 months – time for drought permit/order application and determination, and communication with public. EA determination: Normally within 12 calendar days from date of application When there is a hearing, a decision will normally be made within seven calendar days of the receipt of the hearing report.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Permit Environment Agency
	Risks associated with option	Potential negative publicity if the compensation discharge is NOT stopped (e.g. why release water from the reservoir when there is a drought on?).
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low to moderate
	Likelihood of Action Use Regular / Infrequent / Exceptional	Infrequent (not likely to occur within several decades)
	Summary of possible Environmental Impacts	Reduced water level and flow in Sandon Brook. Potential to effect fish, invertebrates and aquatic habitats
	Details of studies Undertaken & required	River flow and water quality monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	Aeration else with draw drought action.
	Impact on Other Activities e.g. Public, Industry etc	None.

OPTION NAME		REDUCE COMPENSATION FLOW FROM WORTHAM BOREHOLE
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Exceptional (extreme drought scenario)
	Trigger(s) Or preceding actions	Resource and demand situation. Chalk groundwater level information.
	Demand Saving or DO of Option (Mld)[(1)]	Up to 0.69 Ml/d (peak)
	Location	Hartismere Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 1 to 2 months – time for drought permit/order application and determination, and communication with public. EA determination: Normally within 12 calendar days from date of application When there is a hearing, a decision will normally be made within seven calendar days of the receipt of the hearing report.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Permit or Drought Order Environment Agency or Secretary of State Liaison with Suffolk Wildlife Trust, and Natural England required
	Risks associated with option	Cannot be done in conjunction with some elements of Redgrave emergency use drought measure due to limit of WTW capacity at Redgrave.
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low to moderate
	Summary of possible Environmental Impacts	Reduced flows and levels in Hall Farm Meadow, Hall Farm stream and Hall Farm pond. Potential reduced DO which could impact on fish and the wider aquatic environment.
	Details of studies Undertaken & required	Water level and water quality monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	Aeration else with draw drought action.
	Impact on Other Activities e.g. Public, Industry etc	Amenity value of ponds.

OPTION NAME		INCREASE ANNUAL QUANTITY ON REDGRAVE GROUP LICENCE
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Infrequent (not likely to occur within several decades)
	Trigger(s) Or preceding actions	Local supply and demand situation, and water resource situation.
	Demand Saving or DO of Option (Mld)	Up to 1.40 Ml/d (average). Peaks (ie daily quantities for each source unchanged).
	Location	Hartismere Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 1 to 2 months – time for drought permit/order application and determination, and communication with public. EA determination: Normally within 12 calendar days from date of application When there is a hearing, a decision will normally be made within seven calendar days of the receipt of the hearing report.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Permit or Drought Order Environment Agency or Secretary of State Liaison with Suffolk Wildlife Trust and Natural England required.
	Risks associated with option	Sustainability of increased abstraction as use increases.
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low to Moderate
	Summary of possible Environmental Impacts	Reduced flows and levels in Rivers Dove, Waveney, Deben, Gipping. Depletion of groundwater. Potential effects on Redgrave & Lopham Fen SSSI & Ramsar
	Details of studies Undertaken & required	Groundwater level, river flow and water quality monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	Additional water would not be abstracted at Wortham and so would not effect Redgrave Fen SSSI. Potential for aeration of surface water bodies else withdrawal of drought action.
	Impact on Other Activities e.g. Public, Industry etc	Other abstractors.

OPTION NAME		INCREASE ANNUAL QUANTITY ON BEDINGFIELD LICENCE
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Infrequent (not likely to occur within several decades)
	Trigger(s) Or preceding actions	Local supply and demand situation, and water resource situation.
	Demand Saving or DO of Option (Mld)	Up to 0.82 Ml/d (average). Daily licence unchanged.
	Location	Hartismere Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 1 to 2 months – time for drought permit/order application and determination, and communication with public. EA determination: Normally within 12 calendar days from date of application When there is a hearing, a decision will normally be made within seven calendar days of the receipt of the hearing report.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Permit or Drought Order Environment Agency or Secretary of State.
	Risks associated with option	Long term sustainability of abstraction.
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low to Moderate
	Summary of possible Environmental Impacts	Reduced baseflows to and level/flows in River Waveney. River Done & River Deben. Depletion of groundwater.
	Details of studies Undertaken & required	Groundwater level, river flow and water quality monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	Potential for aeration of surface water bodies else withdrawal of drought action.
	Impact on Other Activities e.g. Public, Industry etc	Other abstractors.

OPTION NAME		INCREASE ANNUAL QUANTITY ON SAXMUNDHAM LICENCE
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Infrequent (not likely to occur within several decades)
	Trigger(s) Or preceding actions	Local supply and demand situation, and water resource situation.
	Demand Saving or DO of Option (Mld)[(1)]	Up to 1.24 Ml/d (average). Up to 0.3 Ml/d (peak) for Saxmundham only.
	Location	Blyth Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 1 to 2 months – time for drought permit/order application and determination, and communication with public. EA determination: Normally within 12 calendar days from date of application When there is a hearing, a decision will normally be made within seven calendar days of the receipt of the hearing report.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Permit or Drought Order Environment Agency or Secretary of State.
	Risks associated with option	Long term sustainability of abstraction.
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low to Moderate
	Summary of possible Environmental Impacts	Reduced baseflows to and level/flows in Rivers Alde, Fromus. Depletion of groundwater. Potential effects on Gromford Meadow SSSI, Cransford Meadow SSSI – ponds, meadows and marshland plants.
	Details of studies Undertaken & required	Groundwater level, river flow and water quality monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	Potential for aeration of surface water bodies else withdrawal of drought action.
	Impact on Other Activities e.g. Public, Industry etc	Other abstractors.

OPTION NAME		REDUCE COMPENSATION DISCHARGE FLOW RATES OR INCREASE COLDFAIR GREEN AND LEISTON BOREHOLES LICENSED QUANTITIES
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Infrequent (not likely to occur within several decades)
	Trigger(s) Or preceding actions	Local supply and demand situation, water level information from Crag aquifer.
	Demand Saving or DO of Option (Mld)	Up to 3.0 Ml/d (peak)
	Location	Blyth Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 1 to 2 months – time for drought permit/order application and determination, and communication with public. EA determination: Normally within 12 calendar days from date of application When there is a hearing, a decision will normally be made within seven calendar days of the receipt of the hearing report.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Permit Environment Agency
	Risks associated with option	Long term sustainability of abstraction.
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low to Moderate
	Summary of possible Environmental Impacts	Reduction of levels and flows (effects on aquatic flora/fauna) in Hundred River, Leiston Stream, River Alde. Potential effects on North Warren grazing marshes, Leiston-Aldeburgh SSSI. Thorpeness Marshes and Sizewell Marshes) mere and wet meadow habitats). Increased potential for saline incursion in the Crag aquifer.
	Details of studies Undertaken & required	Groundwater level, river flow and water quality monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	Potential for aeration of surface water bodies else withdrawal of drought action.
	Impact on Other Activities e.g. Public, Industry etc	Other abstractors.

OPTION NAME		INCREASE ANNUAL LICENCE QUANTITIES ON LOUND LICENCE
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Infrequent (not likely to occur within several decades)
	Trigger(s) Or preceding actions	Local supply and demand situation.
	Demand Saving or DO of Option (Mld)	0.81 Ml/d (average). Maximum daily quantities unchanged.
	Location	Northern Central Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	From DMG approving drought action: 1 to 2 months – time for drought permit/order application and determination, and communication with public. EA determination: Normally within 12 calendar days from date of application When there is a hearing, a decision will normally be made within seven calendar days of the receipt of the hearing report.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Permit or Drought Order Environment Agency or Secretary of State.
	Risks associated with option	Long term sustainability of abstraction.
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low
	Summary of possible Environmental Impacts	Reduction in water levels in Lound Ponds and Fritton Lake. However, no significant adverse effect on water quality and species envisaged as sufficient water depth would always be maintained given bed level of Lound Run Channel (connects Fritton Lake with Lound Run Lake)
	Details of studies Undertaken & required	Groundwater level, river flow and water quality monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	Withdrawal of drought action if monitoring indicated significant adverse effect on the environment.
	Impact on Other Activities e.g. Public, Industry etc	Amenity/recreation value at Fritton Lake.

OPTION NAME		INCREASE ANNUAL LICENSED QUANTITY ON ORMESBY/BURE LICENCE
Option Implementation Assessment	**Likelihood of Action Use** Regular / Infrequent / Exceptional	Exceptional (extreme drought scenario)
	Trigger(s) Or preceding actions	Local supply and demand situation.
	Demand Saving or DO of Option (Mld)	1.4 Ml/d (average) No change to daily licensed quantities.
	Location	Northern Central Water Resource Zone
	Implementation Timetable Preparation time, time of year effective, duration	1 to 2 months – time for drought permit/order application and determination, and communication with public. EA determination: Normally within 12 calendar days from date of application When there is a hearing, a decision will normally be made within seven calendar days of the receipt of the hearing report.
	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	Drought Permit or Drought Order Environment Agency or Secretary of State. Liaison with Natural England and other groups necessary.
	Risks associated with option	Long term sustainability of abstraction.
Environmental Assessment	**Risk to the Environment** (High / Significant / Moderate / Low or unknown)	Low to Moderate (Water would be taken from the River Bure which can accommodate additional abstraction)
	Summary of possible Environmental Impacts	Reduced flow could allow the saline interface to travel further upstream
	Details of studies Undertaken & required	Groundwater level, river flow and water quality monitoring. Also see drought action environmental report.
	Summary of Additional Monitoring Requirements	See Environmental Monitoring Plan in Appendix C below.
	Mitigation Measures	If monitoring indicated movement of the saline interface, the drought action would be withdrawn.
	Impact on Other Activities e.g. Public, Industry etc	Recreation, navigation and amenity value.

APPENDIX C:

SUPPLY SIDE DROUGHT ACTION ENVIRONMENTAL MONITORING PLANS

Table 1: Bedingfield Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Redgrave WTW Bedingfield WTW	Ongoing Daily 3/week	ESW	✓	None	✓	None	✓	None	✓	None
Chalk & Crag Groundwater	Level		Bedingfield Monitoring Borehole Hand Pump, Dublin Hand Pump, Bedingfield Suddon Hall Borehole Mill House Well Bucks Green Farm Well WAVOBS 16 WAVOBS 17 Drill Site - Rishangles Triangle	Ongoing 15min	ESW	✓	None	✓	None	✓	None	✓	None
Crag Aquifer	Level		Bedingfield Borehole	Ongoing 15min	ESW	✓	None	✓	None	✓	None	✓	None
Crag Aquifer	Water Quality		Bedingfield Borehole: O, NH_4, Mn, Fe, Plates, B1 pH, Cond, App, Fstrep, Clost, Crypto, F, Cl, NO_2, NO_3, P, SO_4, SiO_2, TH, Alk, NCH, pp, NA, K, Ca, Mg, Turb	Ongoing Monthly Annual	ESW	✓	None	✓	None	✓	None	✓	None
Groundwater (Various)	Level		TM16/7462 Gulls Farm OBH TM16/7464 Gulls Farm Piezometer TM17/507 Public Well TM17/507A OBH TM26/169A Bedfield TM26/169B Bedfield WAVOBS 11, Kerrison School WAVOBS 15, Occold Hill WAVOBS 16, Bedingfield Road WAVOBS 17, Denham Green	Ongoing Monthly	EA	✓	None	✓	None	✓	None	✓	None

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
River Deben	Level		Debenham	Ongoing 15min	EA	✓	None	✓	None	✓	None	✓	None
River Deben	Flow		Spot Stream Gauging: Various Points	Ongoing Monthly	ESW	✓	None	✓	None	X	Increase frequency to weekly	X	Increase frequency to weekly

Table 2: Saxmundham Boreholes Drought Action Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall	-	Benhall WTW	Ongoing: Daily	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	GW Level	GW73-GW74	Saxmundham Borehole	Ongoing: 15min	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Water Quality	GW73 & GW74	Saxmundham Boreholes: Cl, O, NH_4, Mn, Fe, Plates, B1, pH, Cond, App, Fstrep, Clost, Crypto, F, NO_2, NO_3, P, SO_4, SiO_2, TH, Alk, NCH, pp, NA, K, Ca, Mg, Turb	Ongoing: Weekly Monthly Annual	ESW	✓	None	✓	None	✓	None	✓	None
Gromford Meadows SSSI	GW Level	GW104	Groundwater Level / Onsite dip well	Ongoing: 60min	ESW	✓	None	✓	None	✓	None	✓	None
River Alde	Flow & Level	SW7	Farnham	Ongoing: 15min	EA	✓	None	✓	None	✓	None	✓	None
River Alde	Flow	FG19-FG21	Spot flows @ 3 locations	Ongoing: Monthly	ESW	✓	None	✓	None	X	Increase freq. to weekly	X	Increase freq. to weekly
River Fromus	Flow	FG4-FG9	Spot flows @ 3 locations	Ongoing: Monthly	ESW	✓	None	✓	None	X	Increase freq. to weekly	X	Increase freq. to weekly
River Fromus	Flow	SW1 & 19	Saxmundham & Benhall	Ongoing: 15min	EA	✓	None	✓	None	✓	None	✓	None
River Fromus	Water Quality	WQ104	Gromford Meadows	Monthly	EA	✓	None	✓	None	✓	None	✓	None
River Fromus	Dissolved Oxygen	FG19-FG21	At spot gauging points	Monthly	ESW	✓	None	✓	None	X	Increase freq. to weekly	X	Increase freq. to weekly
River Ore	Flow	SW2	Beversham Bridge	15min	EA	✓	None	✓	None	✓	None	✓	None

Table 3: Benhall Boreholes Drought Action Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Benhall WTW	Ongoing: Daily	ESW	✓	None	✓	None	✓	None	✓	None
Crag Aquifer	Ground-water Level		ESW Benhall Boreholes 1, 2 and 3	Ongoing: 15min	ESW	✓	None	✓	None	✓	None	✓	None
Crag Aquifer	Water Quality		Benhall Boreholes: O, NH_4, Mn, Fe, Plates, B1 pH, Cond, App, Fstrep, Clost, Crypto, F, Cl, NO_2, NO_3, P, SO_4, SiO_2, TH, Alk, NCH, pp, NA, K, Ca, Mg, Turb	Ongoing: Monthly Annually	ESW	✓	None	✓	None	✓	None	✓	None
River Alde	Surface Water Level		35003 at Farnham	Ongoing:	EA	✓	None	✓	None	✓	None	✓	None
River Alde	Flow		Spot stream gauging adjacent and downstream of Benhall Treatment Works for calibration against EA's Farnham Gauging Station	Monthly	ESW	✓	None	✓	None	X	Increase frequency to weekly	X	Increase frequency to weekly

Table 4: Parham Borehole Drought Action Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Benhall WTW	Ongoing: Daily	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Ground-water Level		Parham Borehole	Ongoing: 15min	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Water Quality		Parham Borehole: Monthly: O, NH4, Mn, Fe, Plates, B1 Annually: pH, Cond, App, Fstrep, Clost, Crypto, F, Cl, NO_2, NO_3, P, SO_4, SiO_2, TH, Alk, NCH, pp, NA, K, Ca, Mg, Turb	Ongoing: Monthly Annually	ESW	✓	None	✓	None	✓	None	✓	None
River Alde	Surface Water Level		Farnham	Ongoing: 15min	EA	✓	None	✓	None	✓	None	✓	None
River Ore	Surface Water Level		Beversham	Ongoing: 15min	EA	✓	None	✓	None	✓	None	✓	None

Table 5: River Bure Intake Drought Action Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
Horning Marsh Farm	GW Level		Dip Wells 1 to 4	Was hourly. Now stopped as baseline confirmed and abstraction will not effect groundwater levels as the river is tidal.									
Horning Marsh Farm	SW Level		Horning Marsh Farm Ditch	Was hourly. Now stopped as baseline confirmed and abstraction will not effect river levels as the river is tidal.									
Horning Marsh Farm	Water Quality		Horning Marsh Farm Ditch: Nutrients and chloride	Monthly: Now stopped as baseline confirmed	ESW	✓	None	✓	None	X	Increase frequency to monthly	X	Increase frequency to monthly
Horning Marsh Farm	Water Quality		Horning Marsh Farm Ditch: Conductivity	Hourly: Now stopped as baseline confirmed	ESW	✓	None	✓	None	X	Increase frequency to hourly with logger	X	Increase frequency to hourly with logger
River Bure	Level		Horning Hall Horning Intake; and Belaugh Intake	Was hourly. Now stopped as baseline confirmed and abstraction will not effect river levels as the river is tidal.									
River Bure	Level		Halstead Mill	15min	EA	✓	None	✓	None	✓	None	✓	None
River Bure	Water Quality		Horning Hall Horning Intake; and Belaugh Intake: Nutrients and Chloride	Monthly: Now stopped as baseline confirmed	ESW	✓	None	✓	None	X	Increase frequency to monthly	X	Increase frequency to monthly
River Bure	Water Quality		Horning Hall Horning Intake; and Belaugh Intake: Conductivity	Hourly: Now stopped as baseline confirmed	ESW	✓	None	✓	None	X	Increase frequency to hourly with logger	X	Increase frequency to hourly with logger

Table 6: Coldfair Green Boreholes Drought Action Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Benhall TWs	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Crag Aquifer	Water Quality		ESW Boreholes: Chlorides, temp	Weekly	ESW	✓	None	✓	None	✓	None	✓	None
Crag Aquifer	Water Quality		North Warren OBH, Corporal Belts OBH, Halfway Cottages OBH, Hazelwood Hall OBH: Temperature & Conductivity Logs	Ad-hoc	ESW	✓	None	✓	None	✓	None	✓	None
Groundwater	Groundwater Level		North Warren OBH, Corporal Belts OBH, Halfway Cottages OBH, Hazelwood Hall OBH	Daily Monthly	ESW	✓	None	✓	None	✓	None	✓	None
Hundred River	Surface Water Level		Knodishall	15min	EA	✓	None	✓	None	✓	None	✓	None
Hundred River	Water Quality		BOD & DO	Monthly	ESW	✓	None	✓	None	X	Increase freq. to daily	X	Increase freq. to daily
Hundred River	River Flow		Stream Gauging at 3 locations; adjacent, upstream and downstream of Coldfair Green TW)	Monthly	ESW	✓	None	✓	None	✓	None	✓	None
Hundred River	Flora / Fauna		2006 Macro-invert and vegetation survey	Baseline set	ESW	✓	None	✓	None	X	Repeat macro-invert and vegetation survey	X	Repeat macro-invert and vegetation survey
Leiston Aldeburgh SSSI	Groundwater Level		North Warren Reedbed Dip Well	Baseline set	ESW	✓	None	✓	None	X	Log hourly	X	Log hourly
Leiston Stream	Water Quality		DO & BOD	Monthly	ESW	✓	None	✓	None	X	Increase freq. to daily	X	Increase freq. to daily
Leiston Stream	Flora / Fauna		2006 Macro-invert and vegetation survey	Baseline set	ESW	✓	None	✓	None	X	Repeat macro-invert and vegetation survey	X	Repeat macro-invert and vegetation survey
Sizewell Marshes	Flow		Sizewell Beck Stream Gauging at SSSI inlet and outlet.	Monthly	ESW	✓	None	✓	None	✓	None	✓	None
Sizewell Marshes	Level		Sizewell Beck	Monthly	ESW	✓	None	✓	None	X	Log hourly	X	Log hourly

Table 7: Lound Pond Drought Action Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All Lakes	Water Quality		pH, temp, DO, Cl, NO_2, NO_3, NH_4, P, ChloroA	Bi-weekly	ESW	✓	None	✓	None	X	Increase DO to daily	X	Increase DO to daily
Lound Run	Level		Lound Run	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Lound Run	Water Quality		Lound Run: Algae, NO_3, NO_2, NH_4, P, Colour, Fe, Mn, OD254, Plates, B1, Cond, pH, Turb, Odour, App Chem2, Cl, SO_4, Ca, Mg Na, K, SiO_2, Br, temp, BOD, DO, ChloroA, TRI, URON, CPA, TotPest, TOC, F Quarterly: Al, Cu, Zn, Phen, Fstrep, Salmon, Solvents, OCL As, Sb, Se, Cr, Pb, B, Cd, Ni, Hg, CN, MinOil, Styrene, FOG, PAH	Weekly Monthly Annually	ESW	✓	None	✓	None	✓	None	✓	None
Mill Water	Level		Mill Water	Weekly	ESW	✓	None	✓	None	✓	None	✓	None
Mill Water	Water Quality		Mill Water: Algae, NO_3, NO_2, NH_4, P, Colour, Fe, Mn, OD254, Plates, B1, Cond, pH, Turb, Odour, App Chem2, Cl, SO_4, Ca, Mg Na, K, SiO_2, Br, temp, BOD, DO, ChloroA, TRI, URON, CPA, TotPest, TOC, F Al, Cu, Zn, Phen, Fstrep, Salmon, Solvents, OCL As, Sb, Se, Cr, Pb, B, Cd, Ni, Hg, CN, MinOil, Styrene, FOG, PAH	Weekly Monthly Annually	ESW	✓	None	✓	None	✓	None	✓	None
Middle Water	Level		Middle Water	Weekly	ESW	✓	None	✓	None	✓	None	✓	None
Hopton Ponds 1 to 4	Level		Hopton Ponds 1 to 4	Weekly	ESW	✓	None	✓	None	✓	None	✓	None
Fritton Lake	Level		Fritton Lake	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Crag Aquifer	Ground-		Crag and Sand and Gravel	Monthly	ESW	✓	None	✓	None	✓	None	✓	None

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
	water Level		Observation Borehole										
Crag Aquifer	Water Quality		Crag and Sand and Gravel Observation Borehole pH, temp, DO, Cl, NO_2, NO_3, NH_4, P, ChloroA	Monthly	ESW	✓	None	✓	None	✓	None	✓	None
All	Rainfall		Lound WTW	Daily	ESW	✓	None	✓	None	✓	None	✓	None
All Lakes	Ecological		1994 Ecological survey of Lound Lakes and Meadows 1996 Marginal Vegetation survey of Lound Lakes 1998 Molluscan Fauna survey of Lound Broads 2001 Preliminary Ecological survey of Lound WTW 2002 Botanical survey of Lound Lakes 2003 Crassula survey of Lound Lakes 2004 Crassula Helmsii survey 2005 Terrestrial invertebrates Survey 2005 Aquatic invertebrates survey 2005 Wetland Bird Survey (WeBS counts) 2005 Aquatic plant survey	Baseline set	ESW	✓	None	✓	None	✓	None	✓	None
Fritton Lake	Fish		Fritton Lake Fish Survey	Ad-hoc	EA	✓	None	✓	None	✓	None	✓	None

Table 8: Mendlesham Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Redgrave TW	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Water Quality		Mendlesham Borehole: O, NH4, Mn, Fe, Plates, B1, F pH, Cond, App, Fstrep, Clost, Crypto, Cl, NO_2, NO_3, P, SO_4, SiO_2, TH, Alk, NCH, pp, NA, K, Ca, Mg, Turb	Monthly Annually		✓	None	✓	None	✓	None	✓	None
Groundwater (Various)	Level		Mendlesham Borehole	15min	ESW	✓	None	✓	None	✓	None	✓	None
Groundwater (Various)	Level		TM06/864 Boundary Farm; TM06/9567 The Hollies; TM16/3058 Red House Farm; TM16/5138 Grange Farm; WAVOBS 01, Old station; WAVOBS 04, Public well; WAVOBS 06, The Grange Farm; WAVOBS 09, Brockford Green Road	Monthly	EA	✓	None	✓	None	✓	None	✓	None

Table 9: Eye Monitoring Plan

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Redgrave WTW	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Groundwater Level		Eye Borehole	15min	ESW	✓	None	✓	None	✓	None	✓	None
Groundwater (Various)	Groundwater Level		TM17/268 WAVOBS 10, Great Green; TM17/330 Rook Farm; TM17/507 Public Well; TM17/507A Observation BH; WAVOBS 07, Bulls Hall Farm; WAVOBS 08, Thrandeston Lane; WAVOBS 11, Kerrison School; WAVOBS 12, Allans Farm; WAVOBS 13, Hartismere High School; WAVOBS 14, Mustard Pot Hall; WAVOBS 15, Occold Hill; WAVOBS 17, The Green; WAVOBS 18, Denham Green	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater (Various)	Raw Water Quality		Eye Borehole: B1, EntCocci, Clost O, NH4, Mn, Fe, Plates pH, Cond, App, Fstrep, Clost, Crypto, F, Cl, NO_2, NO_3, P, SO_4, SiO_2, TH, Alk, NCH, pp, NA, K, Ca, Mg, Turb	Weekly Monthly Annually	ESW	✓	None	✓	None	✓	None	✓	None
River Dove	Level / Flow		Oakley Park	15min	EA	✓	None	✓	None	✓	None	✓	None
River Dove	Flow		Spot Stream Gauging at three points	Monthly	ESW	✓	None	✓	None	X	Increase freq. to weekly	X	Increase freq. to weekly
River Waveney	Level / Flow		Needham Mill / Billingford Bridge	15min	EA	✓	None	✓	None	✓	None	✓	None

Table 10: Wortham Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Redgrave TW	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Water Quality		Wortham Borehole: O, NH4, Mn, Fe, Plates, B1, NO3 pH, Cond, App, Fstrep, Clost, Crypto, F, Cl, NO_2, P, SO_4, SiO_2, TH, Alk, NCH, pp, NA, K, Ca, Mg, Turb	Monthly Annually									
Groundwater (Various)	Level		Wortham BH	15min	ESW	✓	None	✓	None	✓	None	✓	None
Hall Farm Meadows	Level		Hall Farm Meadow	None	ESW	X	Need to install Logger	✓	None	✓	None	✓	None
Hall Farm Pond	Level		Hall Farm Pond	15min	ESW	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.
Hall Farm Pond	Macro-invert		Hall Farm Pond	Adhoc	ESW	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.
Hall Farm Stream	Water Quality		Temperature, DO and BOD	None	ESW	✓	None	✓	None	X	Daily	X	Weekly
Redgrave Fen	Level		TM08/500 Low Common Redgrave P1 to P4	Monthly	EA	✓	None	✓	None	✓	None	✓	None

Table 11: Merging Redgrave and Bedingfield Abstraction Licences

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Redgrave Treatment Works	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Chalk & Crag Aquifers	Ground-water Level		WAVOBS 02, Rushgreen WAVOBS 03, Clay street TM08/500 Low Common Blo'Norton Fen piezometers Thelnetham Fen piezometers	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Water Quality		Redgrave South Borehole: O, NH_4, Mn, Fe, Plates, B1, NO_3, pH, Cond, App, Fstrep, Clost, Crypto, F, Cl, NO_2, P, SO_4, SiO_2, TH, Alk, NCH, pp, Na, K, Ca, Mg, Turb	Quarterly	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Ground-water Level		Redgrave and Wortham Boreholes	15min	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Water Quality		Redgrave South Borehole			✓	None	✓	None	✓	None	✓	None
Redgrave & Lopham Fen	Water Level		Spider Pools	Monthly	SWT	✓	None	✓	None	X	Increase freq. to weekly	X	Increase freq. to weekly
Redgrave & Lopham Fen	Ground-water Level		Various Fen Chalk and Drift Piezometers	Monthly	SWT	✓	None	✓	None	X	Increase freq. to weekly	X	Increase freq. to weekly
Redgrave & Lopham Fen	Ground-water Level		Various Fen Chalk and Drift Piezometers	Quarterly	ESW	✓	None	✓	None	✓	None	✓	None
Redgrave & Lopham Fen	Flora / Fauna		Annual Fen Raft Spider	Annual	NE	✓	None	✓	None	✓	None	✓	None
Redgrave & Lopham Fen	Flora / Fauna		NVC / Common Standards Monitoring		NE	✓	None	✓	None	✓	None	✓	None
River Waveney	Water Level		Redgrave and Lang Fen Sluices	Bi-weekly	SWT	✓	None	✓	None	X	Increase freq. to daily	X	Increase freq. to daily

Table 12: Wortham / Hall Farm Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Redgrave Treatment Works	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Chalk	Ground-water Level		Wortham BH	15min	ESW	✓	None	✓	None	✓	None	✓	None
Chalk Aquifer	Water Quality		Wortham Borehole: O, NH4, Mn, Fe, Plates, B1, NO3 pH, Cond, App, Fstrep, Clost, Crypto, F, Cl, NO_2, P, SO_4, SiO_2, TH, Alk, NCH, pp, NA, K, Ca, Mg, Turb	Monthly Annually	ESW	✓	None	✓	None	✓	None	✓	None
Hall Farm Meadows	Ground-water Level		Hall Farm Meadow	Hourly	ESW	X	New to install logger – awaiting permission	X	New to install logger – awaiting permission	X	New to install logger – awaiting permission	X	New to install logger – awaiting permission
Hall Farm Pond	Level		Hall Farm Pond	15min	ESW	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.
Hall Farm Pond	Macro-invert		Hall Farm Pond	None	ESW	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.	X	Not been able to safely access due to livestock. Arrange safe access.
Hall Farm Stream	Water Quality		Temperature, DO and BOD	None	ESW	✓	None	✓	None	X	Daily	X	Weekly

Table 13: Sandon Brook Drought Action Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall		Hanningfield WTW	Daily	ESW	✓	None	✓	None	✓	None	✓	None
Hanningfield Reservoir	Water Level		Hanningfield Reservoir Valve Tower	15min	ESW	✓	None	✓	None	✓	None	✓	None
Hanningfield Reservoir	Water Quality		Turb, Odour, App Algae, NO_3, NO_2, NH_4, P, Colour, Fe, Mn, OD254, Plates, B1, Cond, pH, Biomass TH, Alk, AlkpH8, NCH, Cl, SO_4, Ca, Mg Na, K, SiO_2, Br, temp, BOD, DO, F, TRI, CPA, TotPest, Crypto, TOC, ChloroA Al, Cu, Zn, Phen, Fstrep, Salmon, Solvents, OCL As, Sb, Se, Cr, Pb, B, Cd, Ni, Hg, CN, MinOil, Styrene, FOG, PAH	Daily Weekly Monthly Quarterly Annually	ESW	✓	None	✓	None	✓	None	✓	None
Sandon Brook	Flow		37013 Sandon Bridge	15min	EA	✓	None	✓	None	✓	None	✓	None
Sandon Brook	Flow		ESW Compensation Point Spot stream gauging at (1) ESW compensation discharge point, (2) 1km downstream of (1) and EA gauging station	Baseline set	ESW ESW	✓ ✓	None None	✓ ✓	None None	✓ X	None Increase frequency to weekly	✓ X	None Increase frequency to weekly
Sandon Brook	Water Quality		DO & BOD at Flow Gauging & Ecological Survey Points	Baseline set	ESW	✓	None	✓	None	X	Increase frequency to Daily	X	Increase frequency to Daily
Sandon Brook	Macro-inverts		Various	Baseline set	ESW	✓	None	✓	None	X	Repeat survey	X	Repeat survey

Table 14: Ormesby Broad Intake Drought Action Monitoring Programme

Receptor	Monitoring Details					Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Monitoring Site Code	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
Broadshore Fen	GW Level		Piezometers: Lanhams 1 & 2, Chapmans 1 & 2, Burgh Wood 1 to 3 and Filby Common 1 to 3	Monthly	ESW	✓	None	✓	None	✓	None	✓	None
Burgh Common Fen	GW Level		Piezometers 1 to 3	Baseline set	ESW	✓	None	✓	None	X	Start monitoring weekly	X	Start monitoring weekly
Crag Aquifer	GW Level		OBH 1 to 5	Baseline set	ESW	✓	None	✓	None	✓	None	✓	None
Hall Farm Fen Ditch	Level		Hall Farm Fen Ditch Gauge Board and Datalogger	Baseline set	ESW	✓	None	✓	None	X	Start monitoring weekly	X	Start monitoring weekly
Hall Farm Fen Ditch	Water Quality		Hall Farm Fen Ditch: Nutrients	Baseline set	ESW	✓	None	✓	None	✓	None	✓	None
Muckfleet Channel	Level		Muckfleet Channel Gauge Board and datalogger	Hourly	ESW	✓	None	✓	None	✓	None	✓	None
Muckfleet Channel	Water Quality		Muckfleet Channel: Nutrients	Baseline set	ESW	✓	None	✓	None	✓	None	✓	None
Trinity Broads	Level		Gauge Boards with Dataloggers: Ormesby Broad; Rollesby broad; Ormesby Little Broad and Filby Broad	Hourly	ESW	✓	None	✓	None	✓	None	✓	None
Trinity Broads	Water Quality		Ormesby Broad; Rollesby Broad; Ormesby Little Broad and Filby Broad: Nutrients	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Trinity Broads	FLOW		Flow Meters: Spring Dyke; Rollesby Bridge; Filby Bridge and Muckfleet Neck	15min	ESW	✓	None	✓	None	✓	None	✓	None
Trinity Broads	FLOW		Spot Gauging Locations: Spring Dyke; Rollesby Bridge; Filby Bridge and Muckfleet Neck	Monthly	ESW	✓	None	✓	None	✓	None	✓	None
Trinity Broads	FLORA / FAUNA		Various inc. Desmoulin's Whorl Snail & fisheries surveys: Ormesby Broad; Rollesby Broad; Filby Broad	Annual	NWT	✓	None	✓	None	✓	None	✓	None
Burgh Common	FLORA / FAUNA		Desmoulin's Whorl Snail Survey	Annual	NWT	✓	None	✓	None	✓	None	✓	None

Table 15: SAGS Environmental Monitoring Plan

Receptor	Monitoring Details				Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
All	Rainfall	BROADG Broad Green; HAVERR Haverhill STW; GLEMSG Glemsford	Daily	EA	✓	None	✓	None	✓	None	✓	None
Chad Brook	Level	SAGS 6 & 11: Long Melford	15min	EA	✓	None	✓	None	✓	None	✓	None
GOGS BHs and Rivers	Water Quality	Data requested from Agency and to be evaluated.	TBC	EA	?	Request latest data	✓	None	✓	None	✓	None
GOGS BHs and Rivers	Flora / Fauna	River Stour Quantitative sampling of invertebrate communities (*Prepared by Carl Bro Group)*	Ad-hoc	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS1: TL64/840 Haverhill STW TL74/050 AWS STWs OBH TL74/052 Anglian water Services STW Gravel Piezometer TL74/300 Mill Cottage	Monthly (Bi-monthly/ weekly during drought)	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS 2: TL74/050 Anglian Water Services STW OBH TL74/052 AWS STW Gravel Piezometer	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS 3 BH	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS 4 BH	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SDAGS 5 BH	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS 6 BH	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS 7 BH	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS 8 BH	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS 11: TL84/541 Rodbridge Corner TL84/862 Acton PS	Monthly	EA	✓	None	✓	None	✓	None	✓	None
Groundwater	Level	SAGS 12: TL74/641 SAGS Observation Boreholes	Monthly	EA	✓	None	✓	None	✓	None	✓	None
River Brett	Level	SAGS 7 & 8: Cockfield	15min	EA	✓	None	✓	None	✓	None	✓	None

Receptor	Monitoring Details				Baseline Monitoring		Drought Monitoring		Drought Action Monitoring		Recovery Monitoring	
	Parameter	Site Name / Scope	Monitoring Frequency	Data Owner	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required	Adequacy	Additional Monitoring Required
River Glem	Level	SAGS 6 & 11: Glemsford	15min	EA	✓	None	✓	None	✓	None	✓	None
River Stour	Level	SAGS 1: Broad Green	15min	EA	✓	None	✓	None	✓	None	✓	None
River Stour	Level	SAGS 1 & 2: Kedington	15min	EA	✓	None	✓	None	✓	None	✓	None
River Stour	Level	SAGS 4 & 6: Westmill	15min	EA	✓	None	✓	None	✓	None	✓	None
River Stour	Level	SAGS 11 & 12: Westmill	15min	EA	✓	None	✓	None	✓	None	✓	None
Stour Brook	Level	SAGS 1 & 2: Sturmer	15min	EA	✓	None	✓	None	✓	None	✓	None