Plaistow & Ifold Neighbourhood Plan

Habitat Regulations Assessment
Report to Inform Appropriate Assessment

Plaistow & Ifold Parish Council

Project number: 60571087

October 2021

Quality information

Prepared by	Checked by	Verified by	Approved by
GS Graduate Ecologist	JR Technical Director	MW Technical Director	JR Technical Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	20/09/21	Draft	JR	Dr James Riley	Technical Director
1	11/10/21	Final updated to include Local Plan allocations and allowance for windfall	JR	Dr James Riley	Technical Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name

Prepared for:

Plaistow & Ifold Parish Council

Prepared by:

Georgia Stephens

AECOM Infrastructure & Environment UK Limited
Midpoint, Alencon Link
Basingstoke
Hampshire RG21 7PP
United Kingdom

T: +44(0)1256 310200
aecom.com

Table of Contents

1. Introduction

Background to the Project

1.1 AECOM was appointed by Plaistow & Ifold Parish Council to assist in undertaking a Habitats Regulations Assessment (HRA) for the Plaistow & Ifold Neighbourhood Plan (NP). Specifically, Chichester District Council undertook a Likely Significant Effects test regarding internationally important wildlife sites which was able to conclude that there was no potential for Likely Significant Effects on any European sites except for the Arun Valley SAC, SPA and Ramsar site regarding negative effects of abstraction for Public Water Supply and resulting drawdown and reduction in water levels and flow. As a result, it was determined that an Appropriate Assessment was required. The purpose of this report is to provide technical analysis and advice to enable that assessment to be undertaken.

1.2 The water neutrality analysis presented in Appendix A of this report covers the Neighbourhood Plan allocations but also, for completeness, covers a Chichester Local Plan allocation for 'land north of Little Springfield Farm' and makes an allowance for windfall. Thus, the calculations are intended to demonstrate not only whether water neutrality can be achieved for the Neighbourhood Plan allocations but also whether it can be achieved for all growth expected in the parish over the Neighbourhood Plan period, even when not allocated in the actual Neighbourhood Plan itself.

Legislation

1.3 The UK left the EU on 31 January 2019 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). This established a transition period, which ended on 31 December 2020. The Withdrawal Act retains the body of existing EU-derived law within our domestic law. During the transition period EU law applies to and in the UK. The most recent amendments to the Habitats Regulations – the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 – make it clear that the need for HRA has continued after the end of the Transition Period.

1.4 Under the Regulations, an appropriate assessment is required, where a plan or project is likely to have a significant effect upon an international site, either individually or in combination with other projects. The Directive is implemented in the UK by the Conservation of Habitats and Species Regulations 2017 (as amended) (the "Habitats Regulations").

The legislative basis for Appropriate Assessment

> Conservation of Habitats and Species Regulations 2017 (as amended)
>
> With specific reference to Neighbourhood Plans, Regulation 106(1) states that:
> *'A qualifying body which submits a proposal for a neighbourhood development plan must provide such information as the competent authority* [the Local Planning Authority] *may reasonably require for the purposes of the assessment under regulation 105* [which sets out the formal process for determination of 'likely significant effects' and the 'appropriate assessment']…'.

1.5 It is therefore important to note that this report has two purposes:

a. To assist the Qualifying Body (Plaistow & Ifold Parish Council) in preparing their plan by recommending (where necessary) any adjustments required to protect international sites, thus making it more likely their plan will be deemed compliant with the Conservation of Habitats and Species Regulations 2017 (as amended); and

b. On behalf of the Qualifying Body, to assist the Local Planning Authority (Chichester District Council) to discharge their duty under Regulation 105 (in their role as 'plan-making authority' within the meaning of that regulation) and Regulation 106 (in their role as 'competent authority').

1.6 As 'competent authority', the legal responsibility for ensuring that a decision of 'likely significant effects' is made, for ensuring an 'appropriate assessment' (where required) is undertaken, and for ensuring Natural England are consulted, falls on the local planning authority and the Neighbourhood Plan examiner. However,

they are entitled to request from the Qualifying Body the necessary information on which to base their judgment and that is a key purpose of this report.

1.7 Over the years the phrase ‘Habitats Regulations Assessment’ has come into wide currency to describe the overall process set out in the Conservation of Habitats and Species Regulations from screening through to Imperative Reasons of Overriding Public Interest (IROPI). This has arisen in order to distinguish the process from the individual stage described in the law as an ‘Appropriate Assessment’. Throughout this report we use the term Habitats Regulations Assessment for the overall process.

2. Methodology

Introduction

2.1 Figure 1 below outlines the stages of HRA according to current Ministry of Housing, Communities and Local Government guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations, and any relevant changes to the Plan until no significant adverse effects remain.

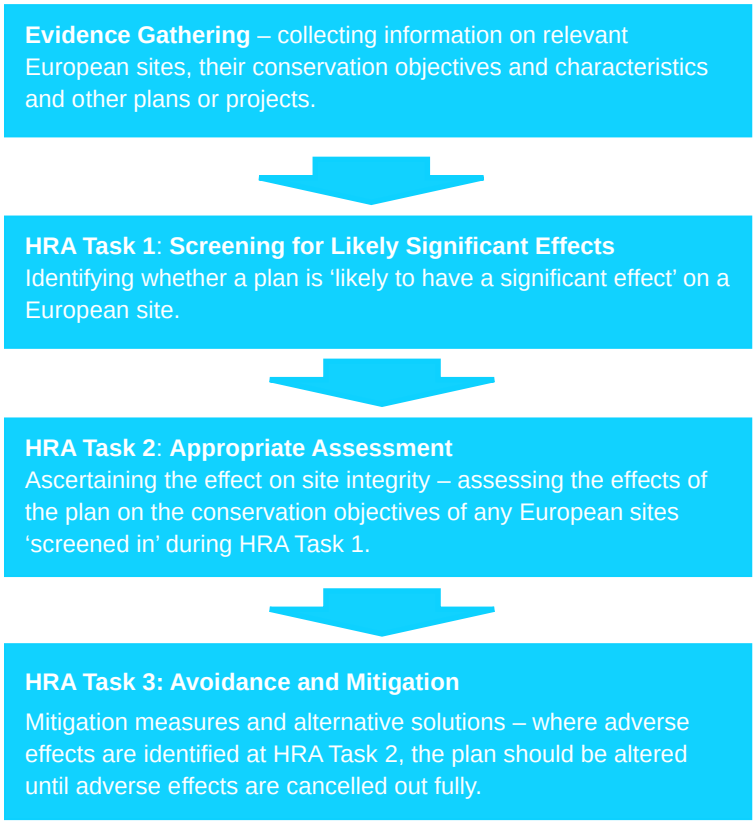

Figure 1 Four Stage Approach to Habitats Regulations Assessment (GOV.UK, 2019)

HRA Task 2: Appropriate Assessment (AA)

2.2 Where it is determined that a conclusion of 'no likely significant effect' cannot be drawn, the analysis has proceeded to the next stage of HRA known as Appropriate Assessment. Case law has clarified that 'Appropriate Assessment' is not a technical term. In other words, there are no particular technical analyses, or level of technical analysis, that are classified by law as belonging to Appropriate Assessment rather than determination of likely significant effects. It literally means '*whatever level of further assessment is appropriate to form a conclusion regarding effects on the integrity of relevant European sites'.*

2.3 During July 2019 the Ministry of Housing, Communities and Local Government published guidance for Appropriate Assessment[1]. Paragraph: 001 Reference ID: 65-001-20190722 explains: '*Where the potential for likely significant effects cannot be excluded, a competent authority must make an appropriate assessment of the implications of the plan or project for that site, in view of the site's conservation objectives. The competent authority may agree to the plan or project only after having ruled out adverse effects on the integrity of the habitats site. Where an adverse effect on the site's integrity cannot be ruled out, and where there are no alternative solutions, the plan or project can only proceed if there are imperative reasons of over-riding public interest and if the necessary compensatory measures can be secured*'.

[1] https://www.gov.uk/guidance/appropriate-assessment#what-are-the-implications-of-the-people-over-wind-judgment-for-habitats-regulations-assessments [Accessed: 07/01/2020].

2.4 One of the key considerations during Appropriate Assessment is whether there is available mitigation that would address the potential effect.

Confirming Other Plans and Projects That May Act 'In Combination'

2.5 It is a requirement of the Regulations that the impacts of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question.

2.6 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation; i.e. to ensure that those projects or plans (which in themselves may have minor impacts) are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in-combination assessment is therefore of greatest relevance when the plan or policy would otherwise be screened out because its individual contribution is inconsequential.

2.7 It is a requirement of the Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the internationally designated site(s) in question.

2.8 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e. to ensure that those projects or plans which in themselves have minor impacts are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential. The overall approach is to exclude the risk of there being unassessed likely significant effects in accordance with the precautionary principle. This was first established in the seminal Waddenzee[2] case.

2.9 For the purposes of this assessment, we have determined that, due to the nature of the identified impacts, the key other plans and projects with potential for in combination likely significant effects are those schemes that have the following impact pathways: Loss of functionally linked land, recreational pressure, air quality impacts, water quality impacts and water quantity level and flow. The following plans have been assessed for their in-combination impact to interact with the Plaistow & Ifold Neighbourhood Plan:

- Chichester Local Plan 2014-2029 (7,388 dwellings over the plan period 2012 – 2029. This was superseded by the CDC Local Plan Review to 2035) [3]
- Chichester Local Plan Review 2035 (12,350 dwellings over the plan period 2016 – 2035)
- South Downs National Park Authority Local Plan (4,750 dwellings over the plan period 2014 – 2033)
- Horsham District Local Plan
- Southern Water, Water Resources Management Plan
- Chichester District Council Water Quality Assessment
- Chichester District Council Transport Study
- Horsham District Council Local Plan (16,000 dwellings over the plan period)
- Arun Local Plan (20,000 dwellings over the plan period 2011 - 2031[4]

[2] Waddenzee case (Case C-127/02, [2004] ECR-I 7405)
[3] https://www.chichester.gov.uk/newlocalplan
[4] https://www.arun.gov.uk/download.cfm?doc=docm93jijm4n12844.pdf&ver=12984

3. Water Neutrality and Arun Valley SPA/SAC/Ramsar

3.1 The proposed NP could result in increased abstraction of water resources for the potable water supply which could materially reduce the volume of fresh water that enters the floodplain around the Arun Valley SPA / SAC / Ramsar with potential cascading effects on its qualifying species and habitats. In this case, this refers to the ditch system within this European Site which supports the little Ramshorn snail in particular.

3.2 The potable water in Plaistow & Ifold Parish is supplied by Southern Water who published a Water Resource Management Plan in December 2019 outlined the resourcing for the water supply areas until 2070. In this WRMP, Plaistow & Ifold is included within the Central area specifically within the Sussex North Water Resource Zone. The breakdown of water resourcing for this area as specified by the WRMP is as follows: 51% rivers, 35% groundwater, 8% reservoirs and 6% transfers[5].

3.3 Water companies respond to supply-demand deficits by considering development options required to meet the growing water demand in the WRMP period. These options may involve a combination of demand management (e.g. investments to reduce leakage reduction, install smart meters, etc.) and supply-side (e.g. bulk water transfer, desalination, water reuse schemes and new groundwater / river abstractions). Typically, demand management is regarded as less 'invasive' and preferable regarding the environment, but it is often not sufficient to meet the growing water demand. In contrast, the exploitation of new water resources or increases to existing abstractions are considered primary means through which adverse effects on European sites might occur.

3.4 The HRA of the preferred programme and strategic alternative options for the Central WRZ (the WRZ relevant to Plaistow & Ifold) documented that there were no LSEs on the Arun Valley SPA / Ramsar / SAC arising from any of the options included in the preferred strategy[6]. While one option includes an increased abstraction from the Pulborough groundwater license, this was determined not to have material effects on the Arun Valley due to there being no hydrological connectivity between the abstraction and the European site.

3.5 However, since that time Natural England have told Horsham Council and Chichester District Council that they are concerned about the Hardham groundwater abstraction (a key part of the Southern Water supply strategy for this part of Chichester District under certain conditions) and the effect this might have on water levels / flows in the Arun Valley SPA / Ramsar / SAC. They are currently working with the Environment Agency and Southern Water to investigate and deliver infrastructure enhancements such that reliance on the Hardham abstraction, even at times of high demand is reduced or eliminated. Horsham District Council is a participant in the Gatwick Sub-Region Water Cycle Study and JBA Consulting have just issued an updated Water Cycle Study. However, the scope of that Water Cycle Study specifically excludes consideration of the implications of changes to the Hardham groundwater abstraction.

3.6 This is clearly not an issue that a Neighbourhood Plan can resolve and the delivery of 18 dwellings in Plaistow & Ifold Parish will not make any difference in the use of the Hardham source by Southern Water given the enormous size of the Gatwick Sub-Region that the Hardham abstraction serves.

3.7 Although an 'in combination' effect is identified, it is also important to note that case law around HRA recognises that the planning system is tiered enabling a graduated approach to be undertaken to HRA ensuring that assessment (and the need for and nature of mitigation) is appropriate to the level of the plan in the tiered system. On these occasions the advice of Advocate-General Kokott[7] is important. She commented that: '*It would …hardly be proper to require a greater level of detail in preceding plans* [rather than planning applications] *or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure'*. It is also important to remember the advice of former Advocate-General Sharpston, who in paragraph 48 of her Opinion in European Court of Justice Case C-258/11 stated that: *'the requirement for an effect to be 'significant' exists*

[5] Southern Water (2019) Water Resources Management Plan, Available at: https://www.southernwater.co.uk/media/3656/5025_wrmp_-v11.pdf [accessed 20/01/2021]
[6] Southern Water (2019) Annex 15: Habitat regulations Assessment Main Report, Available at: https://www.southernwater.co.uk/media/1329/annex-15-hra-main-report.pdf accessed 20/01/2021]
[7] Opinion of Advocate General Kokott, 9th June 2005, Case C-6/04. Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland, paragraph 49http://curia.europa.eu/juris/document/document.jsf?docid=58359&doclang=EN

in order to lay down a de minimis threshold. Plans and projects that have no appreciable effect on the site can therefore be excluded. If all plans and projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill'.

3.8 This chimes with the domestic High Court ruling of Mr Justice Jay in Wealden v SSCLG [2017] EWHC 351 (Admin), who accepted that if the contribution of an individual plan or project to an in combination effect was 'very small indeed' it could be legitimately and legally excluded from 'in combination' assessment and, by extension, the need for mitigation. In other words, the courts are clear that a plan or project can make a contribution to an impact in fact while also being so small that it would have no 'appreciable effect' on the relevant European site even in combination with other plans and projects.

3.9 This legal opinion and case law is directly relevant to the Plaistow & Ifold Neighbourhood Plan and the issue of Public Water Supply abstraction issues on the Arun Valley European sites since the Neighbourhood Plan occupies a mid-position in the tiered planning system, in that it identifies sites for development while not actually granting planning consent (thus ensuring that a further tier of the planning system exists before any development – and thus any effect on a European site - can actually arise).

3.10 This does not mean that no mitigation is required but it does indicate that the nature of that mitigation for a Neighbourhood Plan should take the form of safeguards and the requirements for down-the-line further assessment before a planning application can actually be granted consent.

3.11 To identify the likelihood that any level of water neutrality could be achieved in Plaistow & Ifold Parish a Water Neutrality Assessment is presented in Appendix A. The assessment of water neutrality has been undertaken to demonstrate whether moving towards neutrality within the Plaistow & Ifold Neighbourhood Plan area is feasible and what the technological implications might be to get as close to neutrality as possible. Achieving 'total' water neutrality within a development remains an aspirational concept due to the requirement for specific catchment conditions to supply raw water for treatment and significant capital expenditure. It also requires specialist operational input to maintain the systems such as blackwater re-use on a community scale.

3.12 For the majority of new development, in order for the water neutrality concept to work, the additional demand created by new development needs to be offset in part by reducing the demand from existing population and employment. Therefore, a 'planning area' needs to be considered where measures are taken to reduce existing or current water demand from the current housing and employment stock. The planning area in this case is considered to be the Plaistow and Ifold Parish as a whole, although in practice Plaistow and Ifold is part of a wider planning area covering Chichester District.

3.13 The results have shown a range of theoretical scenarios which achieve differing levels of progress towards water neutrality. As discussed in the introduction the modelling was initially undertaken for the Neighbourhood Plan allocations alone. The results showed that total (100%) neutrality can be achieved for the Neighbourhood Plan allocations in two ways: through having a relatively low uptake (5.5%) of retrofit of water efficient fixtures and fittings for existing homes (48) equivalent to the Southern Water 'Target 100' standard; or through a combination of 3% of existing homes retrofitted (26) and all new development incorporating recycling technology.

3.14 Following discussion with the Parish Council the modelling was updated to allow for a Local Plan allocation for ten dwellings ('land north of Little Springfield Farm') and make an allowance for windfall. Following consideration of patterns of windfall housing delivery in Ifold over the period 2011-2021 (18 dwellings) it was determined that an allowance of c.36 dwellings would be a sufficiently precautionary allowance for windfall over the Neighbourhood Plan period (2019-2037). Appendix A therefore contains an updated water neutrality assessment for sixty-four dwellings.

3.15 When sixty-four dwellings in Plaistow and Ifold over the plan period are taken into account, the results show that total neutrality can still be achieved in the ways identified for the Neighbourhood Plan allocations alone but that the degree of retrofitting required is significantly greater: through having a relatively high uptake (26%) of retrofit of water efficient fixtures and fittings for existing homes (a total of 228 homes to be targeted) equivalent to the Southern Water 'Target 100' standard; or, through a combination of 17% of existing homes retrofitted (a total of 150) and all new development incorporating recycling technology. While significantly greater than for the Neighbourhood Plan alone this is considered feasible with sufficient investment and encouragement in retrofitting. Retrofitting existing development is not something that can be controlled by the Neighbourhood Plan or which is in the power of the parish council. The Technical Note in Appendix A

therefore identifies the bodies most reasonably responsible for delivering the necessary initiatives that lie beyond Neighbourhood Plan policy. These are summarised below.

Responsibility	Responsible stakeholder
Develop a policy requirement within the Neighbourhood Plan to limit water use in new homes to 90 l/h/d	Plaistow and Ifold Neighbourhood Plan Group
Ensure planning applications are compliant with the requirement for water use in homes to be limited to 90 l/h/d	Chichester District Council
Fitting water efficient devices in accordance with policy	Developers
Provide guidance and if necessary, enforce the installation of water efficient devices through the planning application process	Chichester District Council
Ensure continuing increases in the level of water meter penetration	Southern Water
Continue with 'Target 100' campaign	Southern Water
Retrofit devices within council owned housing stock	Chichester District Council
Retrofit devices within privately owned housing stock (via section 106 agreements)	Developers
Promote water audits and set targets for the number of businesses that have water audits carried out. Allocate a specific individual or team to be responsible for promoting and undertaking water audits and ensuring the targets are met. The same team or individual could also act as a community liaison for households (council and privately owned) and businesses where water efficient devices are to be retrofitted, to ensure the occupants of the affected properties understand the need and mechanisms for water efficiency.	Chichester District Council
Educate and raise awareness of water efficiency	Chichester District Council and Southern Water

3.16 It should be noted that, while feasible, retrofitting 26% of properties in the parish to introduce water efficient fixtures and fittings may not be straightforward to achieve in practice, depending on whether existing homes in the Parish have already been subject to demand management initiatives via Southern Water or other sources; opportunities to further reduce water use in existing homes in the Parish may be limited and this would need to be established via a separate study. However, it is considered that it is technically and politically reasonably straightforward to obtain achieve neutrality with a funded joint partnership approach and with new developers contributing water efficient homes with a relative low capital expenditure.

3.17 It is considered that it should be relatively straightforward to achieve the necessary scale of retrofitting (5.5% of the existing stock) to achieve neutrality for the Neighbourhood Plan allocations themselves, which is the minimum that needs to be achieved for the Neighbourhood Plan to achieve water neutrality for the growth it plans to deliver.

3.18 The revised Plaistow & Ifold Neighbourhood Plan should require new residential development to minimise water consumption as much as possible, in line with Southern Water's WRMP and CDC's overarching Local Plan. Measures to reduce water consumption could include any of the following:

- Low water usage toilet flushes and showers
- Rainwater harvesting
- Greywater recycling

3.19 It is considered that in order to draw a conclusion of no adverse effect on site integrity 'in-combination' with other projects and plans, text should be added into the Neighbourhood Plan. A suitable location would be in sections relating to the infrastructure provision in Plaistow & Ifold Parish. The following text could be added, possibly as a new policy: '***Applicants for net new housing within the parish will need to***

maximise the potential for water neutrality by minimising water usage levels in new residential development. Developments should be designed to minimise water consumption with an overall target of 90 litres per day per person, or where feasible full water recycling, across the whole development and incorporating as appropriate the water saving measures. This policy will remain in force until a sustainable source of supply is brought into use for the Sussex North WRZ'.

3.20 With such text being included, it is considered that the Neighbourhood Plan would have no adverse effect either alone or in-combination with other plans and projects as, coupled with a low level of retrofitting of existing housing stock, water neutrality could be achieved to balance the delivery of the Neighbourhood Plan allocations and thus ensure that they do not contribute in a net form to the water neutrality issue for Arun Valley SAC/Ramsar site.

4. Conclusions

4.1 Following Appropriate Assessment, a recommendation was made to improve the policy framework provided in the Plaistow & Ifold Neighbourhood Plan. It is considered that in order to draw a conclusion of no adverse effect on site integrity 'in-combination' with other projects and plans regarding abstraction effects on the Arun Valley SPA/Ramsar/SAC, text should be added into the Neighbourhood Plan, possibly as a new policy: '***Applicants for net new housing within the parish will need to maximise the potential for water neutrality by minimising water usage levels in new residential development. Developments should be designed to minimise water consumption with an overall target of 90 litres per day per person across the whole development and incorporating as appropriate the water saving measures. This policy will remain in force until a sustainable source of supply is brought into use for the Sussex North WRZ'***.

4.2 It is concluded that subject to recommendations made in this assessment, combined with the overarching Chichester District Council Local Plan Review 2035, the Plaistow & Ifold Neighbourhood Plan will contain sufficient policy framework to ensure no adverse effects on the integrity of international designated site will occur in isolation or in combination with other projects and plans.

Appendix A Water Neutrality Assessment

Technical Note

Project name	Plaistow and Ifold Neighbourhood Plan	**AECOM project no.**	60571087
Client	Plaistow and Ifold Neighbourhood Plan Group	**Date:**	08 October 2021
Prepared by	Carl Pelling		
Checked by	Bernadine Maguire		

Introduction

In discussions with Chichester District Council regarding the Habitats Regulations Assessment (HRA) of the Plaistow and Ifold Neighbourhood Plan (2019-2037), Natural England raised concerns about the Hardham groundwater abstraction (a key part of the Southern Water supply strategy for North Sussex during certain conditions) and the effect they think it has on water levels/flows in the Arun Valley Special Area of Conservation (SAC) and Ramsar site. As such, they have advised Chichester District Council that they should implement the requirement to target water neutrality in order for sufficient water to be available to the North Sussex area and this cascades down to Neighbourhood Plans in the affected area.

To inform the Neighbourhood Plan HRA a water neutrality assessment has been undertaken to ascertain whether water neutrality is feasible at the Neighbourhood Plan level and if so, identify the requirements and supporting measures that would need to be implemented in order to achieve different levels of water efficiency working towards neutrality. This technical note provides an overview of the methodology and results of the water neutrality assessment.

Water Resource Planning

Water companies undertake medium to long term planning of water resources in order to demonstrate that a there is a long-term plan for delivering sustainable water supply within its operational area to meet existing and future demand. This is reported via a statutory Water Resource Management Plan (WRMP) produced every five years to coincide with each of the water companies' five-yearly asset management (or business) plans.

WRMPs set out how demand for water from growth within a water company's supply area can be met, taking into account the need to for the environment to be protected. During development of WRMPs, water companies liaise with the Local Planning Authorities in their supply area to understand and account for growth planned within the Local Plans. As part of the statutory process, WRMPs must be approved by both the Environment Agency and Natural England (as well as other regulators) and hence the outcomes of the plans can be used directly to inform whether growth levels being assessed within local planning can be supplied with a sustainable source of water supply.

Water companies manage available water resources within key zones, called Water Resource Zones (WRZ). These zones share the same raw resources for supply and are interconnected by supply pipes, treatment works and pumping stations. As such the customers within these zones share the same available 'surplus of supply' of water when there is more available water than demand; but also share the same risk of supply when demand for water is greater than the available supply (i.e. deficit of supply). Water companies undertake resource modelling to calculate if there is likely to be a surplus of available water or a deficit in each WRZ by the end of their WRMP plan period, once additional demand from growth and other factors such as climate change are taken into account.

Planned Water Availability

Plaistow and Ifold Parish in Chichester District lies within the North Sussex WRZ, which is within the Central sub-regional Southern Water supply area. It is identified within the Southern Water WRMP (2019) that water supply within the North Sussex WRZ is supplied from a number of sources, including:

- 35% groundwater;
- 51% river;
- 8% reservoir; and

- 6% inter-company transfer.

Southern Water's assessment of available water in their baseline predictions (without any measures) identifies that the Central area, which includes the North Sussex WRZ, does not have sufficient water for the whole of the planning period (to 2030) to meet its customers' need.

Southern Water has therefore identified a number of schemes that will benefit the WRZ. This strategy ensures that Southern Water maintains a headroom surplus throughout the planning period. The key measures identified within the Southern Water WRMP for the central area, which includes the North Sussex WRZ, are outlined in Table 1 below.

Table 1: Southern Water WRMP Preferred Schemes for the Central area which includes the North Sussex WRZ

Period	Preferred Schemes
2020 - 2025 (all WRZs in the Central area)	**Demand management** • Target 100 water efficiency activity[1] • Leakage reduction (15% reduction by 2025; 50% by 2050) • Extension of Universal Metering Programme Period **Resource development** • Catchment management and infrastructure solutions to address rising nitrates and increase resilience at the Long Furlong B source, and for pesticides at the River Arun, Weir Wood reservoir, and Pulborough surface water sources • Improve the existing infrastructure to bring the West Chiltington source back into service • Apply for a licence variation at the Pulborough groundwater source • Apply for Drought Permits or Orders in severe or extreme droughts for the Pulborough surface and groundwater sources, Weir Wood reservoir, East Worthing and North Arundel sources
2025-2030 (all WRZs in the Central area)	**Demand management** • Target 100 water efficiency activity • Leakage reduction (15% reduction by 2025; 50% by 2050) **Resource development** • Improve treatment and/or rehabilitate a borehole at Petersfield • Implement catchment management and infrastructure solutions against nitrates at the North Falmer A and B sources • Apply for a Drought Permit / Order in extreme droughts for the East Worthing source
2027 (all WRZs in the Central area)	**Resource development** • Indirect potable water reuse scheme from Littlehampton Wastewater Treatments Works • Aquifer storage and recovery scheme north of Worthing • A potential desalination plant at Shoreham • Improvements to the existing mains between Shoreham and Brighton • Apply for a Drought Permit / Order for the East Worthing and Pulborough surface water sources in an extreme drought event.

The key factor driving the strategy for the Central area is the potential for significant, but as yet unconfirmed, sustainability reductions (abstraction licence changes). These sustainability reductions will be confirmed by the Environment Agency following the conclusion of the investigations the company is proposing to undertake early in the AMP7 period (by 2022-23). If licence changes are confirmed, then significant new infrastructure will be required to provide new water resources to offset the water that is effectively "lost".

In order to ensure water efficiency in the future, Southern Water have included proposals for leakage reduction and demand management measures for the Central area. They have also included the development of a shared new non direct potable water reuse resource with South East Water, together with up to two desalination plants, a storage reservoir, and other measures. It is hoped that by reducing the long-term demand for water, the supply of water can be controlled to aid in ensuring that water is available in the future.

Correspondence from Natural England to Southern Water in December 2019 identified that an adverse effect on the integrity of the Arun Valley SAC, SPA and Ramsar features could not be excluded with certainty following an evidence review of the Hardham groundwater abstraction.

[1] This is an initiative to target a usage of 100 litres per person per day in properties within the Southern Water supply area

Water Neutrality

Water neutrality is a concept whereby the total demand for potable mains water supply within a planning area after development has taken place is the same (or less) than it was before development took place. If this can be achieved, the overall balance for water demand is 'neutral', and there is considered to be no net increase in demand as a result of development. In order to achieve this, new development needs to be subject to planning policy which aims to ensure that where possible, houses and businesses are built to high standards of water efficiency through the use of water efficient fixtures and fittings, and in some cases rainwater harvesting and greywater recycling.

It is theoretically possible that neutrality can be achieved within a new development area, through the complete management of the water cycle within that development area. In addition to water demand being limited to a minimum, it requires:

- all wastewater to be treated and re-used for potable consumption rather than discharged to the environment;
- maximisation of rainwater harvesting (in some cases complete capture of rainfall falling within the development) for use in the home; and
- abstraction of sustainable local groundwater or river flow storage for treatment and potable supply.

Achieving 'total' water neutrality within a development remains an aspirational concept due to the requirement for specific catchment conditions to supply raw water for treatment and significant capital expenditure. It also requires specialist operational input to maintain the systems such as blackwater re-use on a community scale.

For the majority of new development, in order for the water neutrality concept to work, the additional demand created by new development needs to be offset in part by reducing the demand from existing population and employment. Therefore, a 'planning area' needs to be considered where measures are taken to reduce existing or current water demand from the current housing and employment stock. The planning area in this case is considered to be the Plaistow and Ifold Parish as a whole, although in practice Plaistow and Ifold is part of a wider planning area covering Chichester District.

Methodology

Metering Assumptions

Installing water meters within existing residential properties is an important element of the Southern Water WRMP to manage their customers' demand for water. The existing level of metering within the North Sussex WRZ is already high at 88% which limits the potential for further metering to contribute to neutrality. Southern Water's future target for meter penetration on domestic water supplies is 92% by 2025.

Demand in new homes

Likely increases in demand in the study area have been calculated using four different water demand projections based on different rates of water use for new homes that could be implemented through proposed and potential future policy.

The projections were derived as follows:

- Average metered consumption[2] – New homes in the neighbourhood plan area would use 133.24 l/h/d;
- Building Regulations Option requirement – New homes would conform to (and not use more than) 110 l/h/d;
- Chichester District Council requirement[3] – New homes would conform to (and not use more than) the stipulated requirement of 90 l/h/d;

[2] Southern Water Resources Management Plan (Summary Document), Southern Water, 2019. The average water consumption rate was calculated across metered & unmetered households.

[3] Chichester Local Plan 2014-2029, Policy 40 - Sustainable Design & Construction requires new homes to conform to 110 l/h/d, however, recent correspondence from Chichester District Council states a more stringent requirement of 90l/h/d is necessary to demonstrate water neutrality.

- Best case re-use – New homes would include both greywater recycling and rainwater harvesting reducing water use to a minimum of 62 l/h/d.

Using these projections, the increase in demand for water has been calculated for the proposed housing growth of 64 dwellings over the plan period (up to 2037). The projections are shown in Figure 1. It should be noted that the total of 64 dwellings is derived from 18 identified in the Neighbourhood Plan, 10 within the parish allocated in the Local Plan and an allowance of 36 as windfall.

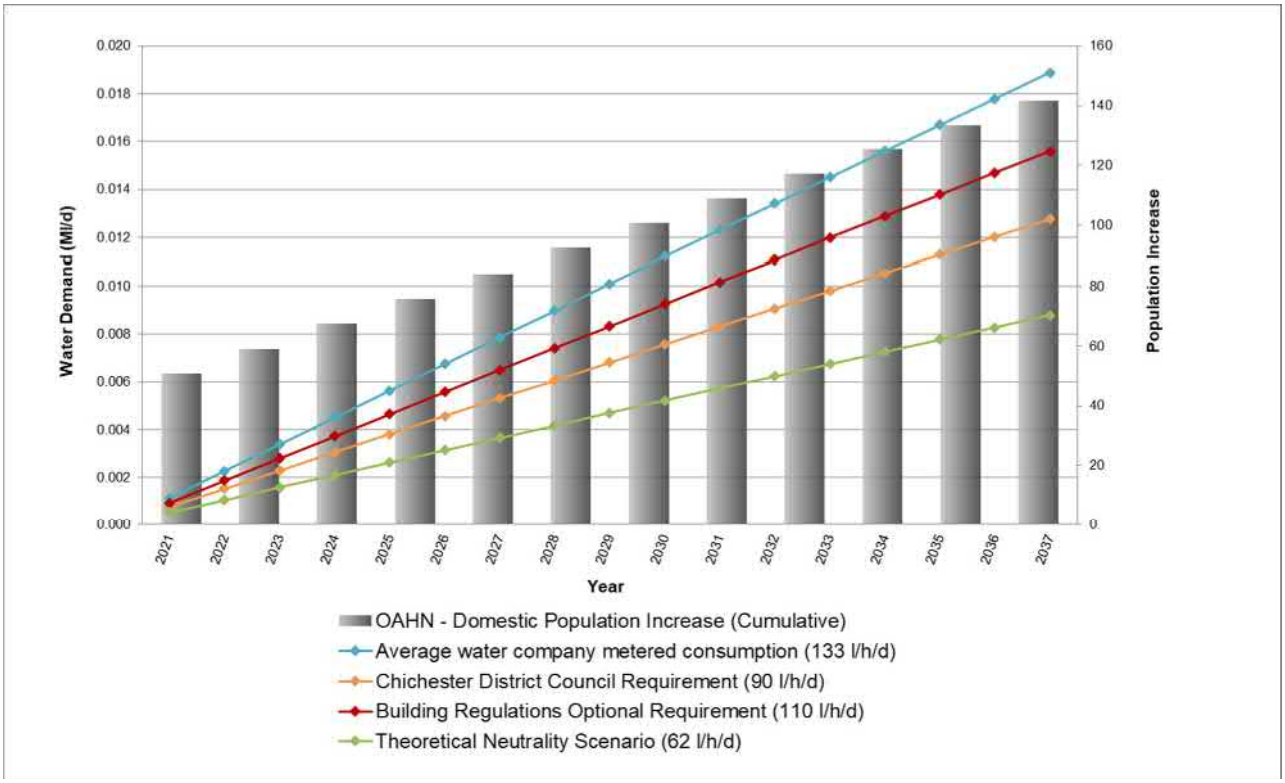

Figure 1: Range of water demands across the plan period in the study area depending on efficiency levels of new homes

Water Neutrality Scenarios

In order to reduce water consumption and manage demand for the limited water resources within the study area, a number of measures and devices are available[4]. Generally, these measures fall into two categories due to cost and space constraints, as those that should be installed in new developments and those which could be retrofitted. Waterwise in conjunction with the Environment Agency, DEFRA, OFWAT and the Department of Communities and Local Government published a best practice guide to water efficiency and retrofitting in 2009. This guide provides case studies and advice on how water companies, local authorities and housing providers can manage retrofitting strategies under different scenarios[5].

These have been used to develop two 'scenarios' which demonstrate how water neutrality could be achieved with the implementation of different measures. It should be noted that both scenarios assume 92% meter penetration, as per Southern Water's WRMP by 2025.

1. Theoretical neutrality – with maximising water recycling for new homes

This scenario demonstrates what would be required to achieve total water neutrality with the onus on new development minimising water use through recycling technologies. It would require:

- All new houses to include water recycling facilities to meet all toilet flushing and washing machine demand;
- 150 existing homes in the Parish being retrofitted with water efficient fixtures and fittings;

[4] Water Efficiency in the South East of England, Environment Agency, April 2007.
[5] Water Efficiency Retrofitting: A Best Practice Guide. Waterwise 2009. Available at: http://www.waterwise.org.uk/resources.php/30/water-efficiency-retrofitting-a-best-practice-guide

- Research into financial viability of such high levels of water efficiency measures in new homes;
- A significant funding pool and a specific joint partnership 'delivery plan' to deliver the retrofitting measures required; and,
- Strong local policy within the Local Plan on restriction of water use in new homes, to a degree which is currently unprecedented in the UK (less than 90 l/h/d).

2. Theoretical neutrality – with maximising existing home retrofit

This scenario demonstrates what would be required to achieve total water neutrality with the onus on maximising demand reduction through retrofitting existing homes. It would require a higher uptake of retrofitting water efficiency measures in existing homes in the Parish (228 no.). A larger funding pool and a specific joint partnership 'delivery plan' to deliver the percentage of retrofitting measures would be required. It should be noted that this may not be straightforward as homes within the Parish may already include water saving devices via existing demand management programmes.

Results

To achieve total water neutrality, the demand post growth must be the same as, or less than existing demand. Based on estimates of population size, current demand in the Plaistow and Ifold Neighbourhood Plan area was calculated to be 0.262 Ml/d.

For both neutrality scenarios, total demand was calculated at three separate stages for housing as follows:

- Stage 1 – total demand post growth without any assumed water efficiency retrofitting of existing housing stock for the differing levels of water efficiency in new homes;
- Stage 2 – total demand post growth with effect of metering applied to the existing housing stock for the differing levels of water efficiency in new homes; and,
- Stage 3 – total demand post growth (additional household and non-household use) with metering and water efficient retrofitting applied to existing homes for the differing levels of water efficiency in new homes.

The results show that total neutrality can be achieved in two ways: through having a relatively high uptake (26%) of retrofit of water efficient fixtures and fittings for existing homes (a total of 228 homes to be targeted) equivalent to the Southern Water 'Target 100' standard; or, through a combination of 17% of existing homes retrofitted (a total of 150) and all new development incorporating recycling technology.

It should be noted that this may not be straightforward to achieve in practice for either scenario, depending on whether existing homes in the Parish have already been subject to demand management initiatives via Southern Water or other sources; opportunities to further reduce water use in existing homes in the Parish may be limited and this would need to be established via a separate study.

It is considered that it is technically and politically challenging to obtain achieve neutrality as it would require a funded joint partnership approach and with new developers contributing water efficient homes with a relative low capital expenditure.

Delivery Requirements

To achieve either level of neutrality, a series of policies, partnership approaches and funding sources would need to be developed. All retrofitting would require a funding pool and a specific joint partnership 'delivery plan' to deliver the required retrofitting measures to the properties, as well as the implementation of the current Chichester District Council restriction of water use in new homes (90 l/h/d which is more stringent than the optional Building Regulations requirements).

Policy

Chichester District Council has a requirement in the Local Plan (2014 – 2029) (Policy 40) that all new developments incorporate water efficiency measures in order to limit water use to 110 l/h/d; however, a Local Plan Review exercise is currently underway and they are currently applying a more stringent requirement of 90 l/h/d to assist new development applications in the North Sussex area comply with the Natural England requirement for achieving water neutrality. It is assumed that the requirement to limit water use in new homes to 90 l/h/d would ultimately be secured through the introduction of a policy requirement within the Local Plan as this is not an issue within Neighbourhood Plan control. In addition, it is also recommended that Chichester

Council consider ways to support developer implementation of this policy via information sources on their website. Measures can include (but not necessarily limited to) garden water butts, low flush toilets, low volume baths, aerated taps, and water efficient appliances.

Relationships

The recommendations above are targeted at Chichester District Council and Southern Water as these are the major stakeholders, although the Environment Agency and other statutory consultees can also influence future development to ensure the water neutrality target is achieved. It is therefore suggested that responsibility for implementing water efficiency policies be shared as detailed in Table 3.

Table 3: Responsibility for implementing water efficiency

Responsibility	Responsible stakeholder
Develop a policy requirement within the Neighbourhood Plan to limit water use in new homes to 90 l/h/d	Chichester District Council
Ensure planning applications are compliant with the requirement for water use in homes to be limited to 90 l/h/d	Chichester District Council
Fitting water efficient devices in accordance with policy	Developers
Provide guidance and if necessary, enforce the installation of water efficient devices through the planning application process	Chichester District Council
Ensure continuing increases in the level of water meter penetration	Southern Water
Continue with 'Target 100' campaign	Southern Water
Retrofit devices within council owned housing stock	Chichester District Council
Retrofit devices within privately owned housing stock (via section 106 agreements)	Developers
Promote water audits and set targets for the number of businesses that have water audits carried out. Allocate a specific individual or team to be responsible for promoting and undertaking water audits and ensuring the targets are met. The same team or individual could also act as a community liaison for households (council and privately owned) and businesses where water efficient devices are to be retrofitted, to ensure the occupants of the affected properties understand the need and mechanisms for water efficiency.	Chichester District Council
Educate and raise awareness of water efficiency	Chichester District Council and Southern Water

A major aim of the education and awareness programmes would be to change peoples' attitude to water use and water saving and to make the general population understand that it is everybody's responsibility to reduce water use. Studies have shown that the water efficiencies in existing housing stock achieved by behavioural changes, such as turning off the tap while brushing teeth or reducing shower time, can be as important as the installation of water efficient devices.

Conclusion

The assessment of water neutrality has been undertaken to demonstrate whether moving towards neutrality within the Plaistow and Ifold Neighbourhood Plan area is feasible.

The results have shown that neutrality is theoretically achievable but that it would require significant funding and a delivery plan to achieve neutrality depending on the number of properties in the Parish which do not already have demand management measures in place. If the required levels of retrofit cannot be achieved, a more stringent local policy requirement would need to be put in place which would require all developers to incorporate reuse technologies, which go far beyond the current proposed requirement of 90 l/h/d (which already exceeds the Building Regulations optional requirement of 110l/h/d).

Either scenario would considerably reduce the pressure placed on the Hardham abstraction by housing in Plaistow and Ifold, although it is not ultimately within the control of Plaistow and Ifold Parish Council to bring about this change.