Final Draft Water Resources Management Plan 2024

Annex 17: SEA Environmental Report –

Appendix M : Biodiversity Net Gain and Natural Capital Report

May 2025
Version 1

from Southern Water

Contents

1 Introduction

1.1 Background and Purpose of this Report

Water companies in England and Wales have a statutory requirement to prepare a Water Resources Management Plan (WRMP) every five years. The Water Resource Planning Guideline[1] (WRPG) produced by Ofwat, the Environment Agency and Natural Resources Wales states that water companies are required to ensure their WRMP "*contributes to the conservation and enhancement of biodiversity, delivers net biodiversity gain where appropriate… and uses a proportionate natural capital approach*." This report demonstrates how Southern Water Services Limited (Southern Water) meets these requirements in the development of their Final WRMP24.

Southern Water has developed its WRMP24 as part of the Water Resources South East (WRSE) Regional Plan[2,3]. WRSE is a collaboration of the six[4] water companies that supply water in south east England. WRSE's aim is to secure the water supply for future generations through a collaborative, regional approach to managing water resources. To meet this aim, WRSE is developing a multi-sector, regional resilience plan in order to secure reliable and resilient water supplies for the south east of England. The Regional Plan looks beyond the boundaries of individual companies and identifies options that will deliver the most benefit across the region. The WRSE regional plan takes a long-term view to 2100 and provides a consistent framework for the development of the member water companies WRMP24s.

In response Southern Water's Revised Draft WRMP24 (rdWRMP24) and associated environmental assessment reports published for consultation in November 2024, both the Environment Agency (EA) and Natural England (NE) requested further clarity on the Natural Capital (NC) and Biodiversity Net Gain (BNG) assessment work carried out for Southern Water options in support of the Regional Plan and rdWRMP24. The purpose of this appendix is to address these comments and provide a response to the WRPG requirements, as then reflected in Southern Water's Final WRMP24. It is structured as follows:

- Chapter 2 sets out the approach and methodology used for the NC and BNG assessments;
- Chapter 3 presents the key findings of the NC and BNG assessments for schemes in Southern Water's Final WRMP24; and
- Chapter 4 sets out next steps and considerations for implementation.

1.2 Biodiversity Net Gain and Natural Capital

BNG is an approach to the development of land and marine management that aims to leave biodiversity in a measurably better condition than prior to development. BNG seeks to provide a means of quantifying losses or gains in biodiversity value bought about by changes in land use. When designed and delivered well, BNG can secure benefits for nature, people and places, and for the economy[5]. BNG refers specifically to the

[1]Environment Agency, Natural Resources Wales and Ofwat (2023) Water resources planning guideline. Available online at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline [Accessed April 2025]

[2]WRSE (2022) Futureproofing our water supplies: A Consultation On Our Draft Regional Plan For South East England, November 2022. Available at: https://www.wrse.org.uk/media/va1bz21z/10306a_wrse-bv-plan-2022final_online.pdf

[3]WRSE (2023) Futureproofing our water supplies: Summary Of Our Revised Draft Plan For South East England https://www.wrse.org.uk/media/u0knltxt/wrse-regional-plan-summary-august-2023_final.pdf

[4]Affinity Water, Portsmouth Water, SES Water, South East Water, Southern Water and Thames Water

[5] Natural England (2021), Biodiversity Net Gain – more than just a number. Accessibile via: https://naturalengland.blog.gov.uk/2021/09/21/biodiversity-net-gain-more-than-just-a-number/

combination of habitats present within a site and their ability to support biodiversity. Each habitat is given a distinct score that relates to its area, condition, distinctiveness and connectivity. The change in habitat due to the construction and operation of the regional plan options informs the overall BNG score and whether they are likely to contribute to a net gain in biodiversity. The Environment Act 2021 has now specified a requirement for development to demonstrate a 10% BNG to development for which planning permission is granted.

Natural Capital (NC) studies key components of nature which are essential for the long-term provision of benefits on which society relies. These components can have a direct or indirect value to people. It includes aspects such as woodland, grassland, freshwater, marine, urban greenspace and wetland habitats. The benefits that are provided vary from regulating services such as natural flood management to cultural services such as recreational value. A natural capital approach seeks to demonstrate the value of the natural environment for people and the economy[6].

Natural assets provide ecosystem services such as regulating floods and improving air quality, and those ecosystem services provide benefits such as reducing the chance a house will flood or improved health. This benefit can then be valued through use of natural capital metrics and can be used to help in the support of delivery of targets, such as putting a value on the potential delivery of BNG.

1.3 Biodiversity Net Gain and Natural Capital requirements for WRMPs

The purpose of a WRMP is to set out how a water company will achieve a secure supply of water for its customers whilst protecting the environment and demonstrate that it is resilient to a range of future challenges including more extreme droughts, climate change and population growth.

As part of the preparation of the WRMP, and consistent with the WRPG, water companies must demonstrate that they have considered a range of environmental legislation and guidance, including the Environment Act (2021). The EA has published supplementary guidance to the WRPG on environment and society in decision-making[7]. This includes more detail about the expectation for Natural Capital Assessment (NCA) in England, and how a NCA can support decision-making. The purpose of this is to allow water companies and Regional Groups to "*make decisions that do not devalue, and look to enhance the value of the natural world for society benefit*" (WRPG Supplementary Guidance Table 1) together with supporting water companies within WRSE to promote plans that have the potential to deliver wider environmental[8] and social benefits.

For example, the WRPG Supplementary Guidance sets out that:
"*You [the respective water company] should undertake a natural capital assessment on the options in your feasible list. However, you can consider a proportionate approach to your assessment.*
You should consider the following five services as a minimum in your assessment:

- *biodiversity and habitat*
- *climate regulation*
- *natural hazard regulation*
- *water purification*

[6] UK Government (2021), Enabling a Natural Capital Approach (ENCA) – Updated 20 August 2021

[7] EA (2022) Water resources planning guideline supplementary guidance – Environment and society in decision-making . Published 03/02/2022

[8] Section 9.4.3 of the of the WRPG sets out that where due to uncertainty, "Alternatives are included in the plan at company and/or regional level where the avoidance of an adverse effect on integrity of European sites is certain, and these are available, feasible and deliverable"

- *water regulation*

These services have been chosen as a minimum, as they represent the services the water industry are most dependent on and have the most influence over. You can consider expanding your assessment to other services."

Section 2 outlines the methodology developed to address this requirement.

2 Approach and methodology

2.1 Approach to Biodiversity Net Gain and Natural Capital assessments

WRSE developed a new integrated environmental appraisal process to provide a consistent framework for environmental assessments that could be applied to the emerging WRSE Regional Plan and also be flexible enough to be implemented at a sub-regional level (for the WRMP24s being developed within the WRSE region). The development of the approach and method[9] took into account the supplementary guidance from the EA on Environment and Society in decision-making[10], and used an integrated approach that considered SEA, HRA, WFD, NC and BNG. The methodology was consulted with regulators, including the EA and NE, and then was updated in 2022[11] to reflect this engagement.

The methodology was informed by an initial scoping study[12] to review best practice in terms of understanding of SEA, Ecosystem Services and NCA. A review of available mechanisms for evaluating environmental and social value using literature searches was undertaken and in total 29 tools and approaches to environmental appraisal and valuation were reviewed. In addition, 13 organisations were interviewed.

The initial approach was developed in line with the best practice and guidance available, for example:

- HM Treasury and government finance, (2018) The Green Book: appraisal and evaluation in central government.
- Natural England, (2019), The Biodiversity Metric 2.0 auditing and accounting for biodiversity.
- Natural England, (2020), Natural Capital Indicators: for defining and measuring change in natural capital.
- DEFRA, (2020) Enabling a Natural Capital Approach.
- The Environment Agency, (2020) Water Resource Planning Guidance.
- The Environment Agency, (2020) Water resources planning guideline supplementary guidance - Environment and society in decision-making

It was then updated to reflect the revisions to the WRPG and supplementary guidance.

The detailed methodology used by WRSE to undertake the NC and BNG assessments of options is presented in Appendix F of the SEA Environmental Report (2023) available alongside the Regional Plan[13]. This information has not been repeated here within this appendix. In summary, an option level NCA was undertaken, which included an ecosystems services screening and an in-combination assessment completed. Given the need for consistency between the Regional Plan and WRMP24s, these options (and their BNG and NCA) were the same.

[9] WRSE (2020) WRSE Method Statement: Environmental Assessment Consultation version July 2020. Available at: https://www.wrse.org.uk/media/wjig1mdu/wrse_file_1329_wrse-ms-environmental-assessment.pdf

[10] EA (2022) Water resources planning guideline supplementary guidance – Environment and society in decision-making. Published 03/02/2022

[11] WRSE (2022) Method Statement: Environmental Assessment. Available at: https://www.wrse.org.uk/media/kggcx5ez/wrse-environmental-assessment-method-statement-november-2022.pdf

[12] WRSE (2020) Scoping Technical Methods WRMP24: Environmental Appraisal (April 2020). Available at: https://www.wrse.org.uk/library?documentTags=Method+Statements&documentTags=Technical+Documents

[13] WRSE (2023) SEA Environmental Report: Appendix F NCA and BNG. Available at: https://www.wrse.org.uk/media/gfbbnqjn/wrse-draft-regional-plan-sea-er-natural-capital-assessment-and-biodiversity-net-gain.pdf

Only options that had the potential to result in a land use change were subject to NC and BNG assessments by WRSE. As a result, a number of options were not subject to assessment including drought permits, options relating to change in levels of service to enhance water available for use (WAFU), including NEUBS and TUBS, and demand management options.

The findings of the NC and BNG assessments were translated into metrics and fed into the investment model used for WRSE decision making, these were:

- **Two biodiversity impact metrics** derived from application of the Biodiversity Net Gain 3.0 metric: 1) Total net change in habitat units, and 2) Habitat units requiring replacement, which was either presented as habitat units required to achieve 10% net gain or for options already achieving 10% net gain, the value for this was 0.
- **Natural capital metric**: A single discreet monetised value reported in £/year generated by combining the outputs of each of the six monetised natural capital metrics combining carbon sequestration, food production, air pollution, natural hazard management, and recreation and amenity) to provide a single cost / benefit figure.

These metrics enabled NC and BNG assessment findings to be directly considered in analysis and selection of programmes of options at an early stage in the planning process.

They also informed the selection of the best value plans at both a Regional and WRMP24 level and so reflected in Southern Water's final draft WRMP24.

Section 3 presents a summary of the findings for Southern Water's final draft WRMP24.

3 Biodiversity Net Gain and Natural Capital assessment findings for the final draft WRMP24 options

Table 1 sets out the key findings of the BNG and NC assessments carried out by WRSE for the supply-side options selected in Southern Water's final draft WRMP24.

Table 1 does not include options related to Drought Permits/Orders, Change in Level of Service to enhance water available for use (WAFU) including NEUBS and TUBS, and demand management options as these were all scoped out of the assessment as they are not expected to result in any land-use change and therefore subsequent impacts on BNG or NCA.

For each remaining final draft WRMP24 supply-side option, **Table 1** presents the following:

- **Overall net BNG change (BU):** for the purposes of BNG, biodiversity value is measured in standardised units. A particular habitat will contain a number of units based on multiple factors (such as size, quality, location and type). Units are calculated through the statutory biodiversity metric, as described in **Section 2.1**. This column in the table presents a single score for each option showing the change in units resulting from the implementation of each option.
- **Overall change in natural capital (£/year):** This is a single discreet monetised value reported in £/year generated by combining the outputs of each of the monetised natural capital metrics (carbon sequestration, food production, air pollution, natural hazard management, and recreation and amenity) to provide a single cost / benefit figure.

Where options were scoped out, as they were found to not result in any land-use change (for example, there would be no construction works, or works would be situated within an existing site), these are indicated in the table with 'Scoped out'.

Table 1 Summary of BNG and NC Assessment Findings for the Southern Water WRMP24 BVP

Option Name	Overall net BNG change (BU)*	Overall change in natural capital (£/year)*
Groundwater (SNZ): New borehole at Petworth (4Ml/d)	Scoped out	Scoped out
Recycling (SNZ): Littlehampton WTW with river discharge (15Ml/d)	-186.87	-288.40
Recycling (SNZ): Horsham with storage at Pulborough (6.8Ml/d)	-56.41	-297.40
Storage (SNZ): River Adur Offline Reservoir (19.5Ml/d)	73.53	-15700.96
Bulk import (SNZ): Havant Thicket Reservoir to Pulborough (50Ml/d)	-73.42	-1973.71
Bulk import (SNZ): SES to SNZ (10Ml/d)	Scoped out	Scoped out
Bulk import (SNZ): SES re-zoning (4Ml/d)	Scoped out	Scoped out
Bulk import (SNZ): SEW RZ5 to Pulborough	-136.32	-107.89
Interzonal transfer (SNZ-SWZ): Pulborough to Worthing	-78.32	-124.89
Desalination (SWZ): Tidal River Arun (10Ml/d) Desalination (SWZ): Tidal River Arun (20Ml/d) Desalination (SWZ): Tidal River Arun (20Ml/d) Phase 2	-100.29	-95.64

Option Name	Overall net BNG change (BU)*	Overall change in natural capital (£/year)*
Treatment capacity (SWZ): Pulborough winter transfer stage 1 (2Ml/d)	-109.07	-230.74
Interzonal transfer (SWZ-SBZ): Pulborough winter transfer stage 2 (4Ml/d)	-109.07	-230.74
Interzonal transfer (SBZ-SWZ): Brighton to Worthing	-178.41	-365.30
Interzonal transfer (SWZ-SBZ): V6 valve additional capacity (13Ml/d)	Scoped out	Scoped out
Bulk import (SBZ): SEW to Rottingdean (20Ml/d)	-119.96	-319.20
Groundwater (SBZ): Lewes Road (3.5Ml/d)	-0.01	1.75
Groundwater (HKZ): Remove constraints at Newbury to increase yield (1.2Ml/d)	Scoped out	Scoped out
Interzonal transfer (HAZ-HKZ): Andover to Near Basingstoke bi-directional (10Ml/d)	-48.93	-61.70
Groundwater (IOW): New boreholes at Newchurch (LGS) (1.9Ml/d)	Scoped out	Scoped out
Recycling (IOW): Sandown (8.5Ml/d)	-73.88	-19.23
Groundwater (HRZ): New boreholes at Romsey (4.8Ml/d)	Scoped out	Scoped out
Interzonal transfer (HWZ-HAZ): Winchester to Andover bi-directional (15Ml/d)	-37.64	-51.46
Bulk import (HSE): PWC Source A to Itchen WSW (21Ml/d)	-280.85	-613.47
Bulk import (HSE): Havant Thicket Reservoir to Itchen WSW (90Ml/d)	-180.82	-468.84
Recycling (HSE): Recharge of Havant Thicket from recycled water from Portsmouth Water WTW(60Ml/d)	-122.73	-54.86
Interzonal transfer (HSE-HWZ): Itchen WSW to Yew Hill bi-directional (74Ml/d)	-23.42	-68.80965
Groundwater (HSW): Test MAR (5.5Ml/d)	Scoped out	Scoped out
Bulk export (HSE): Itchen WSW to PWC Source A (45Ml/d)	-57.76	-86.49
Interzonal transfer (HRZ-HSW): Romsey Town and Test valve (3.1Ml/d)	Scoped out	Scoped out
Desalination (KME): Isle of Sheppey (10Ml/d) phase 2 Desalination (KME): Isle of Sheppey 20Ml/d	Scoped out	Scoped out
Groundwater (KME): Recommission Gravesend (2.7Ml/d)	Scoped out	Scoped out
Recycling (KME): Sittingbourne Industrial Water Reuse (7.5Mld)	-20.82	-50.90
Interzonal transfer (KTZ-KME): Utilise full existing transfer capacity (9Ml/d)	Scoped out	Scoped out
Desalination (KMW): Thames Estuary (10Ml/d) Desalination (KMW): Thames Estuary (10Ml/d) Phase 2	-184.41	-1150.94

Option Name	Overall net BNG change (BU)*	Overall change in natural capital (£/year)*
Desalination (KMW): Thames Estuary (20Ml/d) Desalination (KMW): Thames Estuary (20Ml/d) Phase 2		
Recycling (KMW): Medway WTW to lake (14Ml/d)	-41.81	-197.60
Asset enhancement (KMW): Remove network constraint at Longfield (13Ml/d)	Scoped out	Scoped out
Bulk import (KTZ): SEW Kingston to Near Canterbury (2Ml/d)	Scoped out	Scoped out
Desalination (KTZ): East Thanet (20Ml/d) Desalination (KTZ): East Thanet (20Ml/d) Phase 2	-13.93	-69.59
Bulk import (KTZ): SEW Canterbury to Near Canterbury (20Ml/d)	-13.35	-97.92
Interzonal transfer (KME-KTZ): KME-KTZ bi-directional (15.8Ml/d)	-109.80	-2778.55
Groundwater (SHZ): Reconfigure Rye Wells (1.5Ml/d)	Scoped out	Scoped out
Recycling (SHZ): Tonbridge to Bewl (5.7Ml/d)	-31.22	-8644.50
Recycling (SHZ): Hastings to Darwell (15.3Ml/d)	Scoped out	Scoped out
Bulk import(SHZ): SEW RZ8 to Rye	121.85	-153.01
Bulk export (SHZ): Rye to SEW RZ8	121.85	-153.01
Storage (SHZ): Raising Bewl Reservoir 0.4m (3Ml/d)	-98.16	-7744.07
Interzonal transfer (HSE-HSW): Yew Hill WSW to River Test WSW bi-directional (60Ml/d)	-80.81	-295.13
Groundwater (HAZ): Recommission Chilbolton (0.5Ml/d)	-0.64	-381.45
Groundwater (HRZ): Remove constraints at Kings Sombourne (2.5Ml/d)	-0.06	-9.60
Groundwater (SNZ): Petersfield refurbishment (1.6Ml/d)	Scoped out	Scoped out
Groundwater (SNZ): Reinstate West Chiltington (3.1Ml/d)	Scoped out	Scoped out
Bulk import (HAZ): T2ST to Andover (20Ml/d)	**	**
Bulk import (HKZ): T2ST to HKZ (5Ml/d)	**	**
Bulk import (HWZ): T2ST to Yew Hill (95Ml/d)	**	**
Groundwater (IOW): New borehole at Eastern Yar3 (1.5Ml/d)	Scoped out	Scoped out
Interzonal transfer (HSW-HRZ): Romsey Town and Test valve expansion (5Ml/d)	Scoped out	Scoped out

*Rounded to two decimal places
** The three Thames to Southern Transfer (T2ST) form part of the T2ST Strategic Resource Option (SRO).

The T2ST SRO is currently being assessed as part of RAPID's gated process for SROs, which includes assessment of environmental compliance. The T2ST environmental compliance assessments, and the supporting investigations, are ongoing, and completed outcomes will not be available until the RAPID Gate 3 submission in 2026. However, Gate 2 BNG/NC assessments of the overall SRO route options indicate that[14]:

[14] Thames Water and Southern Water (2022), Strategic Regional Water Resource Solutions: Annex B1 Environmental Appraisal Report Standard Gate Two Submission for Thames to Southern Transfer (T2ST). Available online at:

- **BNG:** The SRO is likely to result in a loss of BNG habitat units due to the temporary and permanent loss of natural capital stocks during construction. However, mitigation and enhancement opportunities for the SRO have been suggested in the Gate 2 environmental appraisal report, which can work in tandem to reduce the loss of BNG and introduce net gain. Such measures, will be developed further during later stages of design.
- **NC:** The SRO will cause the temporary and permanent loss of natural capital stocks. The SRO is likely to cause the permanent loss of ancient woodland that once lost cannot be replaced, and therefore, further SRO development could look towards re-iterating the design to avoid impacting these areas.

At present, as presented in **Table 1**, nearly all of the options are resulting in a net-loss to habitats, natural capital assets and corresponding ecosystem services. Broad habitats lost include:

- Woodland and forest;
- Rivers and lakes;
- Grassland;
- Heathland and shrub;
- Urban;
- Cropland;
- Sparsely vegetated land.

These broad habitats correspond with the following habitat types:

- Ponds;
- Lowland mixed deciduous woodland;
- Broadleaved woodland;
- Coniferous woodland;
- Modified grassland;
- Heathland and shrub;
- Urban;
- Cropland;
- Sparsely vegetated land;
- Neutral grassland.

Correspondingly, the habitat loss expected as part of the construction of the options within the final draft WRMP24 are resulting in a net loss of natural capital assets and ecosystem services.

Section 4 outlines the proposed mitigation and enhancement measures that Southern Water will take to ensure BNG commitments are realised through the implementation of the Final WRMP24.

https://www.thameswater.co.uk/media-library/home/about-us/regulation/regional-water-resources/water-transfer-from-thames-water-to-southern-water/gate-2-reports/T2ST-Gate-2-Annex-B1---Environmental-Appraisal-Report.pdf [Accessed April 2024].

4 Next Steps and Implementation

Mitigation of adverse biodiversity and natural capital impacts have already been already considered at the options development and appraisal stage. This includes measures such as rerouting of proposed pipelines to avoid impacts on important habitats or proposed habitat reinstatement for temporary unavoidable habitat loss. Opportunities for further mitigation as well as enhancement will be considered as part of the project level option design stage.

Southern Water is committed to achieve the required 10% BNG for each relevant final draft WRMP24 option when implemented as a project level scheme, and exceed 10% BNG for those schemes that offer sufficient biodiversity uplift potential. Southern Water will systematically assess and manage the BNG of WRMP24 schemes at the project level using the latest Biodiversity Metric tool (currently Statutory Biodiversity Metric[15]). These developments will be guided by best practice, in particular the BNG Good Practice Principles for Development[16]. This approach to BNG is in line with Southern Water's wider company BNG Policy[17]. Biodiversity is already a key aspect of Southern Water's Environmental Management System (EMS) and will be supported by internal BNG guidance.

In addition, Southern Water is aiming to exceed the 10% BNG goal at the programme level for implemented options that require BNG. Progress towards exceeding the 10% BNG goal at the programme level will be periodically monitored through aggregation of scheme-level BNG performance. This process will highlight to what extent the programme is on track towards achieving this goal. Additional BNG measures would be considered if required to achieve programme-level BNG above 10% (for schemes that require BNG).

Beyond BNG, Southern Water is also committed to deliver wider natural capital enhancements through the WRMP24 programme. Southern Water will use state-of-the-art natural capital tools, such as the NATURE Tool[18], to systematically assess and manage natural capital impacts of WRMP24 schemes at the project level for schemes that require BNG. The aim is to achieve natural capital enhancements for priority ecosystem services for schemes where sufficient natural capital enhancement opportunities arise. Assessments and management of natural capital impacts will align with best practice guidance, in particular Defra's Enabling the Natural Capital Approach (ENCA)[19] and the HM Treasury Green Book[20].

Mirroring the BNG approach, natural capital impacts will be periodically monitored and aggregated to assess performance at the programme level. This holistic approach will enable the WRMP24 to achieve wider environmental enhancements alongside BNG, including the creation of more opportunities for communities to access nature and increased carbon storage in vegetation and soils which will also help to achieve Southern Water's climate goals.

[15] Defra (2025), Guidance Statutory biodiversity metric tools and guides. Available online at : https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides [Accessed April 2025]

[16] CIEEM, CIRIA and IEMA (2016), Biodiversity Net Gain Good practice principles for development. Available online at: https://cieem.net/wp-content/uploads/2019/02/Biodiversity-Net-Gain-Principles.pdf [Accessed April 2025]

[17] Southern Water Services (2021), Our policy on biodiversity. Available online at: https://www.southernwater.co.uk/about-us/our-policies-and-standards/biodiversity/ [Accessed April 2025]

[18]NATURE Tool (undated) NATURE Tool. Available online at: https://nature-tool.com/ [Accessed April 2025]

[19] Defra (2023), Guidance Enabling a Natural Capital Approach (ENCA). Available online at: https://www.gov.uk/guidance/enabling-a-natural-capital-approach-enca [Accessed April 2025]

[20] HM Treasury (2024), Guidance The Green Book (2022). Available online at: https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2020 [Accessed April 2025]

Southern Water will achieve these goals through partnership work to ensure interventions are targeted and meet local demand and expectations. Where appropriate, Southern Water will also seek to collaborate with local landowners to deliver BNG and natural capital enhancements off-site, following the mitigation hierarchy.

These measures will ensure that the delivery of the WRMP24 options will not only result in good value for money for Southern Water customers, but also a wide range of co-benefits for wildlife, the climate and the communities it serves.