

Summer 2023

# Regional Water Resources Plan

## North West

Natura Impact Statement

Appendix C



Tionscadal Éireann  
Project Ireland  
**2040**



Data disclaimer: This document uses best available data at time of writing. As data relating to population forecasts and trends are based on information gathered before the Covid-19 Pandemic, monitoring and feedback will be used to capture any updates. The National Water Resources Plan will also align to relevant updates in applicable policy. In December 2022, the Water Services (Amendment) (No. 2) Act, 2022 was signed into law. This act provides that, from the 31 December 2022, Irish Water will only be known as Uisce Éireann. It also provides that, from that date, all references in any enactment, legal proceedings or other document to Irish Water shall be construed as references to Uisce Éireann only. The NIS reflects this transition from Irish Water to Uisce Éireann.

Baseline data included in the RWRP-NW has been incorporated from numerous sources including but not limited to; National Planning Framework, Central Statistics Office, Regional Spatial and Economic Strategies, Local Authority data sets, Regional Assembly data sets and Uisce Éireann data sets. Data sources will be detailed in the relevant sections of the RWRP-NW. 2019 was selected as the base year to align with the planning period (2019-2025) of the NWRP.

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# C

## Appendix C

Likely Significant Effects

Tables

Note if option from Preferred Approach not listed below there were no European sites identified within the ZOI of that option.

Table C1.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAA-111a leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Cloghernagore Bog and Glenveagh National Park SAC (002047)	0m	<p><b>Annex I habitats:</b>  Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]  Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]  Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]  European dry heaths [4030]  Alpine and Boreal heaths [4060]  Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]  Blanket bogs (* if active bog) [7130]  Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]  Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</p> <p><b>Annex II species:</b>  <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]  <i>Trichomanes speciosum</i> (Killarney Fern) [1421]</p>	<p>New surface water (SW) abstraction from Lough Altan, new water treatment plant (WTP), pump station, and storage. Option study area is within this European site.</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Mortality</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>New surface water (SW) abstraction from Lough Altan, new water treatment plant (WTP), pump station, and storage. Option study area is within this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Ballyness Bay SAC (Donegal) (001090)	7.2km	<p><b>Annex I habitat:</b>  Estuaries [1130]  Mudflats and sandflats not covered by seawater at low tide [1140]  Embryonic shifting dunes [2110]  Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]  Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]  Humid dune slacks [2190]</p> <p><b>Annex II species:</b>  <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]</p>	<p>New surface water (SW) abstraction from Lough Altan, new water treatment plant (WTP), pump station, storage and associated watermains. Option study area is hydrologically linked to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> </ul>	No operational impacts predicted.	Y

Table C1.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAA-111a leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Derryveagh and Glendowan Mountains SPA (004039)	0m	Red-throated Diver ( <i>Gavia stellata</i> ) [A001] Merlin ( <i>Falco columbarius</i> ) [A098] Peregrine ( <i>Falco peregrinus</i> ) [A103] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Dunlin ( <i>Calidris alpina schinzii</i> ) [A466]	Breed Breed Breed Breed Breed	New surface water (SW) abstraction from Lough Altan, new water treatment plant (WTP), pump station, and storage. Option study area is within this European site.  - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New surface water (SW) abstraction from Lough Altan, new water treatment plant (WTP), pump station, and storage. Option study area is within this European site.  - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y
Falcarragh to Meenlaragh SPA (004149)	7.2km	Corncrake ( <i>Crex crex</i> ) [A122]	Breed	No impacts predicted given distance from site, the designated QI species and the works proposed.	No operational impacts predicted.	N

Table C1.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAA-118a leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Gweedore Bay and Islands SAC (Donegal) (001141)	1.2km	<b>Annex I habitats:</b> Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Decalcified fixed dunes with <i>Empetrum nigrum</i> [2140] Atlantic decalcified fixed dunes ( <i>Calluno-Ulicetea</i> ) [2150] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] European dry heaths [4030] Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130] <b>Annex II species:</b> <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] <i>Lutra lutra</i> (Otter) [1355] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]	New SW abstraction from Loch an Luir, new WTP, pump station, storage and associated new water mains. Upgrade WTP. Option study area is hydrologically linked to this European site.  - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Najas flexilis</i> (Slender Naiad) [1833]			
Cloghernagore Bog and Glenveagh National Park SAC (002047)	2.6km	<p><b>Annex I habitats:</b>  Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]  Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]  Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]  European dry heaths [4030]  Alpine and Boreal heaths [4060]  Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]  Blanket bogs (* if active bog) [7130]  Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]  Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</p> <p><b>Annex II species:</b>  <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]  <i>Trichomanes speciosum</i> (Killarney Fern) [1421]</p>	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	<b>N</b>

Table C1.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAA-118a leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Derryveagh and Glendowan Mountains SPA (004039)	0m	Red-throated Diver ( <i>Gavia stellata</i> ) [A001] Merlin ( <i>Falco columbarius</i> ) [A098] Peregrine ( <i>Falco peregrinus</i> ) [A103] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Dunlin ( <i>Calidris alpina schinzii</i> ) [A466]	Breed Breed Breed Breed Breed	New SW abstraction from Loch an Luir, new WTP, pump station, and storage. Upgrade WTP. Option study area is hydrologically linked to this European site. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted	<b>Y</b>
West Donegal Coast SPA (004150)	6km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Shag ( <i>Phalacrocorax aristotelis</i> ) [A018] Peregrine ( <i>Falco peregrinus</i> ) [A103] Herring Gull ( <i>Larus argentatus</i> ) [A184] Kittiwake ( <i>Rissa tridactyla</i> ) [A188]	Breed Breed Breed Breed Breed	No impacts predicted given distance from site, the designated QI species and the works proposed.	No operational impacts are predicted	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Razorbill ( <i>Alca torda</i> ) [A200] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed			

Table C1.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAA-141 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Aran Island (Donegal) Cliffs SAC (000111)	900m	<b>Annex I habitats:</b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Alpine and Boreal heaths [4060] Calcareous rocky slopes with <i>chasmophytic</i> vegetation [8210] Siliceous rocky slopes with <i>chasmophytic</i> vegetation [8220] Submerged or partially submerged sea caves [8330]	Increase existing SW abstraction from Lough Shore by raising impoundment. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Increase existing SW abstraction from Lough Shore by raising impoundment. Option study area is hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	Y
Rutland Island and Sound SAC	2.1km	<b>Annex I habitats:</b> Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <b>Annex II species:</b> <i>Phoca vitulina</i> (Harbour Seal) [1365]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N

Table C1.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAA-141 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
West Donegal Coast SPA (004150)	600m	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Shag ( <i>Phalacrocorax aristotelis</i> ) [A018] Peregrine ( <i>Falco peregrinus</i> ) [A103] Herring Gull ( <i>Larus argentatus</i> ) [A184]	Breed Breed Breed Breed Breed	Increase existing SW abstraction from Lough Shore by raising impoundment. Upgrade WTP and new watermains. Option study area is adjacent to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Razorbill ( <i>Alca torda</i> ) [A200] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed Breed			

Table C1.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAA-217 leading to potential LSEs. Note: no SPAs within ZOI.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Moneygal Bog SAC (UK0030211)	450m	<b>Annex I habitats:</b> Active raised bogs [7110]	<b>Rationalise Alt Raws to Lough Mourne WRZ. New pump station and associated new watermains. Option study area is hydrologically linked to this site.</b>  However, due to the site being upstream of the works and the QI designated, no impacts predicted.	No operational impacts are predicted.	<b>N</b>
River Finn SAC (002301)	5km	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] <b>Annex II species:</b> <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	<b>Rationalise Alt Raws to Lough Mourne WRZ. New pump station and associated new watermains. Option study area is hydrologically linked to this European site.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	<b>Y</b>
River Foyle and Tributaries SAC (UK0030320)	5km	<b>Annex I habitats:</b> Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] <b>Annex II species:</b> <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	<b>Rationalise Alt Raws to Lough Mourne WRZ. New pump station and associated new watermains. Option study area is hydrologically linked to this site.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	<b>Y</b>

Table C1.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAA-218 leading to potential LSEs. Note: no SPAs within ZOI.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Finn SAC (002301)	3km	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] <b>Annex II species:</b>	<b>Rationalise Meeneragh to Lough Mourne WRZ. New pump station and associated new watermains. Option study area is hydrologically linked to this European site.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	<b>Y</b>



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]			
River Foyle and Tributaries SAC (UK0030320)	3km	<b>Annex I habitats:</b> Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]  <b>Annex II species:</b> <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	<b>Rationalise Meeneragh to Lough Mourne WRZ. New pump station and associated new watermains. Option study area is hydrologically linked to this site.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C1.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAA-542 (TG1-SAI-026a, TG1-SAI-191, TG1-SAI-192, TG1-SAI-193) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Finn SAC (002301)	0m	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140]  <b>Annex II species:</b> <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	<b>Upgrade Lough Mourne WTP and new watermain to interconnect Lough Mourne with new WTP at Knaddar. Option study area is within this European site as the new watermain crosses the sac. The WTP upgrade is hydrologically linked to this site.</b> - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Lough Eske and Ardnamona Wood SAC (000163)	0m	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]  <b>Annex II species:</b> <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]	<b>New pump stations, and new watermains to interconnect Lough Mourne with new WTP at Knaddar. Upgrade WTPs. Option study area is within/adjacent to this European site as the new watermains crosses the site and the new pump stations are adjacent to the site.</b> - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Donegal Bay (Murvagh) SAC (000133)	0m	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170] Humid dune slacks [2190]  <b>Annex II species:</b>	<b>Upgrade Frosses-Inver WTP and pump station, new watermains and pump stations. Option study area is adjacent to and hydrologically linked to this European site.</b> - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Phoca vitulina</i> (Harbour Seal) [1365]			
Croaghonagh Bog SAC (000129)	0m	<b>Annex I habitats:</b> Blanket bogs (* if active bog) [7130]	<b>New watermains. Option study area is adjacent to this European site.</b> - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Ballintra SAC (000115)	0m	<b>Annex I habitats:</b> European dry heaths [4030] Limestone pavements [8240]	<b>New watermains. Option study area is adjacent to this European site.</b> - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Durnesh Lough SAC (000138)	2.5km	<b>Annex I habitats:</b> Coastal lagoons [1150] Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N
River Foyle and Tributaries SAC (UK0030320)	4km	<b>Annex I habitats:</b> Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] <b>Annex II species:</b> <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	<b>New watermains. Option study area is hydrologically linked to this site.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
St. John's Point SAC (000191)	13.5km	<b>Annex I habitats:</b> Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410] Alkaline fens [7230] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] <b>Annex II species:</b> <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC (000625)	13km	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Alkaline fens [7230] <b>Annex II species:</b> <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]			

Table C1.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAA-542 (TG1-SAI-026a, TG1-SAI-191, TG1-SAI-192, TG1-SAI-193) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Donegal Bay SPA (004151)	0m	Great Northern Diver ( <i>Gavia immer</i> ) [A003] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Sanderling ( <i>Calidris alba</i> ) [A144] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B	<b>New SW abstraction from Lough Assaroe, new storage, watermains, WTP and pump station. Upgrade WTP. Option study area is adjacent to and hydrologically linked to this European site.</b>  - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Durnesh Lough SPA (004145)	3.8km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	Non-B Non-B	<b>New watermains and a WTP upgrade are in the vicinity of the European site. Option study area is in the vicinity of this European site.</b>  - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C1.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAA-566 (TG1-SAA-261, TG1-SAA-262, TG1-SAA-263, TG1-SAA-264, TG1-SAA-265, TG1-SAA-266, TG1-SAA-267, TG1-SAA-268, TG1-SAA-269, TG1-SAA-270) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
North Inishowen Coast SAC (002012)	0m	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220]	<b>New storage and pump stations hydrologically linked to the European site. New watermains adjacent to the European site. Upgrade of Inishowen West WTP and Tienaleague WTP hydrologically linked to the</b>	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Machairs (* in Ireland) [21A0] European dry heaths [4030] <b>Annex II species:</b> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Lutra lutra</i> (Otter) [1355]	European site. Option study area is adjacent to and hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Mortality - Disturbance (including biological disturbance)		
Cloghernagore Bog and Glenveagh National Park SAC (002047)	0m	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] <b>Annex II species:</b> <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]	New SW abstractions, watermains, storage and pump stations within the European site. Option study area is within this European site. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstractions, watermains, storage and pump stations within the European site. Option study area is within this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	Y
Leannan River SAC (002176)	0m	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] <b>Annex II species:</b> <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Najas flexilis</i> (Slender Naiad) [1833]	New SW abstraction and watermains within the European site. Option study area is within this European site. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction and watermains within the European site. Option study area is within this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	Y
Horn Head and Rinclevan SAC (000147)	0m	<b>Annex I habitats:</b> Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170]	New watermains runs adjacent to the European site and is hydrologically linked to it. Option study area is adjacent to and hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Humid dune slacks [2190]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p><b>Annex II species:</b></p> <p><i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]</p> <p><i>Halichoerus grypus</i> (Grey Seal) [1364]</p> <p><i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p>			
Mulroy Bay SAC (002159)	0m	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Large shallow inlets and bays [1160]</p> <p>Reefs [1170]</p> <p><b>Annex II species:</b></p> <p><i>Lutra lutra</i> (Otter) [1355]</p>	<p>New watermains, pump stations and storage are adjacent to the European site. The new watermains crosses the SAC. Option study area crosses the European site, is adjacent to and hydrologically linked to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Mortality.</li> <li>- Disturbance</li> </ul>	No operational impacts are predicted.	Y
Kindrum Lough SAC (001151)	0m	<p><b>Annex I habitats:</b></p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p><b>Annex II species:</b></p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>A new watermains runs adjacent to the European site. Option study area is adjacent to and hydrologically linked to this European site</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> </ul>	No operational impacts are predicted.	Y
Magheradrumman Bog SAC (000168)	30m	<p><b>Annex I habitats:</b></p> <p>Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]</p> <p>Blanket bogs (* if active bog) [7130]</p>	<p>Upgrade Inishowen East WTP. Option study area is adjacent to this European site.</p> <ul style="list-style-type: none"> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y
Sheephaven SAC (001190)	100m	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Annual vegetation of drift lines [1210]</p> <p>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p> <p>Salicornia and other annuals colonising mud and sand [1310]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>Embryonic shifting dunes [2110]</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p> <p>Humid dune slacks [2190]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p><b>Annex II species:</b></p> <p><i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]</p>	<p>New watermains runs adjacent to the European site. New SW abstraction from Glen lough, new storage and pump station are hydrologically linked to this European site. Option study area is adjacent to and hydrologically linked to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Petalophyllum ralfsii</i> (Petalwort) [1395]			
Lough Swilly SAC (002287)	1.7km	<p><b>Annex I habitats:</b></p> <p>Estuaries [1130]</p> <p>Coastal lagoons [1150]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</p> <p><b>Annex II species:</b></p> <p><i>Lutra lutra</i> (Otter) [1355]</p>	<p>Upgrading WTPs, new storage, pump station and water mains hydrologically linked to this European site. New SW abstraction and increased SW abstraction distantly hydrologically linked to this European site. Option study area is hydrologically linked to this European site.</p> <p>- Habitat degradation – changes in water quality (pollution)</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	Y

Table C1.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAA-566 (TG1-SAA-261, TG1-SAA-262, TG1-SAA-263, TG1-SAA-264, TG1-SAA-265, TG1-SAA-266, TG1-SAA-267, TG1-SAA-268, TG1-SAA-269, TG1-SAA-270) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Trawbreaga Bay SPA (004034)	0m	<p>Barnacle Goose (<i>Branta leucopsis</i>) [A045]</p> <p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]</p> <p>Chough (<i>Pyrhocorax pyrrhocorax</i>) [A346]</p> <p>Wetland and Waterbirds [A999]</p>	<p>Non-B</p> <p>Non-B</p> <p>Non-B</p>	<p>New watermains is hydrologically linked to this European site. At one point the new watermains runs adjacent to the European site. Upgrade WTP and new storage is hydrologically linked to the European site. Option study area is adjacent to and hydrologically linked to this European site.</p> <p>- Habitat degradation – changes in water quality (pollution)</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	Y
Derryveagh and Glendowan Mountains SPA (004039)	0m	<p>Red-throated Diver (<i>Gavia stellata</i>) [A001]</p> <p>Merlin (<i>Falco columbarius</i>) [A098]</p> <p>Peregrine (<i>Falco peregrinus</i>) [A103]</p> <p>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</p> <p>Dunlin (<i>Calidris alpina schinzii</i>) [A466]</p>	<p>Breed</p> <p>Breed</p> <p>Breed</p> <p>Breed</p> <p>Breed</p>	<p>Two new SW abstraction points, new storage and pump station within the European site. New watermains adjacent to the European site. Option study area is within and adjacent to this European site.</p> <p>- Physical loss of habitats/supporting habitat</p> <p>- Mortality</p> <p>- Habitat degradation – changes in water quality (pollution)</p> <p>- Disturbance (including biological disturbance)</p>	<p>Two new SW abstraction points, new storage and pump station within the European site. New watermains adjacent to the European site. Option study area is within and adjacent to this European site.</p> <p>- Habitat degradation – hydrological/hydrogeological changes</p> <p>- Water table/availability</p>	Y
Horn Head to Fanad Head SPA (004194)	500m	<p>Fulmar (<i>Fulmarus glacialis</i>) [A009]</p> <p>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</p> <p>Shag (<i>Phalacrocorax aristotelis</i>) [A018]</p> <p>Barnacle Goose (<i>Branta leucopsis</i>) [A045]</p> <p>Peregrine (<i>Falco peregrinus</i>) [A103]</p> <p>Kittiwake (<i>Rissa tridactyla</i>) [A188]</p> <p>Guillemot (<i>Uria aalge</i>) [A199]</p>	<p>Breed</p> <p>Breed</p> <p>Breed</p> <p>Non-B</p> <p>Non-B</p> <p>Breed</p> <p>Breed</p>	<p>New watermains is hydrologically linked to this European site via a number of watercourses. Option study area is hydrologically linked to this European site.</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Razorbill ( <i>Alca torda</i> ) [A200] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	Breed Breed Breed			
Lough Swilly SPA (004075)	1.7km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Grey Heron ( <i>Ardea cinerea</i> ) [A028] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Greylag Goose ( <i>Anser anser</i> ) [A043] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Shoveler ( <i>Anas clypeata</i> ) [A056] Scaup ( <i>Aythya marila</i> ) [A062] Goldeneye ( <i>Bucephala clangula</i> ) [A067] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Coot ( <i>Fulica atra</i> ) [A125] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Greenshank ( <i>Tringa nebularia</i> ) [A164] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Breed Non-B Breed Breed	Upgrading WTPs, new storage, pump station and water mains hydrologically linked to this European site. New SW abstraction and increased SW abstraction distantly hydrologically linked to this European site. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Lough Fern SPA (004060)	3km	Pochard ( <i>Aythya ferina</i> ) [A059] Wetland and Waterbirds [A999]	Non-B	New watermains, storage and pump stations and upgrade WTPs hydrologically linked to the European site. New SW abstraction distantly hydrologically linked to the Wuropean site. Option study area is hydrologically connected to this European site - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	Y
Greers Isle SPA (004082)	600m	Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191]	Breed Breed Breed	No impacts predicted given distance from site, the designated QI species and the works proposed.	No operational impacts are predicted.	N

Table C1.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAA-567 (TG1-SAA-271, TG1-SAA-272, TG1-SAA-273, TG1-SAA-274) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
West of Ardara/Maas Road SAC (000197)	0m	<p><b><u>Annex I habitats:</u></b></p> <p>Estuaries [1130]</p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Large shallow inlets and bays [1160]</p> <p>Annual vegetation of drift lines [1210]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>Embryonic shifting dunes [2110]</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p> <p>Decalcified fixed dunes with <i>Empetrum nigrum</i> [2140]</p> <p>Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150]</p> <p>Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) [2170]</p> <p>Humid dune slacks [2190]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]</p> <p>European dry heaths [4030]</p> <p>Alpine and Boreal heaths [4060]</p> <p>Juniperus communis formations on heaths or calcareous grasslands [5130]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Blanket bogs (* if active bog) [7130]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Alkaline fens [7230]</p> <p><b><u>Annex II species:</u></b></p> <p><i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]</p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	<p>New watermains crosses the European site. Increase SW abstraction from Derkmore Lough, upgrade WTP, new pump station and pressure tank are adjacent to and hydrologically linked to the European site. Option study area crosses and is hydrologically linked to this European site.</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Mortality</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>New watermains crosses the European site. Increase SW abstraction from Derkmore Lough, upgrade WTP, new pump station and pressure tank are adjacent to and hydrologically linked to the European site. Option study area crosses and is hydrologically linked to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/ hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Petalophyllum ralfsii</i> (Petalwort) [1395] <i>Najas flexilis</i> (Slender Naiad) [1833]			
Lough Nillan Bog (Carrickatlieve) SAC (000165)	25m	<b><u>Annex I habitats:</u></b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Blanket bogs (* if active bog) [7130]	New watermains and decommissioning of WTP adjacent to the European site. Option study area is adjacent to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
River Finn SAC (002301)	30m	<b><u>Annex I habitats:</u></b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] <b><u>Annex II species:</u></b> <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	Decommissioning of WTP adjacent to the European site. Option study area is adjacent to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Slieve Tooney/ Tormore Island/ Loughros Beg Bay SAC (000190)	100m	<b><u>Annex I habitats:</u></b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Decalcified fixed dunes with <i>Empetrum nigrum</i> [2140] Atlantic decalcified fixed dunes ( <i>Calluno-Ulicetea</i> ) [2150] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] <b><u>Annex II species:</u></b> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Lutra lutra</i> (Otter) [1355] <i>Halichoerus grypus</i> (Grey Seal) [1364]	New watermains is hydrologically linked to the European site. Upgrade of WTP is adjacent to the European site. Option study area is adjacent to and hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Slieve League SAC (000189)	2.6km	<b><u>Annex I habitats:</u></b> Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i> ) [8110]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Calcareous rocky slopes with chasmophytic vegetation [8210]</p> <p>Siliceous rocky slopes with chasmophytic vegetation [8220]</p>			
Cloghernagore Bog and Glenveagh National Park SAC (002047)	3.2km	<p><b>Annex I habitats:</b></p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p> <p>Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]</p> <p>European dry heaths [4030]</p> <p>Alpine and Boreal heaths [4060]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Blanket bogs (* if active bog) [7130]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</p> <p><b>Annex II species:</b></p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Trichomanes speciosum</i> (Killarney Fern) [1421]</p>	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	<b>N</b>
St. John's Point SAC (000191)	6.1km	<p><b>Annex I habitats:</b></p> <p>Large shallow inlets and bays [1160]</p> <p>Reefs [1170]</p> <p>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</p> <p>Submerged or partially submerged sea caves [8330]</p> <p><b>Annex II species:</b></p> <p><i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]</p>	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	<b>N</b>
Rutland Island and Sound SAC (002283)	13.5km	<p><b>Annex I habitats:</b></p> <p>Coastal lagoons [1150]</p> <p>Large shallow inlets and bays [1160]</p> <p>Reefs [1170]</p> <p>Annual vegetation of drift lines [1210]</p>	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <b>Annex II species:</b> <i>Phoca vitulina</i> (Harbour Seal) [1365]			
Rathlin O'Birne Island SAC (000181)	13.9km	<b>Annex I habitats:</b> Reefs [1170]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	<b>N</b>
Termon Strand SAC	14.5km	<b>Annex I habitats:</b> Coastal lagoons [1150]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	<b>N</b>
Bunduff Lough and Machair/ Trawalua/ Mullaghmore SAC (000625)	14.8km	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Alkaline fens [7230] <b>Annex II species:</b> <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	<b>N</b>

Table C1.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAA-567 (TG1-SAA-271, TG1-SAA-272, TG1-SAA-273, TG1-SAA-274) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Nillan Bog SPA (00410)	0m	Merlin ( <i>Falco columbarius</i> ) [A098] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	Non-B Breed Breed	New watermains and decommissioning of WTP adjacent to the European site. Option study area is adjacent to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Dunlin ( <i>Calidris alpina schinzii</i> ) [A466]	Breed			
Derryveagh and Glendowan Mountains SPA (004039)	500m	Red-throated Diver ( <i>Gavia stellata</i> ) [A001] Merlin ( <i>Falco columbarius</i> ) [A098] Peregrine ( <i>Falco peregrinus</i> ) [A103] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Dunlin ( <i>Calidris alpina schinzii</i> ) [A466]	Breed Breed Breed Breed Breed	Decommissioning of WTP in close proximity to the European site. Option study area is in close proximity to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Sheskinmore Lough SPA (004090)	6.5km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	Non-B	New watermains, pump stations, storage and break pressure tanks are in the vicinity of the European site and distantly hydrologically connected to it. Option study area is in the vicinity of this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
West Donegal Coast SPA (004150)	1.4km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Shag ( <i>Phalacrocorax aristotelis</i> ) [A018] Peregrine ( <i>Falco peregrinus</i> ) [A103] Herring Gull ( <i>Larus argentatus</i> ) [A184] Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Razorbill ( <i>Alca torda</i> ) [A200] Chough ( <i>Pyrhrocorax pyrrhocorax</i> ) [A346]	Breed Breed Breed Breed Breed Breed Breed Breed	No impacts predicted given distance from site, the designated QI species and the works proposed.	No operational impacts are predicted.	N
Inishduff SPA (004115)	2.5km	Shag ( <i>Phalacrocorax aristotelis</i> ) [A018]	Breed	No impacts predicted given distance from site, the designated QI species, the works proposed and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N
Inishkeel SPA (004116)	8km	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045]	Non-B	No impacts predicted given distance from site, the works proposed and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N
Roaninish SPA (004121)	13km	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Herring Gull ( <i>Larus argentatus</i> ) [A184]	Non-B Breed	No impacts predicted given distance from site, the works proposed and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N
Illancrone and Inishkeeragh SPA (004132)	15.1km	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Common Tern ( <i>Sterna hirundo</i> ) [A193] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195]	Non-B Breed Breed Breed	No impacts predicted given distance from site, the designated QI species, the works proposed and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N
Rathlin O'Birne Island SPA	16.3km	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045]	Non-B	No impacts predicted given distance from site, the works proposed and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Donegal Bay SPA (004151)	17.7km	Great Northern Diver ( <i>Gavia immer</i> ) [A003] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Sanderling ( <i>Calidris alba</i> ) [A144] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B	No impacts predicted given distance from site, the designated QI species, the works proposed and a lack of any source-pathway-receptor between the works proposed and European site.	No operational impacts are predicted.	<b>N</b>

Note if option from Preferred Approach not listed below there were no European sites identified within the ZOI of that option (e.g. Preferred Approach option TG1-SAB-549 (option 170))

Table C2.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-060 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	15km	<p><b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0]</p> <p><b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]</p>	New SW abstraction from River Drumore to supply deficit and new pump hydrologically linked to the European site. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	Y

Table C2.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-060 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	20km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Wetland and Waterbirds [A999]	Non-B Non-B Non-B	New SW abstraction and pump hydrologically linked to the European site. New watermains and upgrade WTP in the vicinity of the European site. Option study area is in the vicinity of this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C2.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-072 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	28km	<p><b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0]</p> <p><b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]</p>	No potential impact pathway given distance from site.	No operational impacts are predicted.	N

Table C2.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-072 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	32km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Wetland and Waterbirds [A999]	Non-B Non-B Non-B	No potential impact pathway given distance from site.	No operational impacts are predicted	N

Table C2.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with options TG1-SAB-077 & TG1-SAB-078 combined leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Corratirrim SAC (000979)	1.3km	<b>Annex I habitats:</b> Limestone pavements [8240]	Keep supplying Blacklion WRZ from Gowlan GWS (Cuilcagh Mountain Spring and Garvagh Lough). No impacts predicted given works proposed, the QIs present, and the distance from this European site.	No operational impacts are predicted	N

Table C2.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with options TG1-SAB-077 & TG1-SAB-078 combined leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Upper Lough Erne SPA (UK9020071)	17.4km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	Keep supplying Blacklion WRZ from Gowlan GWS (Cuilcagh Mountain Spring and Garvagh Lough). No impacts predicted given works proposed.	No operational impacts are predicted	N

Table C2.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-086 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	5.3km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Increase GW abstraction from existing boreholes to supply deficit at Clones WRZ. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted	Y
Upper Lough Erne SAC (UK0016614)	5.9km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Increase GW abstraction from existing boreholes to supply deficit at Clones WRZ. Option study area is hydrologically linked to this site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted	Y

Table C2.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-086 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Upper Lough Erne SPA (UK9020071)	1.2km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	<p>Increase GW abstraction from existing boreholes to supply deficit at Clones WRZ. Option study area is hydrologically linked to this site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted	Y

Table C2.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-104 leading to potential LSEs. Note: No SPAs within ZOI

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	18.7km	<p><b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0]</p> <p><b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Interconnect Smithboro WRZ and Stranoodan GWS and supply deficit from GWS.</p> <p>No potential impact pathway given distance from site and lack of hydrological link.</p>	No operational impacts are predicted	N

Table C2.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-127 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	28.4km	<p><b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0]</p> <p><b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Upgrade Kilkitt WTP for water quality improvements.</p> <p>No potential impact pathway given distance from site and lack of hydrological link.</p>	No operational impacts are predicted	N

Table C2.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-127 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	33km	<p>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Wetland and Waterbirds [A999]</p>	<p>Non-B Non-B Non-B</p>	<p>Upgrade Kilkitt WTP for water quality improvements.</p> <p>No potential impact pathway given distance from site and lack of hydrological link.</p>	No operational impacts are predicted	N



Table C2.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-173 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note no SACs within ZOI.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Donegal Bay SPA (004151)	25km	Great Northern Diver ( <i>Gavia immer</i> ) [A003] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Sanderling ( <i>Calidris alba</i> ) [A144] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B	Increase GW abstraction and upgrade WTP. No potential impact pathway given distance from site.	No operational impacts are predicted	N

Table C2.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-189 leading to potential LSEs. Note: no SPAs within ZOI

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	16.6km	<b>Annex I habitats:</b> Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] Bog woodland [91D0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Upgrade Newbliss WTP for water quality improvements. No potential impact pathway given distance from site and lack of hydrological link.	No operational impacts are predicted	N

Table C2.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-202 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Glenade Lough SAC (001919)	0m	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] <b>Annex II species:</b> <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Najas flexilis</i> (Slender Naiad) [1833]	New SW abstraction from Glenade Lough and upgrade of existing Glenade WTP. New pump and watermain. Option study area is within this European site. - Habitat degradation – changes in water quality (pollution) - Habitat loss - Mortality - Disturbance (including biological disturbance)	New SW abstraction from Glenade Lough and upgrade of existing Glenade WTP. New pump and watermain. Option study area is within this European site. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y
Lough Gill SAC (001976)	1.4km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099]	New SW abstraction and watermain hydrologically connected to the European site. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction and watermain hydrologically connected to the European site. Option study area is hydrologically linked to this European site. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]			
Arroo Mountain SAC (001403)	700m	<b>Annex I habitats:</b> Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Calcareous and calcshist screes of the montane to alpine levels ( <i>Thlaspietea rotundifolii</i> ) [8120] Calcareous rocky slopes with chasmophytic vegetation [8210]	No potential impact pathway given the lack of hydrological link.	No operational impacts are predicted	<b>N</b>
Ben Bulbin, Gleniff and Glenade Complex SAC (000623)	600m	<b>Annex I habitats:</b> Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Alkaline fens [7230] Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladanii</i> ) [8110] Calcareous and calcshist screes of the montane to alpine levels ( <i>Thlaspietea rotundifolii</i> ) [8120] Calcareous rocky slopes with chasmophytic vegetation [8210] <b>Annex II species:</b> <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013] <i>Lutra lutra</i> (Otter) [1355]	No potential impact pathway given the lack of hydrological link.	No operational impacts are predicted	<b>N</b>

Table C2.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-202 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Sligo/Leitrim Uplands SPA	1km	Peregrine ( <i>Falco peregrinus</i> ) [A103] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed	New SW abstraction from Glenade Lough and upgrade of existing Glenade WTP. New pump and watermain. Option study area is in close proximity to this EU site	No operational impacts are predicted.	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
				- Disturbance (including biological disturbance)		

Table C2.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAB-133 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	13.1km	<p><b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0]</p> <p><b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Replace rising main connecting raw water pump station and WTP at Lough Gowna (Cornadrung Pump Station), namely flooding of pump station, lack of control (raw water pumps control flow through plant) and increase SW abstraction to supply deficit. Increase SW abstraction, upgrade Smear WTP, and new watermains. Option study area is hydrologically linked to this European site.</p> <p>No potential impact pathway given the distance between the works and this European site and the attenuation of the hydrological link.</p>	<p>Replace rising main connecting raw water pump station and WTP at Lough Gowna (Cornadrung Pump Station), namely flooding of pump station, lack of control (raw water pumps control flow through plant) and increase SW abstraction to supply deficit. Increase SW abstraction, upgrade Smear WTP, and new watermains. Option study area is hydrologically linked to this European site.</p> <p>No operational impacts are predicted.</p>	<b>N</b>

Table C2.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAB-133 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	13.6km	<p>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Wetland and Waterbirds [A999]</p>	<p>Non-B Non-B Non-B</p>	<p>Replace rising main connecting raw water pump station and WTP at Lough Gowna (Cornadrung Pump Station), namely flooding of pump station, lack of control (raw water pumps control flow through plant) and increase SW abstraction to supply deficit. Increase SW abstraction, upgrade Smear WTP, and new watermains. Option study area is hydrologically linked to this European site.</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	<b>Y</b>
Lough Kinale and Derragh Lough SPA (004061)	14km	<p>Pochard (<i>Aythya ferina</i>) [A059] Tufted Duck (<i>Aythya fuligula</i>) [A061] Wetland and Waterbirds [A999]</p>	<p>Non-B Non-B</p>	<p>Replace rising main connecting raw water pump station and WTP at Lough Gowna (Cornadrung Pump Station), namely flooding of pump station, lack of control (raw water pumps control flow through plant) and increase SW abstraction to supply deficit.</p> <p>No impacts predicted given QI present and distance from this European site.</p>	No operational impacts are predicted.	<b>N</b>
Lough Sheelin SPA (004065)	15.5km	<p>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Pochard (<i>Aythya ferina</i>) [A059] Tufted Duck (<i>Aythya fuligula</i>) [A061] Goldeneye (<i>Bucephala clangula</i>) [A067]</p>	<p>Non-B Non-B Non-B Non-B</p>	<p>Replace rising main connecting raw water pump station and WTP at Lough Gowna (Cornadrung Pump Station), namely flooding of pump station, lack of control (raw water pumps control flow through plant) and increase SW abstraction to supply deficit.</p>	No operational impacts are predicted.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Wetland and Waterbirds [A999]		No impacts predicted given QI present and distance from this European site.		
Ballykenny-Fisherstown Bog SPA (004101)	20.3km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	N/A	Replace rising main connecting raw water pump station and WTP at Lough Gowna (Cornadrung Pump Station), namely flooding of pump station, lack of control (raw water pumps control flow through plant) and increase SW abstraction to supply deficit. No impacts predicted given distance from this European site.	No operational impacts are predicted.	N

Table C2.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAB-535 (TG1-SAB-157, TG1-SAB-185) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Golagh and Breesy Hill SAC (002164)	150m	<b>Annex I habitats:</b> Blanket bogs (* if active bog) [7130]	New SW abstraction from Assaroe Lake, new WTP and new watermains in close proximity to the European site. Option study area is hydrologically linked to this European site. No impacts predicted given lack of hydrological link, distance from site and works proposed.	No operational impacts are predicted.	N
Pettigoe Plateau SAC (UK0016607)	900m	<b>Annex I habitats:</b> Natural dystrophic lakes and ponds [3160] Blanket bogs (* if active bog) [7130] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i> [3130]	New SW abstraction from Assaroe Lake, new WTP and new watermains in close proximity to the site. Option study area is in close proximity to this site. No impacts predicted given lack of hydrological link and QI present.	No operational impacts are predicted.	N

Table C2.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAB-535 (TG1-SAB-157, TG1-SAB-185) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Pettigoe Plateau SPA (UK9020051)	900m	Golden plover ( <i>Pluvialis apricaria</i> )	Breed	New SW abstraction from Assaroe Lake, new WTP and new watermains in close proximity to the site. Option study area is in close proximity to this site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Donegal Bay SPA (004151)	2.3km	Great Northern Diver ( <i>Gavia immer</i> ) [A003] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Sanderling ( <i>Calidris alba</i> ) [A144] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B	New SW abstraction from Assaroe Lake, new WTP and new watermains hydrologically linked to the European site. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C2.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAB-538 (TG1-SAB-024, TG1-SAB-029, TG1-SAB-041, TG1-SAB-048) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	0m	<p><b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0]</p> <p><b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Increase GW abstraction from existing boreholes, upgrade Ballyconnell WTP, and new pump, watermains and storage within the European site. Option study area is within this SAC. The GW ZOC overlaps this site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> <li>- Mortality</li> <li>- Habitat loss</li> </ul>	<p>Increase GW abstraction from existing boreholes, upgrade Ballyconnell WTP, and new pump, watermains and storage within the European site. Option study area is within this SAC. The GW ZOC overlaps this site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/ hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Cuilcagh - Anierin Uplands SAC (000584)	1km	<p><b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflora</i>) [3110] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110] Siliceous rocky slopes with chasmophytic vegetation [8220]</p> <p><b>Annex II species:</b> <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]</p>	<p>Option study area is in close proximity to this site. New mains, decommission WTP.</p> <p>No impacts predicted given the lack of hydrological link and distance from site.</p>	No operational impacts are predicted.	N
Cladagh (Swanlinbar) River SAC (UK0030116)	1.1km	<p><b>Annex I habitats:</b> Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p> <p><b>Annex II species:</b> <i>Margaritifera margaritifera</i> (Freshwater pearl mussel) [1029]</p>	<p>Option study area is in close proximity to this site. New mains, decommission WTP. Option is hydrologically linked to this site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> </ul>	No operational impacts are predicted.	Y
Upper Lough Erne SAC (UK0016614)	1.1km	<p><b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Increase GW abstraction from existing boreholes, upgrade Ballyconnell WTP, and new pump, watermains and storage in close proximity to this site. Option is hydrologically linked to this site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y
Cuilcagh Mountain SAC (UK0016603)	2.6km	<p><b>Annex I habitats:</b> Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130]</p>	<p>Option study area is in close proximity to this site. New mains, decommission WTP.</p> <p>No impacts predicted given the lack of hydrological link, QIs present and distance from site.</p>	No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i> ) [8110] Siliceous rocky slopes with chasmophytic vegetation [8220]			

Table C2.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAB-538 (TG1-SAB-024, TG1-SAB-029, TG1-SAB-041, TG1-SAB-048) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Upper Lough Erne SPA (UK9020071)	1.1km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	Increase GW abstraction from existing boreholes, upgrade Ballyconnell WTP, and new pump, watermains and storage in close proximity to this site. Option is hydrologically linked to this site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted	Y
Lough Oughter Complex SPA (004049)	3.3km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Wetland and Waterbirds [A999]	Non-B Non-B Non-B	Increase GW abstraction from existing boreholes. Upgrade Ballyconnell WTP. New pump, watermains and storage in the vicinity of the European site. Option study area is close to this European site - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C2.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAB-501 (TG1-SAB-011, TG1-SAB-053) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	5.3km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Interconnect Cavan and Ballyjamesduff WRZs. Supply spare capacity from Ballyjamesduff RWSS to Cavan RWSS. Upgrade Lismean WTP for water quality improvements. Ballyjamesduff RWSS is not in deficit and supply spare capacity to Cavan RWSS. Upgrade WTP, and new storage and watermains hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Upper Lough Erne SAC (UK0016614)	17.3km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Interconnect Cavan and Ballyjamesduff WRZs. Supply spare capacity from Ballyjamesduff RWSS to Cavan RWSS. Upgrade Lismean WTP for water quality improvements. Ballyjamesduff RWSS is not in deficit and supply spare capacity to Cavan RWSS. Upgrade WTP, and new storage and watermains hydrologically linked to this European site. No impacts predicted given the distance between the works and this European site and the attenuation of the hydrological link.	No operational impacts are predicted	N

Table C2.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAB-501 (TG1-SAB-011, TG1-SAB-053) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	5.4km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Wetland and Waterbirds [A999]	Non-B Non-B Non-B	Interconnect Cavan and Ballyjamesduff WRZs. Supply spare capacity from Ballyjamesduff RWSS to Cavan RWSS. Upgrade Lismean WTP for water quality improvements. Ballyjamesduff RWSS is not in deficit and supply spare capacity to Cavan RWSS. Upgrade WTP, and new storage and watermains hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Lough Sheelin SPA (004065)	8.7km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Goldeneye ( <i>Bucephala clangula</i> ) [A067] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B	Interconnect Cavan and Ballyjamesduff WRZs. Supply spare capacity from Ballyjamesduff RWSS to Cavan RWSS. Upgrade Lismean WTP for water quality improvements. Ballyjamesduff RWSS is not in deficit and supply spare capacity to Cavan RWSS. Upgrade WTP hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	Y
Upper Lough Erne SPA (UK9020071)	17.3km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	Interconnect Cavan and Ballyjamesduff WRZs. Supply spare capacity from Ballyjamesduff RWSS to Cavan RWSS. Upgrade Lismean WTP for water quality improvements. Ballyjamesduff RWSS is not in deficit and supply spare capacity to Cavan RWSS. Upgrade WTP, and new storage and watermains hydrologically linked to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted	Y
Lough Kinale and Derragh Lough SPA (004061)	17.5km	Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Wetland and Waterbirds [A999]	Non-B Non-B	Interconnect Cavan and Ballyjamesduff WRZs. Supply spare capacity from Ballyjamesduff RWSS to Cavan RWSS. Upgrade Lismean WTP for water quality improvements. Ballyjamesduff RWSS is not in deficit and supply spare capacity to Cavan RWSS. No impacts predicted given QI present and distance from this European site.	No operational impacts are predicted.	N

Table C2.24: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAB-190 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	22.7km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Upgrade Togan (Lake) WTP for water quality improvements. Monaghan WRZ is not in deficit. Option study area is hydrologically linked to this site. No impacts predicted given the distance from site.	No operational impacts are predicted.	N

Table C2.25: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAB-190 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests		Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Slieve Beagh SPA (004167)	8km	Hen Harrier ( <i>Circus cyaneus</i> ) [A082]	Breed	Upgrade Togan (Lake) WTP for water quality improvements. Monaghan WRZ is not in deficit. No impacts predicted given works proposed, QI present, and distance from this European site.	No operational impacts are predicted.	N
Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020302)	12.4km	Hen Harrier ( <i>Circus cyaneus</i> ) [A082]	Breed	Upgrade Togan (Lake) WTP for water quality improvements. Monaghan WRZ is not in deficit. No impacts predicted given works proposed, QI present, and distance from this European site.	No operational impacts are predicted.	N
Upper Lough Erne SPA (UK9020071)	22.3km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	Upgrade Togan (Lake) WTP for water quality improvements. Monaghan WRZ is not in deficit. No impacts predicted given works proposed and distance from this European site.	No operational impacts are predicted.	N

Table C2.26: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-067 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	1km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Keep supplying Ballyhaise WRZ from Annagh GWS. No impacts predicted given the proposed works.	No operational impacts are predicted.	N
Upper Lough Erne SAC (UK0016614)	9.2km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Keep supplying Ballyhaise WRZ from Annagh GWS. No impacts predicted given works proposed and the distance from this European site.	No operational impacts are predicted.	N

Table C2.27: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-067 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	4.9km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Wetland and Waterbirds [A999]	Non-B Non-B Non-B	Keep supplying Ballyhaise WRZ from Annagh GWS. No impacts predicted given the proposed works.	No operational impacts are predicted.	N



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Upper Lough Erne SPA (UK9020071)	9.2km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	Keep supplying Ballyhaise WRZ from Annagh GWS. No impacts predicted given the proposed works.	No operational impacts are predicted.	<b>N</b>

Table C2.28: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAB-084 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	10.4km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Keep supplying Gowna WRZ from Erne Valley GWS. No impacts predicted given works proposed and the distance from this European site.	Keep supplying Gowna WRZ from Erne Valley GWS. No operational impacts are predicted.	<b>N</b>

Table C2.29: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-084 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	10.4km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Wetland and Waterbirds [A999]	Non-B Non-B Non-B	Keep supplying Gowna WRZ from Erne Valley GWS. No impacts predicted given works proposed.	No operational impacts are predicted.	<b>N</b>
Lough Kinale and Derragh Lough SPA (004061)	13.8km	Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Wetland and Waterbirds [A999]	Non-B Non-B	Keep supplying Gowna WRZ from Erne Valley GWS. No impacts predicted given works proposed.	No operational impacts are predicted.	<b>N</b>
Lough Sheelin SPA (004065)	14.8km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Goldeneye ( <i>Bucephala clangula</i> ) [A067] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B	Keep supplying Gowna WRZ from Erne Valley GWS. No impacts predicted given works proposed.	No operational impacts are predicted.	<b>N</b>

Table C2.30: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-115 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note: no SACs within ZOI.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Slieve Beagh SPA (004167)	6.3km	Hen Harrier ( <i>Circus cyaneus</i> ) [A082]	Breed	<p>Keep supplying Emyvale WRZ from Glaslough and Tyholland GWS.</p> <p>No impacts predicted given works proposed, QI present, and distance from this European site.</p>	No operational impacts are predicted.	<b>N</b>
Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020302)	9.6km	Hen Harrier ( <i>Circus cyaneus</i> ) [A082]	Breed	<p>Keep supplying Emyvale WRZ from Glaslough and Tyholland GWS.</p> <p>No impacts predicted given works proposed, QI present, and distance from this European site.</p>	No operational impacts are predicted.	<b>N</b>

Table C2.31: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAB-123 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note: no SACs within ZOI.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Slieve Beagh SPA (004167)	7.8km	Hen Harrier ( <i>Circus cyaneus</i> ) [A082]	Breed	<p>Keep supplying Glaslough WRZ from Glaslough and Tyholland GWS.</p> <p>No impacts predicted given works proposed, QI present, and distance from this European site.</p>	No operational impacts are predicted.	<b>N</b>
Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020302)	11km	Hen Harrier ( <i>Circus cyaneus</i> ) [A082]	Breed	<p>Keep supplying Glaslough WRZ from Glaslough and Tyholland GWS.</p> <p>No impacts predicted given works proposed, QI present, and distance from this European site.</p>	No operational impacts are predicted.	<b>N</b>

Table C3.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-039 leading to potential LSEs. Note: no SPAs within ZOI

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Glenamoy Bog Complex SAC (000500)	0m	<p><b>Annex I habitats:</b>                      Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]                      Machairs (* in Ireland) [21A0]                      Natural dystrophic lakes and ponds [3160]                      Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]                      Blanket bogs (* if active bog) [7130]                      Transition mires and quaking bogs [7140]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p><b>Annex II species:</b>  <i>Salmo salar</i> (Salmon) [1106]  <i>Petalophyllum ralfsii</i> (Petalwort) [1395]  <i>Saxifraga hirculus</i> (Marsh Saxifrage) [1528]  <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]</p>	<p>Increase ground water (GW) abstraction (Belmullet GWB (poorly productive bedrock)) to supply deficit at Ceide Fields WRZ, upgrade Ceide Fields water treatment plant (WTP).                      Option study area is within this European site. GW ZOC overlaps this European site.</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Increase GW abstraction (Belmullet GWB (poorly productive bedrock)) to supply deficit at Ceide Fields WRZ, upgrade Ceide Fields WTP.                      Option study area is within this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y

Table C3.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-044 leading to potential LSEs. Note: No SPAs within ZOI

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Streedagh Point Dunes SAC (001680)	2.6km	<p><b>Annex I habitats:</b>                      Mudflats and sandflats not covered by seawater at low tide [1140]                      Perennial vegetation of stony banks [1220]                      Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]                      Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]                      Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]                      Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p> <p><b>Annex II species:</b>  <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]</p>	<p>New GW abstraction overlying the same karstic aquifer as the European site. New watermains hydrologically linked to the European site. Option study area is hydrologically linked to the European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> </ul>	<p>New GW abstraction overlying the same karstic aquifer as the European site. New watermains hydrologically linked to the European site. Option study area is hydrologically linked to the European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Bunduff Lough And Machair/ Trawalua/ Mullaghmore SAC (000625)	3.7km	<p><b>Annex I habitats:</b>                      Mudflats and sandflats not covered by seawater at low tide [1140]                      Large shallow inlets and bays [1160]                      Reefs [1170]                      Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]                      Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]                      Humid dune slacks [2190]                      Machairs (* in Ireland) [21A0]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]                      Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]                      Alkaline fens [7230]</p>	<p>New GW abstraction overlying the same karstic aquifer as the European site. Option study area is hydrologically linked to the European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> </ul>	<p>New GW abstraction overlying the same karstic aquifer as the European site. Option study area is hydrologically linked to the European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p><b>Annex II species:</b>  <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]  <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p>			
Ben Bulbin, Gleniff and Glenade Complex SAC (000623)	3.5km	<p><b>Annex I habitats:</b>  Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]  Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]  European dry heaths [4030]  Alpine and Boreal heaths [4060]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]  Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]  Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]  Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]  Blanket bogs (* if active bog) [7130]  Transition mires and quaking bogs [7140]  Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]  Alkaline fens [7230]  Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110]  Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>) [8120]  Calcareous rocky slopes with <i>chasmophytic</i> vegetation [8210]</p> <p><b>Annex II species:</b>  <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]  <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Develop a new GW abstraction, build a new WTP, provide new storage, a new pump new network. North Sligo WTP requires an upgrade for water quality purposes.</p> <p>No impacts are predicted given the lack of hydrological link and the zone of contributions (ZOC) do not over lap, abstraction downstream of this European site</p>	No operational impacts are predicted.	N

Table C3.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-067 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Moy SAC (002298)	1km	<p><b>Annex I habitats:</b>  Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]  Active raised bogs [7110]  Degraded raised bogs still capable of natural regeneration [7120]  Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]  Alkaline fens [7230]  Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]  Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b></p>	<p>New GW abstraction to supply deficit at Foxford, upgrade WTP, new pump station, wellfield and storage in the vicinity of the European site. New watermain crosses a hydrological link to the European site.</p> <p>- Habitat degradation – changes in water quality (pollution)</p>	<p>New GW abstraction to supply deficit at Foxford, upgrade WTP, new pump station, wellfield and storage in the vicinity of the European site. New watermain crosses a hydrological link to the European site.</p> <p>No operational impacts are predicted as the GW abstraction is outside the ZOC.</p>	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]			
Killala Bay/Moy Estuary SAC (000458)	14.5km	<u><b>Annex I habitats:</b></u> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <u><b>Annex II species:</b></u> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Phoca vitulina</i> (Harbour Seal) [1365]	New watermains crosses a hydrological link to the European site. No construction impacts predicted given the distance from site and the works proposed.	No operational impacts are predicted	<b>N</b>

Table C3.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SA-C-067 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Conn and Lough Cullin SPA (004228)	3.4km	Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Common Gull ( <i>Larus canus</i> ) [A182] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Breed Breed Non-B	New GW abstraction to supply deficit at Foxford, upgrade WTP, new pump station, wellfield, storage and watermains in the vicinity of the European site. - Disturbance (including biological disturbance)	No operational impacts are predicted	<b>Y</b>
Killala Bay/Moy Estuary SPA (004036)	16.7km	Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B	New watermains crosses a hydrological link to the European site. No construction impacts predicted given the distance from site and the works proposed.	No operational impacts are predicted	<b>N</b>

Table C3.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-073 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Moy SAC (002298)	0m	<p><b>Annex I habitats:</b>                      Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]                      Active raised bogs [7110]                      Degraded raised bogs still capable of natural regeneration [7120]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Alkaline fens [7230]                      Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]                      Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</p> <p><b>Annex II species:</b>  <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]  <i>Petromyzon marinus</i> (Sea Lamprey) [1095]  <i>Lampetra planeri</i> (Brook Lamprey) [1096]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Interconnect Kilaturley GWS with Charlestown and supply deficit from GWS. Option study area is within this European site (watermain crosses SAC). GW abstraction ZOC overlaps SAC</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> <li>- Mortality</li> </ul>	<p>Interconnect Kilaturley GWS with Charlestown and supply deficit from GWS. Option study area is within this European site (watermain crosses SAC). GW abstraction ZOC overlaps SAC</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Killala Bay/Moy Estuary SAC (000458)	27.2km	<p><b>Annex I habitats:</b>                      Estuaries [1130]                      Mudflats and sandflats not covered by seawater at low tide [1140]                      Annual vegetation of drift lines [1210]                      Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]                      Salicornia and other annuals colonising mud and sand [1310]                      Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]                      Embryonic shifting dunes [2110]                      Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]                      Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]                      Humid dune slacks [2190]</p> <p><b>Annex II species:</b>  <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]  <i>Petromyzon marinus</i> (Sea Lamprey) [1095]  <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	No impacts predicted given distance from site and lack of hydrological link.	No operational impacts are predicted	N

Table C3.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SA-C-073 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Killala Bay/Moy Estuary SPA (004036)	28.3km	Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149]	Non-B Non-B Non-B Non-B	<p>Interconnect Kilaturley GWS with Charlestown and supply deficit from GWS.</p> <p>No impacts predicted given distance from site and lack of hydrological link.</p>	<p>Interconnect Kilaturley GWS with Charlestown and supply deficit from GWS.</p> <p>No operational impacts are predicted</p>	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B			

Table C3.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-086 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Carrowmore Lake Complex SAC (000476)	0m	<b>Annex I habitats:</b> Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] <b>Annex II species:</b> <i>Saxifraga hirculus</i> (Marsh Saxifrage) [1528] <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]	Increase surface water (SW) abstraction from Carrowmore Lake to supply deficit at Erris WRZ, upgrade Erris WTP. Increase SW abstraction is within this European site No impacts predicted given distance and the proposed works.	Increase surface water (SW) abstraction from Carrowmore Lake to supply deficit at Erris WRZ, upgrade Erris WTP. Increase SW abstraction is within this European site. No operational impacts are predicted as the SW increase is 3% of the Q50. This will not change water levels outside their natural hydrological regime.	<b>N</b>

Table C3.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SA-C-086 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Carrowmore Lake SPA (004052)	0m	Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191]	Breed	Increase surface water (SW) abstraction from Carrowmore Lake to supply deficit at Erris WRZ, upgrade Erris WTP. Increase SW abstraction is within this European site No impacts predicted given distance and the proposed works.	Increase surface water (SW) abstraction from Carrowmore Lake to supply deficit at Erris WRZ, upgrade Erris WTP. Increase SW abstraction is within this European site. No operational impacts are predicted as the SW increase is 3% of the Q50. This will not change water levels outside their natural hydrological regime.	<b>N</b>
Blacksod Bay/Broad Haven SPA (004037)	2km	Great Northern Diver ( <i>Gavia immer</i> ) [A003] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Curlew ( <i>Numenius arquata</i> ) [A160] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149] Dunlin ( <i>Calidris alpina schinzii</i> ) [A466] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Red-throated Diver ( <i>Gavia stellata</i> ) [A001]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Non-B	Increase surface water (SW) abstraction from Carrowmore Lake to supply deficit at Erris WRZ, upgrade Erris WTP. Option study area is in close proximity to the European site. No impacts predicted given distance and the proposed works.	No operational impacts are predicted	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Slavonian Grebe ( <i>Podiceps auritus</i> ) [A007] Wetland and Waterbirds [A999]	Breed N/A			

Table C3.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-101 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Gill SAC (001976)	0m	<p><b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b> <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Upgrade and increase the existing SW abstraction from Lough Gill, decommission Kilsellagh WTP, upgrade Foxes Den WTP and new water mains crossing the European site. Option study area is within this European site.</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> <li>- Mortality</li> </ul>	<p>Upgrade and increase the existing SW abstraction from Lough Gill, decommission Kilsellagh WTP, upgrade Foxes Den WTP and new water mains crossing the European site. Option study area is within this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/ hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (000627)	30m	<p><b>Annex I habitats:</b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p><b>Annex II species:</b> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	<p>New watermains is hydrologically linked to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> </ul>	No operational impacts predicted.	Y



Table C3.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SA-C-101 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Cummeen Strand SPA (004035)	300m	Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Redshank ( <i>Tringa totanus</i> ) [A162] Wetland and Waterbirds [A999]	Non-B  Non-B Non-B	<b>New watermains is hydrologically linked to this European site.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts predicted.	<b>Y</b>

Table C3.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-108 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Gill SAC (001976)	0m	<b><u>Annex I habitats:</u></b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b><u>Annex II species:</u></b> <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	Increase abstraction at Lough Gill and upgrade pump station within the European site. Upgrade of watermains is crossing the European site. Upgrade Moneyduff WTP. Option study area is within this European site. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance) - Mortality	Increase abstraction at Lough Gill and upgrade pump station within the European site. Upgrade of watermains is crossing the European site. Upgrade Moneyduff WTP. Option study area is within this European site. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	<b>Y</b>
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (000627)	9.4km	<b><u>Annex I habitats:</u></b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] <b><u>Annex II species:</u></b> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Phoca vitulina</i> (Harbour Seal) [1365]	<b>Option study area is hydrologically linked to this European site</b> No operational impacts predicted given the hydrological link is via Lough Gill which would act as a barrier to potential impacts.	No operational impacts predicted.	<b>N</b>

Table C3.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SA-C-108 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Cummeen Strand SPA (004035)	9.8km	Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Redshank ( <i>Tringa totanus</i> ) [A162] Wetland and Waterbirds [A999]	Non-B Non-B Non-B	Increase abstraction at Lough Gill and upgrade pump station within the European site. Upgrade of watermains is crossing the European site. Upgrade Moneyduff WTP. Option study area is hydrologically linked to this European site  No operational impacts predicted given the hydrological link is vis Lough Gill which would act as a barrier to potential impacts.	No operational impacts predicted.	<b>N</b>

Table C3.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-131 leading to potential LSEs. Note: no SPAs within ZOI.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Boleybrack Mountain SAC (002032)	0m	<b>Annex I habitats:</b> Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinia caerulea</i> ) [6410] Blanket bogs (* if active bog) [7130]	Keep supplying Dowra WRZ from Doobally GWS, involves SW abstraction from Lough Naweelion. Option study area is hydrologically linked to this European site and abstraction site is within this European site.  - Habitat degradation – changes in water quality (pollution)	Keep supplying Dowra WRZ from Doobally GWS, involves SW abstraction from Lough Naweelion. Option study area is hydrologically linked to this European site and abstraction site is within this European site.  - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	<b>Y</b>

Table C3.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-137 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Moy SAC (002298)	1.2km	<b>Annex I habitats:</b> Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Alkaline fens [7230] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	Decommission Swinford WTP, new pump and new watermains. New watermains crosses a hydrological link to the European site. Option study area is hydrologically linked to this European site.  - Habitat degradation - Mortality	No operational impacts predicted.	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Killala Bay/Moy Estuary SAC (000458)	26km	<p><b>Annex I habitats:</b>  Estuaries [1130]  Mudflats and sandflats not covered by seawater at low tide [1140]  Annual vegetation of drift lines [1210]  Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]  Salicornia and other annuals colonising mud and sand [1310]  Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]  Embryonic shifting dunes [2110]  Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]  Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]  Humid dune slacks [2190]</p> <p><b>Annex II species:</b>  <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]  <i>Petromyzon marinus</i> (Sea Lamprey) [1095]  <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	<p>New watermains crosses a hydrological link to the European site.  No impacts predicted given the distance from site.</p>	No operational impacts are predicted.	N

Table C3.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SA-C-137 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Killala Bay/Moy Estuary SPA (004036)	27.2km	Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B	<p>Decommission Swinford WTP, new pump and new watermains.  No impacts predicted given the distance from site.</p>	No operational impacts are predicted.	N

Table C3.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-138 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Arrow SAC (001673)	50m	<p><b>Annex I habitats:</b>  Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p>	<p>Upgrade current GW abstraction at Heapstown Spring, Upgrade Riverstown WTP. GW abstraction ZOC overlaps this European site.  - Habitat degradation – changes in water quality (pollution)  - Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Unshin River SAC (001898)	500m	<p><b>Annex I habitats:</b> Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b> <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Upgrade current GW abstraction at Heapstown Spring, Upgrade Riverstown WTP. GW abstraction ZOC overlaps this European site. Option study area is close to a hydrological link to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>GW abstraction ZOC overlaps this European site. Option study area is close to a hydrological link to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Ballysadare Bay SAC (000622)	17.7km	<p><b>Annex I habitats:</b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190]</p> <p><b>Annex II species:</b> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	<p>Upgrade current GW abstraction at Heapstown Spring, Upgrade Riverstown WTP. Option study area is close to a hydrological link to this European site.</p> <p>No impacts predicted given distance to site and works proposed.</p>	No operational impacts are predicted	N

Table C3.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SA-C-138 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Arrow SPA (004050)	50m	<p>Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Tufted Duck (<i>Aythya fuligula</i>) [A061] Wetland and Waterbirds [A999]</p>	<p>Non-B Non-B Breed</p>	<p>Upgrade current GW abstraction at Heapstown Spring, Upgrade Riverstown WTP. Option study area is adjacent to this European site</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y
Ballysadare Bay SPA (004129)	17.7km	<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]</p>	<p>Non-B Non-B Non-B Non-B Non-B</p>	<p>Upgrade current GW abstraction at Heapstown Spring, Upgrade Riverstown WTP. Option study area is close to a hydrological link to this European site.</p> <ul style="list-style-type: none"> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y

Table C3.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SA-C-142 leading to potential LSEs. Note: no SPAs within ZOI.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Keel Machair/Menaun Cliffs SAC (001513)	0m	<p><b>Annex I habitats:</b> Perennial vegetation of stony banks [1220] Machairs (* in Ireland) [21A0] Alpine and Boreal heaths [4060]</p> <p><b>Annex II species:</b> <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p>	<p>New SW abstraction from Keel Lough, new pump and watermains within the European site. Option study area is within this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Habitat loss</li> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts predicted.	Y
Croaghaun/Slievemore SAC (001955)	0m	<p><b>Annex I habitats:</b> Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110] Siliceous rocky slopes with chasmophytic vegetation [8220]</p>	<p>Upgrade WTP and new watermains are adjacent to the European site. Option study area is adjacent to this European site.</p> <ul style="list-style-type: none"> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y
Achill Head SAC (002268)	300m	<p><b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170]</p>	<p>New watermains crosses hydrological links to the European site</p> <p>No impacts predicted given nature of works and designated QIs.</p>	No operational impacts are predicted.	N

Table C3.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SA-C-515 (TG1-SA-C-035, TG1-SA-C-035a) leading to potential LSEs. Note no SPAs within ZOI

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Moy SAC (002298)	320m	<p><b>Annex I habitats:</b> Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Alkaline fens [7230] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</p> <p><b>Annex II species:</b> <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Rationalise Knock Airport to Kilkelly WRZ. Increase GW abstraction at Kilkelly WRZ and upgrade Kilkelly WTP adjacent to the European site. New watermains and pump station hydrologically linked to the European site. Option study area is adjacent to and hydrologically linked to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> </ul>	No operational impacts are predicted as the GW ZOC does not overlap the SAC.	Y

Table C3.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SA-C-542 (TG1-SA-C-139, TG1-SA-C-140) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Moy SAC (002298)	0m	<p><b>Annex I habitats:</b>                      Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]                      Active raised bogs [7110]                      Degraded raised bogs still capable of natural regeneration [7120]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Alkaline fens [7230]                      Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]                      Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b>  <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]  <i>Petromyzon marinus</i> (Sea Lamprey) [1095]  <i>Lampetra planeri</i> (Brook Lamprey) [1096]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Rationalise Kiltimagh to Lough Mask WRZ. Decommission Kiltimagh WTP and new watermains within and crossing the European site. New storage and pump station close to a hydrological link to the European site. Option study area is within this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> <li>- Mortality</li> </ul>	No operational impacts are predicted.	Y
Balla Turlough SAC (000463)	0m	<p><b>Annex I habitats:</b>                      Turloughs [3180]</p>	<p>New watermains and pump station are adjacent to the European site. Option study area is adjacent to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y
Lough Carra/Mask Complex SAC	0m	<p><b>Annex I habitats:</b>                      Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]                      Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]                      Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]                      European dry heaths [4030]                      Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]                      Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]                      Alkaline fens [7230]                      Limestone pavements [8240]                      Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b>  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]  <i>Lutra lutra</i> (Otter) [1355]  <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]</p>	<p>Increase SW abstraction from Lough Mask. Option study area is within this European site.</p> <p>No construction required, therefore no impacts predicted.</p>	<p>Increase SW abstraction from Lough Mask. Option study area is within this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Killala Bay/Moy Estuary SAC (000458)	31km	<p><b>Annex I habitats:</b>                      Estuaries [1130]                      Mudflats and sandflats not covered by seawater at low tide [1140]                      Annual vegetation of drift lines [1210]</p>	No impacts predicted given distance from site.	No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <b>Annex II species:</b> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Phoca vitulina</i> (Harbour Seal) [1365]			

Table C3.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SA-C-542 (TG1-SA-C-139, TG1-SA-C-140) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Mask SPA (004062)	0m	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Lesser Black-backed Gull ( <i>Larus fuscus</i> ) [A183] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	Non-B Non-B Breed Breed Breed Breed	Rationalise Kiltimagh to Lough Mask WRZ. Increase SW abstraction at Lough Mask and upgrade Tourmakeady WTP Option study area is within this European site (increase SW abstraction) - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Kiltimagh to Lough Mask WRZ. Increase SW abstraction at Lough Mask and upgrade Tourmakeady WTP Option study area is within this European site (increase SW abstraction) - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	<b>Y</b>
Killala Bay/Moy Estuary SPA (004036)	33km	Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B	No impacts predicted given distance from site.	No operational impacts are predicted.	<b>N</b>

Table C3.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SA-C-543 (TG1-SA-C-143, TG1-SA-C-144, TG1-SA-C-145) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Moy SAC (002298)	0m	<p><b>Annex I habitats:</b>                      Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]                      Active raised bogs [7110]                      Degraded raised bogs still capable of natural regeneration [7120]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Alkaline fens [7230]                      Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]                      Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</p> <p><b>Annex II species:</b>  <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]  <i>Petromyzon marinus</i> (Sea Lamprey) [1095]  <i>Lampetra planeri</i> (Brook Lamprey) [1096]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Increase abstraction from Lough Conn. Upgrade Lisglennon WTP and maintain Wherrew WTP. Rationalise Lough Talt and Lough Easkey to Lisglennon WTP. Option study area is adjacent to this European site (increase SW abstraction, upgrade WTP, new watermains).</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> <li>- Mortality</li> </ul>	No operational impacts are predicted.	Y
Killala Bay/Moy Estuary SAC (000458)	0m	<p><b>Annex I habitats:</b>                      Estuaries [1130]                      Mudflats and sandflats not covered by seawater at low tide [1140]                      Annual vegetation of drift lines [1210]                      Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]                      Salicornia and other annuals colonising mud and sand [1310]                      Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]                      Embryonic shifting dunes [2110]                      Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]                      Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]                      Humid dune slacks [2190]</p> <p><b>Annex II species:</b>  <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]  <i>Petromyzon marinus</i> (Sea Lamprey) [1095]  <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	<p>Option study area is adjacent to this European site (new watermains).</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y
Lough Hoe Bog SAC (000633)	0m	<p><b>Annex I habitats:</b>                      Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]                      Blanket bogs (* if active bog) [7130]</p> <p><b>Annex II species:</b>  <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]  <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</p>	<p>New watermains runs alongside the European site. Option study area is adjacent to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	No operational impacts are predicted.	Y
Lough Nabrickkeagh Bog SAC (000634)	150m	<p><b>Annex I habitats:</b>                      Blanket bogs (* if active bog) [7130]</p>	<p>New watermains is in close proximity to this European site.</p> <p>No impacts predicted given designated QIs and works proposed.</p>	No operational impacts are predicted.	N



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Ox Mountains Bogs SAC (002006)	580m	<p><b>Annex I habitats:</b>  Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]  Natural dystrophic lakes and ponds [3160]  Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]  European dry heaths [4030]  Blanket bogs (* if active bog) [7130]  Transition mires and quaking bogs [7140]  Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p><b>Annex II species:</b>  <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]  <i>Saxifraga hirculus</i> (Marsh Saxifrage) [1528]</p>	No impacts predicted given distance from site and lack of hydrological link.	No operational impacts are predicted.	N

Table C3.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SA-C-543 (TG1-SA-C-143, TG1-SA-C-144, TG1-SA-C-145) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Conn and Lough Cullin SPA	0m	Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Common Gull ( <i>Larus canus</i> ) [A182] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Breed Breed Non-B	Increase abstraction from Lough Conn. Upgrade Lisglennon WTP and maintain Wherrew WTP. Rationalise Lough Talt and Lough Easkey to Lisglennon WTP. Option study area is adjacent to this European site (increase SW abstraction, upgrade WTP, new watermains). - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Killala Bay/Moy Estuary SPA (004036)	1.7km	Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B	Option study area is hydrologically linked to this European site (new watermains) - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	Y

Table C4.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-014 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Clare Island Cliffs SAC (002243)	0m	<b>Annex I habitats:</b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	New GW abstraction (poorly productive bedrock - Clare Island groundwater body). Option study area is adjacent to this European site (abandon old SW abstraction and WTP within SAC, new GW abstraction, new WTP, new reservoir, new pump station and new mains adjacent to SAC). Within ZOC.  No impacts are predicted given the nature of the works and the QI present.	New GW abstraction (poorly productive bedrock - Clare Island groundwater body). Option study area is adjacent to this European site (abandon old SW abstraction and WTP within SAC, new GW abstraction, new WTP, new reservoir, new pump station and new mains adjacent to SAC). Within ZOC.  No operational impacts are predicted given the nature of the works and the QI present as there are no groundwater dependent (GWD) habitats.	N
West Connacht Coast SAC (002998)	120m	<b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	New GW abstraction (poorly productive bedrock - Clare Island groundwater body). Option study area is close to this European site (new GW abstraction, new WTP, new reservoir, new pump station and new mains close to SAC). Within ZOC.  - Disturbance (including biological disturbance)	New GW abstraction (poorly productive bedrock - Clare Island groundwater body). Option study area is close to this European site (new GW abstraction, new WTP, new reservoir, new pump station and new mains close to SAC). Within ZOC.  No operational impacts are predicted given the QI present.	Y
Lough Cahasy, Lough Baun and Roonah Lough SAC (001529)	6.5km	<b>Annex I habitats:</b> Coastal lagoons [1150] Perennial vegetation of stony banks [1220] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Machairs (* in Ireland) [21A0]	European site is within Zone of Influence of the study area.  No impacts are predicted given distance from site, and a lack of hydrological link.	European site is within Zone of Influence of the study area.  No operational impacts are predicted given distance from site, and a lack of hydrological link.	N
Corraun Plateau SAC (000485)	8.1km	<b>Annex I habitats:</b> Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i> ) [8110] Siliceous rocky slopes with chasmophytic vegetation [8220]	European site is within Zone of Influence of the study area.  No impacts are predicted given distance from site, and a lack of hydrological link.	European site is within Zone of Influence of the study area.  No operational impacts are predicted given distance from site, and a lack of hydrological link.	N
Cross Lough (Killadoon) SAC (000484)	10.5km	<b>Annex I habitats:</b> Perennial vegetation of stony banks [1220]	European site is within Zone of Influence of the study area.  No impacts are predicted given distance from site.	European site is within Zone of Influence of the study area.  No operational impacts are predicted given distance from site.	N
Oldhead Wood SAC (000532)	11.4km	<b>Annex I habitats:</b> European dry heaths [4030] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	European site is within Zone of Influence of the study area.  No impacts are predicted given distance from site, and a lack of hydrological link.	European site is within Zone of Influence of the study area.  No operational impacts are predicted given distance from site, and a lack of hydrological link.	N
Mweelrea/Sheeffry/Erriff Complex	12.3km	<b>Annex I habitats:</b> Coastal lagoons [1150] Annual vegetation of drift lines [1210] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	European site is within Zone of Influence of the study area.  No impacts are predicted given distance from site.	European site is within Zone of Influence of the study area.  No operational impacts are predicted given distance from site.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
SAC (001932)		<p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]  Embryonic shifting dunes [2110]  Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]  Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150]  Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) [2170]  Machairs (* in Ireland) [21A0]  Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]  Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]  Natural dystrophic lakes and ponds [3160]  Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]  Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]  European dry heaths [4030]  Alpine and Boreal heaths [4060]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]  Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]  Blanket bogs (* if active bog) [7130]  Transition mires and quaking bogs [7140]  Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]  Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]  Alkaline fens [7230]  Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110]  Calcareous rocky slopes with chasmophytic vegetation [8210]  Siliceous rocky slopes with chasmophytic vegetation [8220]  <b>Annex II species:</b>  <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]  <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]  <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]  <i>Petalophyllum ralfsii</i> (Petalwort) [1395]  <i>Najas flexilis</i> (Slender Naiad) [1833]</p>			
Achill Head SAC (002268)	12.6km	<p><b>Annex I habitats:</b>  Mudflats and sandflats not covered by seawater at low tide [1140]  Large shallow inlets and bays [1160]  Reefs [1170]</p>	<p>European site is within Zone of Influence of the study area.  No impacts are predicted given distance from site.</p>	<p>European site is within Zone of Influence of the study area.  No operational impacts are predicted given distance from site.</p>	<b>N</b>
Keel Machair/ Menaun Cliffs SAC (001513)	12.6km	<p><b>Annex I habitats:</b>  Perennial vegetation of stony banks [1220]  Machairs (* in Ireland) [21A0]  Alpine and Boreal heaths [4060]  <b>Annex II species:</b>  <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p>	<p>European site is within Zone of Influence of the study area.  No impacts are predicted given distance from site, and a lack of hydrological link.</p>	<p>European site is within Zone of Influence of the study area.  No operational impacts are predicted given distance from site, and a lack of hydrological link.</p>	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Clew Bay Complex SAC (001482)	16km	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Coastal lagoons [1150]</p> <p>Large shallow inlets and bays [1160]</p> <p>Annual vegetation of drift lines [1210]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Embryonic shifting dunes [2110]</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p><b>Annex II species:</b></p> <p><i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>

Table C4.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-014 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Clare Island SPA (004136)	650m	<p>Fulmar (<i>Fulmarus glacialis</i>) [A009]</p> <p>Shag (<i>Phalacrocorax aristotelis</i>) [A018]</p> <p>Common Gull (<i>Larus canus</i>) [A182]</p> <p>Kittiwake (<i>Rissa tridactyla</i>) [A188]</p> <p>Guillemot (<i>Uria aalge</i>) [A199]</p> <p>Razorbill (<i>Alca torda</i>) [A200]</p> <p>Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346]</p>	<p>Breed</p> <p>Breed</p> <p>Breed</p> <p>Breed</p> <p>Breed</p> <p>Breed</p> <p>Breed</p>	<p>New GW abstraction (poorly productive bedrock - Clare Island groundwater body). Option study area is close to this European site (abandon old SW abstraction and WTP, new GW abstraction, new WTP, new reservoir, new pump station and new mains close to SPA).</p> <p>- Physical loss of habitats/supporting habitat</p> <p>- Disturbance (including biological disturbance)</p>	<p>New GW abstraction (poorly productive bedrock - Clare Island groundwater body). Option study area is close to this European site (abandon old SW abstraction and WTP, new GW abstraction, new WTP, new reservoir, new pump station and new mains close to SPA).</p> <p>No operational impacts are predicted.</p>	<b>Y</b>
Cross Lough (Killadoon) SPA (004212)	10.4km	Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191]	Breed	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>
Bills Rocks SPA (004177)	14.5km	<p>Storm Petrel (<i>Hydrobates pelagicus</i>) [A014]</p> <p>Puffin (<i>Fratercula arctica</i>) [A204]</p>	<p>Breed</p> <p>Breed</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>

Table C4.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-027 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
The Twelve Bens/Garraun Complex SAC (002031)	100m	<p><b>Annex I habitats:</b>                      Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]                      Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]                      Alpine and Boreal heaths [4060]                      Blanket bogs (* if active bog) [7130]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110]                      Calcareous rocky slopes with chasmophytic vegetation [8210]                      Siliceous rocky slopes with chasmophytic vegetation [8220]                      Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</p> <p><b>Annex II species:</b>  <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]  <i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>New SW abstraction from Lough Auna and upgrade existing Clifden WTP. Option study area is adjacent to/ hydrologically linked to this European site (new WTP, WTP upgrade, new mains, new break pressure tank (BPT) adjacent to SAC, new SW abstraction downstream from SAC).</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Mortality</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>New SW abstraction from Lough Auna and upgrade existing Clifden WTP. Option study area is adjacent to/ hydrologically linked to this European site (new WTP, WTP upgrade, new mains, new break pressure tank (BPT) adjacent to SAC, new SW abstraction downstream from SAC).</p> <p>No operational impacts are predicted given the SW abstraction is downstream from the site.</p>	Y
Connemara Bog Complex SAC (002034)	1km	<p><b>Annex I habitats:</b>                      Coastal lagoons [1150]                      Reefs [1170]                      Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]                      Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]                      Natural dystrophic lakes and ponds [3160]                      Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]                      Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]                      European dry heaths [4030]                      Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]                      Blanket bogs (* if active bog) [7130]                      Transition mires and quaking bogs [7140]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Alkaline fens [7230]                      Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p><b>Annex II species:</b>  <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]  <i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>European site is within Zone of Influence of the study area.                      No impacts are predicted given lack of hydrological link and distance from site.</p>	<p>European site is within Zone of Influence of the study area.                      No operational impacts are predicted given lack of hydrological link and distance from site.</p>	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slyne Head Peninsula SAC (002074)	3.9km	<p><b>Annex I habitats:</b></p> <p>Coastal lagoons [1150]            Large shallow inlets and bays [1160]            Reefs [1170]            Annual vegetation of drift lines [1210]            Perennial vegetation of stony banks [1220]            Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]            Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]            Embryonic shifting dunes [2110]            Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]            Machairs (* in Ireland) [21A0]            Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]            Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]            Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]            European dry heaths [4030]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]            Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]            Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]            Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]            Alkaline fens [7230]</p> <p><b>Annex II species:</b></p> <p><i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]  <i>Petalophyllum ralfsii</i> (Petalwort) [1395]  <i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given lack of hydrological link and distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	N
West Connacht Coast SAC (002998)	7km	<p><b>Annex II species:</b></p> <p><i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]</p>	<p>Option study area is hydrologically linked to this European site (New SW abstraction, new mains and new BPT hydrologically linked to SAC).</p> <p>No impacts are predicted given the distance from the site and the QI present.</p>	<p>Option study area is hydrologically linked to this European site (New SW abstraction, new mains and new BPT hydrologically linked to SAC).</p> <p>No operational impacts are predicted.</p>	N
Kingstown Bay SAC (002265)	7.3km	<p><b>Annex I habitats:</b></p> <p>Large shallow inlets and bays [1160]</p>	<p>Option study area is hydrologically linked to this European site (New SW abstraction, new mains and new BPT hydrologically linked to SAC).</p> <p>- Habitat degradation – changes in water quality (pollution)</p>	<p>Option study area is hydrologically linked to this European site (New SW abstraction, new mains and new BPT hydrologically linked to SAC).</p> <p>No operational impacts are predicted.</p>	Y
Slyne Head Islands SAC (000328)	10.4km	<p><b>Annex I habitats:</b></p> <p>Reefs [1170]</p> <p><b>Annex II species:</b></p> <p><i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]  <i>Halichoerus grypus</i> (Grey Seal) [1364]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Omey Island Machair SAC (001309)	10.5km	<p><b>Annex I habitats:</b> Machairs (* in Ireland) [21A0] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p> <p><b>Annex II species:</b> <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p>	<p>European site is within Zone of Influence of the study area. No impacts are predicted given distance from site.</p>	<p>European site is within Zone of Influence of the study area. No operational impacts are predicted.</p>	N

Table C4.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-027 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Connemara Bog Complex SPA (004181)	2km	Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Merlin ( <i>Falco columbarius</i> ) [A098] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Common Gull ( <i>Larus canus</i> ) [A182]	Breed Breed Breed Breed	<p>New SW abstraction from Lough Auna and upgrade existing Clifden WTP. Option study area is in close proximity to this European site (new WTP, WTP upgrade, new mains, new break pressure tank (BPT) close to SPA).</p> <p>No impacts are predicted given distance from site, lack of hydrological link and QI present.</p>	<p>New SW abstraction from Lough Auna and upgrade existing Clifden WTP. Option study area is in close proximity to this European site (new WTP, WTP upgrade, new mains, new break pressure tank (BPT) close to SPA).</p> <p>No operational impacts are predicted.</p>	N
Slyne Head to Ardmore Point Islands SPA (004159)	9.5km	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195]	Non-B Breed Breed Breed	<p>European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)</p>	<p>European site is within Zone of Influence of the study area. No operational impacts are predicted.</p>	Y
Inishbofin, Omey Island and Turbot Island SPA (004231)	9.6km	Corncrake ( <i>Crex crex</i> ) [A122]	Breed	<p>European site is within Zone of Influence of the study area. No impacts are predicted given distance from site and lack of hydrological link.</p>	<p>European site is within Zone of Influence of the study area. No operational impacts are predicted.</p>	N
Cruagh Island SPA (004170)	14.1km	Manx Shearwater ( <i>Puffinus puffinus</i> ) [A013] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045]	Breed Non-B	<p>European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)</p>	<p>European site is within Zone of Influence of the study area. No operational impacts are predicted.</p>	Y
High Island, Inishshark and Davillaun SPA (004144)	17.5km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194]	Breed Non-B Breed	<p>European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)</p>	<p>European site is within Zone of Influence of the study area. No operational impacts are predicted.</p>	Y

Table C4.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-033 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Corrib SAC (000297)	0m	<p><b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p>	<p>New SW abstraction from Lough Corrib and new WTP. Option study area is within this European site (new SW abstraction from SAC, new mains, new WTP, new BTP, new pumping station and WTP upgrade adjacent to SAC). FWPM catchment is south of works and works are in close</p>	<p>New SW abstraction from Lough Corrib and new WTP. Option study area is within this European site (new SW abstraction from SAC, new mains, new WTP, new BTP, new pumping station and WTP upgrade adjacent to SAC). FWPM catchment is</p>	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>Bog woodland [91D0]</p> <p><b>Annex II species:</b></p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p> <p><i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]</p>	<p>proximity to lesser horseshoe (LHS) bat foraging range, and within the LHS 2.5km buffer.</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Mortality</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>south of works and works are in close proximity to lesser horseshoe (LHS) bat foraging range, and within the LHS 2.5km buffer.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/ hydrogeological changes</li> <li>- Water table/availability</li> </ul>	
Lough Carra/Mask Complex SAC (001774)	400m	<p><b>Annex I habitats:</b></p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletea uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p> <p>European dry heaths [4030]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b></p>	<p>Option study area is close to/ hydrologically connected to this European site (new SW abstraction, new mains, new WTP, new BTP, new pumping station and WTP upgrade close to SAC). Works within LHS roost and foraging grounds.</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Mortality</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Option study area is close to/ hydrologically connected to this European site (new SW abstraction, new mains, new WTP, new BTP, new pumping station and WTP upgrade close to SAC). Works within LHS roost and foraging grounds.</p> <p>No operational impacts are predicted.</p>	Y



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <i>Lutra lutra</i> (Otter) [1355] <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]			
Ballymaglancy Cave, Cong SAC (000474)	1.4km	<b>Annex I habitats:</b> Caves not open to the public [8310] <b>Annex II species:</b> <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]	Option study area is in close proximity to this European site (new mains) and is within LHS bat foraging range. - Physical loss of habitats/supporting habitat - Disturbance (including biological disturbance)	Option study area is in close proximity to this European site (new mains) and is within LHS bat foraging range. No operational impacts are predicted.	Y

Table C4.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-033 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Corrib SPA (004042)	0m	Gadwall ( <i>Anas strepera</i> ) [A051] Shoveler ( <i>Anas clypeata</i> ) [A056] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Hen Harrier ( <i>Circus cyaneus</i> ) [A082] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Common Tern ( <i>Sterna hirundo</i> ) [A193] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Breed Non-B Non-B Breed Breed Breed Breed	New SW abstraction from Lough Corrib and new WTP. Option study area is within this European site (new SW abstraction from SPA, new mains, new WTP, new BTP, new pumping station and WTP upgrade adjacent to SPA). - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction from Lough Corrib and new WTP. Option study area is within this European site (new SW abstraction from SPA, new mains, new WTP, new BTP, new pumping station and WTP upgrade adjacent to SPA). - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y
Lough Mask SPA (004062)	450m	Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Lesser Black-backed Gull ( <i>Larus fuscus</i> ) [A183] Common Tern ( <i>Sterna hirundo</i> ) [A193] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Non-B Breed Breed Breed Breed	Option study area is close to/ hydrologically connected to this European site (new SW abstraction, new mains, new WTP, new BTP, new pumping station and WTP upgrade close to SPA). - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is close to/ hydrologically connected to this European site (new SW abstraction, new mains, new WTP, new BTP, new pumping station and WTP upgrade close to SPA). No operational impacts are predicted.	Y

Table C4.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-040 leading to potential LSEs. Note: No SPAs within ZOI for SAD-040.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Corrib SAC (000297)	380m	<p><b>Annex I habitats:</b></p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>Bog woodland [91D0]</p> <p><b>Annex II species:</b></p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p> <p><i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]</p>	<p>New GW abstraction from Gortgarogh GWB (Sean, Robbie spring) spring. Option study area is close to/ hydrologically connected to this European site (new GW abstraction, WTP upgrades), within the same karstic region.</p> <ul style="list-style-type: none"> <li>- Mortality</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>New GW abstraction from Gortgarogh GWB (Sean, Robbie spring) spring. Option study area is close to/ hydrologically connected to this European site (new GW abstraction, WTP upgrades), within the same karstic region.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/ hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Lough Lurgheen Bog/Glenamaddy Turlough SAC (000301)	3km	<p><b>Annex I habitats:</b></p> <p>Turloughs [3180]</p> <p>Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation [3270]</p> <p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p>	<p>Option study area is in close proximity to this European site (new GW abstraction, WTP upgrade), within ZOC.</p> <p>No impacts are predicted given distance from site, a lack of hydrological link, and the QI present.</p>	<p>Option study area is in close proximity to this European site (new GW abstraction, WTP upgrade), within ZOC.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/ hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y

Table C4.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-046a leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Corrib SAC (000297)	0m	<p><b>Annex I habitats:</b></p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>Bog woodland [91D0]</p> <p><b>Annex II species:</b></p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p> <p><i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]</p>	<p>Increase existing SW abstraction at Terryland from River Corrib. Option study area is within/adjacent to this European site (increased SW abstraction, WTP upgrade, new mains, pump station upgrades, new storage within/adjacent to SAC).</p> <ul style="list-style-type: none"> <li>- Mortality</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Increase existing SW abstraction at Terryland from River Corrib. Option study area is within/adjacent to this European site (increased SW abstraction, WTP upgrade, new mains, pump station upgrades, new storage within/adjacent to SAC).</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Lough Rea SAC (000304)	0m	<p><b>Annex I habitats:</b></p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p>	<p>Option study area is within this European site (abandon WTPs). No impacts predicted given nature of work.</p>	<p>Option study area is within this European site (abandon WTPs). No operational impacts are predicted.</p>	N
Galway Bay Complex SAC (000268)	1.5km	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Coastal lagoons [1150]</p> <p>Large shallow inlets and bays [1160]</p> <p>Reefs [1170]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p> <p>Salicornia and other annuals colonising mud and sand [1310]</p>	<p>Increase existing SW abstraction at Terryland from River Corrib. Option study area is hydrologically connected to this European site (increased SW abstraction, WTP upgrade, new watermains, new pumps).</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Increase existing SW abstraction at Terryland from River Corrib. Option study area is hydrologically connected to this European site (increased SW abstraction, WTP upgrade, new watermains, new pumps).</p> <p>No operational impacts are predicted.</p>	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Turloughs [3180] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230] Limestone pavements [8240] <u><b>Annex II species:</b></u> <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365]			
Rahasane Turlough SAC (000322)	12.6km	<u><b>Annex I habitats:</b></u> Turloughs [3180]	Option study area is hydrologically linked to this European site (abandon WTPs). No impacts are predicted given nature of work and distance from site.	Option study area is hydrologically linked to this European site (abandon WTPs). No operational impacts are predicted.	<b>N</b>

Table C4.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-046a leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Corrib SPA (004042)	0m	Gadwall ( <i>Anas strepera</i> ) [A051] Shoveler ( <i>Anas clypeata</i> ) [A056] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Hen Harrier ( <i>Circus cyaneus</i> ) [A082] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Common Tern ( <i>Sterna hirundo</i> ) [A193] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Breed Non-B Non-B Non-B Breed Breed Breed Breed	Increase existing SW abstraction at Terryland from River Corrib. Option study area is within/adjacent to this European site (upgrade WTP within SPA, increased SW abstraction, WTP upgrade, new mains, pump station upgrades, new storage adjacent to SPA). - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase existing SW abstraction at Terryland from River Corrib. Option study area is within/adjacent to this European site (upgrade WTP within SPA, increased SW abstraction, WTP upgrade, new mains, pump station upgrades, new storage adjacent to SPA). - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	<b>Y</b>
Lough Rea SPA (004134)	0m	Shoveler ( <i>Anas clypeata</i> ) [A056] Coot ( <i>Fulica atra</i> ) [A125] Wetland and Waterbirds [A999]	Non-B Non-B	Option study area is within this European site (abandon WTPs). No impacts predicted given nature of work.	Option study area is within this European site (abandon WTPs). No operational impacts are predicted.	<b>N</b>
Inner Galway Bay SPA (004031)	1.5km	Black-throated Diver ( <i>Gavia arctica</i> ) [A002] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017]	N/A Non-B Breed	Increase existing SW abstraction at Terryland from River Corrib. Option study area is hydrologically connected to this	Increase existing SW abstraction at Terryland from River Corrib. Option study area is hydrologically connected to this European site (increased SW	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Grey Heron ( <i>Ardea cinerea</i> ) [A028] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Breed	European site (increased SW abstraction, WTP upgrade, new watermains, new pumps). - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	abstraction, WTP upgrade, new watermains, new pumps). No operational impacts are predicted.	
Cregganna Marsh SPA (004142)	9km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	Non-B	Option study area in Zone of Influence of study area. - Disturbance (including biological disturbance)	Option study area in Zone of Influence of study area. No operational impacts are predicted.	Y
Rahasane Turlough SPA (004089)	12.6km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B	Option study area is hydrologically linked to this European site (abandon WTPs) and in Zone of Influence of study area (new storage). - Disturbance (including biological disturbance)	Option study area is hydrologically linked to this European site (abandon WTPs) and in Zone of Influence of study area (new storage). No operational impacts are predicted.	Y

Table C4.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-055 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Inishbofin and Inishshark SAC (000278)	0m	<u><b>Annex I habitats:</b></u> Coastal lagoons [1150] Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] <u><b>Annex II species:</b></u> <i>Halichoerus grypus</i> (Grey Seal) [1364]	Desalination plant to supply full deficit. No blending, chemical remineralization only. Option study area is within this European site (new SW abstraction, new mains, new desalination plant, new storage, new pump, WTP upgrade). - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Desalination plant to supply full deficit. No blending, chemical remineralization only. Option study area is within this European site (new SW abstraction, new mains, new desalination plant, new storage, new pump, WTP upgrade). - Habitat degradation – hydrological/hydrogeological changes	Y
West Connacht Coast SAC (002998)	580m	<u><b>Annex II species:</b></u> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	Option study area is hydrologically linked to this European site. Desalination plant is within potential supporting habitats for the designated QI species.	Option study area is hydrologically linked to this European site. Desalination plant is within	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
			- Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	potential supporting habitats for the designated QI species. - Habitat degradation – hydrological/hydrogeological changes	
Aghrusbeg Machair and Lake SAC (001228)	11km	<b>Annex I habitats:</b> Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Omey Island Machair SAC (001309)	13.2km	<b>Annex I habitats:</b> Machairs (* in Ireland) [21A0] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] <b>Annex II species:</b> <i>Petalophyllum ralfsii</i> (Petalwort) [1395]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Rusheenduff Lough SAC (001311)	14.9km	<b>Annex I habitats:</b> Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] <b>Annex II species:</b> <i>Najas flexilis</i> (Slender Naiad) [1833]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Kingstown Bay SAC (002265)	16.8km	<b>Annex I habitats:</b> Large shallow inlets and bays [1160]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Slyne Head Islands SAC (000328)	19km	<b>Annex I habitats:</b> Reefs [1170] <b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Halichoerus grypus</i> (Grey Seal) [1364]	Desalination plant is within potential supporting habitats for the designated QI species. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Desalination plant is within potential supporting habitats for the designated QI species. - Habitat degradation – hydrological/hydrogeological changes	Y
Kilkieran Bay and Islands SAC (002111)	39km	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365] <i>Najas flexilis</i> (Slender Naiad) [1833]	Desalination plant is within potential supporting habitats for the designated QI species. No impacts predicted given the works required and distance from site.	Desalination plant is within potential supporting habitats for the designated QI species. - Habitat degradation – hydrological/hydrogeological changes	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Clew Bay Complex SAC (001482)	40km	<p><b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p><b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	<p>Desalination plant is within potential supporting habitats for the designated QI species.</p> <p>No impacts predicted given the works required and distance from site.</p>	<p>Desalination plant is within potential supporting habitats for the designated QI species.</p> <p>- Habitat degradation – hydrological/hydrogeological changes</p>	Y
Duvillaun Islands SAC (000495)	49km	<p><b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Halichoerus grypus</i> (Grey Seal) [1364]</p>	<p>Desalination plant is within potential supporting habitats for the designated QI species.</p> <p>No impacts predicted given the works required and distance from site.</p>	<p>Desalination plant is within potential supporting habitats for the designated QI species.</p> <p>- Habitat degradation – hydrological/hydrogeological changes</p>	Y
Inishkea Islands SAC (000507)	52km	<p><b>Annex I habitats:</b> Machairs (* in Ireland) [21A0]</p> <p><b>Annex II species:</b> <i>Halichoerus grypus</i> (Grey Seal) [1364] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p>	<p>Desalination plant is within potential supporting habitats for the designated QI species.</p> <p>No impacts predicted given the works required and distance from site.</p>	<p>Desalination plant is within potential supporting habitats for the designated QI species.</p> <p>- Habitat degradation – hydrological/hydrogeological changes</p>	Y

Table C4.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-055 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Inishbofin, Omev Island and Turbot Island SPA (004231)	90m	Corncrake ( <i>Crex crex</i> ) [A122]	Breed	<p>Desalination plant to supply full deficit. No blending, chemical remineralization only. Option study area is in close proximity to this European site (new SW abstraction, new mains, new desalination plant, new storage, new pump, WTP upgrade).</p> <p>- Disturbance (including biological disturbance)</p>	<p>Desalination plant to supply full deficit. No blending, chemical remineralization only. Option study area is in close proximity to this European site (new SW abstraction, new mains, new desalination plant, new storage, new pump, WTP upgrade).</p> <p>No operational impacts are predicted.</p>	Y
High Island, Inishshark and Davillaun SPA (004144)	1.1km	<p>Fulmar (<i>Fulmarus glacialis</i>) [A009] Barnacle Goose (<i>Branta leucopsis</i>) [A045] Arctic Tern (<i>Sterna paradisaea</i>) [A194]</p>	Breed Non-B Breed	<p>Option study area is hydrologically linked and in close proximity to this European site (new SW abstraction, new mains, new desalination plant, new storage, new pump, WTP upgrade).</p> <p>- Disturbance (including biological disturbance)</p>	<p>Option study area is hydrologically linked and in close proximity to this European site (new SW abstraction, new mains, new desalination plant, new storage, new pump, WTP upgrade).</p> <p>- Habitat degradation – hydrological/hydrogeological changes</p>	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Cruagh Island SPA (004170)	9.1km	Manx Shearwater ( <i>Puffinus puffinus</i> ) [A013] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045]	Breed Non-B	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y
Illaunnaon SPA (004221)	16.6km	Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191]	Breed	European site is within Zone of Influence of the study area. No impacts are predicted given distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted	N

Table C4.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-058 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Inisheer Island SAC (001275)	90m	<b>Annex I habitats:</b> Coastal lagoons [1150] Reefs [1170] European dry heaths [4030] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Limestone pavements [8240]	Optimise GW abstraction from current springs (includes GW harvesting/raw water storage). Option study area is adjacent to this European site (increase GW abstraction, WTP upgrade, new mains, new storage). European site overlies same karst region as abstraction and ZOC adjacent to SAC. - Habitat degradation – changes in water quality (pollution)	Optimise GW abstraction from current springs (includes GW harvesting/raw water storage). Option study area is adjacent to this European site (increase GW abstraction, WTP upgrade, new mains, new storage). European site overlies same karst region as abstraction and ZOC adjacent to SAC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	Y
Inishmaan Island SAC (000212)	3.8km	<b>Annex I habitats:</b> Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] European dry heaths [4030] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Limestone pavements [8240]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link.	European site is within Zone of Influence of the study area. No operational impacts are predicted as the abstraction point overlies a separate aquifer on a different island.	N
Inishmore Island SAC (000213)	7.7km	<b>Annex I habitats:</b> Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Humid dune slacks [2190] Machairs (* in Ireland) [21A0] European dry heaths [4030] Alpine and Boreal heaths [4060] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] <b>Annex II species:</b> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]			
Black Head-Poulsallagh Complex SAC (000020)	8.6km	<b>Annex I habitats:</b> Reefs [1170] Perennial vegetation of stony banks [1220] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] <b>Annex II species:</b> <i>Petalophyllum ralfsii</i> (Petalwort) [1395]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	<b>N</b>
Kilkieran Bay and Islands SAC (002111)	16.6km	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365] <i>Najas flexilis</i> (Slender Naiad) [1833]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	<b>N</b>

Table C4.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-058 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Inishmore SPA (004152)	8km	Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195] Guillemot ( <i>Uria aalge</i> ) [A199]	Breed Breed Breed Breed	Optimise GW abstraction from current springs (includes GW harvesting/raw water storage). European site is within Zone of Influence of the study area.  No impacts are predicted given lack of hydrological link and distance from site.	Optimise GW abstraction from current springs (includes GW harvesting/raw water storage). European site is within Zone of Influence of the study area.  No operational impacts are predicted.	<b>N</b>
Cliffs of Moher SPA (004005)	10.1km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Guillemot ( <i>Uria aalge</i> ) [A199] Razorbill ( <i>Alca torda</i> ) [A200] Puffin ( <i>Fratercula arctica</i> ) [A204] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed Breed Breed Breed Breed	European site is within Zone of Influence of the study area.  No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area.  No operational impacts are predicted.	<b>N</b>

Table C4.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-069 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Inishmaan Island SAC (000212)	3m	<b>Annex I habitats:</b> Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] European dry heaths [4030] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Limestone pavements [8240]	Optimise GW abstraction from current springs (includes GW harvesting/raw water storage). Option study area is adjacent to this European site (increase GW abstraction, WTP upgrade, new storage). European site within ZOC.  - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution)	Optimise GW abstraction from current springs (includes GW harvesting/raw water storage). Option study area is adjacent to this European site (increase GW abstraction, WTP upgrade, new storage). European site within ZOC.  - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	<b>Y</b>
Inishmore Island SAC (000213)	2.1km	<b>Annex I habitats:</b> Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] European dry heaths [4030]	European site is within Zone of Influence of the study area.  No impacts are predicted given lack of hydrological link.	European site is within Zone of Influence of the study area.  No operational impacts are predicted as the abstraction point overlies a separate aquifer on a different island.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Alpine and Boreal heaths [4060]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Limestone pavements [8240]</p> <p>Submerged or partially submerged sea caves [8330]</p> <p><b>Annex II species:</b></p> <p><i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]</p>			
Inisheer Island SAC (001275)	4.3km	<p><b>Annex I habitats:</b></p> <p>Coastal lagoons [1150]</p> <p>Reefs [1170]</p> <p>European dry heaths [4030]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Limestone pavements [8240]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given lack of hydrological link.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted as the abstraction point overlies a separate aquifer on a different island.</p>	<b>N</b>
Kilkieran Bay and Islands SAC (002111)	12.5km	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Coastal lagoons [1150]</p> <p>Large shallow inlets and bays [1160]</p> <p>Reefs [1170]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p><b>Annex II species:</b></p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Phoca vitulina</i> (Harbour Seal) [1365]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given lack of hydrological link</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted</p>	<b>N</b>
Black Head-Poulsallagh Complex SAC (000020)	14.1km	<p><b>Annex I habitats:</b></p> <p>Reefs [1170]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p> <p>Alpine and Boreal heaths [4060]</p> <p><i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given lack of hydrological link.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] <u><b>Annex II species:</b></u> <i>Petalophyllum ralfsii</i> (Petalwort) [1395]			

Table C4.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-069 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Inishmore SPA (004152)	2.2km	Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195] Guillemot ( <i>Uria aalge</i> ) [A199]	Breed Breed Breed Breed	Optimise GW abstraction from current springs (includes GW harvesting/raw water storage). European site is within Zone of Influence of the study area.  No impacts are predicted given lack of hydrological link and distance from site.	Optimise GW abstraction from current springs (includes GW harvesting/raw water storage). European site is within Zone of Influence of the study area.  No operational impacts are predicted.	<b>N</b>
Cliffs of Moher SPA (004005)	15.5km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Guillemot ( <i>Uria aalge</i> ) [A199] Razorbill ( <i>Alca torda</i> ) [A200] Puffin ( <i>Fratercula arctica</i> ) [A204] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed Breed Breed Breed Breed	European site is within Zone of Influence of the study area.  No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area.  No operational impacts are predicted.	<b>N</b>

Table C4.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-074 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Inishmore Island SAC (000213)	0m	<u><b>Annex I habitats:</b></u> Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> ) [2170] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] European dry heaths [4030] Alpine and Boreal heaths [4060] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	Increase GW abstraction from existing boreholes and new raw water storage to maximise GW availability in winter months. Option study area is within/adjacent to this European site (WTP upgrades, increase GW abstractions, new pump, new mains). European site within ZOC. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction from existing boreholes and new raw water storage to maximise GW availability in winter months. Option study area is within/adjacent to this European site (WTP upgrades, increase GW abstractions, new pump, new mains). European site within ZOC. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Limestone pavements [8240]</p> <p>Submerged or partially submerged sea caves [8330]</p> <p><b>Annex II species:</b></p> <p><i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]</p>			
Inishmaan Island SAC (000212)	6.2km	<p><b>Annex I habitats:</b></p> <p>Reefs [1170]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p> <p>Embryonic shifting dunes [2110]</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>European dry heaths [4030]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Limestone pavements [8240]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given lack of hydrological link.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>
Kilkieran Bay and Islands SAC (002111)	7.7km	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Coastal lagoons [1150]</p> <p>Large shallow inlets and bays [1160]</p> <p>Reefs [1170]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p><b>Annex II species:</b></p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Phoca vitulina</i> (Harbour Seal) [1365]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given lack of hydrological link.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>
Inisheer Island SAC (001275)	11.1km	<p><b>Annex I habitats:</b></p> <p>Coastal lagoons [1150]</p> <p>Reefs [1170]</p> <p>European dry heaths [4030]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Limestone pavements [8240]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts are predicted given lack of hydrological link.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>

Table C4.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-074 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Inishmore SPA (004152)	750m	Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195] Guillemot ( <i>Uria aalge</i> ) [A199]	Breed Breed Breed Breed	Increase GW abstraction from existing boreholes and new raw water storage to maximise GW availability in winter months. Option study area is close to this European site (WTP upgrades, increase GW abstractions, new pump, new mains). - Disturbance (including biological disturbance)	Increase GW abstraction from existing boreholes and new raw water storage to maximise GW availability in winter months. Option study area is close to this European site (WTP upgrades, increase GW abstractions, new pump, new mains). No operational impacts are predicted.	Y
Slyne Head to Ardmore Point Islands SPA (004159)	13.7km	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195]	Non-B Breed Breed Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y

Table C4.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-101 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Corrib SAC (000297)	1.1km	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Alkaline fens [7230] Limestone pavements [8240] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Bog woodland [91D0] <b>Annex II species:</b> <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096]	Increase existing GW abstraction from existing spring (karstic bedrock - Clare-Corrib groundwater body). Option study area is hydrologically linked and in close proximity to this site to this European site (increased GW abstraction, WTP upgrade, upgrade pumping station, new balancing tank). European site overlies same karst region as abstraction and ZOC near SAC. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase existing GW abstraction from existing spring (karstic bedrock - Clare-Corrib groundwater body). Option study area is hydrologically linked and in close proximity to this site to this European site (increased GW abstraction, WTP upgrade, upgrade pumping station, new balancing tank). European site overlies same karst region as abstraction and ZOC near SAC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Salmo salar</i> (Salmon) [1106] <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <i>Lutra lutra</i> (Otter) [1355] <i>Najas flexilis</i> (Slender Naiad) [1833] <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]			
Galway Bay Complex SAC (000268)	25km	<u><b>Annex I habitats:</b></u> Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Turloughs [3180] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230] Limestone pavements [8240] <u><b>Annex II species:</b></u> <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365]	Option study area is hydrologically linked to this European site (increased GW abstraction, WTP upgrade, upgrade pumping station, new balancing tank). No impacts are predicted given distance from site.	Option study area is hydrologically linked to this European site (increased GW abstraction, WTP upgrade, upgrade pumping station, new balancing tank). No operational impacts are predicted.	<b>N</b>

Table C4.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-101 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Corrib SPA (004042)	24km	Gadwall ( <i>Anas strepera</i> ) [A051] Shoveler ( <i>Anas clypeata</i> ) [A056] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Hen Harrier ( <i>Circus cyaneus</i> ) [A082] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Common Tern ( <i>Sterna hirundo</i> ) [A193] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194]	Non-B Non-B Non-B Non-B Non-B Breed Non-B Non-B Non-B Breed Breed Breed	Increase existing GW abstraction from existing spring (karstic bedrock - Clare-Corrib groundwater body). Option study area is hydrologically linked to this European site (increased GW abstraction, WTP upgrade, upgrade pumping station, new balancing tank). No impacts are predicted given distance from site.	Increase existing GW abstraction from existing spring (karstic bedrock - Clare-Corrib groundwater body). Option study area is hydrologically linked to this European site (increased GW abstraction, WTP upgrade, upgrade pumping station, new balancing tank). No operational impacts are predicted.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Breed			
Inner Galway Bay SPA (004031)	26km	Black-throated Diver ( <i>Gavia arctica</i> ) [A002] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Grey Heron ( <i>Ardea cinerea</i> ) [A028] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	N/A Non-B Breed Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Breed	Option study area is hydrologically linked to this European site (increased GW abstraction, WTP upgrade, upgrade pumping station, new balancing tank). No impacts are predicted given distance from site.	Option study area is hydrologically linked to this European site (increased GW abstraction, WTP upgrade, upgrade pumping station, new balancing tank). No operational impacts are predicted.	<b>N</b>

Table C4.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-111 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Owenduff/Nephin Complex SAC (000534)	190m	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Natural dystrophic lakes and ponds [3160] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] <b>Annex II species:</b> <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	New GW abstraction (karstic bedrock - Newport groundwater body). Option study area is close to this European site (WTP upgrade). - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction (karstic bedrock - Newport groundwater body). Option study area is close to this European site (WTP upgrade). <b>No operational impacts predicted due to size and scale of abstraction, and due to the abstraction and European site overlying different aquifers.</b>	<b>Y</b>



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Saxifraga hirculus</i> (Marsh Saxifrage) [1528] <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]			
Clew Bay Complex SAC (001482)	770m	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows ( <i>Glaucopuccinellietalia maritima</i> ) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] <b>Annex II species:</b> <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013] <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365]	New GW abstraction (karstic bedrock - Newport groundwater body). Option study area is near hydrological link to this European site and in close proximity to the European site (WTP upgrade, new GW abstraction, new pumps, new mains, new WTP) and overlying the same karstic aquifer as abstraction. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction (karstic bedrock - Newport groundwater body). Option study area is near hydrological link to this European site and in close proximity to the European site (new GW abstraction, new pumps, new mains, new WTP) and overlying the same karstic aquifer as abstraction. <b>No operational impacts predicted due to size and scale of abstraction, and due to the GWDH (Machair) being over 7km from the abstraction.</b>	Y
West Connacht Coast SAC (002998)	14.4km	<b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Clare Island Cliffs SAC (002243)	17.2km	<b>Annex I habitats:</b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

Table C4.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-111 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Owenduff/Nephin Complex SPA (004098)	100m	Merlin ( <i>Falco columbarius</i> ) [A098] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140]	Breed Breed	New GW abstraction (karstic bedrock - Newport groundwater body). Option study area is adjacent to this European site (WTP upgrade). - Disturbance (including biological disturbance)	New GW abstraction (karstic bedrock - Newport groundwater body). Option study area is adjacent to this European site (WTP upgrade). No operational impacts are predicted.	Y
Blacksod Bay/Broad Haven SPA (004037)	16.8km	Red-throated Diver ( <i>Gavia stellata</i> ) [A001] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Slavonian Grebe ( <i>Podiceps auritus</i> ) [A007] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069]	Non-B Non-B Non-B Non-B Non-B	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Dunlin ( <i>Calidris alpina schinzii</i> ) [A466] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Breed Breed			
Clare Island SPA (004136)	17.6km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Shag ( <i>Phalacrocorax aristotelis</i> ) [A018] Common Gull ( <i>Larus canus</i> ) [A182] Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Guillemot ( <i>Uria aalge</i> ) [A199] Razorbill ( <i>Alca torda</i> ) [A200] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed Breed Breed Breed Breed Breed	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

Table C4.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-117a leading to potential LSEs. Note: no SPAs within the ZOI for this option.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Newport River SAC (002144)	0m	<b>Annex II species:</b> <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106]	Increase SW abstraction from existing River Newport and upgrade existing Newport WTP. Option study area is within this European site (increase SW abstraction and WTP upgrade). Within FWPM catchment but infrastructure already in place. - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase SW abstraction from existing River Newport and upgrade existing Newport WTP. Option study area is within this European site (increase SW abstraction and WTP upgrade). Within FWPM catchment but infrastructure already in place. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y
Clew Bay Complex SAC (001482)	1.5km	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] <b>Annex II species:</b> <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013] <i>Lutra lutra</i> (Otter) [1355]	Option study area is hydrologically linked to this European site (increase SW abstraction and WTP upgrade). - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is hydrologically linked to this European site (increase SW abstraction and WTP upgrade). No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Phoca vitulina</i> (Harbour Seal) [1365]			

Table C4.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-122 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Corrib SAC (000297)	650m	<p><b>Annex I habitats:</b></p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>Bog woodland [91D0]</p> <p><b>Annex II species:</b></p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p> <p><i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]</p>	<p>Increase SW abstraction from existing Lough Buffy. Option study area is hydrologically linked to this European site (increase SW abstraction, upgrade WTP, upgrade pump). Adjacent to FWPM catchment.</p> <p>- Habitat degradation – changes in water quality (pollution)</p>	<p>Increase SW abstraction from existing Lough Buffy. Option study area is hydrologically linked to this European site (increase SW abstraction, upgrade WTP, upgrade pump). Adjacent to FWPM catchment.</p> <p>- Habitat degradation – hydrological/ hydrogeological changes</p> <p>- Water table/availability</p>	Y
Ross Lake and Woods SAC (001312)	3.1km	<p><b>Annex I habitats:</b></p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p> <p><b>Annex II species:</b></p>	<p>European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link.</p>	<p>European site is within Zone of Influence of the study area. No operational impacts are predicted.</p>	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]			
Galway Bay Complex SAC (000268)	17.5km	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]  Coastal lagoons [1150]  Large shallow inlets and bays [1160]  Reefs [1170]  Perennial vegetation of stony banks [1220]  Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]  Salicornia and other annuals colonising mud and sand [1310]  Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]  Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]  Turloughs [3180]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]  Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]  Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]  Alkaline fens [7230]  Limestone pavements [8240]</p> <p><b>Annex II species:</b></p> <p><i>Lutra lutra</i> (Otter) [1355]  <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	<p>European site is hydrologically linked to the study area via Lough Corrib.</p> <p>No impacts are predicted given distance from site.</p>	<p>European site is hydrologically linked to the study area via Lough Corrib.</p> <p>No operational impacts are predicted.</p>	<b>N</b>

Table C4.24: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-122 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Corrib SPA (004042)	3.7km	<p>Gadwall (<i>Anas strepera</i>) [A051]  Shoveler (<i>Anas clypeata</i>) [A056]  Pochard (<i>Aythya ferina</i>) [A059]  Tufted Duck (<i>Aythya fuligula</i>) [A061]  Common Scoter (<i>Melanitta nigra</i>) [A065]  Hen Harrier (<i>Circus cyaneus</i>) [A082]  Coot (<i>Fulica atra</i>) [A125]  Golden Plover (<i>Pluvialis apricaria</i>) [A140]  Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]  Common Gull (<i>Larus canus</i>) [A182]  Common Tern (<i>Sterna hirundo</i>) [A193]  Arctic Tern (<i>Sterna paradisaea</i>) [A194]  Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]  Wetland and Waterbirds [A999]</p>	<p>Non-B  Non-B  Non-B  Non-B  Non-B  Breed  Non-B  Non-B  Non-B  Breed  Breed  Breed  Breed</p>	<p>Increase SW abstraction from existing Lough Buffy. Option study area is hydrologically linked to this European site (increase SW abstraction, upgrade WTP, upgrade pump).</p> <p>- Disturbance (including biological disturbance)</p>	<p>Increase SW abstraction from existing Lough Buffy. Option study area is hydrologically linked to this European site (increase SW abstraction, upgrade WTP, upgrade pump).</p> <p>No operational impacts are predicted.</p>	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Inner Galway Bay SPA (004031)	18.3km	Black-throated Diver ( <i>Gavia arctica</i> ) [A002] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Grey Heron ( <i>Ardea cinerea</i> ) [A028] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	N/A Non-B Breed Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Breed	European site is hydrologically linked to the study area via Lough Corrib. - Disturbance (including biological disturbance)	European site is hydrologically linked to the study area via Lough Corrib. No operational impacts are predicted.	Y

Table C4.25: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAD-158 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
West Connacht Coast SAC (002998)	1km	<b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	Raise existing dam height and new impoundment on the other side of the lake. Increase SW abstraction from existing Lake Coolacknick impoundment and WTP upgrade. Inisturk Island surrounded by European site. Works include increased SW abstraction, new mains and WTP upgrade. No impacts predicted due to lack of hydrological link and distance from European site.	Raise existing dam height and new impoundment on the other side of the lake. Increase SW abstraction from existing Lake Coolacknick impoundment and WTP upgrade. Inisturk Island surrounded by European site. Works include increased SW abstraction, new mains and WTP upgrade. No operational impacts are predicted.	N
Inishbofin and Inishshark SAC (000278)	8.2km	<b>Annex I habitats:</b> Coastal lagoons [1150] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] <b>Annex II species:</b> <i>Halichoerus grypus</i> (Grey Seal) [1364]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from European site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Clare Island Cliffs SAC (002243)	9.7km	<b>Annex I habitats:</b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from European site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Cross Lough (Killadoon) SAC (000484)	12.8km	<b>Annex I habitats:</b> Perennial vegetation of stony banks [1220]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from European site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Lough Cahasy, Lough Baun and Roonah Lough SAC (001529)	13.1km	<b>Annex I habitats:</b> Coastal lagoons [1150] Perennial vegetation of stony banks [1220] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Machairs (* in Ireland) [21A0]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from European site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Aughrusbeg Machair and Lake SAC (001228)	15km	<b>Annex I habitats:</b> Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from European site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

Table C4.26: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAD-158 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
High Island, Inishshark and Davillaun SPA (004144)	8.2km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194]	Breed Non-B Breed	Raise existing dam height and new impoundment on the other side of the lake. Increase SW abstraction from existing Lake Coolacknick impoundment and WTP upgrade. European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	Raise existing dam height and new impoundment on the other side of the lake. Increase SW abstraction from existing Lake Coolacknick impoundment and WTP upgrade. European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y
Clare Island SPA (004136)	9.7km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Shag ( <i>Phalacrocorax aristotelis</i> ) [A018] Common Gull ( <i>Larus canus</i> ) [A182] Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Guillemot ( <i>Uria aalge</i> ) [A199] Razorbill ( <i>Alca torda</i> ) [A200] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed Breed Breed Breed Breed	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from European site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Cross Lough (Killadoon) SPA (004212)	12.9km	Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191]	Breed	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from European site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Bills Rocks SPA (004177)	19.1km	Storm Petrel ( <i>Hydrobates pelagicus</i> ) [A014] Puffin ( <i>Fratercula arctica</i> ) [A204]	Breed Breed	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from European site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

Table C4.27: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAD-541 (TG1-SAD-195, TG1-SAD-196) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Cregduff Lough SAC (001251)	0m	<b>Annex I habitats:</b> Transition mires and quaking bogs [7140] <b>Annex II species:</b> <i>Najas flexilis</i> (Slender Naiad) [1833]	New SW abstraction from Lough Skannive, upgrade existing WTP and upgrade existing Carna Kilkieran WTP. Rationalise to Carna Kilkieran. Option study area is within and hydrologically linked to this European site (new pump and mains adjacent to SAC). - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution)	New SW abstraction from Lough Skannive, upgrade existing WTP and upgrade existing Carna Kilkieran WTP. Rationalise to Carna Kilkieran. Option study area is within and hydrologically linked to this European site (new pump and mains adjacent to SAC). No operational impacts are predicted.	Y
Slyne Head Peninsula SAC (002074)	0m	<b>Annex I habitats:</b> Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] European dry heaths [4030] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Alkaline fens [7230] <b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]	Option study area is within and hydrologically linked to this European site (decommission WTP, new mains). - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is within and hydrologically linked to this European site (decommission WTP, new mains). No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<i>Najas flexilis</i> (Slender Naiad) [1833]			
Connemara Bog Complex SAC (002034)	0m	<p><b>Annex I habitats:</b></p> <p>Coastal lagoons [1150]</p> <p>Reefs [1170]</p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Natural dystrophic lakes and ponds [3160]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p> <p>Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]</p> <p>European dry heaths [4030]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Blanket bogs (* if active bog) [7130]</p> <p>Transition mires and quaking bogs [7140]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Alkaline fens [7230]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p><b>Annex II species:</b></p> <p><i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>Option study area is within/adjacent and hydrologically linked to this European site (new mains, new pump).</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Mortality</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Option study area is within/adjacent and hydrologically linked to this European site (new mains, new pump).</p> <p>No operational impacts are predicted.</p>	Y
Dog's Bay SAC (001257)	100m	<p><b>Annex I habitats:</b></p> <p>Annual vegetation of drift lines [1210]</p> <p>Embryonic shifting dunes [2110]</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p> <p>European dry heaths [4030]</p>	<p>Option study area is adjacent to this European site (new mains).</p> <p>No impacts predicted given a lack of hydrological link and the QI present.</p>	<p>Option study area is adjacent to this European site (new mains).</p> <p>No operational impacts are predicted.</p>	N
Murvey Machair SAC (002129)	160m	<p><b>Annex I habitats:</b></p> <p>Machairs (* in Ireland) [21A0]</p> <p><b>Annex II species:</b></p> <p><i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p>	<p>Option study area is close to and hydrologically linked to this European site (new mains).</p> <p>No impacts predicted given the QI present.</p>	<p>Option study area is close to and hydrologically linked to this European site (new mains).</p> <p>No operational impacts are predicted.</p>	N
Kilkieran Bay and Islands SAC (002111)	670m	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Coastal lagoons [1150]</p> <p>Large shallow inlets and bays [1160]</p> <p>Reefs [1170]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p>	<p>Option study area is hydrologically linked and close to this European site (new mains, new SW abstraction, WTP upgrade).</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Option study area is hydrologically linked and close to this European site (new mains, new SW abstraction, WTP upgrade).</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365] <i>Najas flexilis</i> (Slender Naiad) [1833]			
Slyne Head Islands SAC (000328)	3.5km	<b>Annex I habitats:</b> Reefs [1170] <b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Halichoerus grypus</i> (Grey Seal) [1364]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
West Connacht Coast SAC (002998)	3.8km	<b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	European site is within Zone of Influence of the study area. No impacts are predicted given lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

Table C4.28: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAD-541 (TG1-SAD-195, TG1-SAD-196) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Connemara Bog Complex SPA (004181)	0m	Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Merlin ( <i>Falco columbarius</i> ) [A098] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Common Gull ( <i>Larus canus</i> ) [A182]	Breed Breed Breed Breed	New SW abstraction from Lough Skannive, upgrade existing WTP and upgrade existing Carna Kilkieran WTP. Rationalise to Carna Kilkieran. Option study area is within/adjacent and hydrologically linked to this European site (new mains, new pump). - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction from Lough Skannive, upgrade existing WTP and upgrade existing Carna Kilkieran WTP. Rationalise to Carna Kilkieran. Option study area is within/adjacent and hydrologically linked to this European site (new mains, new pump). No operational impacts are predicted.	Y
Slyne Head to Ardmore Point Islands SPA (004159)	670m	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195]	Non-B Breed Breed Breed	Option study area is close to this European site (decommission WTP, new mains). - Disturbance (including biological disturbance)	Option study area is close to this European site (decommission WTP, new mains). No operational impacts are predicted.	Y
Cruagh Island SPA (004170)	12.5km	Manx Shearwater ( <i>Puffinus puffinus</i> ) [A013] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045]	Breed Non-B	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y
High Island, Inishshark and Davillaun SPA (004144)	16.7km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194]	Breed Non-B Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y

Table C4.29: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAD-543 (TG1-SAD-199, TG1-SAD-200, TG1-SAD-201, TG1-SAD-202) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Connemara Bog Complex SAC (002034)	0m	<p><b>Annex I habitats:</b>                      Coastal lagoons [1150]                      Reefs [1170]                      Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]                      Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]                      Natural dystrophic lakes and ponds [3160]                      Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]                      Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]                      European dry heaths [4030]                      Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]                      Blanket bogs (* if active bog) [7130]                      Transition mires and quaking bogs [7140]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Alkaline fens [7230]                      Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p><b>Annex II species:</b>  <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]  <i>Salmo salar</i> (Salmon) [1106]  <i>Lutra lutra</i> (Otter) [1355]  <i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>Increase existing SW abstraction from Lough Bouliska and connect with neighbouring WRZs. Rationalise Carraroe to Spiddal (Lough Bouliska). Rationalise Rosmuc to Spiddal (Lough Bouliska). Rationalise to Spiddal (Lough Bouliska). Option study area is within/adjacent to and hydrologically linked to this European site (increase SW abstraction, new mains, upgrade WTP, new pumps, new storage, decommission WTP).</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Mortality</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Increase existing SW abstraction from Lough Bouliska and connect with neighbouring WRZs. Rationalise Carraroe to Spiddal (Lough Bouliska). Rationalise Rosmuc to Spiddal (Lough Bouliska). Rationalise to Spiddal (Lough Bouliska). Option study area is within/adjacent to and hydrologically linked to this European site (increase SW abstraction, new mains, upgrade WTP, new pumps, new storage, decommission WTP).</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/ hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Kilkieran Bay and Islands SAC (002111)	0m	<p><b>Annex I habitats:</b>                      Mudflats and sandflats not covered by seawater at low tide [1140]                      Coastal lagoons [1150]                      Large shallow inlets and bays [1160]                      Reefs [1170]                      Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]                      Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]                      Machairs (* in Ireland) [21A0]                      Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]                      Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p><b>Annex II species:</b>  <i>Lutra lutra</i> (Otter) [1355]  <i>Phoca vitulina</i> (Harbour Seal) [1365]  <i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>Option study area is within/adjacent to and hydrologically linked to this European site (new mains, new storage, decommission WTP). New water mains run along seafloor in this European site.</p> <ul style="list-style-type: none"> <li>- Physical loss of habitats/supporting habitat</li> <li>- Mortality</li> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Option study area is within/adjacent to and hydrologically linked to this European site (new mains, new storage, decommission WTP). New water mains run along seafloor in this European site.</p> <p>No operational impacts are predicted.</p>	Y
Black Head-Poulsallagh Complex SAC (000020)	9.8km	<p><b>Annex I habitats:</b>                      Reefs [1170]                      Perennial vegetation of stony banks [1220]                      Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts predicted given the lack of hydrological link and distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Water courses of plain to montane levels with the <i>Ranuncion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p> <p>Alpine and Boreal heaths [4060]</p> <p><i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p>Limestone pavements [8240]</p> <p>Submerged or partially submerged sea caves [8330]</p> <p><b>Annex II species:</b></p> <p><i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p>			
Inishmore Island SAC (000213)	10.5km	<p><b>Annex I habitats:</b></p> <p>Coastal lagoons [1150]</p> <p>Reefs [1170]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p> <p>Embryonic shifting dunes [2110]</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p> <p>Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) [2170]</p> <p>Humid dune slacks [2190]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>European dry heaths [4030]</p> <p>Alpine and Boreal heaths [4060]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Limestone pavements [8240]</p> <p>Submerged or partially submerged sea caves [8330]</p> <p><b>Annex II species:</b></p> <p><i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts predicted given the lack of hydrological link and distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>
Galway Bay Complex SAC (000268)	11.8km	<p><b>Annex I habitats:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Coastal lagoons [1150]</p> <p>Large shallow inlets and bays [1160]</p> <p>Reefs [1170]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p> <p>Salicornia and other annuals colonising mud and sand [1310]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>Turloughs [3180]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts predicted given the lack of hydrological link and distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p><i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</p> <p><b>Annex II species:</b></p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Phoca vitulina</i> (Harbour Seal) [1365]</p>			
Inishmaan Island SAC (000212)	15.9km	<p><b>Annex I habitats:</b></p> <p>Reefs [1170]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p> <p>Embryonic shifting dunes [2110]</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Machairs (* in Ireland) [21A0]</p> <p>European dry heaths [4030]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Limestone pavements [8240]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts predicted given the lack of hydrological link and distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>
Inisheer Island SAC (001275)	19km	<p><b>Annex I habitats:</b></p> <p>Coastal lagoons [1150]</p> <p>Reefs [1170]</p> <p>European dry heaths [4030]</p> <p>Semi-natural dry grassland and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p> <p>Limestone pavements [8240]</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No impacts predicted given the lack of hydrological link and distance from site.</p>	<p>European site is within Zone of Influence of the study area.</p> <p>No operational impacts are predicted.</p>	<b>N</b>

Table C4.30: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAD-543 (TG1-SAD-199, TG1-SAD-200, TG1-SAD-201, TG1-SAD-202) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Connemara Bog Complex SPA (004181)	0m	<p>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</p> <p>Merlin (<i>Falco columbarius</i>) [A098]</p> <p>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</p> <p>Common Gull (<i>Larus canus</i>) [A182]</p>	<p>Breed</p> <p>Breed</p> <p>Breed</p> <p>Breed</p>	<p>Increase existing SW abstraction from Lough Bouliska and connect with neighbouring WRZs. Rationalise Carraroe to Spiddal (Lough Bouliska). Rationalise Rosmuc to Spiddal (Lough Bouliska). Rationalise to Spiddal (Lough Bouliska). Option study area is within/adjacent to this European site</p>	<p>Increase existing SW abstraction from Lough Bouliska and connect with neighbouring WRZs. Rationalise Carraroe to Spiddal (Lough Bouliska). Rationalise Rosmuc to Spiddal (Lough Bouliska). Rationalise to Spiddal (Lough Bouliska). Option study area is within/adjacent to this European site</p>	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
				(new mains in SPA, increase SW abstraction, WTP upgrade near SPA). - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	(new mains in SPA, increase SW abstraction, WTP upgrade near SPA). No operational impacts are predicted.	
Slyne Head to Ardmore Point Islands SPA (004159)	7km	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195]	Non-B Breed Breed Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y
Inner Galway Bay SPA (004031)	11.7km	Black-throated Diver ( <i>Gavia arctica</i> ) [A002] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Grey Heron ( <i>Ardea cinerea</i> ) [A028] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	N/A Non-B Breed Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y
Lough Corrib SPA (004042)	13km	Gadwall ( <i>Anas strepera</i> ) [A051] Shoveler ( <i>Anas clypeata</i> ) [A056] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Hen Harrier ( <i>Circus cyaneus</i> ) [A082] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Common Tern ( <i>Sterna hirundo</i> ) [A193] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Breed Non-B Non-B Non-B Breed Breed Breed Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Inishmore SPA (004152)	16km	Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195] Guillemot ( <i>Uria aalge</i> ) [A199]	Breed Breed Breed Breed	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

Table C4.31: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAD-545 (TG1-SAD-209, TG1-SAD-210, TG1-SAD-211) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Maumturk Mountains SAC (002008)	0m	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Siliceous rocky slopes with chasmophytic vegetation [8220] <b>Annex II species:</b> <i>Salmo salar</i> (Salmon) [1106] <i>Najas flexilis</i> (Slender Naiad) [1833]	New Connemara Regional Water Supply Scheme (RWSS) (Kylemore Lough). Option study area is within/adjacent to this European site (new mains, new storage, decommission WTP). - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New Connemara Regional Water Supply Scheme (RWSS) (Kylemore Lough). Option study area is within/adjacent to this European site (new mains, new storage, decommission WTP). No operational impacts are predicted	Y
The Twelve Bens/Garraun Complex SAC (002031)	0m	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i> ) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] <b>Annex II species:</b> <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Najas flexilis</i> (Slender Naiad) [1833]	Option study area is within this European site (new SW abstraction, new pumps, new storage, new WTP, new mains, decommission WTP). Within the FWPM catchment. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is within this European site (new SW abstraction, new pumps, new storage, new WTP, new mains, decommission WTP). Within the FWPM catchment. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	Y
Tully Lough SAC (002130)	0m	<b>Annex I habitats:</b> Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] <b>Annex II species:</b> <i>Najas flexilis</i> (Slender Naiad) [1833]	Option study area is within this European site (decommission WTP). No impacts are predicted given the nature of the works.	Option study area is within this European site (decommission WTP). No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
West Connacht Coast SAC (002998)	45m	<b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	Option study area is adjacent to this European site (new mains, decommission WTP). - Disturbance (including biological disturbance)	Option study area is adjacent to this European site (new mains, decommission WTP). No operational impacts are predicted.	Y
Aughrusbeg Machair and Lake SAC (001228)	1.8km	<b>Annex I habitats:</b> Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	Option study area is hydrologically linked to this European site (decommission WTP). No impacts predicted given the nature of the works.	Option study area is hydrologically linked to this European site (decommission WTP). No operational impacts are predicted.	N
Omev Island Machair SAC (001309)	2km	<b>Annex I habitats:</b> Machairs (* in Ireland) [21A0] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] <b>Annex II species:</b> <i>Petalophyllum ralfsii</i> (Petalwort) [1395]	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Kingstown Bay SAC (002265)	3.5km	<b>Annex I habitats:</b> Large shallow inlets and bays [1160]	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N
Inishbofin and Inishshark SAC (000278)	7km	<b>Annex I habitats:</b> Coastal lagoons [1150] Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] <b>Annex II species:</b> <i>Halichoerus grypus</i> (Grey Seal) [1364]	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

Table C4.32: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAD-545 (TG1-SAD-209, TG1-SAD-210, TG1-SAD-211) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Illaunnaon SPA (004221)	770m	Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191]	Breed	New Connemara Regional Water Supply Scheme (RWSS) (Kylemore Lough). Option study area is in close proximity to this European site (new mains, new pump, decommission WTP). - Disturbance (including biological disturbance)	New Connemara Regional Water Supply Scheme (RWSS) (Kylemore Lough). Option study area is in close proximity to this European site (new mains, new pump, decommission WTP). No operational impacts are predicted.	Y
Cruagh Island SPA (004170)	5.9km	Manx Shearwater ( <i>Puffinus puffinus</i> ) [A013] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045]	Breed Non-B	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y
High Island, Inishshark and	8.5km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194]	Breed Non-B Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Davillaun SPA (004144)						
Lough Mask SPA (004062)	12.1km	Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Lesser Black-backed Gull ( <i>Larus fuscus</i> ) [A183] Common Tern ( <i>Sterna hirundo</i> ) [A193] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Non-B Breed Breed Breed Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y
Slyne Head to Ardmore Point Islands SPA (004159)	13km	Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Little Tern ( <i>Sterna albifrons</i> ) [A195]	Non-B Breed Breed Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y
Lough Corrib SPA (004042)	13.5km	Gadwall ( <i>Anas strepera</i> ) [A051] Shoveler ( <i>Anas clypeata</i> ) [A056] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Hen Harrier ( <i>Circus cyaneus</i> ) [A082] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Common Tern ( <i>Sterna hirundo</i> ) [A193] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Breed Non-B Non-B Non-B Breed Breed Breed Breed	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	Y

Table C4.33: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAD-548 (TG1-SAD-217, TG1-SAD-218) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Carra/Mask Complex SAC (001774)	0m	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] European dry heaths [4030]	Rationalise Louisburgh via new Community/GWS being developed to take water from Westport to Murrisk. Increase SW abstraction from existing Lough Mask and upgrade Tourmakeady WTP. Option study area is within and hydrologically linked this European site (increase SW abstraction, upgrade WTP). - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Louisburgh via new Community/GWS being developed to take water from Westport to Murrisk. Increase SW abstraction from existing Lough Mask and upgrade Tourmakeady WTP. Option study area is within and hydrologically linked this European site (increase SW abstraction, upgrade WTP). - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230] Limestone pavements [8240] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] <b>Annex II species:</b> <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <i>Lutra lutra</i> (Otter) [1355] <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]			
Clew Bay Complex SAC (001482)	45m	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] <b>Annex II species:</b> <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013] <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365]	Option study area is adjacent and hydrologically linked to this European site (new mains). - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is adjacent and hydrologically linked to this European site (new mains). No operational impacts are predicted.	Y
Brackloon Woods SAC (000471)	60m	<b>Annex I habitats:</b> Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	Option study area is adjacent to this European site (WTP upgrade). No impacts are predicted given the nature of the works and the QI present.	Option study area is adjacent to this European site (WTP upgrade). No operational impacts are predicted.	N
Oldhead Wood SAC (000532)	1.4km	<b>Annex I habitats:</b> European dry heaths [4030] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	Option study area is in close proximity to this European site (decommission WTP). No impacts are predicted given the nature of the works.	Option study area is in close proximity to this European site (decommission WTP). No operational impacts are predicted.	N
West Connacht Coast SAC (002998)	1.5km	<b>Annex II species:</b> <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	Option study area is in close proximity to this European site (decommission WTP). No impacts are predicted given the nature of the works.	Option study area is in close proximity to this European site (decommission WTP). No operational impacts are predicted.	N
Lough Cahasy, Lough Baun and Roonah Lough SAC (001529)	5.7km	<b>Annex I habitats:</b> Coastal lagoons [1150] Perennial vegetation of stony banks [1220] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Machairs (* in Ireland) [21A0]			
Cross Lough (Killadoon) SAC (000484)	8.8km	<b>Annex I habitats:</b> Perennial vegetation of stony banks [1220]	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	<b>N</b>
Clare Island Cliffs SAC (002243)	10.1km	<b>Annex I habitats:</b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	<b>N</b>

Table C4.34: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAD-548 (TG1-SAD-217, TG1-SAD-218) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Mask SPA (004062)	0m	Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Lesser Black-backed Gull ( <i>Larus fuscus</i> ) [A183] Common Tern ( <i>Sterna hirundo</i> ) [A193] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-B Non-B Breed Breed Breed Breed	Rationalise Louisburgh via new Community/GWS being developed to take water from Westport to Murrisk. Increase SW abstraction from existing Lough Mask and upgrade Tourmakeady WTP. Option study area is within and hydrologically linked this European site (increase SW abstraction, upgrade WTP). - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Louisburgh via new Community/GWS being developed to take water from Westport to Murrisk. Increase SW abstraction from existing Lough Mask and upgrade Tourmakeady WTP. Option study area is within and hydrologically linked this European site (increase SW abstraction, upgrade WTP). - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	<b>Y</b>
Cross Lough (Killadoon) SPA (004212)	8.7km	Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191]	Breed	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	<b>N</b>
Clare Island SPA (004136)	10km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Shag ( <i>Phalacrocorax aristotelis</i> ) [A018] Common Gull ( <i>Larus canus</i> ) [A182] Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Guillemot ( <i>Uria aalge</i> ) [A199] Razorbill ( <i>Alca torda</i> ) [A200] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed Breed Breed Breed Breed	European site is within Zone of Influence of the study area. No impacts predicted given the lack of hydrological link and distance from site.	European site is within Zone of Influence of the study area. No operational impacts are predicted.	<b>N</b>
Lough Corrib SPA (004042)	16.3km	Gadwall ( <i>Anas strepera</i> ) [A051] Shoveler ( <i>Anas clypeata</i> ) [A056] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Hen Harrier ( <i>Circus cyaneus</i> ) [A082] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179]	Non-B Non-B Non-B Non-B Non-B Breed Non-B Non-B Non-B	European site is within Zone of Influence of the study area. - Disturbance (including biological disturbance)	European site is within Zone of Influence of the study area. No operational impacts are predicted.	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Common Gull ( <i>Larus canus</i> ) [A182] Common Tern ( <i>Sterna hirundo</i> ) [A193] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Breed Breed Breed Breed			

Note: Anywhere the Carlingford Lough SPA based in Northern Ireland is mentioned, both the Carlingford Lough SPA and the Carlingford Marine SPA are implied.

Table C5.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAE-001 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Dundalk Bay SAC (000455)	200m	<b>Annex I habitats:</b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	Increase abstraction from the river Fane and upgrade WTPs, and new watermains hydrologically linked to the European site. New storage is in close proximity to the European site, however there is no hydrological link. Option study area is hydrologically linked to this European site.  - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted given the distance of the SW abstraction to the European site.	Y
Carlingford Mountain SAC (000453)	300m	<b>Annex I habitats:</b> Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Alkaline fens [7230] Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladanii</i> ) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	No impacts predicted given works proposed, and a lack of any source-pathway-receptor as the works are downstream from the European site.	No operational impacts are predicted.	N
Carlingford Shore SAC (002306)	400m	<b>Annex I habitats:</b> Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220]	No impacts predicted given works proposed.	No operational impacts are predicted.	N
Clogher Head SAC (001459)	16.5km	<b>Annex I habitats:</b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	No impacts predicted given distance, and a lack of any source-pathway-receptor between the works and the European site.	No operational impacts are predicted.	N

Table C5.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAE-001 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Dundalk Bay SPA	200m	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Greylag Goose ( <i>Anser anser</i> ) [A043] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Pintail ( <i>Anas acuta</i> ) [A054] Common Scoter ( <i>Melanitta nigra</i> ) [A065]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B	Increase abstraction from the river Fane and upgrade WTPs, and new watermains hydrologically linked to the European site. New storage is in close proximity to the European site, however there is no hydrological link. Option study area is hydrologically linked to this European site.  - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B			
Carlingford Lough SPA (004078)	700m	Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wetland and Waterbirds [A999]	Non-B	Upgrade WTPs and new storage in close proximity to the European site. Option study area is in close proximity to the European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Carlingford Lough SPA (NI) (UK9020160)	3.5km	Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A91] Common Tern ( <i>Sterna hirundo</i> ) [A193] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046]	Breed Breed Non-B	Upgrade WTPs and new storage in close proximity to the European site. Option study area is in close proximity to the European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Stabannan-Braganstown SPA (004091)	6km	Greylag Goose ( <i>Anser anser</i> ) [A043]	Non-B	Abandon WTP hydrologically linked to the European site, new pump, storage and watermains in close proximity to the European site. Option study area is in close proximity to this European site . - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C5.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAE-021 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Boyne and River Blackwater SAC (002299)	11km	<b>Annex I habitats:</b> Alkaline fens [7230] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	Increase GW abstraction from the existing source at Castletown and upgrade of Castletown WTP.  No impacts predicted given works proposed, distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N

Table C5.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAE-021 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Boyne and River Blackwater SPA (004232)	11km	Kingfisher ( <i>Alcedo atthis</i> ) [A229]	Breed	<p>Increase GW abstraction from the existing source at Castletown and upgrade of Castletown WTP.</p> <p>No impacts predicted given works proposed, distance from site and a lack of any source-pathway-receptor between the works and European site.</p>	No operational impacts are predicted.	<b>N</b>

Table C5.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAE-024 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Dundalk Bay SAC (000455)	30km	<p><b>Annex I habitats:</b></p> <p>Estuaries [1130]</p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Salicornia and other annuals colonising mud and sand [1310]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p>	<p>New GW abstraction, upgrade Kilmainhamwood WTP and Nobber WTP, new storage, new pumping station and new watermains.</p> <p>No impacts predicted given the distance from site.</p>	No operational impacts are predicted.	<b>N</b>

Table C5.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAE-024 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Dundalk Bay SPA	30km	<p>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]</p> <p>Greylag Goose (<i>Anser anser</i>) [A043]</p> <p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]</p> <p>Shelduck (<i>Tadorna tadorna</i>) [A048]</p> <p>Teal (<i>Anas crecca</i>) [A052]</p> <p>Mallard (<i>Anas platyrhynchos</i>) [A053]</p> <p>Pintail (<i>Anas acuta</i>) [A054]</p> <p>Common Scoter (<i>Melanitta nigra</i>) [A065]</p> <p>Red-breasted Merganser (<i>Mergus serrator</i>) [A069]</p> <p>Oystercatcher (<i>Haematopus ostralegus</i>) [A130]</p> <p>Ringed Plover (<i>Charadrius hiaticula</i>) [A137]</p> <p>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</p> <p>Grey Plover (<i>Pluvialis squatarola</i>) [A141]</p> <p>Lapwing (<i>Vanellus vanellus</i>) [A142]</p> <p>Knot (<i>Calidris canutus</i>) [A143]</p> <p>Dunlin (<i>Calidris alpina</i>) [A149]</p> <p>Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</p> <p>Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]</p>	Non-B Non-B	<p>New GW abstraction, upgrade Kilmainhamwood WTP and Nobber WTP, new storage, new pumping station and new watermains.</p> <p>No impacts predicted given the distance from site.</p>	No operational impacts are predicted.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B			

Table C5.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAE-033 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Carlingford Mountain SAC (000453)	3km	<u><b>Annex I habitats:</b></u> Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Alkaline fens [7230] Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i> ) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	<b>Reduce leakage in the WTP.</b> No impacts predicted given works proposed, distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>
Dundalk Bay SAC (000455)	8km	<u><b>Annex I habitats:</b></u> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No impacts predicted given works proposed, distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>

Table C5.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAE-033 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Dundalk Bay SPA	8km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Greylag Goose ( <i>Anser anser</i> ) [A043] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Teal ( <i>Anas crecca</i> ) [A052]	Non-B Non-B Non-B Non-B Non-B	<b>Reduce leakage in the WTP.</b> No impacts predicted given works proposed, distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Mallard ( <i>Anas platyrhynchos</i> ) [A053] Pintail ( <i>Anas acuta</i> ) [A054] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B			

Table C5.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAE-050b leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	APotential Impact Pathway		Potential for LSEs
			Construction	Operation	
Dundalk Bay SAC (000455)	28.2km	<b>Annex I habitats:</b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	<b>Upgrade Nafarty WTP for water quality improvements.</b> No impacts predicted given works proposed, distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>

Table C5.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAE-050b leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Stabannan-Braganstown SPA (004091)	20.2km	Greylag Goose ( <i>Anser anser</i> ) [A043]	Non-B	<b>Upgrade Nafarty WTP for water quality improvements.</b> No impacts predicted given works proposed, distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Dundalk Bay SPA	28.2km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Greylag Goose ( <i>Anser anser</i> ) [A043] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Pintail ( <i>Anas acuta</i> ) [A054] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B	No impacts predicted given works proposed, distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>

Table C5.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAE-052 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Dundalk Bay SAC (000455)	15km	<b>Annex I habitats:</b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	<b>Upgrade Inniskeen WTP for water quality improvements.</b> No impacts predicted given the works proposed and distance from site.	No operational impacts are predicted.	<b>N</b>

Table C5.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAE-052 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Dundalk Bay SPA	15km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Greylag Goose ( <i>Anser anser</i> ) [A043] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Pintail ( <i>Anas acuta</i> ) [A054] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B	Upgrade Inniskeen WTP for water quality improvements. No impacts predicted given the works proposed and distance from site.	No operational impacts are predicted.	<b>N</b>

Table C5.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAE-061 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Dundalk Bay SAC (000455)	28km	<b><u>Annex I habitats:</u></b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	Upgrade Lisansky WTP for water quality improvements. No impacts predicted given the distance from site.	No operational impacts are predicted.	<b>N</b>

Table C5.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAE-061 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Stabannan-Braganstown SPA (004091)	26km	Greylag Goose ( <i>Anser anser</i> ) [A043]	Non-B	Upgrade Lisansky WTP for water quality improvements. No impacts predicted given the distance from site.	No operational impacts are predicted.	N
Dundalk Bay SPA	31km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Greylag Goose ( <i>Anser anser</i> ) [A043] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Pintail ( <i>Anas acuta</i> ) [A054] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B	No impacts predicted given the distance from site.	No operational impacts are predicted.	N

Table C5.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAE-508 (TG1-SAE-049, TG1-SAE-050) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Boyne and River Blackwater SAC (002299)	100m	<b>Annex I habitats:</b> Alkaline fens [7230] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	Decommission WTP and new water mains crossing a hydrological link to the European site. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Boyne Coast and Estuary SAC (001957)	4km	<b>Annex I habitats:</b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No impacts predicted given distance from site and works proposed.	No operational impacts are predicted.	<b>N</b>
Dundalk Bay SAC (000455)	14km	<b>Annex I habitats:</b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	No impacts predicted given distance from site and works proposed.	No operational impacts are predicted.	<b>N</b>
Clogher Head SAC (001459)	16.5km	<b>Annex I habitats:</b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>

Table C5.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAE-508 (TG1-SAE-049, TG1-SAE-050) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Boyne and River Blackwater SPA (004232)	100m	Kingfisher ( <i>Alcedo atthis</i> ) [A229]	Breed	<b>Decommission WTP and new watermains crossing a hydrological link to the European site. Option study area is hydrologically linked to this European site.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	<b>Y</b>
Dundalk Bay SPA	14km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Greylag Goose ( <i>Anser anser</i> ) [A043] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Pintail ( <i>Anas acuta</i> ) [A054] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B	<b>Decommission WTP in close proximity to the European site. New GW abstraction, new storage and upgrade WTP hydrologically linked to the European site. Option study area is hydrologically linked to this European site.</b> - Disturbance (including biological disturbance)	No operational impacts are predicted.	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B			
Boyne Estuary SPA (004080)	4km	Shelduck ( <i>Tadorna tadorna</i> ) [A048] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Sanderling ( <i>Calidris alba</i> ) [A144] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Little Tern ( <i>Sterna albifrons</i> ) [A195] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed	No impacts predicted given distance from site, QI species and works proposed.	No operational impacts are predicted.	<b>N</b>
River Nanny Estuary and Shore SPA (004158)	13km	Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Knot ( <i>Calidris canutus</i> ) [A143] Sanderling ( <i>Calidris alba</i> ) [A144] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B	Option study area is close to a hydrological link to this European site (w.mains). No impacts predicted given the lack of hydrological link.	No operational impacts are predicted.	<b>N</b>

Table C5.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAE-513 (TG1-SAE-037, TG1-SAE-038) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Dundalk Bay SAC (000455)	22km	<b>Annex I habitats:</b> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	New GW abstraction at Posseckstown and upgrade the GW abstraction at Rowlagh. A new pump, upgrade Drumcondrath WTP and new water mains. Decommission SW abstraction at Lough Bracken. Option study area is hydrologically linked to this European site. No impacts predicted given the distance from site	No operational impacts are predicted.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	

Table C5.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAE-513 (TG1-SAE-037, TG1-SAE-038) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Dundalk Bay SPA	22km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Greylag Goose ( <i>Anser anser</i> ) [A043] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Pintail ( <i>Anas acuta</i> ) [A054] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Herring Gull ( <i>Larus argentatus</i> ) [A184] Wetland and Waterbirds [A999]	Non-B Non-B	New GW abstraction at Posseckstown and upgrade the GW abstraction at Rowlagh. A new pump, upgrade Drumcondrath WTP and new watermains. Decommission SW abstraction at Lough Bracken. Option study area is hydrologically linked to this European site.  No impacts predicted given the distance from site.	No operational impacts are predicted.	<b>N</b>
Stabannan-Braganstown SPA (004091)	33km	Greylag Goose ( <i>Anser anser</i> ) [A043]	Non-B	New GW abstraction at Posseckstown and upgrade the GW abstraction at Rowlagh. A new pump, upgrade Drumcondrath WTP and new watermains. Decommission SW abstraction at Lough Bracken. Option study area is close to a hydrological link to this European site.  No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>

Table C6.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-009 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Forbes Complex SAC (001818)	0m	<p><b>Annex I habitats:</b>                      Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]                      Active raised bogs [7110]                      Degraded raised bogs still capable of natural regeneration [7120]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p>	<p>Increase SW abstraction from Lough Forbes within the European site, upgrade WTP and pumps adjacent to the European site. New storage in close proximity to the European site.</p> <p>No impacts predicted given the construction works are outside the European site and there are no hydrological links. SW abstraction is pre-existing, so no construction required.</p>	<p>Increase SW abstraction from Lough Forbes, upgrade WTP and pumps within the European site. New storage in close proximity to the European site Option study area is within this European site.</p> <p>- Habitat degradation – hydrological/ hydrogeological changes                      - Water table/ availability</p>	Y
Clooneen Bog SAC (002348)	1km	<p><b>Annex I habitats:</b>                      Active raised bogs [7110]                      Degraded raised bogs still capable of natural regeneration [7120]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Bog woodland [91D0]</p>	No impacts predicted given the lack of hydrological link and distance from site.	No operational impacts predicted.	N
Lough Ree SAC (000440)	15.1km	<p><b>Annex I habitats:</b>                      Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]                      Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]                      Active raised bogs [7110]                      Degraded raised bogs still capable of natural regeneration [7120]                      Alkaline fens [7230]                      Limestone pavements [8240]                      Bog woodland [91D0]                      Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b>  <i>Lutra lutra</i> (Otter) [1355]</p>	No impacts predicted given the works proposed, distance from site and the attenuation of the hydrological link.	No operational impacts predicted.	N

Table C6.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-009 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Ballykenny-Fisherstown Bog SPA (004101)	0m	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	N/A	<p>Increase SW abstraction from Lough Forbes, upgrade WTP and pumps within the European site. New storage in close proximity to the European site. Option study area is within this European site.</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	Y
Lough Ree SPA (004064)	15.1km	Little Grebe ( <i>Tachybaptus ruficollis</i> ) [A004] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053]	Non-b Non-b Non-b Non-b Non-b	<p>New storage in close proximity to the European site.</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Shoveler ( <i>Anas clypeata</i> ) [A056] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Goldeneye ( <i>Bucephala clangula</i> ) [A067] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	Non-b Non-b Breed Non-b Non-b Non-b Non-b Breed			

Table C6.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-021 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Ree SAC (000440)	700m	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Alkaline fens [7230] Limestone pavements [8240] Bog woodland [91D0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	<b>New GW abstraction, upgrade Lisreevagh WTP and Newtowncahcel WTP, upgrade pumps and upgrade WTP at ESB site. Option study area is in close proximity to this European site. Within ZOC.</b>  No impacts predicted given the construction works are outside the European site and there are no hydrological links between construction works and the European site.	<b>New GW abstraction, upgrade Lisreevagh WTP and Newtowncahcel WTP, upgrade pumps and upgrade WTP at ESB site. Option study area is in close proximity to this European site. Within ZOC.</b>  - Habitat degradation – hydrological/ hydrogeological changes - Water table/ availability	Y
Fortwilliam Turlough SAC (000448)	1.8km	<b>Annex I habitats:</b> Turloughs [3180]	<b>New GW abstraction, upgrade Lisreevagh WTP and Newtowncahcel WTP, upgrade pumps and upgrade WTP at ESB site. Option study area is in close proximity to this European site. Within ZOC.</b>  No impacts predicted given the construction works are outside the European site and there are no hydrological links between construction works and the European site.	<b>New GW abstraction, upgrade Lisreevagh WTP and Newtowncahcel WTP, upgrade pumps and upgrade WTP at ESB site. Option study area is in close proximity to this European site. Within ZOC.</b>  - Habitat degradation – hydrological/ hydrogeological changes - Water table/ availability	Y



Table C6.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-021 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Ree SPA (004064)	700m	Little Grebe ( <i>Tachybaptus ruficollis</i> ) [A004] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Shoveler ( <i>Anas clypeata</i> ) [A056] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Goldeneye ( <i>Bucephala clangula</i> ) [A067] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b Breed Non-b Non-b Non-b Non-b Breed	New GW abstraction, upgrade Lisreevagh WTP and Newtowncashel WTP, upgrade pumps and upgrade WTP at ESB site. Option study area is in close proximity to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C6.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-030 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Derragh Bog SAC	1.2km	<b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	No impacts predicted given proposed works and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N
Garriskil Bog SAC (000679)	11.2km	<b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	No impacts predicted given the distance from site and the attenuation of the hydrological link.	No operational impacts predicted.	N

Table C6.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-030 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Kinale and Derragh Lough SPA (004061)	0m	Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Wetland and Waterbirds [A999]	Non-b Non-b	Increase SW abstraction from Lough Kinale, re-locate existing intake, upgrade WTP and pumps and new storage. Option study area is within this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance) - Physical loss of habitat	Increase SW abstraction from Lough Kinale, re-locate existing intake, upgrade WTP and pumps and new storage. Option study area is within this European site. - Habitat degradation – hydrological/hydrogeological changes - Water table/ availability	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Sheelin SPA (004065)	2.9km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Goldeneye ( <i>Bucephala clangula</i> ) [A067] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase SW abstraction from Lough Kinale, re-locate existing intake, upgrade WTP and pumps and new storage. Option study area is in close proximity to this European site. - Disturbance (including biological disturbance)	No operational impacts predicted.	Y
Lough Derravarragh SPA (004043)	12.2km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Coot ( <i>Fulica atra</i> ) [A125] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase SW abstraction from Lough Kinale, re-locate existing intake, upgrade WTP and pumps and new storage. Option study area is in close proximity to this European site. - Disturbance (including biological disturbance)	No operational impacts predicted.	Y
Garriskil Bog SPA (004102)	13.2km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	N/A	Increase SW abstraction from Lough Kinale, re-locate existing intake, upgrade WTP and pumps and new storage. Option study area is in close proximity to this European site. - Disturbance (including biological disturbance)	No operational impacts predicted.	Y

Table C6.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-038 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Ree SAC (000440)	1.5km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Alkaline fens [7230] Limestone pavements [8240] Bog woodland [91D0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Upgrade Ballinagard Springs and Toberdan WTP. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted	Y
River Shannon Callows SAC (000216)	16.3km	<b>Annex I habitats:</b> Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Alkaline fens [7230] Limestone pavements [8240] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	No impacts predicted given the distance from site and the attenuation of the hydrological link.	No operational impacts are predicted	N

Table C6.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-038 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Ree SPA (004064)	2km	Little Grebe ( <i>Tachybaptus ruficollis</i> ) [A004] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Mallard ( <i>Anas platyrhynchos</i> ) [A053] Shoveler ( <i>Anas clypeata</i> ) [A056] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Common Scoter ( <i>Melanitta nigra</i> ) [A065] Goldeneye ( <i>Bucephala clangula</i> ) [A067] Coot ( <i>Fulica atra</i> ) [A125] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b Breed Non-b Non-b Non-b Non-b Breed	Upgrade Ballinagard Springs and Toberdan WTP. New storage. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted	Y
River Suck Callows SPA (004097)	5.2km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b	Upgrade Ballinagard Springs, Toberdan and Toberreoge WTP. New storage. Option study area is in close proximity to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Middle Shannon Callows SPA (004096)	16.3km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Corncrake ( <i>Crex crex</i> ) [A122] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Wetland and Waterbirds [A999]	Non-b Non-b Breed Non-b Non-b Non-b Non-b	No impacts predicted given the new storage construction is 30km from the European site, upgrade works not likely to disturb QI species.	No operational impacts are predicted.	N

Table C6.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-039 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Corliskea/ Trien/ Cloonfelliv Bog SAC (002110)	3.8km	<b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Bog woodland [91D0]	Increase GW abstraction at Longford Springs to supply deficit and upgrade WTP. Option study area is in close proximity to this European site. Within ZOC, overlying the same karstic aquifer. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction at Longford Springs to supply deficit and upgrade WTP. Option study area is in close proximity to this European site. Within ZOC, overlying the same karstic aquifer. - Habitat degradation – hydrological/ hydrogeological changes - Water table/ availability	Y

Table C6.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-039 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Bellanagare Bog SPA (004105)	5.5km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	N/A	Increase GW abstraction at Longford Springs to supply deficit and upgrade WTP in close proximity to the European site. No impacts predicted given the distance and works proposed.	No operational impacts are predicted	N
River Suck Callows SPA (004097)	20km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b	No impacts predicted given the distance from site and the attenuation of the hydrological link.	No operational impacts are predicted	N

Table C6.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-052 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Callow Bog SAC (000595)	0m	<b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	New watermains within the European site, decommission the existing abstraction, new SW abstraction, upgrade Lough Gara WTP, upgrade storage and upgrade pumps adjacent to the European site. Option study area is within and adjacent to this European site. - Physical loss of habitat - Disturbance (including biological disturbance)	No operational impacts are predicted	Y
Tullaghanrock Bog SAC (002354)	3.7km	<b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	No impacts predicted given a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted	N

Table C6.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-052 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Gara SPA (004048)	0m	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	Non-b Non-b	Decommission the existing abstraction, new SW abstraction, upgrade Lough Gara WTP, upgrade storage, upgrade pumps and new watermains within the European site. Option study area is within this European site. - Physical loss of habitat - Disturbance (including biological disturbance)	No operational impacts are predicted	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Bellanagare Bog SPA (004105)	4.4km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	N/A	New watermains in close proximity to the European site. - Disturbance (including biological disturbance)	No operational impacts are predicted	Y

Table C6.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-068 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Arrow SAC (001673)	5.6km	<b>Annex I habitats:</b> Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]	Castletenison WTP Upgrade. No impacts predicted given a lack given a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted	N
Cuilcagh - Anierin Uplands SAC (000584)	7.4km	<b>Annex I habitats:</b> Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) [3110] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i> ) [8110] Siliceous rocky slopes with chasmophytic vegetation [8220] <b>Annex II species:</b> <i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]	No impacts predicted given a lack given a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted	N
Lough Forbes Complex SAC (001818)	35km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]	No impacts predicted given the distance from site.	No operational impacts are predicted	N

Table C6.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-068 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Arrow SPA (004050)	5.6km	Little Grebe ( <i>Tachybaptus ruficollis</i> ) [A004] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Wetland and Waterbirds [A999]	Non-B Non-B	<b>Castletenison WTP Upgrade.</b> No impacts predicted given a lack given a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted	<b>N</b>
Ballykenny-Fisherstown Bog SPA (004101)	35km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	N/A	No impacts predicted given a lack given a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted	<b>N</b>

Table C6.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-072 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Corliskea/ Trien/ Cloonfelliv Bog SAC (002110)	1.4km	<b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	<b>Ballymoe WTP upgrade and maintain GW abstraction. Option study area is in close proximity to this European site. Within ZOC.</b> No construction impacts predicted given the works proposed, and a lack of any source-pathway-receptor between the construction works and the European site.	<b>Ballymoe WTP upgrade and maintain GW abstraction. Option study area is in close proximity to this European site. Within ZOC.</b> However, no operational impacts are predicted given the nature of the works and that the abstraction is to be maintained. No abstraction increases or upgrades are required.	<b>N</b>
Kilsallagh Bog SAC (000285)	3.2km	<b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	No construction impacts predicted given the works proposed.	<b>Ballymoe WTP upgrade and maintain GW abstraction. Option study area is in close proximity to this European site. Within ZOC.</b> However, no operational impacts are predicted given the nature of the works and that the abstraction is to be maintained. No abstraction increases or upgrades are required.	<b>N</b>

Table C6.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-072 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Suck Callows SPA (004097)	15.7km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b	No impacts predicted given the distance from site works proposed and the attenuation of the hydrological link.	No operational impacts are predicted	<b>N</b>

Table C6.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-084 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Carrownagappul Bog SAC (001242)	4.2km	<p><b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p>	<p>Increase the existing GW abstraction at Mountbellew WTP, upgrade Mountbellew WTP, provide new pumps and new watermains. Ballygar WTP will be decommissioned. Option study area is in close proximity to this European site. within ZOC.</p> <p>No construction impacts predicted given the works proposed.</p>	<p>Increase the existing GW abstraction at Mountbellew WTP, upgrade Mountbellew WTP, provide new pumps and new watermains. Ballygar WTP will be decommissioned. Option study area is in close proximity to this European site. Within ZOC.</p> <p>- Habitat degradation – hydrological/ hydrogeological changes - Water table / availability</p>	Y
River Shannon Callows SAC (000216)	33.3km	<p><b>Annex I habitats:</b> Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510] Alkaline fens [7230] Limestone pavements [8240] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]</p>	No impacts predicted given the distance from site.	No operational impacts are predicted	N

Table C6.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-084 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Suck Callows SPA (004097)	1.8km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b	<p>New watermains and Ballygar WTP will be decommissioned. Option study area is hydrologically linked to this European site.</p> <p>- Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)</p>	No operational impacts are predicted	Y
Four Roads Turlough SPA (004140)	5km	Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-b Non-b	<p>New watermains and Ballygar WTP will be decommissioned. Option study area is in close proximity to this European site.</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted	Y
Lough Croan Turlough SPA (004139)	8.7km	Shoveler ( <i>Anas clypeata</i> ) [A056] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	N/A	<p>New watermains and Ballygar WTP will be decommissioned. Option study area is in close proximity to this European site.</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted	Y
Middle Shannon Callows SPA (004096)	33.3km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Corncrake ( <i>Crex crex</i> ) [A122]	Non-b Non-b Breed	<p>New watermains and Ballygar WTP will be decommissioned. Option study area is hydrologically linked to this European site.</p> <p>No impacts predicted given the distance from site.</p>	No operational impacts are predicted	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b			

Table C6.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-150 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	300m	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Keep supplying Killeshandra WRZ from Erne Valley GWS. No impacts predicted given works proposed.	Keep supplying Killeshandra WRZ from Erne Valley GWS. No operational impacts are predicted.	<b>N</b>
Upper Lough Erne SAC (UK0016614)	13.5km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	Keep supplying Killeshandra WRZ from Erne Valley GWS. No impacts predicted given works proposed and the distance from this European site.	Keep supplying Killeshandra WRZ from Erne Valley GWS. No operational impacts are predicted.	<b>N</b>

Table C6.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-150 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	365m	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Wetland and Waterbirds [A999]	Non-b Non-b Non-b	Keep supplying Killeshandra WRZ from Erne Valley GWS. No impacts predicted given works proposed.	Keep supplying Killeshandra WRZ from Erne Valley GWS. No operational impacts are predicted.	<b>N</b>
Upper Lough Erne SPA (UK9020071)	13.5km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	Keep supplying Killeshandra WRZ from Erne Valley GWS. No impacts predicted given works proposed.	Keep supplying Killeshandra WRZ from Erne Valley GWS. No operational impacts are predicted.	<b>N</b>



Table C6.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-161 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Forbes Complex SAC (001818)	18.7km	<p><b>Annex I habitats:</b>                      Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]                      Active raised bogs [7110]                      Degraded raised bogs still capable of natural regeneration [7120]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p>	<p><b>Grange WTP upgrade.</b>                      No impacts predicted given a lack given a lack of any source-pathway-receptor between the works and European site.</p>	No operational impacts are predicted	<b>N</b>

Table C6.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-161 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Ballykenny-Fisherstown Bog SPA (004101)	18.7km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	N/A	<p><b>Grange WTP upgrade.</b>                      No impacts predicted given works proposed and a lack given a lack of any source-pathway-receptor between the works and European site.</p>	No operational impacts are predicted	<b>N</b>

Table C6.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAF-529 (TG1-SAF-066, TG1-SAF-128) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Forbes Complex SAC (001818)	21km	<p><b>Annex I habitats:</b>                      Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]                      Active raised bogs [7110]                      Degraded raised bogs still capable of natural regeneration [7120]                      Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]                      Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p>	<p><b>Increase the existing SW abstraction, upgrade Carrick-on-Shannon WTP and Rockingham WTP, upgrade an existing pump station, new pump stations and new watermains.</b>                      No impacts predicted given the distance from site and attenuation of the hydrological link.</p>	No operational impacts are predicted	<b>N</b>

Table C6.24: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAF-529 (TG1-SAF-066, TG1-SAF-128) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Ballykenny-Fisherstown Bog SPA (004101)	21km	Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	N/A	<p><b>Increase the existing SW abstraction, upgrade Carrick-on-Shannon WTP and Rockingham WTP, upgrade an existing pump station, new pump stations and new watermains.</b></p>	No operational impacts are predicted	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
				No impacts predicted given the distance from site and attenuation of the hydrological link.		

Table C6.25: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAF-534 (TG1-SAF-081, TG1-SAF-133) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Corrib SAC (000297)	300m	<p><b>Annex I habitats:</b></p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p> <p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>Bog woodland [91D0]</p> <p><b>Annex II species:</b></p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p> <p><i>Hamatocaulis vernicosus</i> (Slender Green Feather-moss) [6216]</p>	<p>Increase GW abstraction at Gortgarrow Spring, upgrade WTP and upgrade pump. Option study area is hydrologically linked to this European site, within ZOC.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Increase GW abstraction at Gortgarrow Spring, upgrade WTP and upgrade pump. Option study area is hydrologically linked to this European site, within ZOC.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/ hydrogeological changes</li> <li>- Water table / availability</li> </ul>	Y
Shankill West Bog SAC (000326)	330m	<p><b>Annex I habitats:</b></p> <p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p>	<p>New watermains crosses a hydrological link to this European site. Option study area is hydrologically linked to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – changes in water quality (pollution)</li> </ul>	No operational impacts are predicted as the GW abstraction is outside the ZOC for this European site.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]			
Derrinlough (Cloonkeen-leananode) Bog SAC (002197)	1km	<b>Annex I habitats:</b> Degraded raised bogs still capable of natural regeneration [7120]	No impacts predicted given a lack given a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted as the GW abstraction is outside the ZOC for this European site.	<b>N</b>
Lough Lurgeen Bog/ Glenamaddy Turlough SAC (000301)	1.2km	<b>Annex I habitats:</b> Turloughs [3180] Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidenton</i> p.p. vegetation [3270] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	No impacts predicted given a lack given a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted as the GW abstraction is outside the ZOC for this European site.	<b>N</b>
Curragh-lehanagh Bog SAC (002350)	2.7km	<b>Annex I habitats:</b> Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	No impacts predicted given a lack given a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted as the GW abstraction is outside the ZOC for this European site.	<b>N</b>

Table C6.26: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAF-534 (TG1-SAF-081, TG1-SAF-133) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Suck Callows SPA (004097)	16.2km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b	<b>New watermains and storage in close proximity to the European site.</b> - Disturbance (including biological disturbance)	No operational impacts are predicted	<b>Y</b>

Table C6.27: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAF-147 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lough Oughter and Associated Loughs SAC (000007)	7.6km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Bog woodland [91D0] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355]	<b>Maintain supply to Arvagh WRZ from Erne Valley GWS.</b> No impacts predicted given works proposed and the distance from this European site.	No operational impacts are predicted.	<b>N</b>

Table C6.28: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAF-147 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Oughter Complex SPA (004049)	9.1km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Wetland and Waterbirds [A999]	Non-b Non-b Non-b	Maintain supply to Arvagh WRZ from Erne Valley GWS. No impacts predicted given works proposed.	No operational impacts are predicted.	<b>N</b>
Lough Kinale and Derragh Lough SPA (004061)	19km	Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Wetland and Waterbirds [A999]	Non-b Non-b	Maintain supply to Arvagh WRZ from Erne Valley GWS. No impacts predicted given works proposed.	No operational impacts are predicted.	<b>N</b>
Lough Sheelin SPA (004065)	19.5km	Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005] Pochard ( <i>Aythya ferina</i> ) [A059] Tufted Duck ( <i>Aythya fuligula</i> ) [A061] Goldeneye ( <i>Bucephala clangula</i> ) [A067] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Maintain supply to Arvagh WRZ from Erne Valley GWS. No impacts predicted given works proposed.	No operational impacts are predicted.	<b>N</b>

Table C7.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAG-001 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
East Burren Complex SAC (001926)	0m	<p><b>Annex I habitats:</b>  Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]  Turloughs [3180]  Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]  Alpine and Boreal heaths [4060]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]  Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130]  Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]  Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]  Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]  Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]  Alkaline fens [7230]  Limestone pavements [8240]  Caves not open to the public [8310]  Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b>  <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]  <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Increase the existing GW abstraction at Kilkeedy BH, upgrade Kilkeedy WTP and new storage. Option study area is within this European site. Within LHS foraging range.</p> <ul style="list-style-type: none"> <li>- Disturbance (including biological disturbance)</li> <li>- Physical loss of habitat</li> <li>- Mortality</li> </ul>	<p>Increase the existing GW abstraction at Kilkeedy BH, upgrade Kilkeedy WTP and new storage. Option study area is within this European site, within ZOC.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Ballyogan Lough SAC (000019)	2.9km	<p><b>Annex I habitat:</b>  Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p>	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N
Moyree River System SAC	3.6km	<p><b>Annex I habitat:</b>  Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]  Alkaline fens [7230]  Limestone pavements [8240]  Caves not open to the public [8310]</p> <p><b>Annex II species:</b>  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]  <i>Lutra lutra</i> (Otter) [1355]</p>	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N

Table C7.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAG-001 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Corofin Wetlands SPA (004220)	6km	Little Grebe ( <i>Tachybaptus ruficollis</i> ) [A004] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B	Upgrade Kilkeedy WTP and new storage. Option study area is within the Zone of Influence of this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Coole-Garryland SPA (004107)	7.7km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	Upgrade Kilkeedy WTP and new storage. Option study area is within the Zone of Influence of this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Slieve Aughty Mountains SPA (004168)	6km	Hen Harrier ( <i>Circus cyaneus</i> ) [A082] Merlin ( <i>Falco columbarius</i> ) [A098]	Breed Breed	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N

Table C7.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAG-039 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Coole-Garryland Complex SAC (000252)	5km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Turloughs [3180] Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation [3270] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Limestone pavements [8240] <i>Taxus baccata</i> woods of the British Isles [91J0]	New watermains crosses hydrological link to this European site. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	Y
Lough Cutra SAC (000299)	2.5km	<b>Annex II species:</b> <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N
East Burren Complex SAC (001926)	3.5km	<b>Annex I habitats:</b> Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] Turloughs [3180] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130]  Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]  Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]  Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davalliana</i> [7210]  Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]  Alkaline fens [7230]  Limestone pavements [8240]  Caves not open to the public [8310]  Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]  <b>Annex II species:</b>  <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]  <i>Lutra lutra</i> (Otter) [1355]</p>			
Caherglassaun Turlough SAC (000238)	5.6km	<p><b>Annex I habitats:</b>  Turloughs [3180]  Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation [3270]  <b>Annex II species:</b>  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p>	No impacts predicted given distance from site and the attenuation of the hydrological link.	No operational impacts are predicted.	<b>N</b>
Galway Bay Complex SAC (000268)	11.4km	<p><b>Annex I habitats:</b>  Mudflats and sandflats not covered by seawater at low tide [1140]  Coastal lagoons [1150]  Large shallow inlets and bays [1160]  Reefs [1170]  Perennial vegetation of stony banks [1220]  Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]  Salicornia and other annuals colonising mud and sand [1310]  Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]  Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]  Turloughs [3180]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]  Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]  Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davalliana</i> [7210]  Alkaline fens [7230]  Limestone pavements [8240]  <b>Annex II species:</b>  <i>Lutra lutra</i> (Otter) [1355]  <i>Phoca vitulina</i> (Harbour Seal) [1365]</p>	No impacts predicted given distance from site, the attenuation of the hydrological link and works proposed.	No operational impacts are predicted.	<b>N</b>

Table C7.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAG-039 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Lough Cutra SPA (004056)	2.5km	Cormorant ( <i>Phalacrocorax carbo</i> ) [A017]	Breed	Increase existing GW abstraction from boreholes, new watermains. No impacts predicted QI species and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N
Slieve Aughty Mountains SPA (004168)	4.5km	Hen Harrier ( <i>Circus cyaneus</i> ) [A082] Merlin ( <i>Falco columbarius</i> ) [A098]	Breed Breed	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	N
Coole-Garryland SPA (004107)	5km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	New watermains crosses a hydrological link to this European site, however no impacts predicted given the QI species and the works proposed. The new watermain will be built in the existing road so no potential for disturbance impacts to QI species.	No operational impacts are predicted.	N
Inner Galway Bay SPA (004031)	11.4km	Black-throated Diver ( <i>Gavia arctica</i> ) [A002] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Grey Heron ( <i>Ardea cinerea</i> ) [A028] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	N/A Non-B Breed Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Breed	No impacts predicted given distance from site, the attenuation of the hydrological link and the works proposed. The new watermain will be built in the existing road so no potential for disturbance impacts to QI species.	No operational impacts are predicted.	N

Table C7.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAG-046 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Galway Bay Complex SAC (000268)	300m	<b>Annex I habitats:</b> Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160]	New GW abstraction at existing site, upgrade Kinvara WTP and decommissioning of existing GW abstraction are hydrologically linked to the European site. New storage adjacent to the European site. Option study area is hydrologically linked to this European site and within ZOC.	New GW abstraction at existing site, upgrade Kinvara WTP and add a new storage. Existing GW abstraction will be decommissioned. Option study area is hydrologically linked to this European site and within ZOC.	Y



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Turloughs [3180] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davalliana</i> [7210] Alkaline fens [7230] Limestone pavements [8240] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365]	- Habitat degradation – changes in water quality (pollution)	- Habitat degradation – hydrological/hydrogeological changes - Water table/availability	
Caherglassaun Turlough SAC (000238)	2.6km	<b>Annex I habitats:</b> Turloughs [3180] Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation [3270] <b>Annex II species:</b> <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]	No impacts predicted given works are downstream from the European site. The works lie outside the LHS bat foraging range so there is no potential for impacts to this QI species.	New GW abstraction at existing site, upgrade Kinvara WTP and add a new storage. Existing GW abstraction will be decommissioned. Option study area is within the Zone of Influence of this European site. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y
Cahermore Turlough SAC (002294)	2.6km	<b>Annex I habitats:</b> Turloughs [3180]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the construction works and European site.	New GW abstraction at existing site. Existing GW abstraction will be decommissioned. Option study area is within the Zone of Influence of this European site. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y
East Burren Complex SAC (001926)	3.7km	<b>Annex I habitats:</b> Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] Turloughs [3180] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davalliana</i> [7210]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the construction works and European site.	New GW abstraction at existing site. Existing GW abstraction will be decommissioned. Option study area is within the Zone of Influence of this European site. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Alkaline fens [7230] Limestone pavements [8240] Caves not open to the public [8310] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] <b>Annex II species:</b> <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <i>Lutra lutra</i> (Otter) [1355]			
Coole-Garryland Complex SAC (000252)	4.7km	<b>Annex I habitats:</b> Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Turloughs [3180] Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation [3270] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Limestone pavements [8240] <i>Taxus baccata</i> woods of the British Isles [91J0]	No impacts predicted given a lack of any source-pathway-receptor between the construction works and European site.	New GW abstraction at existing site. Existing GW abstraction will be decommissioned. Option study area is within the Zone of Influence of this European site. - Habitat degradation – hydrological/hydrogeological changes - Water table/availability	Y
Lough Fingall Complex SAC (000606)	4.5km	<b>Annex I habitats:</b> Turloughs [3180] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davalliana</i> [7210] Limestone pavements [8240] <b>Annex II species:</b> <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the construction works and European site.	No operational impacts are predicted as new GW abstraction is outside of the ZOC.	N
Ardrahan Grassland SAC	4.7km	<b>Annex I habitats:</b> Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Limestone pavements [8240]	No impacts predicted given a lack of any source-pathway-receptor between the construction works and European site.	No operational impacts are predicted.	N

Table C7.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAG-046 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Inner Galway Bay SPA (004031)	1.7km	Black-throated Diver ( <i>Gavia arctica</i> ) [A002] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Grey Heron ( <i>Ardea cinerea</i> ) [A028] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	N/A Non-B Breed Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Breed	<b>New GW abstraction at existing site, upgrade Kinvara WTP and add a new storage. Existing GW abstraction will be decommissioned. Option study area is hydrologically linked to this European site.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted as there are no ground water dependent species designated in the European site.	Y
Coole-Garryland SPA (004107)	4.7km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	<b>New GW abstraction at existing site, upgrade Kinvara WTP and add a new storage. Existing GW abstraction will be decommissioned. Option study area is within the Zone of Influence of this European site.</b> - Disturbance (including biological disturbance)	No operational impacts are predicted as there are no ground water dependent species designated in the European site.	Y
Corofin Wetlands SPA (004220)	17.4km	Little Grebe ( <i>Tachybaptus ruficollis</i> ) [A004] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B	<b>New GW abstraction at existing site, upgrade Kinvara WTP and add a new storage. Existing GW abstraction will be decommissioned. Option study area is within the Zone of Influence of this European site.</b> - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C7.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG1-SAG-079 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
East Burren Complex SAC (001926)	0m	<b>Annex I habitats:</b> Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] Turloughs [3180] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]	<b>Upgrade Corofin WTP. Option study area is within this European site. Within LHS foraging range.</b> - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Alpine and Boreal heaths [4060]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]            Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130]            Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]            Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]            Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]            Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]            Alkaline fens [7230]            Limestone pavements [8240]            Caves not open to the public [8310]            Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]  <u><b>Annex II species:</b></u>  <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]  <i>Lutra lutra</i> (Otter) [1355]</p>			
Dromore Woods and Loughs SAC (000032)	6.8km	<p><u><b>Annex I habitats:</b></u>            Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]            Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]            Limestone pavements [8240]  <u><b>Annex II species:</b></u>  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]  <i>Lutra lutra</i> (Otter) [1355]</p>	No impacts predicted given distance from site, the attenuation of the hydrological link and works proposed.	No operational impacts are predicted.	<b>N</b>
Ballyallia Lake SAC (000014)	9km	<p><u><b>Annex I habitats:</b></u>            Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]</p>	No impacts predicted given distance from site, the attenuation of the hydrological link and works proposed.	No operational impacts are predicted.	<b>N</b>
Lower River Shannon SAC (002165)	16.3km	<p><u><b>Annex I habitats:</b></u>            Sandbanks which are slightly covered by sea water all the time [1110]            Estuaries [1130]            Mudflats and sandflats not covered by seawater at low tide [1140]            Coastal lagoons [1150]            Large shallow inlets and bays [1160]            Reefs [1170]            Perennial vegetation of stony banks [1220]            Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]            Salicornia and other annuals colonising mud and sand [1310]            Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]            Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]            Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p>	No impacts predicted given distance from site, the attenuation of the hydrological link and works proposed.	No operational impacts are predicted.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b></p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p>			

Table C7.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG1-SAG-079 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Corofin Wetlands SPA (004220)	0m	<p>Little Grebe (<i>Tachybaptus ruficollis</i>) [A004]</p> <p>Whooper Swan (<i>Cygnus cygnus</i>) [A038]</p> <p>Wigeon (<i>Anas penelope</i>) [A050]</p> <p>Teal (<i>Anas crecca</i>) [A052]</p> <p>Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</p> <p>Wetland and Waterbirds [A999]</p>	<p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p>	<p>Upgrade Corofin WTP. Option study area is adjacent to this European site.</p> <p>- Habitat degradation – changes in water quality (pollution)</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	<b>Y</b>
Ballyallia Lough SPA (004041)	9km	<p>Wigeon (<i>Anas penelope</i>) [A050]</p> <p>Gadwall (<i>Anas strepera</i>) [A051]</p> <p>Teal (<i>Anas crecca</i>) [A052]</p> <p>Mallard (<i>Anas platyrhynchos</i>) [A053]</p> <p>Shoveler (<i>Anas clypeata</i>) [A056]</p> <p>Coot (<i>Fulica atra</i>) [A125]</p> <p>Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</p> <p>Wetland and Waterbirds [A999]</p>	<p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p>	No impacts predicted given the works proposed are upgrade works in existing infrastructure and the distance from site.	No operational impacts are predicted.	<b>N</b>
River Shannon and River Fergus Estuaries SPA (004077)	17km	<p>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</p> <p>Whooper Swan (<i>Cygnus cygnus</i>) [A038]</p> <p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]</p> <p>Shelduck (<i>Tadorna tadorna</i>) [A048]</p> <p>Wigeon (<i>Anas penelope</i>) [A050]</p> <p>Teal (<i>Anas crecca</i>) [A052]</p> <p>Pintail (<i>Anas acuta</i>) [A054]</p> <p>Shoveler (<i>Anas clypeata</i>) [A056]</p> <p>Scaup (<i>Aythya marila</i>) [A062]</p> <p>Ringed Plover (<i>Charadrius hiaticula</i>) [A137]</p> <p>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</p> <p>Grey Plover (<i>Pluvialis squatarola</i>) [A141]</p>	<p>Breed</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p>	No impacts predicted given the works proposed are upgrade works in existing infrastructure and the distance from site.	No operational impacts are predicted.	<b>N</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Lapwing ( <i>Vanellus vanellus</i> ) [A142] Knot ( <i>Calidris canutus</i> ) [A143] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Greenshank ( <i>Tringa nebularia</i> ) [A164] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B			

Table C7.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAG-501 (TG1-SAG-016, TG1-SAG-057) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Inagh River Estuary SAC (000036)	5m	<b>Annex I habitats:</b> <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glaucopuccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	New watermain to interconnect Ennistymon and West Clare is adjacent to the European site and Ballymacraven WTP upgrade is hydrologically linked to the European site. Option study area is hydrologically linked and adjacent to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Carrowmore Point to Spanish Point and Islands SAC (001021)	1.6km	<b>Annex I habitats:</b> Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220]	A new pump and new watermain to interconnect Ennistymon and West Clare hydrologically linked to the European site. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	Y
Carrowmore Dunes SAC (002250)	8.2km	<b>Annex I habitats:</b> Reefs [1170] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <b>Annex II Species:</b> <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	No impacts predicted given a lack of any source-pathway-receptor between the construction works and European site.	No operational impacts are predicted.	N
Kilkee Reefs SAC (002264)	15.5km	<b>Annex I habitats:</b> Large shallow inlets and bays [1160] Reefs [1170] Submerged or partially submerged sea caves [8330]	No impacts predicted given a lack of any source-pathway-receptor between the construction works and European site.	No operational impacts are predicted.	N

Table C7.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAG-501 (TG1-SAG-016, TG1-SAG-057) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Mid-Clare Coast SPA (004182)	1.6km	Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Sanderling ( <i>Calidris alba</i> ) [A144] Purple Sandpiper ( <i>Calidris maritima</i> ) [A148] Dunlin ( <i>Calidris alpina</i> ) [A149] Turnstone ( <i>Arenaria interpres</i> ) [A169] Wetland and Waterbirds [A999]	Breed Non-B Non-B Non-B Non-B Non-B Non-B	A new pump and new watermain to interconnect Ennistymon and West Clare hydrologically linked to the European site. Option study area is hydrologically linked to this European. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Coole-Garryland SPA (004107)	11.2km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	A new pump is within the Zone of Influence of this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Cliffs of Moher SPA (004005)	9km	Fulmar ( <i>Fulmarus glacialis</i> ) [A009] Kittiwake ( <i>Rissa tridactyla</i> ) [A188] Guillemot ( <i>Uria aalge</i> ) [A199] Razorbill ( <i>Alca torda</i> ) [A200] Puffin ( <i>Fratercula arctica</i> ) [A204] Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	Breed Breed Breed Breed Breed Breed	No impacts predicted given the designated QI species and a lack of any source-pathway-receptor between the construction works and European site..	No operational impacts are predicted.	N
Inner Galway Bay SPA (004031)	17.9km	Black-throated Diver ( <i>Gavia arctica</i> ) [A002] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Grey Heron ( <i>Ardea cinerea</i> ) [A028] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	N/A Non-B Breed Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Breed	No impacts predicted given the closest works are the new watermain which is to be set in the road. Other new infrastructure will have no impacts given the distance to the site.	No operational impacts are predicted.	N

Table C7.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAG-506 (TG1-SAG-36, TG1-SAG-62) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
East Burren Complex SAC (001926)	0m	<p><b>Annex I habitats:</b>  Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]  Turloughs [3180]  Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]  Alpine and Boreal heaths [4060]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]  Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130]  Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]  Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]  Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]  Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]  Alkaline fens [7230]  Limestone pavements [8240]  Caves not open to the public [8310]  Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b>  <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]  <i>Lutra lutra</i> (Otter) [1355]</p>	<p>Increase GW abstraction from Turlough BH, upgrade Turlough WTP and decommission Carron WTP within the European site. A new pump is adjacent to the European site. A new watermain runs though and adjacent to the European site. Option study area is within and adjacent to this European site. Within ZOC.</p> <ul style="list-style-type: none"> <li>- Disturbance (including biological disturbance)</li> <li>- Physical loss of habitat</li> </ul>	<p>Increase GW abstraction from Turlough BH, upgrade Turlough WTP and decommission Carron WTP within the European site. A new pump is adjacent to the European site. A new watermain runs though and adjacent to the European site. Option study area is within and adjacent to this European site. Within ZOC.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Moneen Mountain SAC (000054)	0m	<p><b>Annex I habitats:</b>  Turloughs [3180]  Alpine and Boreal heaths [4060]  <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]  Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]  Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]  Limestone pavements [8240]</p> <p><b>Annex II species:</b>  <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]  <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p>	<p>Increase GW abstraction from Turlough BH within the ZOC for the European site. A new watermain runs adjacent to the European site. Option study area is adjacent to this European site.</p> <ul style="list-style-type: none"> <li>- Disturbance (including biological disturbance)</li> </ul>	<p>Increase GW abstraction from Turlough BH within the ZOC for the European site. A new watermain runs adjacent to the European site. Option study area is adjacent to this European site.</p> <ul style="list-style-type: none"> <li>- Habitat degradation – hydrological/hydrogeological changes</li> <li>- Water table/availability</li> </ul>	Y
Galway Bay Complex SAC (000268)	2.4km	<p><b>Annex I habitats:</b>  Mudflats and sandflats not covered by seawater at low tide [1140]  Coastal lagoons [1150]  Large shallow inlets and bays [1160]  Reefs [1170]  Perennial vegetation of stony banks [1220]  Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]  <i>Salicornia</i> and other annuals colonising mud and sand [1310]</p>	<p>No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.</p>	<p>No operational impacts are predicted.</p>	N



European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Turloughs [3180] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230] Limestone pavements [8240] <b>Annex II species:</b> <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365]			
Black Head-Poulsallagh Complex SAC (000020)	14.2km	<b>Annex I habitats:</b> Reefs [1170] Perennial vegetation of stony banks [1220] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210] Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) [6510] Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] <b>Annex II species:</b> <i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No impacts predicted given distance from site and a lack of any source-pathway-receptor between the works and European site.	No operational impacts are predicted.	<b>N</b>

Table C7.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAG-506 (TG1-SAG-36, TG1-SAG-62) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Inner Galway Bay SPA (004031)	2.4km	Black-throated Diver ( <i>Gavia arctica</i> ) [A002] Great Northern Diver ( <i>Gavia immer</i> ) [A003] Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Grey Heron ( <i>Ardea cinerea</i> ) [A028] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Wigeon ( <i>Anas penelope</i> ) [A050]	N/A Non-B Breed Non-B Non-B Non-B	Increase GW abstraction from Turlough BH, upgrade Turlough WTP, decommission Carron WTP and new pump and new watermain. Option study area is within the Zone of Influence of this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	<b>Y</b>

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Teal ( <i>Anas crecca</i> ) [A052] Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Lapwing ( <i>Vanellus vanellus</i> ) [A142] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Common Gull ( <i>Larus canus</i> ) [A182] Sandwich Tern ( <i>Sterna sandvicensis</i> ) [A191] Common Tern ( <i>Sterna hirundo</i> ) [A193] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Non-B Breed Breed			
Corofin Wetlands SPA (004220)	9km	Little Grebe ( <i>Tachybaptus ruficollis</i> ) [A004] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Wigeon ( <i>Anas penelope</i> ) [A050] Teal ( <i>Anas crecca</i> ) [A052] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Wetland and Waterbirds [A999]	Non-B Non-B Non-B Non-B Non-B	New pump station. Option study area is within the Zone of Influence of this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y
Coole-Garryland SPA (004107)	12.4km	Whooper Swan ( <i>Cygnus cygnus</i> ) [A038]	Non-B	New pump station. Option study area is within the Zone of Influence of this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y

Table C7.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG1-SAG-513 (TG1-SAG-23, TG1-SAG-70) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Shannon SAC (002165)	0m	<b>Annex I habitats:</b> Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	New watermain crosses the European site and a new pump station is within the European site. Option Study area is within this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance) - Physical loss of habitat - Mortality	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		<p><i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><b>Annex II species:</b></p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p>			
Carrowmore Point to Spanish Point and Islands SAC (001021)	8.4km	<p><b>Annex I habitats:</b></p> <p>Coastal lagoons [1150]</p> <p>Reefs [1170]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p>	<p>Increase SW abstraction from Doo Lough and upgrade existing New Doolough WTP.</p> <p>Decommission Old Doolough WTP. Option Study area is hydrologically linked to this European site.</p> <p>- Habitat degradation – changes in water quality (pollution)</p>	No operational impacts are predicted.	Y

Table C7.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG1-SAG-513 (TG1-SAG-23, TG1-SAG-70) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Shannon and River Fergus Estuaries SPA (004077)	200m	<p>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</p> <p>Whooper Swan (<i>Cygnus cygnus</i>) [A038]</p> <p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]</p> <p>Shelduck (<i>Tadorna tadorna</i>) [A048]</p> <p>Wigeon (<i>Anas penelope</i>) [A050]</p> <p>Teal (<i>Anas crecca</i>) [A052]</p> <p>Pintail (<i>Anas acuta</i>) [A054]</p> <p>Shoveler (<i>Anas clypeata</i>) [A056]</p> <p>Scaup (<i>Aythya marila</i>) [A062]</p> <p>Ringed Plover (<i>Charadrius hiaticula</i>) [A137]</p> <p>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</p> <p>Grey Plover (<i>Pluvialis squatarola</i>) [A141]</p> <p>Lapwing (<i>Vanellus vanellus</i>) [A142]</p> <p>Knot (<i>Calidris canutus</i>) [A143]</p> <p>Dunlin (<i>Calidris alpina</i>) [A149]</p> <p>Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</p> <p>Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]</p> <p>Curlew (<i>Numenius arquata</i>) [A160]</p> <p>Redshank (<i>Tringa totanus</i>) [A162]</p> <p>Greenshank (<i>Tringa nebularia</i>) [A164]</p> <p>Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</p>	<p>Breed</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p> <p>Non-B</p>	<p>New watermains crosses a hydrological link to the European site and a new pump station is adjacent to the European site. Option Study area is adjacent to and hydrologically linked to this European site.</p> <p>- Habitat degradation – changes in water quality (pollution)</p> <p>- Disturbance (including biological disturbance)</p>	No operational impacts are predicted.	Y

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Wetland and Waterbirds [A999]				
Mid-Clare Coast SPA (004182)	8.4km	Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Barnacle Goose ( <i>Branta leucopsis</i> ) [A045] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Sanderling ( <i>Calidris alba</i> ) [A144] Purple Sandpiper ( <i>Calidris maritima</i> ) [A148] Dunlin ( <i>Calidris alpina</i> ) [A149] Turnstone ( <i>Arenaria interpres</i> ) [A169] Wetland and Waterbirds [A999]	Breed Non-B Non-B Non-B Non-B Non-B Non-B	Increase SW abstraction from Doo Lough and upgrade existing New Doolough WTP. Decommission Old Doolough WTP. Option Study area is hydrologically linked to this European site. - Disturbance (including biological disturbance)	No operational impacts are predicted.	Y