Drainage and Wastewater Management Plan

Strategic Environmental Assessment Scoping Report

August 2021

from Southern Water

Contents

Abbreviations

AA	Appropriate Assessment
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
BNG	Biodiversity Net Gain Assessment
BRAVA	Baseline Risk and Vulnerability Assessment
CAMS	Catchment Abstraction Management Strategies
CBD	Convention on Biological Diversity
CROW	Countryside and Rights of Way
DAPs	Drainage Area Plans
DCLG	The Ministry of Housing, Communities and Local Government's (formerly the Department for Communities and Local Government). Now referred to MHCLG.
Defra	Department for Environment, Food & Rural Affairs
DSFs	Drainage Strategy Frameworks
DWF	Dry Weather Flow
DWMP	Drainage and Wastewater Management Plan
GEP	Good Ecological Potential
GES	Good Ecological Status
GHG	Greenhouse Gas
HRA	Habitats Regulations Assessment
INNS	Invasive non-native species risk assessment
LNR	Local Nature Reserves
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zones
NC	Natural Capital
NCA	National Character Area
NNR	National Nature Reserves
ODA	Options Development and Appraisal
PR24	The Ofwat 2024 price review
RBD	River Basin Districts
RBMP	River Basin Management Plan
ROWIPs	Public Rights of Way Improvement Plans
SAC	Special Areas of Conservation

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SEA	Strategic Environmental Assessment
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
SST	sea-surface temperature
SuDS	Sustainable Drainage Systems
SWS	Southern Water
UK	United Kingdom
WFD	Water Framework Directive Assessment
WRSE	Water Resources South East
WTW	Wastewater Treatment Works

1. Introduction

1.1. Background and Purpose

This Strategic Environmental Assessment (SEA) Scoping Report has been prepared in support of the development of the Southern Water Services (Southern Water) Drainage and Wastewater Management Plans (DWMPs).

DWMPs are not currently a statutory obligation for companies and, as such, they do not fall within the SEA Regulations (2004). However, in accordance with the DWMP guidance produced by Water UK[1], undertaking SEA on the final optimised plan is considered best practice.

The framework provided by SEA is a useful approach to align the assessment of impacts and benefits of DWMPs to the requirements of an SEA, to demonstrate that the DWMPs deliver the best, sustainable outcomes for customers, stakeholders and the environment. Although not a legal requirement, the SEA for the DWMPs will be legally compliant with the SEA Regulations

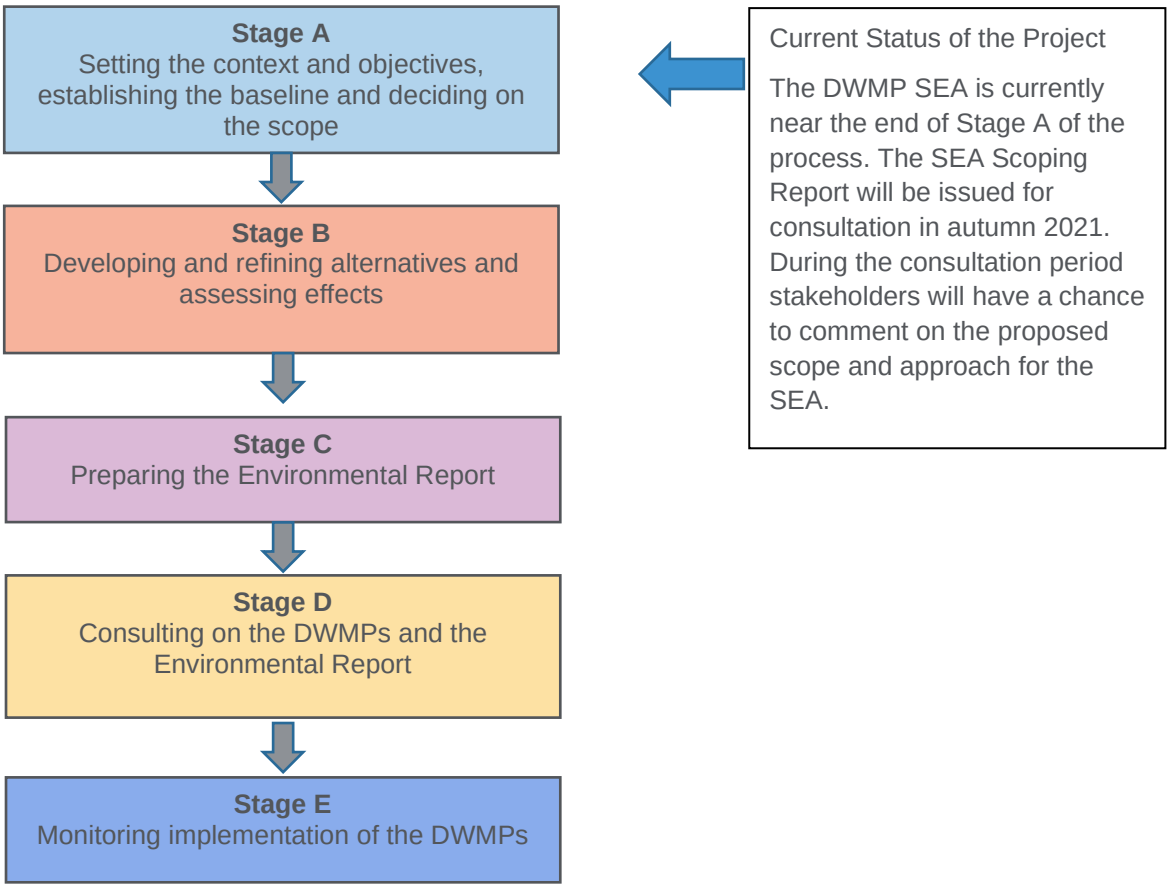
European Union Directive 2001/42/EC, more commonly known as the SEA Directive was transposed into United Kingdom (UK) law via the Environmental Assessment of Plans and Programmes Regulations 2004 ('SEA Regulations'), which requires an assessment of the effects of certain plans and programmes on the environment. Part 2 (5) (2) of the SEA Regulations states that SEA is required for plans and programmes which are prepared for water management and sets the framework for development consents.

1.2. The SEA process

SEA works to inform the decision-making process through the identification and assessment of significant and cumulative effects a plan or programme may have on the environment. The SEA process is conducted at a strategic level and enables consultation on the potential effects of a plan with a wide range of stakeholders. Figure 1 shows the different stages in the SEA process. Appendix A presents the different tasks involved in each of the SEA stages.

[1] A framework for the production of Drainage and Wastewater Management Plans, Commissioned by Water UK, September 2019

Figure 1: SEA process stages



Source: Adapted from 'A Practical Guide to the Strategic Environmental Assessment Directive' (DCLG, 2005)

The first stage, scoping, aims to:

- Set the context for how SEA is integrated into the DWMP, and ensure the DWMP appropriately considers the environment within the decision making process;
- Review relevant International, European, National, and local policies, plans and programmes on sustainable development and environmental protection and their implications for the DWMPs;
- Establish the baseline environmental and socio-economic information;
- Identify the key issues (problems) and opportunities (benefits) that are relevant to the DWMPs;
- Propose the scope for the SEA, providing a focus for future assessment on those issues that are have the potential to result in likely significant environmental effects through the implementation of the DWMPs;
- Developing the SEA objectives, including the methods for assessment; and

- Provide an opportunity to engage and collaborate with the Consultation Bodies[2] and wider stakeholders

The purpose of this Scoping Report is to set the context and scope for the SEA, covering Stage A of the SEA process[3]. The subsequent Environmental Report, published alongside the DWMPs, will set out the results of the SEA assessment (covering Stages B to D). Stage E (Monitoring) will be carried out by Southern Water as part of their monitoring programme.

The remainder of this report sets out the findings from the scoping stage of the SEA. Section 2 describes the plan that is being assessed – the DWMPs. Section 3 identifies the relevant policies, plans and programmes. Section 4 describes the environmental and socio-economic baseline and future trends. Section 5 identifies the issues and opportunities associated with implementing the DWMPs, scoping the likely effects. Section 6 sets out the SEA objectives and the methodology for assessing these is described in Section 7. Views on the SEA Scoping Report are welcomed and Section 8 sets out some questions, the process for capturing views and responses and the next steps.

1.3. Limitations of the Scoping Report

Reliance has been placed on data and information published by third party organisations in the production of this SEA Scoping Report. The baseline information collected in this SEA Scoping Report is the most up-to-date information available at the date of publication, however it is possible that conditions described in this report may change over time. The consultation process aims to address and minimise any gaps in information to ensure all potential environmental effects have been considered with regard to the DWMPs.

The Southern Water (SWS) DWMPs cover a large geographical area. Therefore, the baseline summarised in this report is currently a high-level review of conditions within the Southern Water area of operation. Once specific options and locations for DWMP interventions are known, additional datasets will be collated to inform the assessment process.

[2] The Consultation Bodies are: Natural England, Historic England, and the Environment Agency
[3] DCLG, September 2005, A 'Practical Guide to the Strategic Environmental Assessment Directive', Pages 26 - 29

2. Description and Context of the DWMP

2.1. Introduction

The SEA Regulations require ‘an outline of the contents and main objectives of the plan or programme...’SEA Regulations Schedule 2 (1).

This section explains the objectives of DWMPs and Southern Water’s approach to preparing DWMPs.

Figure 2 shows the SWS area of operation for water supply and wastewater treatment.

DWMPs are the new way to plan for the longer term strategic management of drainage, wastewater and environmental water quality. DWMPs provide the basis for more collaborative and integrated long-term planning by organisations that have interests and/or responsibilities relating to drainage, flooding and protection of the environment. Whilst the production of DWMPs will be led by water companies, all of these organisations have a part to play in their creation.

In 2018, Water UK collaborated with water companies across the UK, plus the Department for Environment, Food & Rural Affairs (Defra); the Welsh Government; Ofwat; the Environment Agency; Natural Resources Wales; the Consumer Council for Water; ADEPT; and Blueprint for Water, to create a framework all water companies can use to work together to improve drainage and environmental water quality.

By planning together, organisations are more likely to work together to deliver improvements that benefit the communities we live and work in.

Further information on DWMPs can be found on the Water UK website at https://www.water.org.uk/.

Figure 2: Southern Water area of operation

2.2. Description of the DWMPs

DWMPs must improve the water sector's approach to long-term drainage and wastewater planning with a view to providing greater transparency, robustness and clarity towards investment decisions.

There are three levels of the DWMP. Water UK have provided guidance which sets out the steps and processes for developing DWMPs[4]. This includes a management structure that sets out three levels of planning, based on different geographical boundaries:

- **Level 1 – Company Level**
    - This plan covers the company's whole operating region and details its corporate strategy for drainage and wastewater management and long-term investment planning to secure the outcomes and resilience for customers and the environment. The level 1 plans brings together information from level 2 and 3 planning to provide a strategic, long-term plan for drainage and wastewater resilience and associated investment over the next 25 years.
    - There will be a single company level DWMP.
- **Level 2 – Strategic Planning Areas**
    - These plans are aligned to individual River Basin Districts (RBD) catchments. They look strategically across each of these individual catchments, so long-term drivers for change can be identified and holistic options considered at the catchment scale. They describe strategic issues and future risks across the geographical area, along with the strategy for investment to manage and reduce the risks to people, businesses and the environment for the future (short, medium and long term). This provides a strategic context for detailed assessments that take place at Level 3.
    - There are 11 RBD catchments and there will be corresponding Level 2 plans.
- **Level 3 – Wastewater Catchment / System Level**
    - These plans cover wastewater treatment works and the sewerage network system, including Drainage Area Plans (DAPs) and Drainage Strategy Frameworks (DSFs). These cover specific local geographical areas within each of the river basin district catchment where customers are connected to the main sewerage system. Level 3 plans consider the investment options and needs to reduce the risks in the system. The investment needs will align with the broader policies for the regional Level 1 plan and the strategic options set out in the Level 2 plans.
    - There are 381 wastewater treatment catchments. Level 3 plans will be developed for priority catchments, aiming to address the needs to as many customers as possible.

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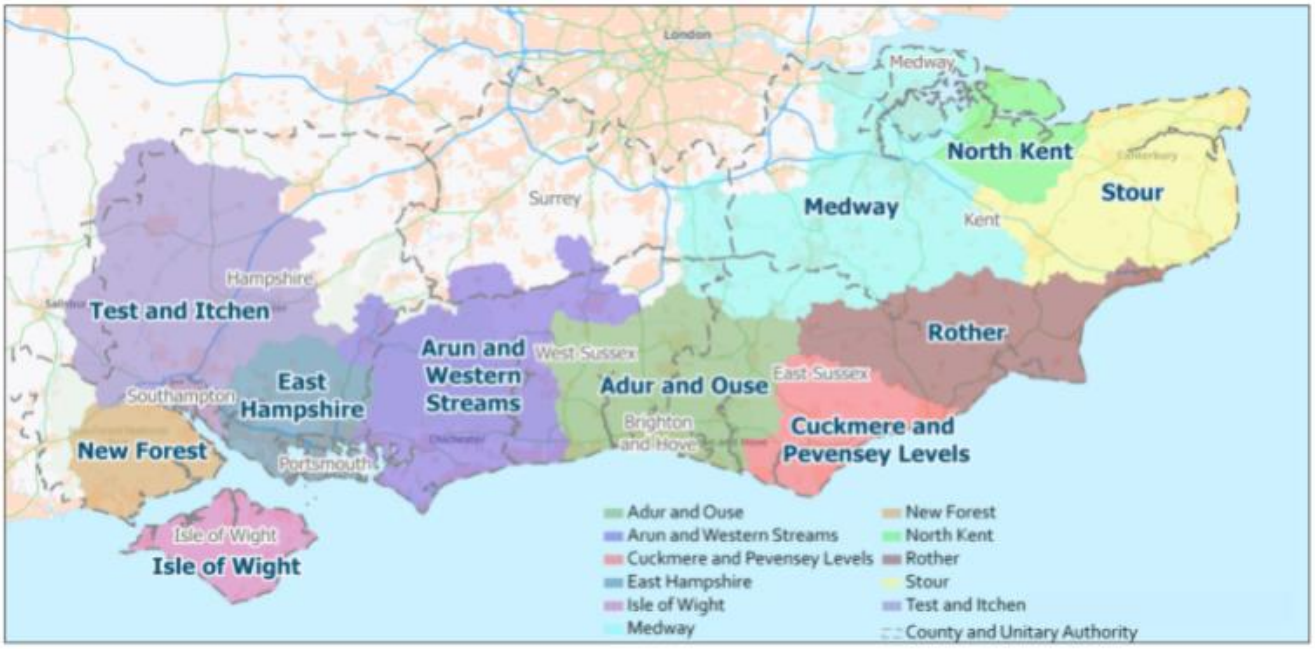
[4] Guidance can be found at: https://www.water.org.uk/wp-content/uploads/2020/01/Water_UK_DWMP_Framework_Report_Main_September-2019.pdf

Figure 3: Southern Water 11 DWMPs



Further information on the DWMPs can be found on our website at https://www.southernwater.co.uk/dwmp.

2.3. Process for developing DWMPs

The process for developing DWMPs is shown in Figure 4[5]. The final DWMP programme is fed into the development of our Business Plan for the next price review period (PR24).

[5] Further information can be found online at: Developing our DWMPs (southernwater.co.uk)

Figure 4: Process for developing DWMPs

Step	Name	Description
1	Strategic context	The strategic context defines the objective of the DWMP, the area that the plan covers and the planning objectives against which current and future performance is to be measured at a company and local planning level.
2	Risk based catchment screening	Risk based catchment screening (RBCS) is designed to focus effort where there is evidence of flooding, pollution issues or other risks that may require action.
3	Baseline risk and vulnerability assessment	The baseline risk and vulnerability assessment establishes the current position of issues in the drainage and sewer catchments, and assesses the potential impacts of future changes. It will also assess the resilience of the systems within the catchments.
4	Problem characterisation	The problem characterisation identifies the nature and complexity of the interventions required and assigns the catchments to different levels of options development and appraisal.
5	Options development and appraisal	The options development and appraisal develops a long list of generic options that could be considered to address the problems within the catchments. Appraisal of these options will lead to feasible options for future funding and implementation.
6	Programme appraisal	The programme appraisal stage will define preferred options based on 'best value' and incorporating ecosystem services assessments / natural capital approaches, and develop a prioritised list of interventions and timetable.
7	Final DWMP programme	The final DWMP is then produced, after external consultation, with a proposed investment programme, to inform our formal Business Plan development and submission to Ofwat to make the case for funding.

2.4. DWMP Options

Developing the DWMP options is Step 5 in the process illustrated in Figure 4. The types of interventions that will be promoted within the DWMPs can be categorised into measures that focus on the source-pathway-receptor model, identifying where measures to manage wastewater and drainage. For each of these categories, a number of Generic Options – different techniques and technologies – have been identified. These are set out in Table 1.

Table 1: Generic option categories proposed for the DWMPs

Type of Measures	Generic Option Categories	Icon	Examples of Generic Options
Source (Demand) Measures (to reduce likelihood)	Control / Reduce surface water run-off		Natural Flood Management; rural land management and catchment management; SuDS including blue and green infrastructure; storm management
	Reduce groundwater levels		Reduce leakage from water supply pipes; pump away schemes to locally lower groundwater near sewer network
	Improve **quality** of wastewater		Domestic and business customer education; incentives and behaviour change (reduce Fats, Oils & Grease, wet wipes etc.); monitoring trade waste at source; on-site black water and/or greywater pre-treatment
	Reduce the **quantity** / demand		Water efficient appliances; water efficient measures; blackwater and/or greywater re-use; treatment at source
Pathway (Supply) Measures (to reduce likelihood)	Improve Sewer Network		Asset optimisation; additional network capacity; storage; separate flows; operational improvements; structural repairs; re-line sewer pipe and manholes; smart networks.
	Improve Treatment Quality		Increase treatment capacity; rationalisation of treatment works (centralisation / de-centralisation); install tertiary plant; UV plant or disinfection facilities; innovation; improve Technical Achievable Limits; new WTWs
	Wastewater Transfer to treatment elsewhere		Transfer flow to other network or treatment sites; transport sewage by tanker to other sites
Receptor Measures (to reduce consequences)	Mitigate impacts on Air Quality		Carbon offsetting; noise suppression /filtering; odour control and treatments
	Improve Land and Soils		Sludge soil enhancement
	Mitigate impacts on receiving waters		River enhancement, aeration
	Reduce impact on properties		Property flood resilience; non-return valves; flood guards / doors; air brick covers
Other	Study / Investigation		Additional data required; hydraulic model development; WQ monitoring and modelling

The DWMP process moves from Generic Options to Feasible Options for each Level 3 catchment. This process involves screening options as they move through Unconstrained Options and Constrained Options stages. Constrained options are reviewed and preliminary feasibility work undertaken to assess their viability and define sufficient detail to confirm them as Feasible Options.

These Feasible Options at Level 3 (wastewater treatment catchments) then form the building blocks for the planned approach to manage wastewater across the Level 2 River Basin District area. This is subject to programme appraisal (Step 6 in Figure 4).

3. Relationships with other Policies, Plans and Programmes

3.1. Introduction

The SEA Regulations require: ‘an outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes’. An additional requirement is: ‘the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation’ SEA Regulations Schedule 2 (1) and (5). This section identifies the relevant policies, plans and programmes.

3.2. Policies, plans and programmes review

A review of the policies, plans, and programmes relevant to the DWMPs was undertaken as part of the SEA Scoping process (listed in Table 2). The aim was to determine how the DWMPs may be affected by these external factors. Furthermore, the DWMPs must aim to support current relevant policies, plans, programmes, and environmental protection legislation at international, national, and local levels. The DWMPs must aim to support, and where possible, strengthen the objectives of other local plans and strategies within the Southern Water region.

A review of these documents is required to identify potential inconsistencies or constraints, and consistencies between these documents and the DWMPs to inform the development of the SEA Framework. Table 2 lists current relevant policies, plans, and programmes which were considered during the SEA scoping stage. Appendix B presents the policies, plans, and programmes review in full.

Table 2: Policies, Plans and Programmes reviewed

International

- Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)
- Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)
- Convention on Biological Diversity (1992)
- Ramsar Convention - The Convention on Wetlands of International Importance (1971)
- UN Framework Convention on Climate Change (1992)
- United Nations (1992) Convention on Biological Diversity (CBD)
- Kyoto Protocol to the UN Framework Convention on Climate Change (1997)
- Commitments arising from the World Summit on Sustainable Development, Johannesburg (2002)
- Paris Agreement (2015)
- Charter for the Protection and Management of Archaeological Heritage (1990)
- The World Heritage Convention (1972)
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (1998)

European[6]

- Ambient Air Quality Directive (2008/50/EC)
- Thematic Strategy on Air Pollution (2005)
- Establishing measures for the recovery of the stock of European eel 2007 (1100/2007)
- Our life insurance, our natural capital: an EU biodiversity strategy to 2020 (2011)
- Fresh Water Fish Directive (2006/44/EC)
- Directive on the Conservation of Wild Birds (79/409/EEC) (as amended)
- European Commission, Birds Directive (2009/147/EC)
- Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC)
- Directive on Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (2006/88/EC)
- Limiting Global Climate Change to 2 degrees Celsius - The way ahead for 2020 and beyond (2007)
- The Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) (1985)
- The European Convention on the Protection of Archaeological Heritage (Valletta Convention) (1992)
- The European Landscape Convention (2006)
- The Environmental Noise Directive (2002/49/EC)
- European Soils Charter (2003)
- Thematic Strategy for Soil Protection (2006)
- The Nitrates Directive (91/676/EEC)
- The Water Framework Directive (WFD) (2000/60/EC)
- European Commission Floods Directive (2007/60/EC)
- Urban Wastewater Treatment Directive (91/271/EEC)
- Drinking Water Directive (1998/83/EC)
- Directive on Bathing Water (76/160/EEC); and Directive 2006/7/EC repealing Directive 76/160/EEC (from 2014)
- Groundwater Directive (2006/118/EC)
- Marine Strategy Framework Directive (2008/56/EEC)

[6] It is acknowledged that the UK has left the European Union. However, European law and policy has formed the basis for UK environmental laws and contributed to the direction of UK policy in these areas for many years. As such, they are considered to remain a useful contextual frame as part of the policies, plans and programmes review. Therefore the Directives are listed here and the relevant national legislation that transposes these Directives is included in the 'National' list of PPPs.

- A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy (2018)
- Promotion of the use of energy and renewable sources Directive (2009/28/EC)
- Energy Act 2013
- Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development
- European Commission Environmental Liability Directive (2004/35/EC)
- Directive on the assessment of the effects of certain plans and programmes on the environment (2001/42/EC)
- Directive on the Assessment and Management of Flood Risks (2007/60/EC)
- Blueprint to Safeguard Europe's Water Resources (2012)
- European Commission, The 7th Environmental Action Programme (EAP) Environment Action Programme to 2020 'Living well, within the limits of our planet' (1386/2013/EU)

National

- The Eels (England & Wales) Regulations 2009 (as amended)
- Salmon and Freshwater Fisheries Act 1975
- UK Post-2010 Biodiversity Framework, JNCC and Defra (2012)
- Making Space for Nature - A review of England's Wildlife Sites and Ecological Network, Defra (2010)
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services, Defra (2011)
- The Conservation of Habitats and Species Regulations (2010) (as amended)
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019)
- Delivering a healthy natural environment. Ecosystem approach action plan, Defra (2010)
- The Invasive Alien Species (Enforcement and Permitting) Order 2019
- EU Regulation 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species
- The Great Britain Invasive Non-Native Species Strategy, Defra (2015)
- A narrative for conserving freshwater and wetland habitats in England, Natural England (2016)
- Conservation 21 - Natural England's Conservation Strategy for the 21st Century, Natural England (2016)
- State of Natural Capital Annual Report 2020, Natural Capital Committee (2020)
- Standing Advice on Protected Species, Natural England (2016)
- Climate Change Act 2008
- UK Climate Change Risk Assessment, Defra (2017)
- The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting, Defra (2018)
- DCLG (2012) National Policy Planning Framework
- National Planning Policy Framework (NPPF) (2019)
- A Green Future: Our 25 Year Plan to Improve the Environment, UK Government (2018)
- Ancient Woodland and Veteran Trees: Protecting them from development, Forestry Commission and Natural England (2014)
- Our Waste, Our Resources: A Strategy for England, HM Government (2018)
- Safeguarding our Soils - A strategy for England, Defra (2009)
- Water Resources Act 1991
- Water Industry Act 1991
- Water Act 2003 (as amended)
- Preparing for a drier future: England's water infrastructure needs, National Infrastructure Commission (2018)
- Draft National Policy Statement for Water Resources Infrastructure, Defra (2018)
- Water for Life White Paper, Defra (2011)
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (as amended)
- Protect groundwater and prevent groundwater pollution, Environment Agency (2017)
- Groundwater protection technical guidance, Environment Agency (2017)
- The Environment Agency's approach to groundwater protection, Environment Agency (2018)
- The Groundwater (England and Wales) Regulations 2009
- Directive 2006/118EC of the European Parliament and of the council of 12 December 2006 on the protection of groundwater against pollution and deterioration
- Flood and Water Management Act 2010
- National Flood and Coastal Erosion Risk Management Strategy for England, Environment Agency (2020)
- The Flood and Coastal Erosion Risk Management Policy Statement, Defra (2020)
- Flood risk assessments: climate change allowances, Environment Agency (2016)
- The Water Resources Management Plan Regulations 2007

- The draft Environment Bill 2020, Defra
- Securing the Future – Delivering the UK Sustainable Development Strategy (2005)
- The Natural Choice: Securing the Value of Nature, Defra (2011)
- Working with the grain of nature: a biodiversity strategy for England, Defra (2002)
- Catchment Based Approach: Improving the quality of our water environment, Defra (2013)
- Marine and Coastal Access Act (2009)
- The Wildlife and Countryside Act 1981 (as amended)
- Environment Protection Act 1990
- Countryside and Rights of Way (CROW) Act
- The Natural Environment and Communities Act 2006 (NERC Act)
- Creating a better place: Our ambition to 2020, Environment Agency (2018)
- UK National Ecosystem Assessment Follow-on (2014)
- National Infrastructure Delivery Plan 2016–2021, Infrastructure and Projects Authority (HM Government) (2016)
- Fixing the foundations: Creating a more prosperous nation, HM Government (2015)
- Environment Act 1995
- The Environmental Damage (Prevention and Remediation) (England) Regulations 2015
- Environmental Assessment of Plans and Programmes Regulations 2004
- Creating a great place for living: together we are building a green and healthy future (2018)
- Planning (Listed Buildings and Conservation Areas) Act 1990
- The Ancient Monuments and Archaeological Areas Act 1979
- Climate Change and the Historic Environment, English Heritage (2008)
- Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment, Historic Environment (2016)
- The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, Historic Environment (2017)
- Water Resources Planning Framework (2015-2065), Water UK (2016)
- Water Supply (Water Quality) Regulations 2016 (as amended)
- National Policy Statement for Wastewater (2012)
- Climate change approaches in water resources planning – Overview of new methods, Environment Agency (2013)
- England Biodiversity Strategy –climate change adaptation principles, Defra (2008)
- Drought response: our framework for England, Environment Agency (2017)
- Future Water: the Government's water strategy for England, Defra (2008)
- Water Resources Planning Guideline, Environment Agency (2016)
- The Urban Waste Water Treatment (England and Wales) Regulations 1994
- The Nitrate Pollution Prevention Regulations 2015
- Managing Water Abstraction, Environment Agency (2016)
- Marine Plans – South East Inshore, South Inshore, South Offshore (Marine Management Organisation)
- UK Marine Policy Statement (2011)
- The Marine Strategy Framework Directive (2008)
- Marine and Coastal Access Act (MCAA) (2009)
- Natural Environment and Rural Communities Act 2006
- Environment Agency, The Wild Trout Trust, Atlantic Salmon Trust (2011) South Coast Sea Trout Action Plan
- Environment Agency (2009) Water Resources Strategy for England and Wales
- Environment Agency (2010) Water Resources Action Plan for England and Wales
- Defra (2015) The government's response to the Natural Capital Committee's third State of Natural Capital report
- Defra (2005) Making Space for Water
- Environment Agency (2013) Evidence Climate change approaches in water resources planning – overview of new methods

Regional and Local

- Site Improvement Plans for Natura 2000 sites: London & South East, Natural England
- Local Development Plans (Various)
- Public Rights of Way Improvement Plans (ROWIPs) (Various)
- Local level Green Infrastructure Plans and Strategies (Various)
- AONB Management Plans (Various)
- National Character Area (NCA) Profiles, Natural England
- River Basin Management Plans (RBMPs) Defra and the Environment Agency; South East river basin district RBMP: 2015
- WRSE Regional Plan
- Draft South East Marine Plan, Marine Management Organisation (2020)
- Environment Agency (2009) Water Resources Strategy, Regional Strategy Actions for South East Region
- South Downs National Park (2013) Partnership Management Plan, Shaping the future of your south downs national park 2014-2019
- Partnership Plan for the New Forest National Park (2015) An update of the National Park Management Plan with actions for 2015 -2020

- Catchment Flood Management Plans, the Environment Agency (2009): South East River Basin
- Catchment Abstraction Management Strategies (CAMS) (2016) (Various)
- Local Flood Risk Management Strategies (Various)

Southern Water

- Environment Policy (2019)
- WRMP 2020-2070 (2019)
- Draft Drought Plan 2022 (2021)
- Business Plan 2020-25 (2019)
- Work in progress DWMPs (2020)
- Southern Water (2011) Strategic Statement 2015-40 and Southern Water (2013) updated Strategic Statement 2015-40 (Parts 1 to 4)
- Southern Water (2013) Five Year Business Plan 2015-2020
- Key initiatives such as: Target 100; Catchment First; Networks 2030; Resource Hubs; Sustainable Drainage 2030

3.3. Identification of key themes and messages

3.3.1. Themes and messages from policies, plans and programmes

The main themes, messages and objectives from the policies, plans and programmes review that are considered relevant to the DWMPs are presented below:

- Conserve flora and fauna and their habitats, including designated and non-designated sites;
- Conservation and wise use of wetlands and their resources;
- Protection of wild birds and their habitats;
- Support environmental and biodiversity net gain,
- Halt overall biodiversity loss;
- Contribute to nature recovery and nature recovery networks and strategies;
- Creation of green infrastructure[7];
- Protection of landscape, townscape or seascape character and quality;
- Improve water quality so all waters achieve 'good status' as set out in the Water Framework Directive;
- Prevent or limit inputs of pollutants into groundwater;
- Promote efficient use of water;
- Reduce and manage the risks of flooding;
- Reduce greenhouse gas emissions to support the transition to the UK Government's 2050 net zero target;
- Adapt to the impacts of climate change including drought, and flooding;
- Increase resource efficiency and reduce natural resource use and waste;
- Create a green economy and promote sustainable growth;
- Promote sustainable and healthy communities[8];
- Promote social inclusion and community participation;
- Protect cultural heritage assets including archaeology and built heritage;
- Protect best quality soils and agricultural land;
- Promote soil health;
- Improve the health and resilience of Chalk Catchments;

[7] The UK Government's 25-year Environment Plan includes a sub-objective for the provision of more and better-quality green infrastructure including urban trees. Available at: https://www.gov.uk/government/publications/25-year-environment-plan
[8] The UK Government definition of sustainable communities as outlined in the document 'Sustainable Communities: Homes for All' (ODPM, January 2005, page 74) is: "*Sustainable communities are places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all*".

- Support the UK Government's 25 Year Plan to Improve the Environment[9]:
    - Using and managing land sustainably – including embedding an "environmental net gain" principle into development (as supported by the draft Environment Bill 2020);
    - Recovering nature and enhancing the beauty of landscapes;
    - Connecting people to the environment to improve health and wellbeing;
    - Increase resource efficiency and reducing pollution;
    - Securing clean, healthy and productive and biologically diverse seas and oceans; and
    - Protecting and improving the global environment.

3.3.2. DWMP planning objectives

Planning objectives are used in the DWMP process to assess the current and future performance of the drainage and wastewater systems, and to identify where action and/or future investment is required. The performance is considered in terms of a risk of harm, based on the likelihood of an event occurring and the potential impact on people, property and/or the environment.

Developing planning objectives is an important early step in the process for DWMPs. The planning objectives enable us to consider and identify the issues that we, and the organisations we are working with, care about in each river basin catchment, such as flooding, pollution and the impact on the environment.

The six common, national planning objectives are:

1. Internal sewer flooding risk – which is internal flooding of a domestic or business premises by wastewater
2. Pollution risk – pollution from any wastewater source on land or in water
3. Sewer collapses risk
4. Risk of sewer flooding in a 1 in 50 year storm – this is a severe storm that is likely to occur once in every 50 years or, put another way, a 2% chance of happening in any 12 month period
5. Storm overflow performance – this is non-compliance of a storm overflow with the permit issued by the Environment Agency which specifies the amount, frequency and concentration allowed to be discharged into the receiving water
6. Risk of WTW quality compliance failure – this is non-compliance of a Wastewater Treatment Works (WTWs) with its permit

We identified two further planning objectives to help us identify where we have current and future risks. The first is on the capacity of our sewers and the second relates to the capacity of treatment works being exceeded as a result of new development (growth) and urban creep (paving over of land and additional connections into the sewer network). These are:

[9] UK Government (2018). A Green Future: Our 25 Year Plan to Improve the Environment. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

7. Annualised Flood Risk (or hydraulic overload). This is the flood risk arising from different severities of rainfall
8. WTW Compliance with the EA's permit relating to the dry weather flow (DWF) arriving at the treatment works

In September 2020, we held a workshop with partner organisations in each river basin catchment. The purpose of the workshops was to discuss the need for any additional planning objectives to reflect any concerns or local issues with input from partner organisations. As a result of these workshops the following six additional planning objectives were included within our DWMPs:

9. Achieve Good Ecological Status or Good Ecological Potential (GES/GEP)
10. Improve surface water management and reduce surface water flooding
11. Secure nutrient neutrality
12. Reduce groundwater pollution
13. Improve bathing waters
14. Protect shellfish water

These planning objectives are an important step to improving knowledge and understanding of the potential impacts (positive and negative) of drainage and wastewater operations on the environment.

The themes, messages and objectives identified from the policies, plans, and programmes review will provide an input into the process of identifying key issues and opportunities and developing the SEA Framework.

The compatibility of the DWMP planning objectives with the SEA objectives is explored in Section 6.2.

4. Environmental baseline

4.1. Introduction

The SEA Regulations requires: 'the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme' and 'the environmental characteristics of areas likely to be significantly affected' SEA Regulations Schedule 2 (2) and (3).

An essential part of the SEA process is to identify the current baseline environmental and socio-economic conditions and their likely evolution during the life of the plan (in this case, over the next 25 years).

The data has been drawn from a variety of sources, including a number of the plans and programmes reviewed as part of the SEA process (as set out in Section 3.2); and from other published sources as referenced in this section.

The key issues arising from the review of baseline conditions are summarised in Section 5.

4.2. Baseline information

Baseline information for the Southern Water area of operation and the likely future trends for the environmental issues being considered (as far as information is available) is included in Appendix C. A summary of the baseline is set out in Table 3.

The baseline information is presented under the SEA Directive topics and provides an evidence base from which environmental issues or opportunities resulting from the DWMPs can be predicted and assessed.

Baseline information has been collected for the Southern Water area of operation, with reference to the 11 RBD catchments:

- Adur and Ouse
- Arun and Western Streams
- Cuckmere and Pevensey Levels
- East Hampshire
- Isle of Wight
- Medway
- New Forest
- North Kent
- Rother
- Stour
- Test and Itchen

Maps showing key spatial baseline information are referenced in Appendix C and presented in Appendix D.

The Southern Water area of operation covers a large geographical area (for local authorities affected, see Appendix C). Therefore, the baseline is currently a high-level review of conditions within the region, rather than being location specific. Once options and their locations are better defined and narrowed down in number and location a review of the specific site baseline conditions will be undertaken and the environmental datasets will be reviewed to support the assessment of the options.

Table 3: Baseline information summary

SEA topic	Baseline summary
Biodiversity, flora and fauna	The SWS area of operation contains 38 Special Areas of Conservation (SAC), 18 Special Protection Areas (SPA), 13 Ramsar sites, 369 Sites of Special Scientific Interest (SSSI), 26 National Nature Reserves (NNR), 165 Local Nature Reserves (LNR), 14 Marine Conservation Zones (MCZ) and 2 Biosphere Reserves
Soil	The majority of agricultural land in the area is classified as Grade 3, with some Grade 1 and 2 land located to the east of the area, and some Grade 5 and urban land located to the west. There are 145 authorised landfill sites and over 1800 historic landfill sites across the SWS area of operation.
Water	The SWS area of operation is one of the driest areas in the UK and is classed as an area with serious water stress. There are seven man-made reservoirs owned by various water companies within the SWS area of operation. Flood risk across the SWS area of operation is diverse and can occur from a wide range of sources including rivers and the sea, groundwater, reservoir and surface water
Air	Many of the RBD catchments within the SWS area of operation contain at least one air quality management area (AQMA), which are predominately designated for Nitrogen dioxide (NO_2) and Particulate Matter (PM_{10}).
Climatic factors	Current observations indicate that the UK is continuing to warm. The year 2020 was the third warmest year for the UK in a series from 1884, and the eighth warmest year for UK near-coastal sea-surface temperature (SST) in a series from 1870
Landscape	The landscape across the SWS area of operation is diverse and is made up of a mixture of lowlands and small hills. There are 2 National Parks; 2 National Tails; 6 Areas of Outstanding Natural Beauty (AONB); and 17 NCAs within the SWS area of operation.
Historic environment	The SWS area is rich in heritage with over 43,000 listed buildings, approximately 1,770 scheduled monuments, approximately 5850 conservation areas, approximately 180 registered parks and gardens, 3 registered battlefields, 3 protected wrecks, 5 heritage coasts and 2 world heritage sites
Population and human health	The South East region (which covers the SWS operational area), has the highest population of all the regions of the UK, with an estimated population of 9,217,265 in mid-2020. There are expected to be an additional five million people within the SWS operational area by 2041. The percentage of the population describing their general health (for categories very good, good, fairly good, not good, and very bad) in South-East region is aligned with the national averages.
Material assets	SWS treats and recycles 700 million litres of wastewater per day at nearly 400 wastewater treatment works, after it has travelled through 39,000 kilometers of sewers. SWS supplies approximately 535 million litres of drinking water each day to its customers. The SWS area has an extensive transport network for road and rail. International airports at Gatwick and Southampton serve the regional population and the two busiest UK sea ports (Southampton and Dover) are also located within the region. In 2019/20 the total amount of local authority managed waste was approximately 25 million tonnes.

5. Key Environmental Issues and Opportunities

5.1. Introduction

The SEA Regulations require “Consideration of ‘any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds (a) and the Habitats Directive’ SEA Regulations Schedule 2 (4).

This section draws on the findings from:

- activities and actions that are likely to be delivered by the DWMPs (Section 2)
- review of plans, policies and programmes (Section 3)
- review of existing baseline and the future trends (Section 4)

Based on these findings, the issues and opportunities for the natural and human environment have been identified. These issues and opportunities represent environmental priorities and sensitivities that could be affected by the proposals set out in the DWMPs.

5.2. Issues, opportunities and scoping

The issues and opportunities are presented in Table 4, for each of the SEA topics. This shows that the proposals in the DWMPs have the potential to have some effect on all of the SEA topics and therefore all topics are scoped into the assessment.

However, as the proposals in the DWMPs are so varied (see Table 1) not all of the generic options are likely to affect all of the SEA topics. Therefore, for each generic option, we have identified those SEA topics that are scoped in – where issues and opportunities could arise – and those SEA topics that are scoped out – where the generic options are not likely to result in significant environmental effects (see Appendix E).

Table 4: Key issues and opportunities relevant to the DWMPs

SEA topic	Scoped in	Issues	Opportunities
Biodiversity, Flora and Fauna	Yes	• Potential that new infrastructure could contribute result in loss and/or fragmentation of locally, nationally and internationally designated ecological habitats. • Consequences for species abundance and diversity due to loss and fragmentation of habitats and disturbance • Potential that inadequate wastewater and drainage services and pollution from wastewater discharges could affecting aquatic, marine and riparian/terrestrial ecology (including chalk streams) • Risk of transfer of Invasive Non-Native Species	• Potential to introduce nature-based methods for wastewater services which can create, restore, rewild, connect, improve the quality and diversity of habitats and species • Slow/ halt biodiversity losses and declines and support nature recovery and returning areas to a natural state • Promote and achieve biodiversity net gain, integrating biodiversity considerations into new infrastructure • Connect people with nature and improving access to greenspace and biodiversity, particularly people in urban areas • Integrate a natural capital approach to influence decision making and achieve better outcomes, and seek to grow the value of the area's natural capital
Soil	Yes	• Potential for the loss of soil (including agricultural land) and deterioration in soil quality where new infrastructure may be required or pollution occurs • Poor soil quality can have implications for storing water and flood management, agricultural processes and food production, biodiversity, water quality and carbon storage • Potential for soil disturbance and / or contamination during construction phase activities (e.g. disturbance of landfill sites)	• Protect the highest quality agricultural land from disturbance and loss • Opportunity to increase infiltration and improve soil structure through sustainable land management • Ensure soils are protected from contamination • Prioritise the implementation of catchment management solutions to help manage soils, increase soil health and reduce impacts on waterbodies • Encourage adoption of farming principles and practices to increase biodiversity
Water	Yes	• Increased demand and pressure on water resources and wastewater treatment due to population and economic growth • Risk of pollution to affecting waterbodies, habitats and species (including groundwater, bathing water, shellfish water and chalk streams) • Risk to WFD waterbodies being able to achieve Good Ecological Status or Good Ecological Potential • Risk of flooding, including internal and external sewer flooding.	• Ensure the protection, improvement and sustainable use of all waterbodies • Plan for and deliver additional wastewater treatment to support new development and growth • Reduce per capita water consumption and therefore reduce demand for wastewater treatment services • Reduce flood risk and increase resilience of infrastructure to flooding (including measures at a catchment scale) • Encourage a nature-based approach to managing water / wastewater to leave more water in the natural environment • Avoid and control water pollution

SEA topic	Scoped in	Issues	Opportunities
		• Contamination or exacerbation of existing contamination of the water environment from development • Risk to nutrient neutrality	• Improve water quality in all waterbodies
Air	Yes	• Potential for short term increase in air pollution due to construction activities • Proposals that rely on transporting / tankering wastewater / sludge likely to generate pollutants • New wastewater treatment infrastructure has the potential to generate emissions to air (including odour) and noise	• Potential for transport / tanker options, if required, to be electric fleets • Maintenance, replacement and upgrade of assets / infrastructure to consider benefits in avoiding pollutants with cleaner technology • Potential to install specific technology to tackle odours and emissions to air to improve ambient air quality
Climatic Factors	Yes	• Construction of new infrastructure could generate additional GHG emissions • Proposals for pumping and transporting / tankering wastewater likely to generate additional GHG emissions • Additional GHG emissions during the construction and operation phases likely to be challenges to carbon neutrality objectives • Risk of existing and future assets being vulnerable to the current and future effects of climate change (e.g. weather extremes)	• Considering whole life GHG emissions / carbon implications for achieving carbon neutrality objectives. • Identify opportunities to make use of renewable energy. • Ensure that climate risks are actively and consistently managed across the DWMPs and resilience is integrated into new and existing places, spaces and infrastructure • Avoid development in areas at high risk of flooding • Increase the provision of green infrastructure and nature recovery to improve resilience to climate change through sequestration of carbon • Consider the impact of climate change within the option selection process. Measures to increase the resilience of the option to a changing climate should be considered • Opportunity for nature based solutions and habitat restoration to offset and sequester carbon
Landscape	Yes	• Avoid disturbance to locations subject to international, national and local landscape designations • Some types of wastewater infrastructure could detract from the visual identity of the area • Potential for temporary construction effects and permanent effects associated with infrastructure which could affect visual amenity or the character of the area	• Protect and enhance landscape character • Natural capital approaches to inform decision-making • Encourage sustainable use of land • Enhance landscapes by working with stakeholders through habitat creation, implementation of catchment-based solutions and safeguarding existing habitats

SEA topic	Scoped in	Issues	Opportunities
		• Many parts of the natural environment within the Southern Water operational area are relatively inaccessible to the public	
Cultural Heritage	Yes	• Avoid disturbance to locations subject to international, national and local heritage designations • Potential for disturbance of heritage assets (and their settings) and archaeology during construction activities	• Consider impacts on heritage assets as early as possible • Identify opportunities to integrate access to heritage assets into relevant proposals
Population, Communities and Human Health	Yes	• A predicted increase in the population leading to additional demand for wastewater services • Temporary disturbance effects during construction affecting the amenity of local communities • Potential for ongoing amenity impacts affecting communities for some types of wastewater infrastructure	• Prevent the damage to property and impacts on wellbeing associated with sewer flooding • Plan construction activities to minimise disturbance of the local community • Enhance the natural environment for recreation purposes to improve wellbeing • Provide a resilient and reliable plan for drainage and wastewater management for customers
Material Assets	Yes	• Potential for temporary increases in road congestion during construction activities • Development pressures on existing wastewater infrastructure • High energy use from existing inefficient equipment • Potential for increased demand for energy for some proposals, e.g pumping solutions.	• Deliver well planned and co-ordinated wastewater infrastructure – incorporating sustainable design - which integrates a natural capital approach, and supports the net zero transition, to serve population growth and business needs. • Contribute to the transition to a circular economy to optimise resource use, create new opportunities (e.g. resource hubs) and reduce environmental pressures of production and consumption • Contribute to waste reduction targets and increase recycling rates, reducing the amount sent to landfill

6. SEA Framework

6.1. SEA objectives and assessment criteria

A key part of the SEA Scoping process is the development of the SEA Framework. The SEA Framework forms the basis for predicting and assessing the effects arising from the implementation of the DWMPs and will be used to assess the DWMPs.

An overarching set of SEA objectives and assessment questions to guide the assessment have been developed.

For the purpose of this SEA, the starting point for developing SEA objectives are the SEA objectives that were used for the WRSE regional plan. These are linked to the environmental and social topics that are set out in the SEA Regulations. The key priorities used by WRSE and have been informed by a review of the SEA objectives used for WRMP19 by the six water companies' within WRSE (including Southern Water).

Some edits were made to the SEA objectives and assessment criteria that align this SEA to wastewater rather than water resources.

The proposed SEA objectives are summarised in Table 5 and expanded to include the assessment questions in Table 6.

Table 5: Proposed SEA objectives

SEA topic	Proposed SEA Objective
Biodiversity, Flora and Fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)
Soil and Geology	Protect and enhance the functionality, quantity and quality of soils
Water	Increase resilience and reduce flood risk
	Protect and enhance the quality of the water environment
	Deliver reliable and resilient wastewater services
Air	Reduce and minimise air emissions
Climatic Factors	Reduce embodied and operational carbon emissions
	Reduce vulnerability to climate change risks and hazards
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity
Cultural Heritage	Conserve, protect and enhance the historic environment, including archaeology
Population, Communities and Human Health	Supporting communities and economic growth
	Maintain and enhance tourism and recreation
Material Assets	Minimise resource use and waste production

Table 6: Proposed SEA framework

SEA topic	Proposed SEA Objective	Assessment Questions/Sub-Themes
Biodiversity, Flora and Fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)	• Will it affect the conservation status of any SPA, SACs, Ramsar sites, SSSI or locally designated sites? • Will it protect and enhance aquatic environment, habitats and species, including freshwater fisheries and chalk rivers? • Will it affect the marine environment, habitats and species (including MCZs)? • Will it affect ancient woodland? • Will it affect any habitats that support legally protected species, priority species or species of conservation concern? • Will it bring opportunities for habitat creation or restoration? • Will it help to restore the natural ecosystem function and/or promote resilience / adaptation to climate change? • Will it contribute to the loss or gain in biodiversity, and/or habitat connectivity? • Will it limit, reduce or increase the risk of introducing or spreading INNS? • Will it create areas of improved biodiversity in urban or deprived areas (or locations that are accessible to those areas)?
Soil and Geology	Protect and enhance the functionality, quantity and quality of soils	• Will it affect high grade agricultural land? • Will it protect and enhance the quality of soils? • Will it promote the efficient and sustainable use of land? • Will it prevent soil erosion and retain soil stocks as a natural resource? • Will it prevent mineral sterilisation of land and nutrient loading in water bodies? • Will it create soil/land contamination or involve remediation? • Will it avoid damage to and protect geologically important sites (e.g. geological SSSIs)?
Water	Increase resilience and reduce flood risk	• Will it be vulnerable to flood risk? • Will it contribute to the risk of flooding? • Will it mitigate or reduce the risk of flooding?
	Protect and enhance the quality of the water environment	• Will it affect surface water quality or quantity? • Will it affect ground water quality or quantity? • Will it contribute to or conflict with the achievement of WFD objectives (e.g. Good Ecological Status / Good Ecological Potential)? • Will it improve bathing waters? • Will it protect shellfish waters? • Will it protect chalk rivers? • Will it improve waste water quality?

SEA topic	Proposed SEA Objective	Assessment Questions/Sub-Themes
		• Will it reduce the presence of contaminants in waterbodies? • Will it reduce the risk of pollution from any wastewater source on land or in water? • Will it support greater water efficiency and re-use at source? • Will it enable better management of surface water before entering sewers?
	Deliver reliable and resilient wastewater services	• Will it promote a catchment-based approach and solutions? • Will it increase the resilience of water and wastewater systems? • Will the option protect and enhance the environmental resilience of the water environment to climate change, flood risk and drought? • Will it provide an opportunity for co-delivery with partner organisations?
Air	Reduce and minimise air emissions	• Will it decrease the air quality within in an AQMA? • Will it affect local air quality?
Climatic Factors	Reduce embodied and operational carbon emissions	• Will it reduce or minimise greenhouse gas (GHG) emissions? • Will it reduce carbon emissions and support carbon neutrality / reduction targets? • Will it make use of or generate renewable energy? • Will it incorporate measures to reduce its carbon footprint? • Will it affect carbon sequestration?
	Reduce vulnerability to climate change risks and hazards	• Will it be vulnerable to climate change? • Will it include climate resilience measures? • Will it adapt to future climatic risks or create opportunities to benefit from potential effects of climate change?
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	• Will it have an effect on the character of the landscape, townscape or seascape, including tranquillity and views? • Will it improve access to the countryside? • Will it create or improve green infrastructure? • Will it protect and enhance designated landscapes and features?
Cultural Heritage	Conserve, protect and enhance the historic environment, including archaeology	• Will it affect designated or non-designated historic assets, sites and features? • Will it affect the setting and/or significance of a historic asset? • Will it affect archaeology (including unknown archaeology)? • Will it affect heritage assets at risk? • Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?
Population, Communities and Human Health	Supporting communities and economic growth	• Will it provide reliable and affordable wastewater services for the health and wellbeing of customers? • Will it allow for economic development and/or diversity? • Will it have an effect on active lifestyles, such as impacts on active travel through disruption to pedestrian and cycle routes?

SEA topic	Proposed SEA Objective	Assessment Questions/Sub-Themes
		• Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way and national trails? • Will it affect access to road or rail infrastructure? • Will it minimise disturbance from noise, light, visual, and transport? • Will it local communities have been actively engaged to foster an inclusive environment and participate in decision making? • Will it address specific customer concerns?
	Maintain and enhance tourism and recreation	• Will it maintain or enhance tourism? • Will it improve access to the natural environment for recreation, including those living within deprived areas? • Will it have an effect on freshwater/marine fisheries for recreational purposes?
Material Assets	Minimise resource use and waste production	• Will it make use of existing infrastructure? • Will it minimise the demand for resources? • Will it use natural rather than built solutions where appropriate? • Will it minimise the use of energy and promote energy efficiency? • Will it reduce the production of waste and increase the proportion for reuse or recycling?

6.2. Compatibility of SEA objectives

The development of SEA objectives based on environmental, social and economic issues means that it is likely not all of the objectives will relate or be compatible with the DWMP planning objectives. Objectives which cover economic issues may sometimes conflict with environmental objectives, and vice versa, for example. A compatibility assessment of the SEA objectives is presented in Table 7 and demonstrates any potential conflicts and uncertainties between the SEA objectives.

The following key has been used to illustrate the SEA objectives compatibility:

+	Objectives are compatible
-	Objectives are potentially incompatible
0	Objectives are not related
/	Uncertainty over relationship

The compatibility matrix demonstrates that the planning objectives of the DWMPs are compatible with the SEA objectives. Many of the DWMP planning objectives are directly seeking improvements in the natural environment or reductions in events affecting people's homes. Therefore, we would expect to see many compatible objectives. There may be some areas where the way the DWMP planning objective is met, i.e. the specific intervention that is proposed or the sensitivities of a specific location, that may lead to some tensions with SEA objectives. These are the areas where the need for mitigation will be identified.

Table 7: SEA objectives compatibility matrix

SEA objectives	DWMP planning objectives													
	1. Internal sewer flooding risk	2. Pollution risk	3. Sewer collapses risk	4. Risk of sewer flooding	5. Storm overflow performance	6. Risk of WTW quality compliance failure	7. Annualised Flood Risk	8. WTW Compliance	9. Achieve GEP/GEP	10. Improve surface water management	11. Secure nutrient neutrality	12. Reduce groundwater pollution	13. Improve bathing waters	14. Protect shellfish water
Protect and enhance Biodiversity, Flora and Fauna	0	+	+	+	+	+	+	+	+	+	+	+	/	+
Protect and enhance Soil and Geology	0	+	+	+	+	+	+	+	+	+	+	+	0	0
Increase resilience and reduce flood risk	+	+	+	+	+	+	+	+	0	+	0	+	0	0
Protect and enhance the quality of the water environment	+	+	+	+	+	+	+	+	+	+	+	+	/	+
Deliver reliable and resilient wastewater services	+	+	+	+	+	+	+	+	0	+	0	+	0	0
Reduce and minimise air emissions	+	+	+	+	+	+	+	+	0	0	+	+	0	0
Reduce embodied and operational carbon emissions	+	0	+	0	0	+	0	+	0	0	0	0	0	0
Reduce vulnerability to climate change risks and hazards	0	+	+	+	+	+	+	+	0	+	0	+	0	0
Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	+	+	+	+	+	+	+	+	0	+	0	+	/	+
Conserve, protect and enhance the historic environment, including archaeology	0	+	+	+	+	+	+	+	0	+	0	+	0	0
Supporting communities and economic growth	+	+	+	+	+	+	+	+	0	+	0	+	+	+
Maintain and enhance tourism and recreation	0	+	+	+	+	+	+	+	+	+	0	+	+	+
Minimise resource use and waste production	+	+	+	+	+	+	+	+	0	+	0	+	/	/

7. Methodology

7.1. Introduction

Water UK guidance on DWMPs advises that "undertaking an SEA on the final optimised DWMP would be 'best practice' and is recommended. In developing the options, the approaches outlined include a requirement to assess their overall environmental and societal impact, aligned to the requirements of an SEA".

This chapter sets out a summary of the proposed assessment methodology in relation to completing a high level assessment following the principles of SEA, including identifying how environmental and social issues are considered through the DWMP option development and appraisal process.

The following environmental assessments will be undertaken, where applicable:

- Strategic Environmental Assessment (SEA)
- Habitats Regulations Assessment (HRA)
- Water Framework Directive Assessment (WFD)
- Invasive non-native species risk assessment (INNS)
- Natural Capital Assessment (NC)
- Biodiversity Net Gain Assessment (BNG)

The SEA process will follow current and upcoming guidance on the application of SEA assessment to Drainage and Wastewater Management Plans including incorporating best practice within the proposed approach. The current guidance documents (drawing on good practice for water resources and wastewater) include:

- A framework for the production of Drainage and Wastewater Management Plans, Commissioned by Water UK, September 2019
- Strategic environmental assessment and habitats regulations assessment - guidance for water resources management plans and drought plans, 2012, UK Water Industry Research
- Strategic environmental assessment and habitats regulations assessment - guidance for water resources management plans and drought plans, Update ongoing, UK Water Industry Research
- Strategic Environmental Assessment: Core Objective Identification, 2020, All Company Working Group.
- Water Resource Planning Guideline, 2021, Environment Agency, Office for Water Services, Natural Resources Wales.
- Water Resource Planning Guideline Supplementary Guidance (March 2021) 'Environment and Society in Decision-Making'
- WRSE (2020) WRSE Regional Plan. Strategic Environmental Assessment Scoping Report. Revision B. 18 September 2020. 124 pages. Available online at: wrse-regional-plan-strategic-environmental-assessment-scoping-report.pdf

7.2. SEA methodology

7.2.1. Overview

Water UK guidance recommends undertaking an SEA on the final optimised plan (i.e. Level 1 company level DWMP). A requirement of the Water UK guidance is also to undertake the development of options (interventions to manage drainage and wastewater) with an understanding the environmental and social impacts, aligned to the requirement of SEA.

Therefore there is opportunity to embed consideration of environmental and social impacts throughout the DWMP process. The following sections set out how environmental and social impacts will be considered and assessed. The generic options to address issues and risks in wastewater catchments (Level 3) form the building blocks to the proposals across River Basin District catchments (Level 2) which in turn inform the strategic company level DWMP (Level 1).

7.2.2. Application at Level 1

The final SEA report will be a supporting document to the single company level DWMP. The company level DWMP is the investment plan for the next 25 years. The SEA report will describe the findings of the SEA process applied across all the Level 2 DWMPs. The final DWMP programme is fed into the development of our Business Plan for the next price review period (PR24).

7.2.3. Application at Level 2

At Level 2, 11 DWMPs will be developed (one for each of the River Basin District catchments). The Level 2 DWMPs will comprise the risk assessment results, the problem characterisation, the options explored for each Level 3 and the proposed investment programme to manage and reduce the risks, using the outputs from the Level 3 catchment DWMPs.

At this stage, the SEA assessment will be carried out using the SEA Framework outlined in Table 6. Each SEA objective has a defined scoring system using a qualitative scale of minor, moderate, major positive and minor, moderate, major negative, and neutral. The effects of each option will be assessed using this scale and a narrative justification, using the scoring method in Appendix F.

The assessment will be split into construction effects and operational effects as these may be quite different and would not provide an accurate picture if they were combined. Proposals may have both positive and negative effects under a SEA objective. Rather than trading these effects to cancel each other out, both positive and negative scoring will be used to show there are potential mixed effects.

Potential mitigation and enhancement measures will also be identified and fed back to the development team as part of an iterative process. Proposals with major and moderate negative effects will need to include appropriate mitigation.

The report of the SEA will identify the main environmental and social effects of the DWMP, considering any cumulative and/or in-combination effects.

When considering the 11 DWMPs collectively, any environmental and social cumulative / in-combination effects of the components of the DWMP will be identified. This will include looking across plans such as Water Resource Management Plan, Drought Plan, to identify any additional impacts across SEA, HRA and WFD.

Natural Capital and Biodiversity Net Gain assessments will also be applied to the Level 2 programme. In addition, any sites that have been flagged during HRA or WFD screening stages will also be subject to further assessment.

7.2.4. Application at Level 3

Level 3 is focused on the wastewater catchments (systems). A subset of Southern Water's catchments has been prioritised and options to address risks and issues are being developed; this is the Options Development and Appraisal (ODA) process. The outputs of the ODA process for Level 3 catchments form the components of a Level 2 DWMP (for the River Basin District catchment in which the wastewater treatment catchment is located). The DWMP ODA process will consider environmental and social impacts aligned to the requirements of SEA. The sections below set out the environmental and social considerations for relevant stages of the ODA process.

- Generic Options – A list of potential types of solution, grouped around Source, Pathway, Receptor and Other were developed (see Table 1: Generic option categories proposed for the DWMPs). The generic options have been screened to identify potential environmental and social impacts (see Appendix E).
- Unconstrained Options – A review of the generic options, applying questions to consider whether the option would address an identified problem. The question "Are there environmental risks (in establishment/operation and outcomes), that cannot be mitigated or benefits provided?" is posed. For the purposes of this question, the main environmental risks seek to understand whether the Level 3 catchment contains any Special Areas of Conservation (SAC), Sites of Special Scientific Interest (SSSI), Special Protection Areas (SPAs), Ramsar sites and Scheduled Monuments. This helps to raise awareness of environmental sensitivities that should be considered in developing options.
- Constrained Options – A review of the performance of the options against criteria including feasibility and risk, engineering and cost, performance (delivering desired outcomes), operation of the system and environmental and social considerations. At this stage, each Level 3 catchment is subject to a high-level assessment of the environmental and social constraints within that catchment. These are set out in Table 8 and focus on identifying the designations associated with SEA objectives that are present in each Level 3 catchment. This information can then inform the 'Environmental' score, and therefore influence decision-making on which options are carried forward.

Table 8: Constrained Options –SEA considerations

SEA topic	Proposed SEA Objective
Biodiversity, Flora and Fauna	• HRA (internationally designated sites) • SSSIs, national nature reserves (national level sites) • Risk of Invasive Species
Soli and Geology	• Agricultural land classification • Landfill sites
Cultural Heritage	• Protected structures • Designated sites
Water	• Groundwater source protection zones • Areas of Flood Risk • WFD waterbodies
Air	• Air Quality Management Areas
Climatic Factors	• Additional carbon emissions
Landscape	• International designations • Areas of Outstanding Natural Beauty and
Population, Communities and Human Health	• National and regional recreation facilities
Material Assets	• Minimise resource use and waste production

- Feasible Options – For each Level 3 area, Feasible Options are those options that could address the identified risks and issues in the catchment. Some feasible options may be able to achieve this being the single and only intervention. However, it is more likely that feasible options will need to be grouped or combined, in order to address the identified risks and issues. Therefore, combining and grouping different feasible options together provides different ways of addressing risks and issues or realising benefits within a Level 3 catchment. It is these groups of feasible options that will be subject environmental and social assessment against the SEA objectives using the scoring criteria (see Appendix F). This will be a high-level application of the scoring criteria. At this stage, the availability of the information to define the feasible options (e.g. location of interventions) will influence the extent to which assessment scoring criteria can be meaningfully applied. Assuming appropriate information is available, screening will be applied to identify the need to trigger a Habitats Regulation Assessment (HRA screening), the need to trigger a Water Framework Directive assessment (WFD screening). The outputs of this stage will inform the identification of Preferred Option for each Level 3 catchment. This will then form a component of the Level 2 DWMPs.

7.3. Other assessments

Habitats Regulations Assessment

The HRA is a statutory requirement in its own right, but also feeds into the SEA objective on biodiversity.

A HRA includes several stages, as detailed in the Conservation of Habitats and Species Regulations 2017 (as amended), known as the Habitats Regulations, to determine if a plan or project may affect the protected features of a designated site before deciding whether to undertake, permit or authorise it. Changes to the Habitats Regulations came into force on 1 January 2021 introduced by the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019.

The HRA process follows the stages detailed below[10] :

- Stage 1 Screening - to check if the proposal is likely to have a significant effect on the site's conservation objectives. If so, the proposal needs to go through the appropriate assessment or derogation stages.
- Stage 2 Appropriate Assessment - to assess the likely significant effects of the proposal in more detail and identify ways to avoid or minimise any effects.
- Stage 3 Derogation - to consider if proposals that would have an adverse effect on a European site qualify for an exemption.

The DWMP will include Stage 1 (Screening), and Stage 2 (Appropriate Assessment) if required following stage 1.

HRA screening (Stage 1) will be applied to the Feasible Options to identify those options with the potential to generate a likely significant effect. Where likely significant effects are identified, those options would trigger Stage 2, a HRA Appropriate Assessment (AA) only if those options progress to Preferred Option status.

[10] As defined by national guidance 'Appropriate Assessment - Guidance on the use of Habitats Regulations Assessment. Published 22 July 2019' (GOV.UK (2019)

If the AA finds that effects on site integrity cannot be adequately mitigated, then the HRA consideration of alternatives stage will assess alternative options.

Water Framework Directive Assessment

The WFD assessment is a statutory requirement in its own right, but also feeds into the SEA objective on water quality. The WFD assessment considers impacts on WFD waterbodies. The WFD Level 1 Basic Screening for Impact will be applied to the Feasible Options. Should the screening identify issues, WFD Phase 2 Assessment will be applied to those options, only if those options progress to Preferred Option status.

Invasive Non-Native Species Risk Assessment

The tasks in the INNS assessment include: i) identify species present, ii) identify relevant pathways, iii) identify specific source pathway receptors, iv) assessment of risks.

The results of the INNS assessment will feed back into the SEA process under the biodiversity objective. For those assets or raw water transfer scenarios determined as high risk for the potential spread of INNS, a mitigation options appraisal will be conducted. This will involve reviewing known mitigation technologies and determining their effectiveness with regard to species type, transmission pathway and feasibility.

Natural Capital and Biodiversity Net Gain

A Natural Capital (NC) Assessment will be undertaken at programme level (Figure 4, Step 6 - Preferred Options) to define and develop the natural capital baseline using open source data as described in NECR285[11] to generate a Natural Capital account of the stocks within the region. The impact on the Natural Capital stocks and indicators of condition will be reported quantitatively for construction and post construction to give an estimation of the impact of the option's whole lifecycle. The results of the stock assessment will be reported in total losses and gains within each option's zone of influence.

The results of the change in natural capital stocks will inform the assessment against the six ecosystem services listed below. During the initial phase of the NC Assessment, all of the six ecosystem services listed will be reviewed and scoped in or out due to the geographical or socio-economic context of the option and its zone of influence. Five of the ecosystem services are monetised, however, water purification is assessed quantitatively. The ecosystem services used to assess the impact on natural capital include:

- Carbon sequestration (Climate regulation)
- Natural Hazard management
- Water purification * Quantitative
- Water Regulation
- Biodiversity and Habitats (assessed separately through Biodiversity net gain)
- Air pollutant removal
- Recreation & amenity value
- Food production

Biodiversity net gain or net loss will be considered in developing Preferred Options, with a view to maximising biodiversity net gain and any required mitigation should be included in the option cost.

[11] Natural England, (2020) National Natural Capital Atlas: Mapping Indicators

8. Consultation and Next Steps

8.1. DWMP consultation

We cannot deliver high-quality drainage and wastewater plans by ourselves. We need to engage with other organisations to obtain data and information to understand the wider issues and risks associated with drainage, water quality and the environment. We know how important consultation and engagement are towards achieving a plan that will be understood and supported by our customers and partners. To achieve this, we have adopted the Environment Agency's 'Working with others' approach to promote collaboration, information sharing and partnership working (see Figure 5).

Figure 5: Infographic on DWMP engagement

Source: Who we're working with (southernwater.co.uk)

We are working with a diverse range of partners. We have been developing our approach in collaboration with partners and work to date is described at the location below.

https://www.southernwater.co.uk/dwmp/who-we-re-working-with

We are commencing consultation on the Level 2 catchment based DWMPs. Further details on these documents and the DWMP SEA Scoping Report can be found at:

https://www.southernwater.co.uk/dwmp

8.2. SEA scoping consultation

The SEA Scoping Report will be issued for a formal five-week consultation period starting in September 2021 to the three statutory bodies: The Environment Agency, Natural England and Historic England, as well as being made available to wider stakeholders.

At this stage we welcome your views on the SEA Scoping Report including the following key questions:

1. Are there any additional plans or programmes at the international, national, regional or local level which have been excluded from the plans and programmes review, which your organisation thinks are relevant to the DWMP SEA?
2. Do you have any comments on the baseline information presented or any additional baseline information you think would be useful?
3. Do you have any comments on the key issues and opportunities identified?
4. Do you have any comments on the proposed SEA objectives and assessment questions/sub-themes?
5. Do you have any comments on the high-level screening RAG criteria and definitions and/or the SEA objectives scoring criteria?
6. Do you have any other comments on the scoping report?

You can respond to the questions via email DWMP@southernwater.co.uk.

Following the Scoping Report consultation period, all consultation responses will be carefully reviewed and tabulated, and taken into account as far as possible. Details of how the scoping stage consultation has been taken into account, alongside the results of the SEA assessment, will be presented in the Environmental Report.

8.3. Next steps

Section 1.2, Figure 2 - SEA process stages, set out the five stages of SEA. This document reports Stage A, setting the context and objectives, establishing the baseline and deciding on the scope. Following receipt of feedback from the SEA Scoping Report consultation, the assessment stage (Stage B) will be undertaken. The DWMP options will be assessed against the SEA objectives. The results of the assessment will be presented in an Environmental Report (Stage C). The Environmental Report will accompany publication of the DWMP (Stage D). Monitoring and review of the DWMP and its environmental and social performance will be undertaken during implementation (Stage E).

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