

# **Water Resource and Supply Resilience Plan**

## **Strategic Environmental Assessment Statement**

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# 1. Introduction

## 1.1 Background

NI Water is the appointed statutory undertaker for the supply of water and sewerage services to the population of Northern Ireland and is required under the Water and Sewerage Services Act (NI) 2016 to produce a Water Resource and Supply Resilience Plan in line with the price Control period (PC15 - 2015-2021). NI Water has dual status as a government-owned company and a non-departmental public body. It operates according to conditions outlined in the company's licence. The Department for Infrastructure is the sole shareholder of NI Water.

Water as a resource is often taken for granted, yet it is the world's most precious asset, covering two thirds of the earth's surface. It is vital for human health and well-being making up 75% of the human body. Urbanisation, population growth, increased living standards, growing competition for water, and pollution put pressure on water resources, and these pressures are provoked by climate change and variations in natural conditions.

In Northern Ireland each person uses around 145 litres of clean, treated water every day<sup>1</sup>. Water is also important to many sectors of the economy and is used for growing crops, producing electricity and manufacturing goods. These activities rely on a balance between water supply (sources of water) and water demand (users of water).

NI Water has met these legislative requirements through provision of an overarching Water Resource and Supply Resilience Plan (WR&SR Plan) published alongside this SEA Statement.

**The WR&SR Plan** seeks to provide water to customers to maintain a defined level of service and identifies the actions required to achieve this over the next 25 years while meeting wider objectives for resilience and sustainability.

**The Drought Plan** can be found in Chapter 5 of the WR & SR Plan and it sets out the actions required to maintain water supplies to customers for the very rare events that are more severe than the level of service. The plan is based on the assets available to the company now, and will be updated as changes to the infrastructure occur.

The Plan required a Strategic Environmental Assessment under both the European Directive (2001/42/E) and the Environmental Assessment of Plans and Programme Regulations (S 163 2004). Article 3 (2) of the SEA Directive makes SEA mandatory for plans or programmes which;

- a) are prepared for agriculture, forestry, fisheries, energy, transport, industry, tourism, land use, telecommunications, waste management, or water management;
- b) are wholly prepared within one part of the UK (including NI); and
- c) may set a framework for future development consents that could require Environmental Impact Assessment.

The objective of SEA, as stated in the SEA Directive (Article 1), is *'to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development'*. Therefore, this SEA process ensured that environmental considerations were taken into account in the development of the WR&SR Plan when identifying the preferred options; and the impacts of a plan or programme on the environment against a baseline situation<sup>2</sup>. The SEA involved collecting baseline information, defining alternatives, identifying

<sup>1</sup> Statistic taken from 'Why save water at home' [Accessed 23/06/2016] <https://www.niwater.com/why-save-water-at-home-audit/>

<sup>2</sup> The baseline describes the condition of the environment in the absence of the plan

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environmental effects, developing mitigation measures and revising proposals in light of the predicted environmental effects. The SEA was fully integrated into the plan-making process from the earliest stages and was taken into account when identifying the preferred WR&SR Plan.

The Environmental Report was published alongside the draft WR&SR Plan and provided the results of the assessment, together with recommendations to improve the environmental outcomes and monitor the effects of the plan. The purpose of the Environmental Report was to inform decision-makers, including the public, as to how the draft WR&SR Plan is likely to impact on the environment and the measures required to mitigate significant environmental effects going forward. The Environmental Report also documented the responses from the consultation conducted on the SEA Scoping Report and the changes that have occurred since its publication.

The purpose of this SEA Statement is to document any changes to the information provided in the draft WR&SR Plan and Environmental Report. It also documents the responses from the consultation conducted on the SEA Environmental Report and draft WR&SR Plan. The final WR&SR Plan has also been published alongside this SEA Statement.

Figure 1-1<sup>3</sup> below illustrates the key stages where the WR&SR Plan and SEA interact throughout the project. The SEA process helped to inform the development and refinement of plan options and identify mitigation and monitoring requirements.

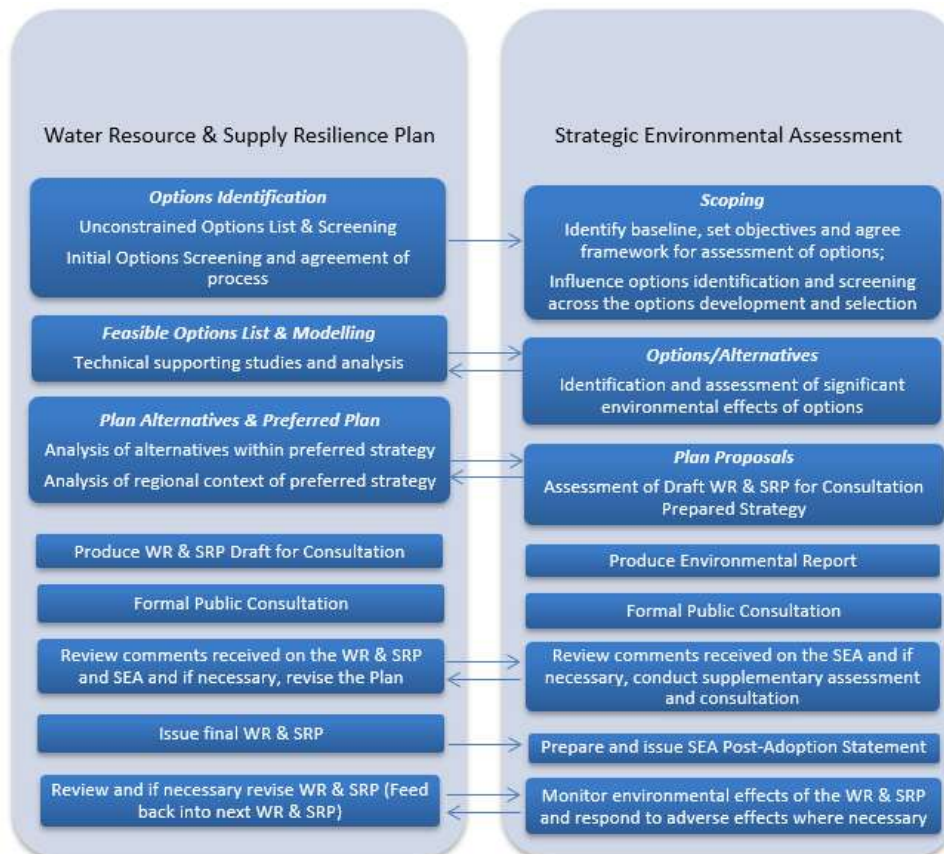


Figure 1-1 SEA and WR&SR Plan Interaction

<sup>3</sup> Based on the steps outlined in 'Strategic Environmental Assessment and Habitats Regulations Assessment – Guidance for Water resources Management Plans and Drought Plans' UKWIR 2012

## 1.2 Overview of the Water Resource and Supply Resilience Plan

This WR&SR Plan builds on the previous plan water resource management plan (WRMP) published in 2012. The aim of the WR&SR Plan is to deliver a more resilient water supply. There has been a significant decrease in water supply demand compared to demand covered in WRMP 2012. The base year for WRMP 2012 was 2008/09 with a total supply demand of 677MI/d. The base year for the current plan is 2014/15 and the total supply demand is 570MI/d, a reduction of 107MI/d. This reduction has been achieved through continued high levels of active leakage detection and sustained investment in water mains to reduce leakage, along with reduced household and non-household demand.

As a result of this investment the deficits identified in three of the five Water Resource Zones (WRZs) in 2012 no longer exist for the planned Level of Service (LoS). Based on the scenario tested in 2012, all of Northern Ireland has sufficient quantities of safe, secure drinking water. However, the 2012 plan did not fully assess critical period events where there are significant peaks in demand such as a freeze thaw. The WR&SR Plan has tested these scenarios further with a view to ensuring an enhanced security of supply for NI Water's customers.

The WR&SR Plan process identified the baseline supply and demand over the plan period and potential of options for the short, medium and long-term to ensure a consistent supply demand balance of water for Northern Ireland. The options considered are based on evidence that there will be three water zones with supply demand imbalances in the Dry Year Critical Period; Central WRZ, West WRZ and South WRZ. Therefore, options identified were developed with the aim of increasing the resilience of the water supply system to maintain this consistent level of supply across all zones.

## 1.3 Strategic Environmental Assessment

In determining whether the WR&SR Plan could give rise to significant effects on the environment, NI Water has taken account of the iterative process of developing the WR&SR Plan with influence from the SEA process and the additional assessments, consultation with environmental authorities and public consultation.

The approach to this WR&SR Plan ensured that the recommended options meet the SEA objectives outlined in Table 1-1.

Table 1-1: SEA Objectives

<b>SEA Theme</b>	<b>Objectives</b>
<b>Population, Economy and Human Health</b>	<ul style="list-style-type: none"> <li>To protect public health and promote wellbeing and avoid disadvantaging any group or area.</li> <li>To protect and enhance recreational amenity and public access.</li> <li>To contribute to raising awareness of water conservation.</li> </ul>
<b>Tourism and Recreation</b>	<ul style="list-style-type: none"> <li>To protect and enhance recreation and amenity facilities.</li> </ul>
<b>Material Assets/infrastructure</b>	<ul style="list-style-type: none"> <li>To avoid conflict with strategic infrastructure, and support viable land use, businesses and sustainable resource use.</li> </ul>
<b>Biodiversity, Flora and Fauna</b>	<ul style="list-style-type: none"> <li>To protect and enhance aquatic and terrestrial biodiversity including statutory and non-statutory sites, protected species, fisheries and priority habitats.</li> </ul>
<b>Landscape, Townscape and Visual Amenity</b>	<ul style="list-style-type: none"> <li>To maintain and enhance valued landscape character and visual amenity.</li> </ul>
<b>Climate</b>	<ul style="list-style-type: none"> <li>To minimise the carbon footprint of the Company.</li> <li>To contribute to climate change adaptability of the environment to resilience of water supply.</li> </ul>
<b>Water Environment</b>	<ul style="list-style-type: none"> <li>To protect and improve surface water and groundwater body status; including water quality and quantity.</li> <li>Ensure sustainable levels of surface water and groundwater abstraction.</li> </ul>

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<b>Cultural Heritage and Archaeology</b>	<ul style="list-style-type: none"><li>• To conserve and enhance buildings, sites and features of archaeological and historic interest and their settings.</li></ul>
<b>Geology and Soils</b>	<ul style="list-style-type: none"><li>• To protect and enhance soil quality and avoid conflict with identified mineral resources and ASSI's.</li></ul>
<b>Sustainability Issues</b>	<ul style="list-style-type: none"><li>• To ensure environmental and supply resilience to natural events and extreme weather events such as droughts, flood events and freeze/ thaw.</li></ul>

In adopting the WR&SR Plan and in accordance with the SEA Directive, NI Water as competent authority has taken account of the following:

- the Environmental Report;
- the Habitats Regulation Assessment;
- submissions and observations made to NI Water in response to consultation; and
- any consultations under article 14, during the preparation of the plan or programme, or modification to a plan or programme, and before its adoption.

More detail on each of these is provided in this SEA Statement.

This SEA Statement is the final output of the four-stage SEA process (as outlined in Figure 1-2). The purpose of this SEA Statement is to set out how the SEA and responses received during consultation have influenced the final WR&SR Plan.

The WR&SR Plan and all strategic environmental actions outlined in Section 5.1 of this report were adopted by NI Water on the 31st March 2020.

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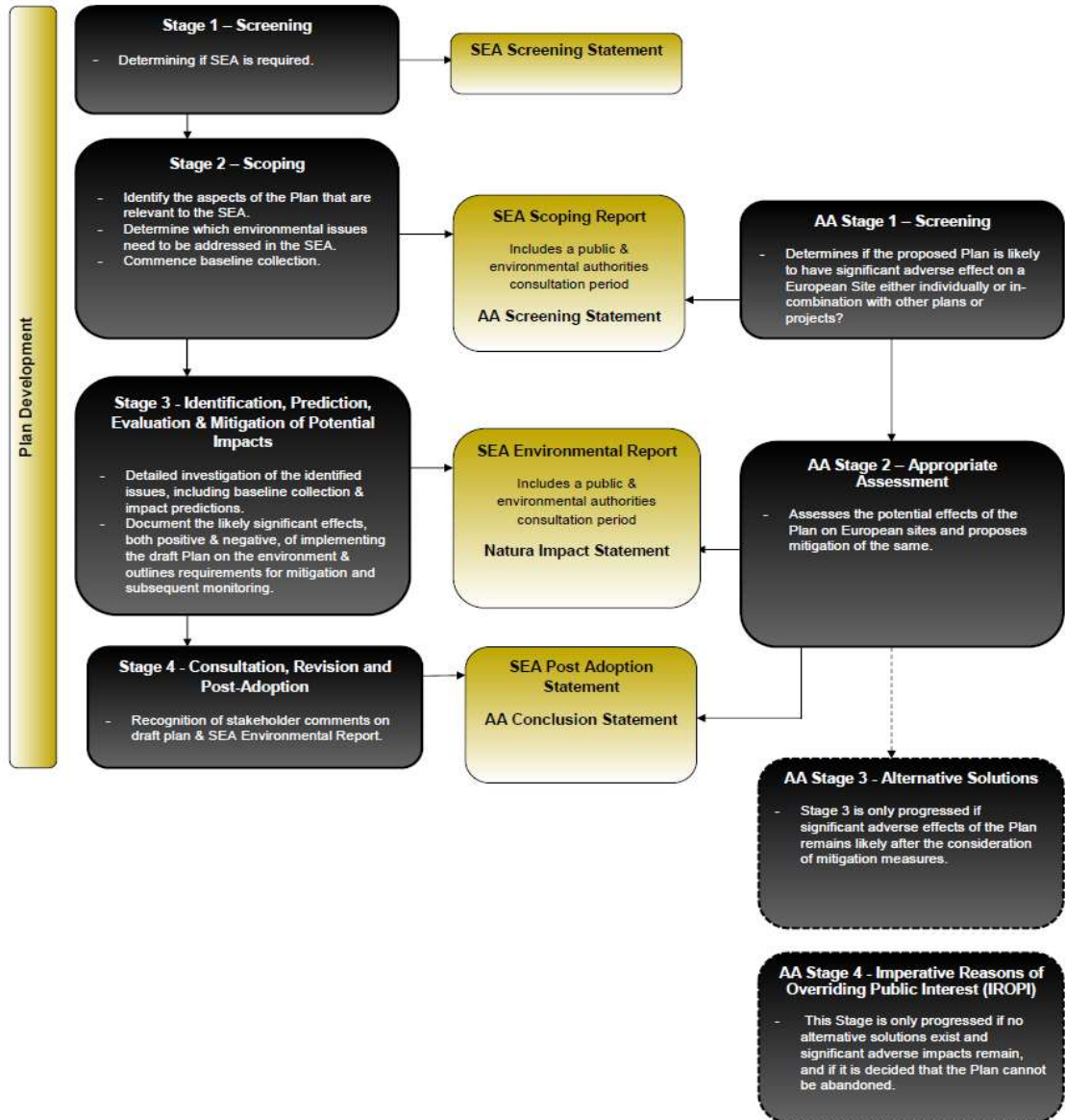


Figure 1-2: SEA/AA Stages and Key Deliverables

## **2. Summary of the Strategic Environmental Assessment Process**

### **2.1 Screening**

Stage 1 Screening (to determine whether SEA was required for the WR&SR Plan) was undertaken in mid-2016.

A pre-screening check was carried out to determine if the WR&SR Plan could be considered to be a plan/programme as defined in SEA Directive as being required under legislative procedures and administrative provisions to undergo Strategic Environmental Assessment.

This process concluded that the WR&SR Plan falls under a sector covered by the SEA Directive, namely water management. The WR & SR Plan sets out a framework for future development of NI Water projects, some of which may require EIA. While the Plan does not set a framework for consent of those projects, it could be interpreted as setting the context for future projects. In addition, in the absence of further detailed assessment, it could not be ruled out that the Plan proposals would significantly affect a Natura 2000 site/European Site.

### **2.2 Scoping Report and Statutory Consultation**

Stage 2 of the SEA Process, scoping (established the spatial and temporal scope of the SEA and a decision-making framework that was used to evaluate impacts) was undertaken in 2017. Scoping identified the aspects of the Plan that were relevant to the SEA, determined which environmental issues were required to be addressed in Stage 3 SEA Environmental Report and commenced the collection of baseline data.

Consultation began with the issue of the SEA Scoping Report. The designated Consultation Body in Northern Ireland is the Environment and Heritage Service (Part of Department of Agriculture, Environment and Rural Affairs). However, NI Water also consulted with key stakeholders in the water sector.

### **2.3 SEA Environmental Report and draft WR&SR Public Plan Consultation**

The output of Stage 3 of the SEA process was the draft SEA Environmental Report. The purpose of the SEA Environmental Report was to:

- identify, evaluate and describe the likely significant effects on the environment of implementing the WR&SR Plan;
- ensure identified adverse effects are communicated, mitigated and the effectiveness of mitigation is monitored; and
- provide opportunities for public and stakeholder involvement prior to the finalisation of the WR&SR Plan.

The draft WR&SR Plan, Environmental Report and additional assessments were published for public consultation on 26<sup>th</sup> July 2019 to 27<sup>th</sup> September 2019. Following the consultation final amendments were made to the final WR&SR Plan and Environmental Report in late 2019 and a final SEA Statement has now been published alongside the final WR&SR Plan. Submissions could be made by post or by email. Electronic copies of the draft WR&SR Plan and the SEA Environmental Report were made available to transboundary stakeholders in the Republic of Ireland.



## 2.4 Other Assessments

### 2.4.1 Natural Impact Assessment

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (the Habitats Directive) and Directive 2009/147/EC on the conservation of wild birds (the Birds Directive) provide the framework for the designation and protection of ‘European sites’ for the protection of Europe’s most valuable and threatened habitats and species. The Conservation of Habitats and Species Regulations (Northern Ireland) 2010 (the Habitats Regulations) transpose the Directives into NI law.

This network of European sites is known as the ‘Natura 2000 Network.’ The network comprises Special Protection Areas (SPA) and Special Areas of Conservation (SAC). SACs are designated under the ‘Habitats Directive’ for supporting habitats or species listed on Annex I or II of the Habitats Directive. SPAs are designated under the ‘Birds Directive.’ Ramsar<sup>4</sup> sites are also included within the regulations as Northern Ireland policy affords them the same level of protection as European sites.

Under the Habitats Regulations, NI Water as the ‘competent authority’ had a general duty, in the exercise of any of their functions, to have regard to undertake Habitats Regulations Assessment (HRA) of its WR&SR Plan.

If a proposed plan or project is likely to have a significant effect on a European site, alone or in-combination with other plans or projects, an appropriate assessment must be undertaken to consider the potential implications for the Natura 2000 site. The competent authority must only agree to a plan or project after ascertaining that it will not adversely affect the integrity of the site. In some cases, a potential impact cannot be avoided, designed out or mitigated, and no alternative is available. In this instance, there must be an imperative reason for overriding public interest (IROPI) to allow the plan to go ahead and the Habitats Directive recommends a hierarchy of: avoidance, mitigation and compensatory measures. The 4-stage HRA process is shown in Table 2-1.

**Table 2-1: HRA Process**

HRA Stage	Task	Description
<b>Stage 1</b>	Screening	<i>“The process to identify the likely impacts of a project upon a European site, either alone or in combination with other plans and projects and consider whether the impacts are likely to be significant.”</i>
<b>Stage 2</b>	Appropriate Assessment	<i>“The consideration of the impacts on the integrity of the European site, either alone or in combination with other plans and projects, with regard to the site’s structure and function and its conservation objectives. Where there are adverse impacts, an assessment of mitigation options is carried out to determine adverse effect on the integrity of the site. If these mitigation options cannot avoid adverse effects, then development consent can only be given if Stages Three and Four are followed”.</i>
<b>Stage 3</b>	Assessment of alternative solutions	<i>“Examining alternative ways of achieving the objectives of the project to establish whether there are solutions that would avoid or have a lesser effect on European sites”.</i>
<b>Stage 4</b>	Imperative Reasons of Overriding Public Interest (IROPI)	<i>“This is the assessment where no alternative solution exists and where adverse effects remain. This stage aims to assess whether the development is necessary for IROPI and, if so, the potential compensatory measures that would be needed to maintain the integrity of the European site”.</i>

Originally all options had been screened out of Stage 2 HRA process, however during the period from development of the draft WR&SR Plan to publication of the final WR&SR Plan, changes in environmental

<sup>4</sup> Ramsar sites are wetlands of global importance, listed under the Convention on Wetlands of international importance. Whilst most Ramsar sites overlap with Natura 2000 sites, some have distinct boundary difference.

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legislation as a result of the 'Sweetman judgement' meant that "*it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site*". This meant that 4 options were screened in for Stage 2 AA, as it could not be confidently determined that there were no, or only very weak source-receptor-pathways. For these four options, it was determined that standard mitigation (such as noise and vibration management plans, best practice pollution prevention control guidelines and timing restrictions) would be needed to discount Likely Significant Effects. The four options which screened in for Stage 2 HRA are:

### **Supply Demand Balance Requirement Options:**

- Carmoney to Strabane New Trunk Main;
- Castor Bay WTW to Ballydougan SR Trunk Mains Upgrade; and
- Booster Upgrade on Carland to Cookstown TM.

### **Resilience Options:**

- West WRZ Resilience Link.

The following measures have been identified to in order to avoid/eliminate Likely Significant Effects:

- Sensitive siting HDD compounds using pre-construction surveys information;
- Industry standard good practice to prevent pollution and sedimentation entering the river and avoid significant impacts to water quality;
- Good practice construction measures to avoid the likelihood of direct mortality (i.e. restricting speed and time of day for site traffic movements, timing of construction activities, ensuring excavations are covered overnight or incorporate slopes to allow egress and incorporating buffers around known features such as holts or resting places to ensure that there is no encroachment); and
- Implementation of an Invasive Species Management Strategy to prevent, reduce, control the effects of invasive species.

### **2.4.2 Water Framework Directive Assessment**

Directive 2000/60/EC on Establishing a Framework for Community Action in the field of Water Policy ('The Water Framework Directive') requires any new development to ensure the fundamentals of the Directive are not compromised. The Directive came into force in Northern Ireland in 2003 through the implementation of the Water Environment (Water Framework Directive) (Northern Ireland) Regulations 2003 and aims to achieve the following;

- Enhance the status of, and prevent further deterioration to aquatic ecosystems and their dependent terrestrial ecosystems and wetlands;
- Promote sustainable water use based on the long-term protection of available water resources;
- Reduce discharges and emissions of water pollutants to surface and groundwater, especially by 'priority' and 'priority hazardous' substances;
- Mitigate the effects of flood and droughts and thereby provide a sufficient supply of good quality surface water and groundwater.

The legislation resulted in the creation of a process known as Water Framework Directive (WFD) assessment, which is required to be carried out on individual schemes in order to help ensure compliance with WFD objectives.

An initial assessment was undertaken and established that the proposed options are unlikely to have a significant impact on the WFD water bodies at both a catchment scale and a Local Management Area scale.

Two options (Castor Bay WTW to Ballydougan SR TM and Booster Upgrades on Carland to Cookstown TM) are located within the same Groundwater Body however it is anticipated that there will be no residual effects from construction or operation of either option.

The following additional work has been identified, which would need to be carried out related to WFD requirements during the detailed assessment for Preferred Plan scheme:

- a detailed WFD assessment for each proposed option covering fluvial, groundwater and transitional water bodies;
- detailed analysis of historical channel migration at each proposed river crossing to establish areas which may be sensitive to channel change and have the potential to put infrastructure (such as pipelines) at risk (i.e. from erosion).

### 2.4.3 Equalities Impact Assessment

The potential impacts of the Plan, and the plan options, on vulnerable groups identified in Section 75 of the Northern Ireland Act have been assessed as part of the overall SEA Environmental Assessment. A screening analysis was carried out to determine whether a detailed EQIA would be required. Nine categories were assessed as part of the analysis:

- Religious Belief
- Political Opinion
- Race
- Age
- Gender
- Disability
- Marital Status
- Sexual Orientation; and
- People with or without Dependents

The screening assessment determined that no vulnerable groups would be significantly affected by the Plan and that the Plan had the potential to benefit everyone in Northern Ireland through the additional water security provided for the future. The screening assessment on the Drought Plan identified that some measures involving temporary restrictions to water use such as hosepipe and car wash bans could affect specific ethnic groups where these types of activities were part of business/employment. The screening assessment identified that mitigation to avoid adverse impacts on these groups would be incorporated into the approach for implementing the Drought Plan. These included the development of a Communications Plan covering a consultation approach to identify any specific exemptions required. A human rights assessment was been conducted as part of the screening assessment.

### 2.4.4 Regulatory Impact Assessment

The screening assessment determined that there would be no significant impacts from the Plan on the wider economy, businesses or customers and that the Plan had potential provides general benefits through additional water security for the future. The screening for the Drought Plan identified that some measures involving temporary restrictions to water use such as hosepipe and car wash bans could affect specific business groups and sectors. The screening assessment identified that mitigation to avoid adverse impacts on these groups such as farm irrigation, car wash operators and other industrial businesses would be incorporated into the approach for implementing the Drought Plan. This mitigation included the development of a Communications Plan covering a consultation approach to identify any specific exemptions required. The screening assessment determined with the mitigation identified that there will be no major direct or indirect impacts on the wider economy or customers.

### **2.4.5 Rural Needs Impact Assessment**

The screening assessment determined that rural areas would not be more affected by the Plan and the plan options and that all regional and local areas had the potential to benefit from the plan.

## **2.5 Strategic Environmental Assessment Statement**

This SEA Statement completes the four-stage SEA process. The SEA Statement, in compliance with the SEA Directive and transposing Regulations as amended, includes information that summarises:

- how environmental considerations have been integrated into the final WR&SR Plan;
- how the environmental report, submissions and observations made to Northern Ireland Water on the draft WR&SR Plan and draft SEA Environmental Report, and any transboundary consultations have been considered during the preparation of the WR&SR Plan;
- the reasons for choosing the final WR&SR Plan, as adopted, in the light of the other reasonable alternatives dealt with; and
- the measures decided upon to monitor the significant environmental effects of implementation of the WR&SR Plan.

### 3. Integration of Environmental Considerations into the Plan

#### 3.1 How Environmental Considerations have been Implemented

This section details how both the SEA Environmental Report, and submissions and observations made to NI Water on the SEA Environmental Report and additional assessment, have been considered during the preparation of the final WR&SR Plan.

#### 3.2 Submissions and Observations

The consultation period for the draft WR&SR Plan, SEA Environmental Report and additional assessments lasted a total of 9 weeks ending on 27<sup>th</sup> September 2019. A total of 3 submissions were received during the consultation process; the comments received and NI Water response are summarised in Table 3-1.

**Table 3-1: Summary of Consultation Comments which required no changes to the WR&SR Plan and NI Water responses**

Consultee	Issue	Northern Ireland Water response
Consumer Council of Northern Ireland	The Plan notes a significant drop in dry year average demand, from 677 MI/d in 2008/09 to 570 MI/d and that demand is not expected to increase significantly over the period – rising to 572 MI/d in 2042. Given this reduction, the projection of steady demand, the timeframes the Plan works over and the many sources of evidence, risk assessments and sensitivities contained within the Draft Plan, it would be sensible to see if assumptions have been realised before committing to investment. This would help ensure we are investing in the right areas on the right priorities to benefit consumers.	The current plan has identified deficits in three zones under critical scenarios. The methodology used follows best practice and in each case, there is currently an identified deficit today. Thus, NI Water believes it cannot wait before committing investment as the customers within these zones are at risk of loss of supply in a critical period.  It should be noted that in the case of the Southern Zone the deficit increases over time and the solution for this area will be phased over at least two PC periods. The initial phase will mitigate against the current deficit and the future predictions in supply demand will be reassessed in future Water Resource Plans and phase 2 will be actioned if and when required.
Consumer Council of Northern Ireland	The Level of Service is set at providing customer reliability of 97.5%, the equivalent of accepting a supply failure for one year in 40. It is reassuring that at this level of service all water resource zones under dry year annual average conditions are not in deficit. We note that this Level of Service has been set by reference and comparison to other GB water companies. We have no evidence to show that consumers agree or disagree with this service level. For future plans consumer acceptance of this or a different level of service should be tested directly by NI Water.	NI Water will recommend monitoring changes in UK Water Industry best practice and review UK evidence. This will also involve engagement with CCNI to establish a local evidence base including customer research, to include assessment of acceptable customer levels of service.
Consumer Council of Northern Ireland	The removal of some of the demand management options would go against the stated Northern Ireland water sector’s desire to increase the societal value placed on water.	Consideration will be given to linking water and energy efficiency through trials and feedback from other UK water companies.

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Consultee	Issue	Northern Ireland Water response
	We would recommend retaining some options to be developed into trials and pilots to inform the debate on water value and water use.	
Consumer Council of Northern Ireland	We would recommend testing the Draft Plan's assumption that for water efficiency options to be successful they should target all customers and not just those in deficit water resource zones.	This was based on the assumption that wider application of demand management and promoting good water conservation practice would be positive, while also being supportive of equality aspects and avoiding any public feeling that some areas are unfairly targeted. NI Water will continue to monitor UK Water Industry best practice in this regard.
Utility Regulator	As the Drought plan is based on the company's current infrastructure and asset base, we would expect it to be reviewed when any material changes occur as a consequence of ongoing investment to determine if it needs to be amended.	This is included in the Plan as a recommendation.
Utility Regulator	We acknowledge that the level of investment identified in the plan is based a target level of service of 1 in 40 years (i.e. supply will be available 97.5% of the time) and that this has been chosen on the basis that it compares favourably with levels of service adopted by comparative companies in Great Britain. This appears to be a reasonable approach in the absence of any better information, but we would encourage NI Water to engage with local consumers in future planning processes to assess whether this aligns with their expectations.	NI Water will recommend monitoring changes in UK Water Industry best practice and review UK evidence. This will also involve engagement with CCNI to establish a local evidence base including customer research, to include assessment of acceptable customer levels of service.
Utility Regulator	We note the significant reduction in assessed demand since the last water resource plan and the reasonably flat demand profile over the planning period, resulting in none of the resource zones being in deficit under the dry year annual average planning scenario. Over 85% of the demand reduction since the last plan appears to have resulted from the revised dry year uplift assessment and reductions in non-household and household demand. This illustrates how planning assumptions can change rapidly over time and so we would encourage the company not to commit to any identified investment earlier than necessary in order to provide as much time as possible to see if assumptions are realised.	<p>The current plan has identified deficits in three zones under critical scenarios. The methodology follows best practice and in each case, there is currently an identified deficit today. Thus, NI Water believes it cannot wait before committing investment as the customers within these zones are at risk of loss of supply in a critical period.</p> <p>It should be noted that in the case of the Southern Zone the deficit increases over time and the solution for this area is planned to be phased over at least two PC periods. The initial phase will mitigate against the current deficit and the future predictions in supply demand will be reassessed in future Water Resource Plans and phase 2 will be actioned if and when required.</p>
Utility Regulator	The Utility Regulator recognises that assessing the effectiveness of demand measures in Northern Ireland might be difficult	NI Water will recommend monitoring changes in UK Water Industry best practice, review UK evidence and establish a local evidence base

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Consultee	Issue	Northern Ireland Water response
	<p>in the absence of robust local data and the ability to easily apply comparative data in a local context. The approach adopted in the plan therefore seems reasonable in these circumstances. However, we would encourage NI Water to continue to consider opportunities for developing a local evidence base and for using any further evidence identified through a review of the outcome of approaches adopted in Great Britain.</p>	<p>including customer research, to include assessment of demand management measures.</p>
<p>Utility Regulator</p>	<p>We welcome the fact that NI Water considered an extensive range of demand management options in the planning process but note that only four options were deemed to be cost beneficial and that the associated water savings are small. Whilst this is assumed to be an appropriate output based on a robust assessment for the current plan, we would expect NI Water to continue to assess the full range of available demand management options on an economic basis in future plans. It should also consider opportunities to test potential approaches through investigations and pilot studies and to learn from the outcome of initiatives being undertaken in Great Britain.</p>	<p>NI Water will recommend monitoring changes in UK Water Industry best practice, review UK evidence and establish a local evidence base including customer research, for the effectiveness of water saving measures. This will include giving consideration to differing approaches on water efficiency optioneering.</p>
<p>Waterwise</p>	<p>We urge Northern Ireland Water to join Waterwise and the water sector in supporting and advocating for a mandatory water label on water-using products linked to minimum standards for new build and refurbishment.</p>	<p>NI Water will recommend monitoring changes in UK Water Industry best practice, review UK evidence and establish a local evidence base including customer research, for the effectiveness of water saving measures. This will include giving consideration to mandatory water labelling.</p>
<p>Waterwise</p>	<p>We do not agree with the assumption that all water efficiency measures have to be adopted everywhere.</p>	<p>This was based on the assumption that wider application of demand management and promoting good water conservation practice would be positive, while also being also supportive of equality aspects and avoiding any public feeling that some areas are unfairly targeted. NI Water will continue to monitor UK Water Industry best practice in this regard.</p>
<p>Waterwise</p>	<p>We do not agree with the statement that the impact of water efficiency measures is largely lost over time. Measures such as encouraging customers to choose and use water-efficient fittings in their home are not short lived.</p>	<p>We agree that the water savings from options that include installation of water efficient devices can reasonably be sustained in the long term. Note that most efficiency options had a varying projected water saving depending on their type e.g. some have water savings ramping up over 5 years and then continuing thereafter, others ramp up over 5 years then continue over a further 10 years and then ramp down over the next 5 years and</p>

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Consultee	Issue	Northern Ireland Water response
		a few ramp up over 5 years and then immediately ramp down over the next 5 years; - it all depended on the expected performance of the particular option. Hence the reference in the report to the benefits 'largely being lost over time'. As above, NI Water will continue to monitor UK Water Industry best practice in this regard.
Waterwise	We would like Northern Ireland Water to confirm whether the energy bill savings to householders from water efficiency options have been incorporated into the cost benefit analysis along with the benefit of reducing emissions.	We have not explicitly included any domestic heating cost savings resulting from reduced water demand because the preferred options in this Plan are for non-household use. Where domestic options are promoted, this saving would be considered.
Waterwise	We question the methodology behind developing the three water efficiency packages which means that sensible but very low-cost measures such as advocating for greater water efficiency in new build houses and social housing refurbishment are dropped because they sit in a package with a less cost beneficial option.	The options were categorised into three separate water efficiency packages as it was felt it would be not be efficient (or practical) to implement single options on their own. As the intention was to implement the most cost-effective water efficiency options first, the costing model was used to determine an approximate 'economic level of water efficiency' and the options were ranked in order of least cost and then grouped into three packages of increasing cost.
Waterwise	We recommend that Northern Ireland Water carries out segmented research with their customer base to further understand these motivations and link them to future campaigns and retrofits.	NI Water will recommend monitoring changes in UK Water Industry best practice, review UK evidence and establish a local evidence base including customer research, for the effectiveness of water saving measures.
Waterwise	We are disappointed that the approach taken to optioneering has resulted in nearly all public-facing water efficiency measures being removed. We feel this is a missed opportunity to engage with customers on water (and energy use) and is at odds with the approach being taken by regulators and companies in Wales and England. We believe this outcome is a consequence of the approach taken to optioneering.	NI Water will recommend monitoring changes in UK Water Industry best practice, review UK evidence and establish a local evidence base including customer research, for the effectiveness of water saving measures. This will include giving consideration to differing approaches on water efficiency optioneering.
Waterwise	We would like to see confirmation of the planned spend on water efficiency measures in the next 5 years as compared to supply side solutions. This is a question we ask all UK water companies.	NI Water will provide this information to Waterwise.
Waterwise	In future we would like to see the resilience assessment look at how the system would cope in an extreme drought of 1 in 500 return period. This is the approach recommended by the National Infrastructure Commission; being	NI Water will recommend monitoring changes in UK Water Industry best practice, review UK evidence and establish a local evidence base including customer research, for the effectiveness of water saving measures. This



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Consultee	Issue	Northern Ireland Water response
	proposed by the National Water Resources Framework (in England); and being adopted by water companies in England and Wales. It should also look at how the system performs in terms of water availability with future climate change and population changes.	will include giving consideration to the impacts of extreme weather events.

### 3.3 Summary of Changes to the draft WR&SR Plan

In response to feedback received during consultation, a number of recommendations were added into Table 15.1 of the WR&SR Plan, as summarised in **Table 3-1** below.

**Table 3-2: Amendments to the draft WR&SR Plan as a Result of Consultation Feedback**

Comment Received	NI Water Response	Amendment to WR&SR Plan
<p><b>Consumer Council:</b> A number of UK and Northern Ireland Government strategies will be developed during the lifespan of this Plan that could impact on the achievement of its aim, for example Northern Ireland's energy strategy. These should be monitored to ensure that the Plan's implementation, and future planning processes, are mindful of the wider societal context it operates in.</p> <p>Opportunities of linking water efficiency trials with energy efficiency programmes should be explored.</p>	<p>Consideration will be given to future UK &amp; NI Government strategies e.g. NI Energy Strategy and to linking water and energy efficiency through trials and feedback from other UK water companies.</p>	<p><b>Recommendation 14:</b> Consideration will be given to future UK &amp; NI Government strategies e.g. NI Energy Strategy and to linking water and energy efficiency through trials and feedback from other UK water companies.</p>
<p><b>Waterwise:</b> The Drought Plan should specify trigger points, and when and how these measures will be implemented and communicated to consumers. Supporting messages should also be developed.</p>	<p>NI Water will recommend monitoring changes in UK Water Industry best practice, review UK evidence and establish a local evidence base including customer research, for the effectiveness of water saving measures. This will include developing engagement and communication plans targeting efficient water use.</p>	<p><b>Recommendation 17:</b> The Drought Plan should specify trigger points in addition to when and how measures will be implemented and communicated to consumers. Supporting messages should also be developed.</p>
<p><b>Consumer Council:</b> Under Drought Plan demand side considerations, the Draft Plan states that the receptiveness to appeals is likely to be greater in areas other than Northern Ireland. We would question this, as there is clear evidence from the Summer of 2018 of the positive reaction from consumers to requests to reduce consumption which demonstrates that there is both receptiveness and reaction from consumers. A clear desire for education on water use came through strongly in the consumer research to inform PC15 and is again apparent in the work undertaken to inform PC21. Therefore, the question of consumer receptiveness and</p>	<p>NI Water will recommend monitoring changes in UK Water Industry best practice, review UK evidence and establish a local evidence base including customer research, for the effectiveness of water saving measures. This will include developing engagement and communication plans targeting efficient water use.</p>	<p><b>Recommendation 18:</b> Develop engagement and communication plans targeting efficient water use.</p>

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Comment Received	NI Water Response	Amendment to WR&SR Plan
<p>response largely falls to the effectiveness of NI Water's engagement and communication plans. We would be keen to work with NI Water to develop engagement and communication plans with improved messaging and methods for effective water use.</p>		
<p><b>Waterwise:</b> The Drought Plan should specify trigger points, and when and how these measures will be implemented and communicated to consumers. Supporting messages should also be developed.</p>		
<p><b>Waterwise:</b> The draft plan indicates that demand rose by over 20% during summer 2018 hot weather event. Despite this little consideration is given to how proactively reducing demand through messaging and initiatives such as home visits can improve resilience and help the company deal with similar events in the future. Only supply-side actions are discussed in any detail along with the creation of some reactive messaging for customers.</p>		
<p><b>Waterwise:</b> Given its importance to the investment decisions made in the plan we feel that in future Northern Ireland Water should commission an independent consultant, who has experience with similar investment plans prepared by other water companies, to undertake and publish an independent review of the costing process.</p>	<p>NI Water will consider the commissioning of an independent audit of their future Water Resource and Supply Resilience Plans, in line with UK Water Industry processes.</p>	<p><b>Recommendation 19:</b> Following review of the latest E&amp;W Water Resource Planning Guidance consideration will be given to the commission of an independent audit of Water Resource and Supply Resilience Plan, in line with UK Water Industry process.</p>
<p><b>Consumer Council:</b> The Level of Service is set at providing customer reliability of 97.5%, the equivalent of accepting a supply failure for one year in 40. It is reassuring that at this level of service all water resource zones under dry year annual average conditions are not in deficit. We note that this Level of Service has been set by reference and comparison to other GB water companies. We have no evidence to show that consumers agree or disagree with this service level. For future plans consumer acceptance of this or a different level of service should be tested directly by NI Water.</p>	<p>NI Water will recommend monitoring changes in UK Water Industry best practice and review UK evidence. This will also involve engagement with CCNI to establish a local evidence base including customer research, to include assessment of acceptable customer levels of service.</p>	<p><b>Recommendation 20:</b> Work with CCNI to establish a local evidence base including customer research, to assess acceptable customer levels of service.</p>
<p><b>Utility Regulator:</b> We acknowledge that the level of investment identified in the plan is based a target level of service of 1 in 40 years (i.e. supply will be available 97.5% of the time) and that this has been chosen on the basis that it compares favourably with levels of service adopted by</p>		

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Comment Received	NI Water Response	Amendment to WR&SR Plan
comparative companies in Great Britain. This appears to be a reasonable approach in the absence of any better information, but we would encourage NI Water to engage with local consumers in future planning processes to assess whether this aligns with their expectations.		

### 3.4 Summary of Changes to the SEA Environmental Report

No significant changes were required to be made to the SEA Environmental Report, in relation to the submissions received during the public consultation. Similar to the WR&SR Plan a number of comments were received in relation to the SEA, however amendments were not required. The rationale for these decisions are explained in Table 3-3.

**Table 3-3: Summary of Consultation Comments which required no changes to the SEA and NI Water responses**

Consultee	Issue	Northern Ireland Water response
Waterwise	Consideration should be given to undertaking SEA on all Demand Management options (not just Water Efficiency Package 1).	Social and environmental factors have been considered for all water efficiency options at the initial assessment stage. An assessment against SEA objectives was completed for those options being considered for inclusion in the final Plan. In this case, these options were only those in Package 1.

## 4. Reasons for Selecting the final WR&SR Plan

### 4.1 Introduction

The SEA Directive requires the SEA process to identify and describe ‘reasonable alternative’ means of achieving the WR&SR Plan objectives to ensure that the most favourable options are taken forward in terms of technical, social and environmental aspects. Alternatives to the WR&SR Plan were considered taking account of the objectives and geographical scope of the WR&SR Plan.

In this regard, alternatives were considered across three levels; individual options; Plan Alternatives (packages of options) and at the Plan Recommendation level. The assessment of alternatives for each of these approaches is presented in Section 5 of the SEA Environmental Report.

### 4.2 Alternatives Considered

#### 4.2.1 Plan Alternatives

The Plan Alternatives were identified as potential ways NI Water could meet the supply demand balance in Northern Ireland. Table 4-1 details the packages of options considered to be “reasonable alternatives” to the preferred WR&SR Plan. A1 is the final WR&SR Plan.

**Table 4-1 Plan Alternatives**

Plan Alternative	WRZ	Delivery	Option Name
A1	All*	2017/18	Water Efficiency Package 1
	South	2019/20	Castor Bay WTW to Ballydougan TM
	West	2018/19	Carmoney to Strabane TM
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM
A2	All*	2017/18	Water Efficiency Package 1
	South	2019/20	Castor Bay WTW to Ballydougan TM
	West	2018/2019	Derg Bankside Storage
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM
A3	All*	2017/18	Water Efficiency Package 1
	South	2019/20	Castor Bay WTW to Ballydougan TM
	West	2019/20	Killyhevlin to Lough Bradan TM
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM
A4	All*	2017/18	Water Efficiency Package 1
	South	2019/20	Castor Bay WTW to Ballydougan TM
	West	2019/20	Lough Neagh, New WTW and Trunk Main Transfer
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM
A5	All*	2017/18	Water Efficiency Package 1
	South	2019/20	Castor Bay WTW to Ballydougan TM
	West	2022/2023	New Groundwater Sources in Fermanagh
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM
A6	All*	2017/18	Water Efficiency Package 1
	South	2019/20	Castor Bay WTW to Ballydougan TM
	West	2022/2023	Caugh Hill to Strabane TM
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM

A no Plan, 'no development' alternative was initially considered. However, this was not deemed a reasonable alternative which would allow NI Water to meet the supply demand balance given the deficit in critical scenarios in 3 Water Resource Zones, and on this basis, was not considered further.

### 4.3 Evaluation of Alternatives

#### 4.3.1 Methodology

The six plan alternatives were assessed against the SEA assessment criteria developed during the SEA process, as outlined in **Table 4-2**.

**Table 4-2: SEO Objectives and SEA Assessment Criteria**

SEA Theme	Objectives	Key Questions to inform the assessment of options and the plan as a whole
Population, Economy and Human Health	<ul style="list-style-type: none"> <li>To protect public health and promote wellbeing and avoid disadvantaging any group or area.</li> <li>To protect and enhance recreational amenity and public access.</li> <li>To contribute to raising awareness of water conservation.</li> </ul>	<ul style="list-style-type: none"> <li>Are there any health risks associated with the plan/options?</li> <li>Will the options/plan contribute to public health and quality of life?</li> <li>Would the options/plan provide access to clean water to everyone?</li> <li>Would the options/plan impact properties, or community facilities or access?</li> <li>Will the options cause traffic disruption during construction or operation?</li> <li>Does the plan help to raise public awareness of the need for water conservation?</li> </ul>
Tourism and Recreation	<ul style="list-style-type: none"> <li>To protect and enhance recreation and amenity facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Would the options impact on recreational or tourist facilities or access?</li> <li>Will the options affect water-based recreation?</li> </ul>
Material Assets	<ul style="list-style-type: none"> <li>To avoid conflict with strategic infrastructure, and support viable land use, businesses and sustainable resource use.</li> </ul>	<ul style="list-style-type: none"> <li>Would the options affect existing critical infrastructure?</li> <li>Would the options result in waste from non-renewable materials which cannot be reused or recycled?</li> <li>Would the options have implications for businesses?</li> <li>Do the options conflict with existing or planned land-use?</li> </ul>
Biodiversity, Flora and Fauna	<ul style="list-style-type: none"> <li>To protect and enhance aquatic and terrestrial biodiversity including statutory and non-statutory sites, protected species, fisheries and priority habitats.</li> </ul>	<ul style="list-style-type: none"> <li>Could the options/plan affect internationally designated sites?</li> <li>Are there likely potential impacts on nationally importance statutory sites?</li> <li>Is there potential for direct loss and/or change to habitats as a result of construction or operation of the options?</li> <li>Could this plan/options result in impacts to protected species?</li> <li>Could the options contribute to the spread of invasive species?</li> </ul>

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Landscape, Townscape and Visual Amenity	<ul style="list-style-type: none"> <li>To maintain and enhance valued landscape character and visual amenity.</li> </ul>	<ul style="list-style-type: none"> <li>Would the options lead to the loss or alteration of trees, hedgerows or other landscape/townscape features?</li> <li>Would the options potentially impact views from public rights of way, designated landscapes, parks or other valued places?</li> </ul>
Climate	<ul style="list-style-type: none"> <li>To minimise the carbon footprint of the Company.</li> <li>To contribute to climate change adaptability of the environment to resilience of water supply.</li> </ul>	<ul style="list-style-type: none"> <li>Would implementing the plan entail a significantly larger carbon footprint compared with alternative plan scenario?</li> <li>Would the options/plan affect the resilience of the local environment to climate change?</li> </ul>
Water Environment	<ul style="list-style-type: none"> <li>To protect and improve surface water and groundwater body status; including water quality and quantity.</li> <li>Ensure sustainable levels of surface water and groundwater abstraction.</li> </ul>	<ul style="list-style-type: none"> <li>Would the options improve water treatment and water quality?</li> <li>Would the options alter ground water levels and amount of water within aquifers?</li> <li>Would the options protect or restore adequate levels of flow in rivers and streams and contribute to WFD objectives? How vulnerable are the options to potential future review of abstraction consents?</li> </ul>
Cultural Heritage and Archaeology	<ul style="list-style-type: none"> <li>To conserve and enhance buildings, sites and features of archaeological and historic interest and their settings.</li> </ul>	<ul style="list-style-type: none"> <li>Would the options avoid damage to, and protect, designated assets?</li> <li>Would the options maintain and enhance the historic environment, including palaeo-environmental deposits, which may be dependent on a high / stable water table?</li> </ul>
Geology and Soils	<ul style="list-style-type: none"> <li>To protect and enhance soil quality and avoid conflict with identified mineral resources and ASSI's.</li> </ul>	<ul style="list-style-type: none"> <li>Would the options impact upon best and most versatile agricultural land (ALC grades 1 – 3a)?</li> <li>Would the options impact upon ASSI's designated for geological significance?</li> </ul>
Sustainability Issues	<ul style="list-style-type: none"> <li>To ensure resilience to natural events and disasters such as droughts, flood events and freeze/ thaw.</li> <li>To minimise the risk of flooding taking account of climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Would the options contribute to the company's ability to supply water in extreme weather events such as during drought and also during flood events?</li> <li>Would the options/plan reduce or contribute to environmental resilience to climate change?</li> </ul>

Using this assessment, the sensitivity of the baseline environment was given a rating based on the:

- Importance of any designations:** Is it a feature of international, national, regional or local importance?
- Sensitivity to change:** How sensitive is the receptor to the options? Is it 'healthy' or 'at risk'? This will affect how the receptor responds to an impact and how quickly it can recover.

**Table 4-3 Assessing the sensitivity of the baseline**

Designation	Sensitivity to change				
	Very High	High	Moderate	Low	None
<b>International / national</b>	Critical	High	Moderate	Minor	Neutral
<b>Regional</b>	High	Moderate	Moderate	Minor	Neutral
<b>Local</b>	High	Moderate	Minor	Neutral	Neutral

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The effects can be both adverse and beneficial as indicated by the colour and by the + and – symbol in the Table 4-4 below. The effects of each Plan Alternative were assessed both before and after the identified mitigation measures against the objectives for each of the environmental topics listed in Table 4-2. An overall SEA rating was then allocated to each individual option and each Plan Alternative as illustrated in Table 4-5.

**Table 4-4 Scale of effects**

Baseline sensitivity	Significant loss or change to receptor		Moderate loss or change to receptor		Minor loss or change to receptor		No discernible loss or change to receptor
High	+++	---	++	--	+	-	0
Moderate	++	--	+	-	0	0	0
Low	+	-	0	0	0	0	0
None	0	0	0	0	0	0	0

**Table 4-5** provides a high-level assessment of the WR&SR Plan alternatives. The Plan alternatives were identified as potential ways that NI Water could achieve a balance of water supply and demand. The SEA assessment supported the decision to select Plan Alternative A1 as the preferred plan.

Following the multi criteria assessment, scenarios A1-A3 were taken forward for further appraisal. These options are discussed in more detail in Section 13.6.5 of the WR & SR Plan. As can be seen from the tables above, scenarios A1 and A3 were given a lower environmental risk. While the A1 and A3 scenarios were considered similar for environmental risk. A3 had a lower operational carbon footprint and cost but A1 was considered to provide greater supply resilience and as a combined set of options also greater potential for environmental climate change resilience and was therefore preferred overall. Scenario A2 included the Derg Bankside storage option. This has a higher environmental risk compared to the pipeline options, which was associated with potentially greater deliverability, lead time and supply resilience risks as identified in Section 13 of the WR & SR Plan.

**Table 4-5: Plan Alternatives Assessment**

Plan Alternative	WRZ	Delivery	Option Name	SEA Risk Level	E & S + Carbon Costing
A1	All*	2017/18	Water Efficiency Package 1	Low	-£304,487
	South	2019/20	Castor Bay WTW to Ballydougan TM	Moderate	£247,142
	West	2018/19	Carmoney to Strabane TM	Low	£691,361
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM	Low	£31,979
	Total			Low	£665,969
A2	All*	2017/18	Water Efficiency Package 1	Low	-£304,487
	South	2019/20	Castor Bay WTW to Ballydougan TM	Moderate	£247,142
	West	2018/2019	Derg Bankside Storage	Moderate	£1,862,553
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM	Low	£31,979
	Total			Moderate	£1,837,187
A3	All*	2017/18	Water Efficiency Package 1	Low	-£304,487
	South	2019/20	Castor Bay WTW to Ballydougan TM	Moderate	£247,142

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	West	2019/20	Killyhevlin to Lough Bradan TM	Low	£260,837
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM	Low	£31,979
	<b>Total</b>			<b>Low</b>	<b>£235,471</b>
A4	All*	2017/18	Water Efficiency Package 1	Low	-£304,487
	South	2019/20	Castor Bay WTW to Ballydougan TM	Moderate	£247,142
	West	2019/20	Lough Neagh, New WTW and Trunk Main Transfer	Moderate	£2,449,186
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM	Low	£31,979
	<b>Total</b>			<b>Moderate</b>	<b>£2,432,820</b>
A5	All*	2017/18	Water Efficiency Package 1	Low	-£304,487
	South	2019/20	Castor Bay WTW to Ballydougan TM	Moderate	£247,142
	West	2022/2023	New Groundwater Sources in Fermanagh	Moderate	£9,145,681
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM	Low	£31,979
	<b>Total</b>			<b>Moderate</b>	<b>£9,120,315</b>
A6	All*	2017/18	Water Efficiency Package 1	Low	-£304,487
	South	2019/20	Castor Bay WTW to Ballydougan TM	Moderate	£247,142
	West	2022/2023	Caugh Hill to Strabane TM	Moderate	£1,176,405
	Central	2018/19	Booster Upgrades on Carland to Cookstown TM	Low	£31,979
	<b>Total</b>			<b>Moderate</b>	<b>£1,151,039</b>

### 4.4 Final Preferred Plan

Pre-draft consultation was undertaken with key stakeholders. At the outset of the project a Steering Group comprising regulator representatives and key stakeholders was established. This Steering Group included the following stakeholders:

- Drinking Water Inspectorate (DWI);
- Northern Ireland Utility Regulator (NIAUR);
- Department for Infrastructure (DfI);
- Department of Agriculture, Environment and Rural Affairs (DAERA), NIEA;
- CCNI.

The Steering Group met 10 times during the Pre-Draft phase where methodologies and preliminary results on multiple aspects of the WR&SR Plan's development were presented and discussed.

The final WR&SR Plan has strengthened the overall potential to meet with Strategic Environmental Objectives. This has been achieved through commitment to consultation, scheme options assessments and evidence-based studies and mitigation guidelines.



## 5. Recommendations, Mitigation and Monitoring Measures

### 5.1 SEA Recommendations

All water resource and resilience options will be subject to mitigation and monitoring, appropriate planning processes, and construction best practice. However, there are also a number of recommendations (Plan related actions) required to ensure findings from the SEA are taken forward. This includes linking the SEA findings and recommendations to the NI Water Business Plan to ensure the SEA requirements for the plan and the options implementation over the next 5-year period are supported with appropriate funding for monitoring, further environmental studies and mitigation. This section outlines the recommendations proposed in relation to the WR&SR Plan.

This will be supported through application of an approach to review individual schemes as they are brought forward for implementation using the information from the SEA process as a starting point for more detailed studies. This will need to include the baseline information, the design assumptions and mitigation measures and further studies recommended.

The key short-term and long-term recommendations are identified in the Environmental Action Plan (EAP) in Table 5-1. All projects will be subject to a review to determine appropriate level of additional consultation, environmental survey and assessment needed. The EAP also identifies actions that can contribute to long term environmental and supply resilience and contribute to developing future WR&SR plans.

**Table 5-1 Environmental Action Plan**

Ref no	Action	Target	Monitoring
<b>Short term (during next 5 years) 2017-22</b>			
EAP 1	<p><b>Link SEA issues and recommendations with project implementation</b> Develop a procedure to ensure project implementation documents include SEA/HRA/option information to provide starting point for early options development. Include good practice mitigation in project briefs e.g. measures to reduce the risk of significant dust emissions during the construction and for other impacts as identified in the HRA.</p> <p>All projects to be reviewed through desk-based screening to determine appropriate level of environmental survey and assessment to meet obligations (including permitted development projects) and determine need for EIA/planning permission.</p> <p>Reference to NIEA's Standing Advice for Protected Habitats and Species to form part of these reviews to ensure appropriate measures are taken to address impacts on protected or Priority habitats &amp; species. In general, for all environmental issues, good practice guidance will inform the approach to these reviews.</p>	All proposed schemes to be reviewed taking into account any assumptions and mitigation and further identified through the SEA.	<i>Update as part of annual review and use to update input into next WR&amp;SR Plan and SEA.</i>
EAP 2	<p><b>Undertake further studies on the Preferred Plan schemes:</b></p> <ul style="list-style-type: none"> <li>Develop the baseline information</li> </ul>	Ensure best environmental solutions considered with mitigation built into design and	

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Ref no	Action	Target	Monitoring
<b>Short term (during next 5 years) 2017-22</b>			
	<ul style="list-style-type: none"> <li>Detailed studies on option variants, pipeline routes along with further comparison with relevant alternatives; and</li> <li>Mitigation studies.</li> <li>Project Level HRA/Appropriate Assessment</li> <li>WFD assessment where potential to cause deterioration needs to be ruled out.</li> </ul>	costing, and opportunities for enhancement are included in option design through consultation with relevant stakeholders.	
EAP 3	<b>Link SEA findings and mitigation recommendations to the next Business Plan.</b>	Ensure coordinated approach to delivery and funding through the Business Plan to support environmental protection, sustainability and resilience measures.	
EAP 4	<b>Develop additional mitigation for cumulative impacts/risks</b> such as pipelines crossing the same waterbody/designated site, pipelines through AONB, traffic management, combined effects on same types of priority habitats e.g. connectivity considerations within landscape where many field boundaries are crossed.	Ensure approaches and mitigation for cumulative landscape, habitat impacts, and waterbody impacts are taken into account as individual schemes are developed.	
EAP 5	<b>Undertake a review of potential sustainable abstractions</b> to identify potential risk and plan for appropriate data collection/ monitoring.	Coordinated approach to developing new options addressing possible sustainable abstraction reductions supported by appropriate evidence.	
EAP 6	<b>Review potential for catchment management actions related to supporting existing or possible future abstractions.</b>  Consider developing an ecosystems service approach to inform catchment management proposals.	Catchment management improving water quality, retention of water in catchment and habitat enhancement and potentially also carbon offsetting.	
EAP 7	<b>Investigate drought plan options requiring additional abstraction or change to compensation flow</b> to prepare Environmental Assessment Report and HRA in advance of a Drought Order being required. Screen for WFD assessment requirement.  <b>Develop Communications Plan for Drought Plan implementation</b> including consultation approach and consideration of exemptions.  Identify any amendments to procedures to ensure proposals and communications are aligned with UKWIR (UK Water Industry Research) good practice on drought plan consultation appropriate exemptions.	Drought plan measures investigated, documents prepared demonstrating measures avoid/minimise adverse effects on Natural 2000/Ramsar/ ASSIs and comply with Habitats Regulations. Procedures for drought plan address requirements of potential vulnerable groups.	

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Ref no	Action	Target	Monitoring
<b>Short term (during next 5 years) 2017-22</b>			
EAP 8	<b>Undertake monitoring and reporting of SEA targets</b> as listed in Monitoring Plan on an annual basis and report within next SEA/WR& SR Plan. Link with Environmental Strategy reporting where appropriate.	Annual monitoring as part of WR&SR Plan review and reporting within 5 year WRMP cycle.	
<b>Medium to long term (5-25 years) 2023-2043</b>			
EAP 9	<b>Review the SEA objectives and targets as part of lessons learned for next WR&amp;SR Plan</b> cycle and update baseline.  Feed information gathered through studies into the next cycle of options identification and appraisal.	SEA objectives, baseline and option assumptions reviewed as part of next WR&SR Plan cycle and more developed options for consideration - to reduce assessment uncertainty and delivery risk.	<i>Update as required leading up to next cycle.</i>
EAP 10	Action results of catchment management and sustainable abstraction investigations. Consult with NIEA on updates to WFD/River basin management status/objectives and consider alongside early development of future WR&SR Plans.	WFD, Catchment management supporting water quality and resource sustainability.	
EAP 11	Consult with stakeholders to identify constraints, requirements and opportunities for the next cycle.	Specific actions identified for the next Plan cycle.	

These SEA recommendations will contribute to NI Water's Strategy and will complement the assumptions on standard mitigation as set out in the SEA Environmental Report. These recommendations will also facilitate effective monitoring of the SEA Objectives, and performance against these, throughout the WR&SR Plan cycle.

### 5.2 SEA Mitigation Specific to WR&SR Plan

Mitigation recommendations within this SEA include the need for further environmental assessment. As the options are progressed to future design stages it is expected that they will be assessed in greater detail, including further surveys, investigations and consultation to understand the local baseline environment.

The risks associated with these options will be addressed using a combination of the following mitigation measures:

- Discussions with communities or relevant organisations to assess and promote the potential uptake of demand management measures;
- Sensitive design of permanent structures to fit into landscapes;
- Appropriate siting/re-routing taking account of environmental constraints;
- Reinstatement of land to ensure no net loss of habitat and minimal long-term land use change;
- Good construction management to minimise pollution risk;
- Use of trenchless technologies for sensitive crossings for WFD rivers and major infrastructure or other sensitive sites;
- Good traffic management avoiding interruption during peak traffic time and seasonal peaks;

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- Project level assessments; ecological and protected and priority habitats and species, cultural heritage, archaeological, ground conditions, arboriculture, landscape and visual, drainage and screening for EIA/HRA/WFD as appropriate based on good practice and consultation with stakeholders; and
- Restricting construction time scales/ areas to prevent, for example; disturbance to nesting birds or to avoid other protected species at specific times.

### 5.3 Monitoring Measures

The SEA Directive requires that any significant environmental effects resulting from the implementation of plans and programmes are monitored. The purpose of the monitoring plan is to allow NI Water to take a proactive approach to reviewing the predicted impacts of the WR&SR Plan and undertake additional mitigation if required. The monitoring plan will also encourage continual improvement towards the SEA objectives and the monitoring results can be used to inform the SEA during the next WR&SR Plan.

Indicators and targets have been set for the SEA objectives for monitoring the effects of the plan against the objectives following implementation of the plan. These are set out in Table 5-2 below.

It should be noted, that the targets within the monitoring plan refer to the potential effects of the plan and its options after implementation of any pre-determined mitigation measures. However, option mitigation and monitoring arrangements proposed at this stage will need to be reviewed in light of the findings of the detailed studies required at the project level.

**Table 5-2: SEA Objectives, Target and Indicators: Monitoring Framework**

Objectives	Target	Indicators
<b>1. Population, Economy and Human Health</b>		
<ul style="list-style-type: none"> <li>• <b>To protect public health and promote wellbeing and avoid disadvantaging any group or area.</b></li> </ul>	Maintain and improve access to reliable drinking water meeting forecast demand.	<ul style="list-style-type: none"> <li>• Level of service.</li> <li>• Frequency and duration of drought orders and temporary use bans.</li> <li>• Development of communication plan for the implementation of the Drought Plan with appropriate consideration for all vulnerable groups (with reference to the Equalities Impact Assessment, Human Rights Assessment Regulatory Impact Assessment and Rural Needs Impact Assessment).</li> </ul>
	Improve water access for vulnerable groups and general public.	<ul style="list-style-type: none"> <li>• As above; and</li> <li>• Number of days/hours when water supply to people on the vulnerable groups register is disrupted.</li> </ul>
	Minimise extent and period of disruption to traffic related to construction.	<ul style="list-style-type: none"> <li>• Duration of highways works.</li> </ul>
	Minimise access restrictions and noise disturbance to people from construction and operation of schemes.	<ul style="list-style-type: none"> <li>• Number of complaints received relating to construction works.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>To protect and enhance recreational</b></li> </ul>	No net loss of important recreational amenity.	<ul style="list-style-type: none"> <li>• Number of public right of way closures/diversions.</li> <li>• Length of paths created compared to loss.</li> </ul>

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<b>amenity and public access.</b>	Generation of new recreational facilities.	<ul style="list-style-type: none"> <li>Area of land/water made available for new recreational facilities.</li> </ul>
<ul style="list-style-type: none"> <li>To contribute to raising awareness of water conservation.</li> </ul>	Raised awareness and increased publicity for issues.	<ul style="list-style-type: none"> <li>No. of properties/business/schools/communities targeted with demand management initiative.</li> <li>Accessible summary documents available to public.</li> <li>Level of response and participation in the process.</li> </ul>
<b>2. Tourism and Recreation</b>		
<ul style="list-style-type: none"> <li>To protect and enhance recreation and amenity facilities.</li> </ul>	No net loss of important recreational amenity.	<ul style="list-style-type: none"> <li>As for recreation above.</li> </ul>
	Generation of new recreational facilities.	<ul style="list-style-type: none"> <li>As for recreation above.</li> </ul>
<b>3. Material Assets</b>		
<ul style="list-style-type: none"> <li>To avoid conflict with strategic infrastructure, and support viable land use, businesses and sustainable resource use.</li> </ul>	Minimise material consumption and waste during construction and operation of schemes.	<ul style="list-style-type: none"> <li>Site Waste Management Plans completed for construction works</li> <li>Proportion of material reused within site</li> <li>Tonnes of construction waste sent to landfill as a proportion of total waste produced.</li> </ul>
	No water treatment sludge sent to landfill.	<ul style="list-style-type: none"> <li>Tonnes of sludge reused or recycled</li> <li>Quality of WTW discharge and compliance with consents.</li> </ul>
	Minimise permanent loss of greenfield land including agricultural, forestry or other land uses.	<ul style="list-style-type: none"> <li>Area of greenfield land disturbed or lost.</li> </ul>
	No disruption to strategic infrastructure/services.	<ul style="list-style-type: none"> <li>Complaints/incidence of strategic infrastructure disruption or loss of strategic service.</li> </ul>
<b>4. Biodiversity, Flora and Fauna</b>		
<ul style="list-style-type: none"> <li>To protect and enhance aquatic and terrestrial biodiversity including statutory and non-statutory sites, protected species, fisheries and priority habitats.</li> </ul>	No adverse effects on integrity of European, national or regional level designations; and where feasible seek to contribute to achieving favourable conservation status.	<ul style="list-style-type: none"> <li>For statutory designated nature conservation sites affected by water resource options;                             <ul style="list-style-type: none"> <li>Area of each designated site/type affected and likely impact.</li> <li>Area of site with recorded change in condition (positive or negative).</li> <li>Plan for enhancement</li> </ul> </li> </ul>
	No net loss of priority habitats or habitat connectivity as a result of the works, and where possible demonstrate habitat enhancement / creation.	<ul style="list-style-type: none"> <li>Area/length of priority habitat site affected vs restored</li> </ul>
	No reduction in ecological value of waterbodies  Improved environmental resilience within water resource use catchments	<ul style="list-style-type: none"> <li>Review of potential sustainability reductions</li> <li>Review of potential for catchment management to improve water quality/retain water</li> <li>No. of investigations and upgrades for intake screens</li> </ul>

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	Reduced invasive species risk	<ul style="list-style-type: none"> <li>Review risks for spread invasive species and identify opportunities to remove/reduce.</li> </ul>
<b>5. Landscape, Townscape and Visual Amenity</b>		
<ul style="list-style-type: none"> <li>To maintain and enhance valued landscape character and visual amenity.</li> </ul>	Improvement or no net change in landscape quality through landscape design and mitigation and enhancement.	<ul style="list-style-type: none"> <li>Total working area of pipelines through designated landscapes and non-designated landscapes.</li> <li>Development of protected landscape strategies to guide work in AONBs and other sensitive landscapes</li> <li>Land use/landscape features re-established monitoring over appropriate period – areas/km successfully restored to meet strategy requirements.</li> </ul>
<b>6. Climate</b>		
<ul style="list-style-type: none"> <li>To minimise the carbon footprint of the Company.</li> </ul>	Minimise carbon emissions from construction – take into account in design.	<ul style="list-style-type: none"> <li>Carbon footprint (total tonnes) of construction.</li> </ul>
	Increase use of renewable/low carbon energy sources in new schemes – or identify where increases can be off set through use within existing operations.	<ul style="list-style-type: none"> <li>Percentage of energy supply from renewable sources/ or reduced energy use.</li> </ul>
	Minimise the annual carbon emissions from operation (tonnes and tonnes/MI).	<ul style="list-style-type: none"> <li>Carbon footprint (total tonnes) per year, predicted over plan period, lifetime of schemes and carbon intensity of water resource options (tonnes/MI).</li> </ul>
<ul style="list-style-type: none"> <li>To contribute to climate change adaptability of the environment and resilience of water supply.</li> </ul>	Improve resilience of the environment and NI Water supply to climate change.	<ul style="list-style-type: none"> <li>Improved mix of water resource sources or flexibility of system.</li> <li>Reduced frequency of drought orders requiring change to normal abstractions/compensation releases.</li> </ul>
<b>7. Water Environment</b>		
<ul style="list-style-type: none"> <li>To protect and improve surface water and groundwater body status; including water quality and quantity.</li> </ul>	Contribute to achieving WFD quality/resource objectives for surface water bodies and groundwater used for supply.	<ul style="list-style-type: none"> <li>See biodiversity above re reviews of potential sustainable abstractions and catchment management opportunities</li> <li>Number of investigations and contribution to catchment management schemes.</li> <li>Consider additional water quality and biological monitoring collection of data additional to WFD monitoring data where needed (See Biodiversity).</li> </ul>
<b>8. Cultural Heritage and Archaeology</b>		
<ul style="list-style-type: none"> <li>To conserve and enhance buildings, sites and features of archaeological and historic interest and their settings.</li> </ul>	<p>Avoid impact on cultural heritage designated sites and settings to minimise risks to buried archaeology.</p> <p>Avoid impacts on wetlands with potential for archaeological interest.</p>	<ul style="list-style-type: none"> <li>Number of scheduled monuments or other important archaeological remains and/or their settings adversely affected by water resource options.</li> <li>Number of schemes where options are re-routed to avoid designations.</li> <li>No. of schemes where archaeological interest found and no. where supervised</li> </ul>

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	Ensure approach to archaeological risk on proposed schemes is agreed with authorities.	excavations required in areas sensitive for archaeology.
<b>9. Geology and Soils</b>		
<ul style="list-style-type: none"> <li><b>To protect and enhance soil quality and avoid conflict with identified mineral resources and ASSI's.</b></li> </ul>	No Loss of statutory/non-statutory sites of geological interest.	<ul style="list-style-type: none"> <li>Areas of Special Scientific Interest (ASSIs) affected by Water Resource options.</li> </ul>
	Minimum disturbance or loss of high quality land as a result of the plan.	<ul style="list-style-type: none"> <li>Areas of Agricultural Land Classification graded 1-3a affected by water resource options.</li> <li>Total area of soil removed and reinstated for agricultural use.</li> </ul>
<b>10. Sustainability Issues</b>		
<ul style="list-style-type: none"> <li><b>To ensure resilience to natural events and disasters such as droughts, flood events and freeze/ thaw.</b></li> </ul>	Maintain and improve access to reliable drinking water meeting throughout extreme weather events.	<ul style="list-style-type: none"> <li>Levels of service.</li> <li>Number of days/hours when water supply is disrupted as a result of extreme weather or natural events.</li> <li>Review of direct and indirect vulnerability to extreme weather events.</li> </ul>
<ul style="list-style-type: none"> <li><b>To minimise the risk of flooding taking account of climate change.</b></li> </ul>	No net flood plan area (Ha) lost as a result of this plan, and where possible, increase functioning flood plain.	<ul style="list-style-type: none"> <li>Number of projects where flood risk compensation was required or increase provided.</li> </ul>

### 5.4 Implementation and Reporting Timeframes

NI Water is responsible for monitoring of the implementation of the WR&SR Plan. This should include collating relevant monitoring data, preparing preliminary and final monitoring reports and the publication of these reports. NI Water will also be responsible for responding on performance against monitoring criteria and responding where needed to avoid significant environmental effects. This information will be used to inform the preparation of the next WR&SR Plan and accompanying SEA.

## 6. Conclusion and Next Steps

Consultation was carried out on the draft WR&SR Plan and draft SEA Environmental Report and supporting assessments to receive feedback and to inform the finalisation of the WR&SR Plan.

Following the completion of the consultation period, all comments were reviewed to identify any changes required to the draft WR&SR Plan, draft SEA Environmental Report or supporting assessments. The SEA Environmental Report and HRA have been updated in response to these comments and legislative and project changes which came about during the period from draft WR&SR Plan to publishing the final WR&SR Plan. This SEA Statement was produced to document this process and includes a record of the comments received regarding the draft WR&SR Plan, draft SEA Environmental Report and supporting assessments, and the actions taken.

The SEA Statement provides a set of recommendations in the Environmental Action Plan for mitigation and enhancement. The monitoring framework set out within the SEA Environmental Report will be used to assess environmental performance against key indicators and to determine the impacts of the implementation the WR&SR Plan. This will also be used to inform any future updates of the WR&SR Plan.