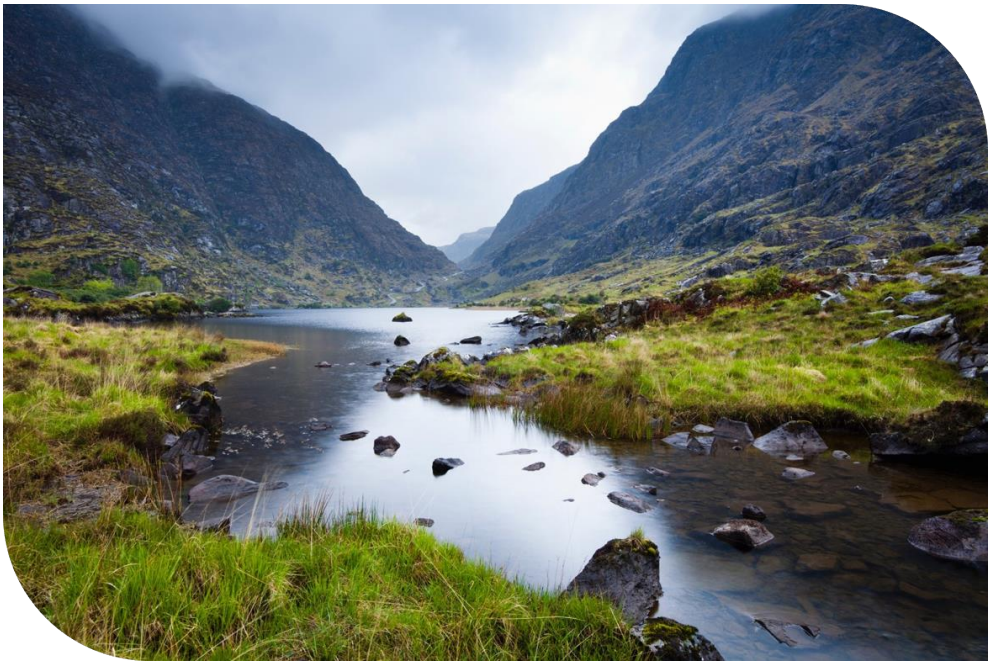
Spring 2023

Regional Water Resources Plan–South 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 legislates 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. Therefore in this NIS, which was developed prior to the name change, all references to Irish Water shall be construed as Uisce Éireann.

Baseline data included in the RWRP-SW 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-SW. 2019 was selected as the base year to align with the planning period (2019-2025) of the NWRP.

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 (e.g. Preferred Approach options TG2-SAH-099, TG2-SAH-094, TG2-SAH-169).

Table C1.1: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAH-524 (TG2-SAH-162 and TG2-SAH-162a) combined 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	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] Degraded raised bogs still capable of natural regeneration [7120] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Alkaline fens [7230] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Lutra lutra* (Otter) [1355]	New GW abstraction (outside of SAC), pumps, mains, WTPs. Mains cross SAC. 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)	New GW abstraction (outside of SAC), pumps, mains, WTPs. Mains cross SAC. Option study area is hydrologically linked to this European site. No operational impacts are predicted from GW abstraction as abstraction predicted to be low risk, estimated to be c. 2% of available recharge. Agricultural grassland predominates the surrounding landscape and no qualifying interests noted within the ZOC.	**Y**
Moanveanlagh Bog SAC (002351)	300m	**Annex I habitats** Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the *Rhynchosporion* [7150]	Option study area is hydrologically linked to this European site. Study area is downstream of SAC. However, impacts are unlikely given the study area is downstream of the SAC.	No operational impacts are predicted.	**N**

Table C1.2: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAH-524 (TG2-SAH-162 and TG2-SAH-162a) 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	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	80m	*Circus cyaneus* (Hen Harrier) [A082]	Breed	- Disturbance (including biological disturbance)	No operational impacts are predicted.	**Y**
River Shannon and River Fergus Estuaries SPA (004077)	1.2km	*Phalacrocorax carbo* (Cormorant) [A017] *Cygnus cygnus* (Whooper Swan) [A038] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Tadorna tadorna* (Shelduck) [A048] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Anas acuta* (Pintail) [A054] *Anas clypeata* (Shoveler) [A056] *Aythya marila* (Scaup) [A062] *Charadrius hiaticula* (Ringed Plover) [A137] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Calidris canutus* (Knot) [A143] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] *Tringa nebularia* (Greenshank) [A164] *Chroicocephalus ridibundus* (Black-headed Gull) [A179] Wetland and Waterbirds [A999]	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	WTP upgrade near river leading into SPA. SPA is downstream of study area. - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	**Y**

Table C1.3: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAH-512 (TG2-SAH-108 and TG2-SAH-108a) combined leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAH-512.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Mount Brandon SAC (000375)	80m	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction. Option study area is hydrologically linked to this European site. Within ZOC. - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction. Option study area is hydrologically linked to this European site. Within ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C1.4: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-038 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Akeragh, Banna and Barrow Harbour SAC (000332)	650m	**Annex I habitats** Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] European dry heaths [4030]	Increase GW abstraction. Option study area is hydrologically linked to this European site. ZOC in close proximity to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction. Option study area is hydrologically linked to this European site. ZOC in close proximity to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C1.5: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAH-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	
Kerry Head SPA (004189)	0m	*Fulmarus glacialis* (Fulmar) [A009] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	New mains running through SPA. 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)	New mains running through SPA. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**
Tralee Bay Complex SPA (004188)	700m	*Cygnus cygnus* (Whooper Swan) [A038] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Tadorna tadorna* (Shelduck) [A048] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Anas platyrhynchos* (Mallard) [A053] *Anas acuta* (Pintail) [A054] *Aythya marila* (Scaup) [A062] *Haematopus ostralegus* (Oystercatcher) [A130] *Charadrius hiaticula* (Ringed Plover) [A137] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Calidris alba* (Sanderling) [A144] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] *Arenaria interpres* (Turnstone) [A169] *Chroicocephalus ridibundus* (Black-headed Gull) [A179] *Larus canus* (Common Gull) [A182] Wetland and Waterbirds [A999]	Non-b Non-b	Increase GW abstraction. Option study area is hydrologically linked to this European site. ZOC in close proximity to this European site. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction. Option study area is hydrologically linked to this European site. ZOC in close proximity to this European site. No operational impacts are predicted.	**Y**

Table C1.6: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-225 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	**Annex I habitats** Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130]	New GW abstraction within SAC. Option study area is hydrologically linked to this European site. - Physical loss of habitats/supporting habitat	New GW abstraction within SAC. Option study area is hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] Degraded raised bogs still capable of natural regeneration [7120] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Alkaline fens [7230] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Lutra lutra* (Otter) [1355]	- Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	- Water table/availability	

Table C1.7: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAH-225 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	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	600m	*Circus cyaneus* (Hen Harrier) [A082]	Breed	- Disturbance (including biological disturbance)	No operational impacts are predicted.	**Y**

Table C1.8: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAH-531 (TG2-SAH-181, TG2-SAH-182 and TG2-SAH-204) combined leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	0m	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] 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 *Rhynchosporion* [7150] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Geomalacus maculosus* (Kerry Slug) [1024] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421] *Najas flexilis* (Slender Naiad) [1833] *Alosa fallax killarnensis* (Killarney Shad) [5046]	Increase SW abstraction from Lough Currane,within SAC and associated new mains which also cross the SAC. 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)	Increase SW abstraction from Lough Currane,within SAC and associated new mains which also cross the SAC. Option study area is hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Ballinskelligs Bay and Inny Estuary SAC (000335)	0m	**Annex I habitats** Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] **Annex II species**	New mains cross SAC. Option study area is hydrologically linked to this European site. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Petalophyllum ralfsii (Petalwort) [1395]	- Disturbance (including biological disturbance)		
Valencia Harbour/Portmagee Channel SAC (002262)	1km	**Annex I habitats** Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170]	Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted.	**Y**

Table C1.9: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAH-531 (TG2-SAH-181, TG2-SAH-182 and TG2-SAH-204) 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	
Iveragh Peninsula SPA (004154)	900m	*Fulmarus glacialis* (Fulmar) [A009] *Falco peregrinus* (Peregrine) [A103] *Rissa tridactyla* (Kittiwake) [A188] *Uria aalge* (Guillemot) [A199] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed Breed Breed	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 C1.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-065 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	New SW abstraction from Lough Gill and new mains within SAC. 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)	New SW abstraction from Lough Gill and new mains within SAC. 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	
		Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395]			
Mount Brandon SAC (000375)	2.2km	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Trichomanes speciosum* (Killarney Fern) [1421]	Option study area is hydrologically linked to this European site. However, impacts are unlikely given distance from site and the study area is downstream of the SAC.	No operational impacts are predicted.	**N**

Table C1.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAH-065 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	
Tralee Bay Complex SPA (004188)	0m	*Cygnus cygnus* (Whooper Swan) [A038] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Tadorna tadorna* (Shelduck) [A048] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Anas platyrhynchos* (Mallard) [A053] *Anas acuta* (Pintail) [A054] *Aythya marila* (Scaup) [A062] *Haematopus ostralegus* (Oystercatcher) [A130] *Charadrius hiaticula* (Ringed Plover) [A137] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Calidris alba* (Sanderling) [A144] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] *Arenaria interpres* (Turnstone) [A169] *Chroicocephalus ridibundus* (Black-headed Gull) [A179] *Larus canus* (Common Gull) [A182] Wetland and Waterbirds [A999]	Non-b Non-b	New SW abstraction from Lough Gill and new mains within SPA. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance) - Mortality	New SW abstraction from Lough Gill and new mains within SPA. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Dingle Peninsula SPA (004153)	1.5km	*Fulmarus glacialis* (Fulmar) [A009] *Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed	Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted	**Y**

Table C1.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAH-530 (TG2-SAH-177 and TG2-SAH-178) combined leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	0m	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260]	New SW abstraction from lower Leane catchment, new WTP and WTP upgrades within SAC. 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)	New SW abstraction from lower Leane catchment, new WTP and WTP upgrades within SAC. Option study area is hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] 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 *Rhynchosporion* [7150] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Geomalacus maculosus* (Kerry Slug) [1024] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421] *Najas flexilis* (Slender Naiad) [1833] *Alosa fallax killarnensis* (Killarney Shad) [5046]			
Castlemaine Harbour SAC (000343)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	New mains cross SAC and WTP adjacent to SAC. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New mains cross SAC and WTP adjacent to SAC. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395]			
Slieve Mish Mountains SAC (002185)	0m	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species** *Trichomanes speciosum* (Killarney Fern) [1421]	WTP upgrade within SAC. - Habitat degradation – changes in water quality (pollution)	WTP upgrade within SAC. No operational impacts are predicted.	**Y**
Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070)	140m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190]	WTP upgrade in close proximity to SAC. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	WTP upgrade in close proximity to SAC. No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395]			
Akeragh, Banna and Barrow Harbour SAC (000332)	260m	**Annex I habitats** Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] European dry heaths [4030]	WTP upgrades. Option study area is hydrologically linked to this European site. ZOC in close proximity to this European site. - Habitat degradation – changes in water quality (pollution)	WTP upgrades. Option study area is hydrologically linked to this European site. ZOC in close proximity to this European site. No operational impacts are predicted.	**Y**
Sheheree (Ardagh) Bog SAC (000382)	330m	**Annex I habitats** Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	SAC in close proximity to new mains. However, impacts are unlikely given the QI features it supports and no hydrological link.	SAC in close proximity to new mains. No operational impacts are predicted.	**N**

Table C1.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAH-530 (TG2-SAH-177 and TG2-SAH-178) 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	
Killarney National Park SPA (004038)	0m	*Falco columbarius* (Merlin) [A098] *Anser albifrons flavirostris* (Greenland White-fronted Goose) [A395]	Non-b Non-b	New SW abstraction and new WTP within SPA. Option study area is hydrologically linked to this European site. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction and new WTP within SPA. Option study area is hydrologically linked to this European site. No operational impacts are predicted due to QI present.	**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	
Castlemaine Harbour SPA (004029)	2.4km	*Gavia stellata* (Red-throated Diver) [A001] *Phalacrocorax carbo* (Cormorant) [A017] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Anas penelope* (Wigeon) [A050] *Anas platyrhynchos* (Mallard) [A053] *Anas acuta* (Pintail) [A054] *Aythya marila* (Scaup) [A062] *Melanitta nigra* (Common Scoter) [A065] *Haematopus ostralegus* (Oystercatcher) [A130] *Charadrius hiaticula* (Ringed Plover) [A137] *Calidris alba* (Sanderling) [A144] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Tringa totanus* (Redshank) [A162] *Tringa nebularia* (Greenshank) [A164] *Arenaria interpres* (Turnstone) [A169] *Pyrrhocorax pyrrhocorax* (Chough) [A346] 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	Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted	**Y**
Tralee Bay Complex SPA (004188)	325m	*Cygnus cygnus* (Whooper Swan) [A038] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Tadorna tadorna* (Shelduck) [A048] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Anas platyrhynchos* (Mallard) [A053] *Anas acuta* (Pintail) [A054] *Aythya marila* (Scaup) [A062] *Haematopus ostralegus* (Oystercatcher) [A130] *Charadrius hiaticula* (Ringed Plover) [A137] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Calidris alba* (Sanderling) [A144] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] *Arenaria interpres* (Turnstone) [A169] *Chroicocephalus ridibundus* (Black-headed Gull) [A179] *Larus canus* (Common Gull) [A182] Wetland and Waterbirds [A999]	Non-b Non-b	WTP upgrades. Option study area is hydrologically linked to this European site. ZOC in close proximity to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	WTP upgrades. Option study area is hydrologically linked to this European site. ZOC in close proximity to this European site. No operational impacts are predicted.	**Y**

Table C1.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-148 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAH-148.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	0m	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] 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 *Rhynchosporion* [7150] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Geomalacus maculosus* (Kerry Slug) [1024] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421] *Najas flexilis* (Slender Naiad) [1833] *Alosa fallax killarnensis* (Killarney Shad) [5046]	Increase GW abstraction within SAC. Option study area is hydrologically linked to this European site. Within ZOC. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction within SAC. Option study area is hydrologically linked to this European site. Within ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C1.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-170 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	0m	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] 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 *Rhynchosporion* [7150] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Geomalacus maculosus* (Kerry Slug) [1024] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421] *Najas flexilis* (Slender Naiad) [1833] *Alosa fallax killarnensis* (Killarney Shad) [5046]	New SW abstraction from Coomasaharn Lake and associated pipeline within SAC, upgrade existing 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)	New SW abstraction from Coomasaharn Lake and associated pipeline within SAC, upgrade existing WTP. . Option study area is hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Castlemaine Harbour SAC (000343)	1.4km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210]	Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

		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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395]			

Table C1.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAH-170 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	
Castlemaine Harbour SPA (004029)	1.2km	*Gavia stellata* (Red-throated Diver) [A001] *Phalacrocorax carbo* (Cormorant) [A017] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Anas penelope* (Wigeon) [A050] *Anas platyrhynchos* (Mallard) [A053] *Anas acuta* (Pintail) [A054] *Aythya marila* (Scaup) [A062] *Melanitta nigra* (Common Scoter) [A065] *Haematopus ostralegus* (Oystercatcher) [A130] *Charadrius hiaticula* (Ringed Plover) [A137] *Calidris alba* (Sanderling) [A144] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Tringa totanus* (Redshank) [A162] *Tringa nebularia* (Greenshank) [A164] *Arenaria interpres* (Turnstone) [A169] *Pyrrhocorax pyrrhocorax* (Chough) [A346] 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	Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. European site is downstream of 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	
Iveragh Peninsula SPA (004154)	500m	*Fulmarus glacialis* (Fulmar) [A009] *Falco peregrinus* (Peregrine) [A103] *Rissa tridactyla* (Kittiwake) [A188] *Uria aalge* (Guillemot) [A199] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed Breed Breed	- Disturbance (including biological disturbance)	No operational impacts are predicted	**Y**

Table C1.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAH-540 (TG2-SAH-215) combined leading to potential LSEs. Note: the new SW abstraction from the lower Leane catchment included in this option is the same new SW abstraction included in SAH-530, and so there is only one abstraction associated with option SAH-530 and SAH-540.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	0m	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] 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 *Rhynchosporion* [7150] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Geomalacus maculosus* (Kerry Slug) [1024] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106]	New SW abstraction from lower Leane catchment within SAC. 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)	New SW abstraction from lower Leane catchment within SAC. 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	
		Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421] *Najas flexilis* (Slender Naiad) [1833] *Alosa fallax killarnensis* (Killarney Shad) [5046]			
Castlemaine Harbour SAC (000343)	8.4km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395]	Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**
Blackwater River (Cork/Waterford) SAC (002170)	2.2km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species**	Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C1.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAH-540 (TG2-SAH-215) combined leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note: the new SW abstraction from the lower Leane catchment included in this option is the same new SW abstraction included in SAH-530, and so there is only one abstraction associated with option SAH-530 and SAH-540.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Killarney National Park SPA (004038)	0m	*Falco columbarius* (Merlin) [A098] *Anser albifrons flavirostris* (Greenland White-fronted Goose) [A395]	Non-b Non-b	New SW abstraction within SPA. Option study area is hydrologically linked to this European site. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction within SPA. Option study area is hydrologically linked to this European site. No operational impacts are predicted due to QI present.	**Y**
Castlemaine Harbour SPA (004029)	20.3km	*Gavia stellata* (Red-throated Diver) [A001] *Phalacrocorax carbo* (Cormorant) [A017] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Anas penelope* (Wigeon) [A050] *Anas platyrhynchos* (Mallard) [A053] *Anas acuta* (Pintail) [A054] *Aythya marila* (Scaup) [A062] *Melanitta nigra* (Common Scoter) [A065] *Haematopus ostralegus* (Oystercatcher) [A130] *Charadrius hiaticula* (Ringed Plover) [A137] *Calidris alba* (Sanderling) [A144] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Tringa totanus* (Redshank) [A162] *Tringa nebularia* (Greenshank) [A164] *Arenaria interpres* (Turnstone) [A169] *Pyrrhocorax pyrrhocorax* (Chough) [A346] 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	Option study area is hydrologically linked to this European site. European site is downstream of study area. However, impacts are unlikely given distance from site and the QI features it supports.	Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**N**

Table C1.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-122 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAH-122.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Mount Brandon SAC (000375)	550m	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction. Option study area is hydrologically linked to this European site as study area is within ZOC. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction. Option study area is hydrologically linked to this European site as study area is within ZOC. However, the edge of the SAC which overlaps the ZOC is at c. 275m elevation whereas the abstraction source is c. 75m elevation. Significant effect ruled out as the QIs for this SAC are at a higher elevation than the abstraction point and will therefore not be impacted by the abstraction. Therefore, no operational impacts are predicted.	**Y**

Table C1.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-173 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Mount Brandon SAC (000375)	1km	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130]	WTP upgrade only, no deficit. Option study area is hydrologically linked to this European site. Within ZOC. Option study area is downstream of European site. However, impacts are unlikely given distance from site, the QI features it supports, and due to the works being downstream of the SAC.	WTP upgrade only, no deficit. Option study area is hydrologically linked to this European site. Within ZOC. Option study area is downstream of European site. However, impacts are unlikely given distance from site, the QI features it supports, and due to the works being downstream of the SAC.	**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 (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Trichomanes speciosum* (Killarney Fern) [1421]			
Castlemaine Harbour SAC (000343)	1.5km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395]	WTP upgrade only, no deficit. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade only, no deficit. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C1.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAH-173 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	
Dingle Peninsula SPA (004153)	450m	*Fulmarus glacialis* (Fulmar) [A009] *Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed	Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted	**Y**
Castlemaine Harbour SPA (004029)	1.5km	*Gavia stellata* (Red-throated Diver) [A001] *Phalacrocorax carbo* (Cormorant) [A017] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Anas penelope* (Wigeon) [A050] *Anas platyrhynchos* (Mallard) [A053] *Anas acuta* (Pintail) [A054] *Aythya marila* (Scaup) [A062] *Melanitta nigra* (Common Scoter) [A065] *Haematopus ostralegus* (Oystercatcher) [A130] *Charadrius hiaticula* (Ringed Plover) [A137] *Calidris alba* (Sanderling) [A144] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Tringa totanus* (Redshank) [A162] *Tringa nebularia* (Greenshank) [A164] *Arenaria interpres* (Turnstone) [A169] *Pyrrhocorax pyrrhocorax* (Chough) [A346] 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	Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted	**Y**

Table C1.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-138 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Mount Brandon SAC (000375)	2km	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]	New GW abstraction. Option study area is hydrologically linked to this European site. Option study area is downstream of European site. However, impacts are unlikely given distance from site, the QI features it supports, and due to the works being downstream of the SAC.	New GW abstraction. Option study area is hydrologically linked to this European site. Option study area is downstream of European site. However, impacts are unlikely given distance from site, the QI features it supports, and due to the works being downstream of the SAC.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Trichomanes speciosum* (Killarney Fern) [1421]			
Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070)	3km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395]	New GW abstraction. Option study area is hydrologically linked to this European site. European site is downstream of option study area. - Habitat degradation – changes in water quality (pollution)	New GW abstraction. Option study area is hydrologically linked to this European site. European site is downstream of option study area. No operational impacts are predicted	**Y**

Table C1.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAH-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	
Dingle Peninsula SPA (004153)	2.3km	*Fulmarus glacialis* (Fulmar) [A009] *Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed	No impacts are predicted	No operational impacts are predicted	**N**
Castlemaine Harbour SPA (004029)	3km	*Gavia stellata* (Red-throated Diver) [A001] *Phalacrocorax carbo* (Cormorant) [A017] *Branta bernicla hrota* (Light-bellied Brent Goose) [A046] *Anas penelope* (Wigeon) [A050] *Anas platyrhynchos* (Mallard) [A053] *Anas acuta* (Pintail) [A054] *Aythya marila* (Scaup) [A062] *Melanitta nigra* (Common Scoter) [A065] *Haematopus ostralegus* (Oystercatcher) [A130] *Charadrius hiaticula* (Ringed Plover) [A137] *Calidris alba* (Sanderling) [A144] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Tringa totanus* (Redshank) [A162] *Tringa nebularia* (Greenshank) [A164] *Arenaria interpres* (Turnstone) [A169] *Pyrrhocorax pyrrhocorax* (Chough) [A346] 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	New GW abstraction. Option study area is hydrologically linked to this European site. European site is downstream of option study area. - Habitat degradation – changes in water quality (pollution)	New GW abstraction. Option study area is hydrologically linked to this European site. European site is downstream of option study area. No operational impacts are predicted	**Y**

Table C1.24: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAH-533 (TG2-SAH-186 and TG2-SAH-187) combined leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blasket Islands SAC (002172)	250m	**Annex I habitats** Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] **Annex II species** *Phocoena phocoena* (Harbour Porpoise) [1351] *Halichoerus grypus* (Grey Seal) [1364]	Increase GW abstraction, upgrade WTP, new storage, new pump, lay new network. Option study area is hydrologically linked to this European site. European site is downstream of option study area. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction, upgrade WTP, new storage, new pump, lay new network. Option study area is hydrologically linked to this European site. European site is downstream of option study area. No operational impacts are predicted	**Y**

Table C1.25: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAH-533 (TG2-SAH-186 and TG2-SAH-187) 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	
Dingle Peninsula SPA (004153)	0m	*Fulmarus glacialis* (Fulmar) [A009] *Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed	Increase GW abstraction, upgrade WTP, new storage, new pump, lay new network. Option study area is hydrologically linked to this European site. European site is downstream of option study area. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction, upgrade WTP, new storage, new pump, lay new network. Option study area is hydrologically linked to this European site. European site is downstream of option study area. However, no operational impacts are predicted.	**Y**
Blasket Islands SPA (004008)	2.8km	*Fulmarus glacialis* (Fulmar) [A009] *Puffinus puffinus* (Manx Shearwater) [A013] *Hydrobates pelagicus* (Storm Petrel) [A014] *Phalacrocorax aristotelis* (Shag) [A018] *Larus fuscus* (Lesser Black-backed Gull) [A183] *Larus argentatus* (Herring Gull) [A184] *Rissa tridactyla* (Kittiwake) [A188] *Sterna paradisaea* (Arctic Tern) [A194] *Alca torda* (Razorbill) [A200] *Fratercula arctica* (Puffin) [A204] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed Breed Breed Breed Breed Breed Breed Breed Breed	Increase GW abstraction, upgrade WTP, new storage, new pump, lay new network. Option study area is hydrologically linked to this European site. European site is downstream of option study area. No impacts predicted due to SPA being offshore.	Increase GW abstraction, upgrade WTP, new storage, new pump, lay new network. Option study area is hydrologically linked to this European site. European site is downstream of option study area. No operational impacts are predicted	**N**

Table C1.26: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAH-179 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAH-179.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Mount Brandon SAC (000375)	30m	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130]	New SW abstraction, mains and WTP upgrades adjacent to SAC. Option study area is hydrologically linked to this European site. European site is upstream of option study area. However, the works are downstream of the SAC and the new mains are outside of the SAC connecting to existing mains, so no habitat loss predicted. The SW abstraction will not impact freshwater pearl mussel through disturbance or pollution as they are not found in the Milltown River where the abstraction is from. Therefore, due to the location of the works no impacts on any QI are predicted.	New SW abstraction, mains and WTP upgrades adjacent to SAC. Option study area is hydrologically linked to this European site. European site is upstream of option study area. However, the works are downstream of the SAC and the new mains are outside of the SAC connecting to existing mains, so no habitat loss predicted. The SW abstraction will not impact freshwater pearl mussel through disturbance or pollution as they are not found in the Milltown River where the abstraction is from. Therefore, due to the location of the works no impacts on any QI 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 (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Trichomanes speciosum* (Killarney Fern) [1421]			

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 options TG2-SAI-146, TG2-SAI-212, TG2-SAI-450, TG2-SAI-486, Group TG2-SAI-820, TG2-SAI-050, TG2-SAI-102, TG2-SAI-176, TG2-SAI-239, TG2-SAI-240, TG2-SAI-273, TG2-SAI-324, TG2-SAI-410, TG2-SAI-442, TG2-SAI-455, TG2-SAI-508, TG2-SAI-526, TG2-SAI-772, TG2-SAI-774, TG2-SAI-778, TG2-SAI-781, and Group TG2-SAI-952).

Table C2.1: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-011 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
St. Gobnet's Wood SAC (000106)	1.3km	**Annex I habitats** Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	New SW abstraction and upgrade WTP. Option study area is in close proximity to this European Site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	New SW abstraction and upgrade WTP. Option study area is in close proximity to this European Site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.2: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-011 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	
Mullaghanish to Musheramore Mountains SPA (004162)	1.2km	*Circus cyaneus* (Hen Harrier) [A082]	Breed	New SW abstraction and upgrade WTP. Option study area is in close proximity to this European Site. - Disturbance (including biological disturbance).	New SW abstraction and upgrade WTP. Option study area is in close proximity to this European Site. No impacts are predicted due to a lack of hydrological link.	**Y**

Table C2.3: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-060 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
The Gearagh SAC (000108)	14.2km	**Annex I habitats** Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation [3270] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] **Annex II species** *Lutra lutra* (Otter) [1355]	Increase SW from Bunsheelin River and upgrade WTP. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Increase SW from Bunsheelin River and upgrade WTP. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts predicted given distance from site.	**Y**

Table C2.4: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-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	
The Gearagh SPA (004109)	14.2km	*Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Anas platyrhynchos* (Mallard) [A053] *Fulica atra* (Coot) [A125] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase SW from Bunsheelin River and upgrade WTP. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Increase SW from Bunsheelin River and upgrade WTP. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts predicted given distance from site.	**Y**

Table C2.5: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-193 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note: no SACs within ZOI for TG2-SAI-193.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Ballycotton Bay SPA (004022)	3.5km	*Anas crecca* (Teal) [A052] *Charadrius hiaticula* (Ringed Plover) [A137] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Arenaria interpres* (Turnstone) [A169] *Larus canus* (Common Gull) [A182] *Larus fuscus* (Lesser Black-backed Gull) [A183] 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	New GW abstraction (karstic region) and new WTP to supply deficit. Option study area is in close proximity to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	New GW abstraction (karstic region) and new WTP to supply deficit. Option study area is in close proximity to a hydrological link to this European site. No operational impacts predicted as the wetland habitat is tidal dependent. GW abstraction not considered significant impact.	**Y**

Table C2.6: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-457 leading to potential LSEs. Note: no SPAs within ZOI for TG2-SAI-457.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Barley Cove to Ballyrisode Point SAC (001040)	0m	**<u>Annex I habitats:</u>** 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 (Glauco-Puccinellietalia maritimae) [1330]	Increase SW abstraction from Goleen Intake and upgrade Goleen WTP. Significant reduction in yield in 2018. Option study area is within this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase SW abstraction from Goleen Intake and upgrade Goleen WTP. Significant reduction in yield in 2018. 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	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] **Annex II species:** *Petalophyllum ralfsii* (Petalwort) [1395]			

Table C2.7: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-468 leading to potential LSEs. Note: no SPAs within ZOI for TG2-SAI-468.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Caha Mountains SAC) (000093)	100m	**Annex I habitats:** Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024] *Trichomanes speciosum* (Killarney Fern) [1421]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is adjacent to European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is adjacent to European site. No operational impacts predicted.	**Y**
Glengarriff Harbour and Woodland SAC (000090)	800m	**Annex I habitats:** Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]	Option study area is close to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is close to a hydrological link to this European site. No operational impacts predicted.	**Y**

Table C2.8: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-480 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note no SACs within ZOI of TG2-SAI-480

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Beara Peninsula SPA (004155)	360m	*Fulmarus glacialis* (Fulmar) [A009] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	New GW abstraction to supply deficit and upgrade WTP. Abandon existing SW source. Option study area is close to a hydrological link to this European site. Within ZOC. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction to supply deficit and upgrade WTP. Abandon existing SW source. Option study area is close to a hydrological link to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C2.9: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-498 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Barley Cove to Ballyrisode Point SAC (001040)	1.4km	**Annex I habitats:** 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 (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] **Annex II species:** *Petalophyllum ralfsii* (Petalwort) [1395]	New GW abstraction and upgrade Toormore WTP to supply deficit. Option study area is close to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	New GW abstraction and upgrade Toormore WTP to supply deficit. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site.	**Y**
Roaringwater Bay and Islands SAC (000101)	2.8km	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] **Annex II species:** *Phocoena phocoena* (Harbour Porpoise) [1351] *Lutra lutra* (Otter) [1355]	Option study area is close to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Halichoerus grypus (Grey Seal) [1364]			

Table C2.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-498 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	
Sheep's Head to Toe Head SPA (004156)	6.5km	*Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	New GW abstraction and upgrade Toormore WTP to supply deficit. Option study area is close to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	New GW abstraction and upgrade Toormore WTP to supply deficit. Option study area is close to a hydrological link to this European site. No operational impacts are predicted given distance from site.	**Y**

Table C2.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-630 leading to potential LSEs. Note: no SPAs within ZOI for TG2-SAI-630.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Kenmare River SAC (002158)	2.2km	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Submerged or partially submerged sea caves [8330]	New SW abstraction from Kenmare River and new WTP. Hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction from Kenmare River and new WTP. Hydrologically linked to this European site. No operational impacts predicted given distance from site and size of abstraction.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Annex II species: *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra (*Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]			
Old Domestic Building, Dromore Wood SAC (000353)	9.5km	**Annex II species:** *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-643 leading to potential LSEs. Note: no SPAs within ZOI of TG2-SAI-643.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Kenmare River SAC (002158)	3.5km	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Submerged or partially submerged sea caves [8330] **Annex II species:** *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	Increase SW abstraction from Lough Dromtine. Hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Increase SW abstraction from Lough Dromtine. Hydrologically linked to this European site. No operational impacts predicted given distance from site and abstraction is within sustainable limit.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		*Lutra lutra (*Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]			
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	400m	**Annex I habitats:** Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] 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 Rhynchosporion [7150] Old sessile oak woods with *Ilex* and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421] *Najas flexilis* (Slender Naiad) [1833] *Alosa fallax killarnensis* (Killarney Shad) [5046]	Increase SW abstraction from Lough Dromtine. Option study area is in close proximity to this European site - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase SW abstraction from Lough Dromtine. Option study area is in close proximity to this European site No operational impacts predicted due to lack of hydrological link from abstraction to site.	**Y**

Table C2.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-645 leading to potential LSEs. Note: no SPAs within ZOI of TG2-SAI-645.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Kilgarvan Ice House SAC (000364)	1.4km	**Annex II species:** *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	New GW abstraction, new WTP and new mains. Option study area is hydrologically linked to this European site. Within ZOC. - Physical loss of habitats/supporting habitat - Disturbance (including biological disturbance)	New GW abstraction, new WTP and new mains. Option study area is hydrologically linked to this European site. Within ZOC. No operational impacts predicted due to QI present.	**Y**
Kenmare River SAC (002158)	10.3km	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Submerged or partially submerged sea caves [8330] **Annex II species:** *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra (*Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]	Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. No operational impacts predicted given distance from site.	**Y**
Old Domestic Building, Dromore Wood SAC (000353)	17.7km	**Annex II species:** *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-652 leading to potential LSEs. Note: no SPAs within ZOI of TG2-SAI-652

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Kenmare River SAC (002158)	2.3km	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Submerged or partially submerged sea caves [8330] **Annex II species:** *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra (*Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]	New SW abstraction from Glenmore Lake and upgrade WTP. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	New SW abstraction from Glenmore Lake and upgrade WTP. Option study area is hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Caha Mountains SAC (000093)	350m	**Annex I habitats:** Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]	New SW abstraction from Glenmore Lake and upgrade WTP. Option study area is in close proximity to this European site. - Disturbance (including biological disturbance)	New SW abstraction from Glenmore Lake and upgrade WTP. Option study area is in close proximity to this European site. No operational impacts predicted due to a lack of hydrological link.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C2.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-660 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Farranamanagh Lough SAC (002189)	690m	**Annex I habitats:** Coastal lagoons [1150] Perennial vegetation of stony banks [1220]	New GW abstraction and abandon existing GW source. New WTP. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	New GW abstraction and abandon existing GW source. New WTP. Option study area is hydrologically linked to this European site. No operational impacts predicted due to QI present.	**Y**
Sheep's Head SAC (000102)	440m	**Annex I habitats:** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024]	Option study area is in close proximity to a hydrological link to this European site. Within ZOC. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is in close proximity to a hydrological link to this European site. Within ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C2.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-660 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	
Sheep's Head to Toe Head SPA (004156)	1.4km	*Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	New GW abstraction and abandon existing GW source. New WTP. Option study area is in close proximity to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	New GW abstraction and abandon existing GW source. New WTP. Option study area is in close proximity to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-768 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Kenmare River SAC (002158)	260m	**Annex I habitats:** Large shallow inlets and bays [1160]	New raw water storage for this WRZ. Based on requiring 100 days supply of 13m3/d deficit. Increased GW abstraction, WTP upgrade and new main. Option study area is hydrologically linked to European site.	New raw water storage for this WRZ. Based on requiring 100 days supply of 13m3/d deficit. Increased GW abstraction, WTP upgrade and	**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] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Submerged or partially submerged sea caves [8330] **Annex II species:** *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra (*Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]	- Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	new main. Option study area is hydrologically linked to European site. However, no operational impacts predicted as the SAC is not within the ZOC for this abstraction.	

Table C2.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-768 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	
Beara Peninsula SPA (004155)	0m	*Fulmarus glacialis* (Fulmar) [A009] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	New raw water storage for this WRZ. Based on requiring 100 days supply of 13m3/d deficit. Increased GW abstraction, WTP upgrade and new main. Option study area is within this European site, but new infrastructure outside of SPA boundary. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New raw water storage for this WRZ. Based on requiring 100 days supply of 13m3/d deficit. Increased GW abstraction, WTP upgrade and new main. Option study area is within this European site, but new infrastructure outside of SPA boundary. No operational impacts predicted.	**Y**
The Bull and The Cow	6.3km	*Hydrobates pelagicus* (Storm Petrel) [A014] *Morus bassanus* (Gannet) [A016]	Breed Breed	Option study area is close to a hydrological link to this European site.	Option study area is close to a hydrological link to this European site.	**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	
Rocks SPA (004066)		*Fratercula arctica* (Puffin) [A204]	Breed	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No impacts are predicted given distance from site, and due to a lack of hydrological link.	

Table C2.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-771 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
The Gearagh SAC (000108)	7.4km	**Annex I habitats** Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation [3270] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] **Annex II species** *Lutra lutra* (Otter) [1355]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is hydrologically linked to European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is hydrologically linked to European site. No operational impacts predicted	**Y**

Table C2.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-771 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	
The Gearagh SPA (004109)	8.5km	*Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Anas platyrhynchos* (Mallard) [A053] *Fulica atra* (Coot) [A125] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is hydrologically linked to European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is hydrologically linked to European site. No operational impacts predicted	**Y**

Table C2.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-779 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Courtmacsherry Estuary SAC (001230)	11.2km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is hydrologically linked to European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is hydrologically linked to European site. No operational impacts predicted	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]			

Table C2.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAI-779 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	
Courtmacsherry Bay SPA (004219)	11.2km	*Gavia immer* (Great Northern Diver) [A003] *Tadorna tadorna* (Shelduck) [A048] *Anas penelope* (Wigeon) [A050] *Mergus serrator* (Red-breasted Merganser) [A069] *Pluvialis apricaria* (Golden Plover) [A140] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Chroicocephalus ridibundus* (Black-headed Gull) [A179] *Larus canus* (Common Gull) [A182] 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	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is hydrologically linked to European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is hydrologically linked to European site. No operational impacts predicted.	**Y**

Table C2.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-784 leading to potential LSEs. Note: no SPAs within ZOI for TG2-SAI-784.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Barley Cove to Ballyrisode Point SAC (001040)	0m	**Annex I habitats:** 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 (Glauco-Puccinellietalia maritimae) [1330]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is within this European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Option study area is within this European site. No operational impacts predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] **Annex II species:** *Petalophyllum ralfsii* (Petalwort) [1395]			

Table C2.24: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-877 (TG2-SAI-231, TG2-SAI-293) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Ballymacoda (Clonpriest and Pillmore) SAC (000077)	9.3km	**Annex I habitats:** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410]	Increase existing GW abstraction from infiltration gallery and supply deficit. Rationalise Dungourney WTP to Mogeely WRZ. Option study area is hydrologically linked to European site. - Habitat degradation – changes in water quality (pollution)	Increase existing GW abstraction from infiltration gallery and supply deficit. Rationalise Dungourney WTP to Mogeely WRZ. Option study area is hydrologically linked to European site. No operational impacts predicted due to distance from site.	**Y**

Table C2.25: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-877 (TG2-SAI-231, TG2-SAI-293) 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	
Ballymacoda Bay SPA (004023)	6.7km	*Anas penelope* (Wigeon) [A050]	Non-b	Increase existing GW abstraction from infiltration gallery and supply deficit. Rationalise Dungourney WTP to Mogeely WRZ. Option study area is hydrologically linked to European site. - Habitat degradation – changes in water quality (pollution)	Increase existing GW abstraction from infiltration gallery and supply deficit. Rationalise Dungourney WTP to Mogeely WRZ. Option study area is hydrologically linked to European site. No operational impacts predicted due to distance from site.	**Y**
		Anas crecca (Teal) [A052]	Non-b			
		Charadrius hiaticula (Ringed Plover) [A137]	Non-b			
		Pluvialis apricaria (Golden Plover) [A140]	Non-b			
		Pluvialis squatarola (Grey Plover) [A141]	Non-b			
		Vanellus vanellus (Lapwing) [A142]	Non-b			
		Calidris alba (Sanderling) [A144]	Non-b			
		Calidris alpina (Dunlin) [A149]	Non-b			
		Limosa limosa (Black-tailed Godwit) [A156]	Non-b			
		Limosa lapponica (Bar-tailed Godwit) [A157]	Non-b			
		Numenius arquata (Curlew) [A160]	Non-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	
		Tringa totanus (Redshank) [A162]	Non-b			
		Arenaria interpres (Turnstone) [A169]	Non-b			
		Chroicocephalus ridibundus (Black-headed Gull) [A179]	Non-b			
		Larus canus (Common Gull) [A182]	Non-b			
		Larus fuscus (Lesser Black-backed Gull) [A183]	Non-b			
		Wetland and Waterbirds [A999]				

Table C2.26: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-897 (TG2-SAI-399, TG2-SAI-434) leading to potential LSEs. Note: no SPAs within ZOI of TG2-SAI-897.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Bandon River SAC (002172)	1km	**Annex I habitats:** Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] **Annex II species:** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Lampetra planeri* (Brook Lamprey) [1096]	Increase SW abstraction from Curraghlicky Lake and upgrade WTP. Interconnect Dunmanway and Drinagh WRZ. Supply deficit from Curraghlicky Lake. Option study area is hydrologically linked to European site and is within freshwater pearl mussel catchment zone. - Habitat degradation – changes in water quality (pollution)	Increase SW abstraction from Curraghlicky Lake and upgrade WTP. Interconnect Dunmanway and Drinagh WRZ. Supply deficti from Curraghlicky Lake. Option study area is hydrologically linked to European site and is within freshwater pearl mussel catchment zone. No operational impacts predicted due to size of abstraction.	**Y**

Table C2.27: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-923 (TG2-SAI-641, TG2-SAI-642) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	0m	**Annex I habitats:** Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Molinia meadows on calcareous, peaty or clayey-silt-laden soils	Increase abstraction from Lough Currane and supply Caherdaniel. Supplement Caherdaniel from Waterville. Construction of new network within the SAC. Network would be laid in existing road network. Option study area is within this European site - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase abstraction from Lough Currane and supply Caherdaniel.Supplement Caherdaniel from Waterville. Construction of new network within the SAC. Network would be laid in existing road network. 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	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		(Molinion caeruleae) [6410] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Old sessile oak woods with *Ilex* and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421] *Najas flexilis* (Slender Naiad) [1833] *Alosa fallax killarnensis* (Killarney Shad) [5046]			
Ballinskelligs Bay and Inny Estuary SAC (000335)	1.5km	**Annex I habitats:** Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] **Annex II species:** *Petalophyllum ralfsii* (Petalwort) [1395]	Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. No operational impacts predicted due to size of abstraction.	**Y**
Kenmare River SAC (002158)	200m	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is hydrologically linked to this European site. No operational impacts predicted due to size of abstraction.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Submerged or partially submerged sea caves [8330] **Annex II species:** *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra (*Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]			

Table C2.28: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-923 (TG2-SAI-641, TG2-SAI-642) 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	
Iveragh Peninsula SPA (004154)	5.2km	*Fulmarus glacialis* (Fulmar) [A009] *Falco peregrinus* (Peregrine) [A103] *Rissa tridactyla* (Kittiwake) [A188] *Uria aalge* (Guillemot) [A199] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed Breed Breed	Increase abstraction from Lough Currane and supply Caherdaniel.Supplement Caherdaniel from Waterville. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Increase abstraction from Lough Currane and supply Caherdaniel.Supplement Caherdaniel from Waterville. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Deenish Island and Scariff Island SPA (004175)	10.3km	*Fulmarus glacialis* (Fulmar) [A009] *Puffinus puffinus* (Manx Shearwater) [A013] *Hydrobates pelagicus* (Storm Petrel) [A014] *Larus fuscus* (Lesser Black-backed Gull) [A183] *Sterna paradisaea* (Arctic Tern) [A194]	Breed Breed Breed Breed Breed	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.29: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-949 (TG2-SAI-830, TG2-SAI-831, TG2-SAI-832, TG2-SAI-833) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Ballymacoda (Clonpriest and Pillmore) SAC (000077)	0m	**Annex I habitats:** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410]	New GW abstraction (karstic) and new WTP to supply deficit. Rationalise Knockadoon, Ballymacoda and Kilcraheen to Youghal (new GW source). Option study area is within this European site. Within ZOC. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction (karstic) and new WTP to supply deficit. Rationalise Knockadoon, Ballymacoda and Kilcraheen to Youghal (new GW source). Option study area is within this European site. Within ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Blackwater River (Cork/Waterford) SAC (002170)	900m	**Annex I habitats:** 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 (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	Option study area is hydrologically linked to this European site. Abstraction point within ZOC. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is hydrologically linked to this European site. Abstraction point within ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Ardmore Head SAC (002123)	9.8km	**Annex I habitats:** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.30: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-949 (TG2-SAI-830, TG2-SAI-831, TG2-SAI-832, TG2-SAI-833) 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	
Ballymacoda Bay SPA (004023)	0m	*Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Charadrius hiaticula* (Ringed Plover) [A137] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Calidris alba* (Sanderling) [A144] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] *Arenaria interpres* (Turnstone) [A169] *Chroicocephalus ridibundus* (Black-headed Gull) [A179] *Larus canus* (Common Gull) [A182] *Larus fuscus* (Lesser Black-backed Gull) [A183] 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	New GW abstraction (karstic) and new WTP to supply deficit. Rationalise Knockadoon, Ballymacoda and Kilcraheen to Youghal (new GW source). Option study area is within this European site. Within ZOC. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction (karstic) and new WTP to supply deficit. Rationalise Knockadoon, Ballymacoda and Kilcraheen to Youghal (new GW source). Option study area is within this European site. Within ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Blackwater Estuary SPA (004028)	900m	*Anas penelope* (Wigeon) [A050] *Pluvialis apricaria* (Golden Plover) [A140] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [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. Abstraction point within ZOC. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Option study area is hydrologically linked to this European site. Abstraction point within ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Ballycotton Bay SPA (004022)	13.1km	*Anas crecca* (Teal) [A052] *Charadrius hiaticula* (Ringed Plover) [A137] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Limosa limosa* (Black-tailed Godwit) [A156]	Non-b Non-b Non-b Non-b Non-b Non-b	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**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	
		Limosa lapponica (Bar-tailed Godwit) [A157]	Non-b			
		Numenius arquata (Curlew) [A160]	Non-b			
		Arenaria interpres (Turnstone) [A169]	Non-b			
		Larus canus (Common Gull) [A182]	Non-b			
		Larus fuscus (Lesser Black-backed Gull) [A183]	Non-b			
		Wetland and Waterbirds [A999]				
Helvick Head to Ballyquin SPA (004192)	14.8km	*Phalacrocorax carbo* (Cormorant) [A017]	Breed	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
		Falco peregrinus (Peregrine) [A103]	Breed			
		Larus argentatus (Herring Gull) [A184]	Breed			
		Rissa tridactyla (Kittiwake) [A188]	Breed			
		Pyrrhocorax pyrrhocorax (Chough) [A346]	Breed			

Table C2.31: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-950 (TG2-SAI-836, TG2-SAI-837) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Ballymacoda (Clonpriest and Pillmore) SAC (000077)	2.8km	**Annex I habitats:** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410]	Increase GW abstraction (karstic) and supply deficit. Rationalise Ballykilty to Killeagh WRZ. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction (karstic) and supply deficit. Rationalise Ballykilty to Killeagh WRZ. Option study area is hydrologically linked to this European site. No operational impacts are predicted due to distance from abstraction to site.	**Y**
Ardmore Head SAC (002123)	16km	**Annex I habitats:** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Increase GW abstraction (karstic) and supply deficit. Rationalise Ballykilty to Killeagh WRZ. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Increase GW abstraction (karstic) and supply deficit. Rationalise Ballykilty to Killeagh WRZ. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.32: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-950 (TG2-SAI-836, TG2-SAI-837) 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	
Ballymacoda Bay SPA (004023)	2.8km	*Anas penelope* (Wigeon) [A050]	Non-b	Increase GW abstraction (karstic) and supply deficit. Rationalise Ballykilty to Killeagh WRZ. Option study area is hydrologically linked to this European site.	Increase GW abstraction (karstic) and supply deficit. Rationalise Ballykilty to Killeagh WRZ. Option study area is hydrologically linked to this European site.	**Y**
		Anas crecca (Teal) [A052]	Non-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	
		Charadrius hiaticula (Ringed Plover) [A137]	Non-b	- Habitat degradation – changes in water quality (pollution)	No operational impacts are predicted due to distance from abstraction to site.	
		Pluvialis apricaria (Golden Plover) [A140]	Non-b			
		Pluvialis squatarola (Grey Plover) [A141]	Non-b			
		Vanellus vanellus (Lapwing) [A142]	Non-b			
		Calidris alba (Sanderling) [A144]	Non-b			
		Calidris alpina (Dunlin) [A149]	Non-b			
		Limosa limosa (Black-tailed Godwit) [A156]	Non-b			
		Limosa lapponica (Bar-tailed Godwit) [A157]	Non-b			
		Numenius arquata (Curlew) [A160]	Non-b			
		Tringa totanus (Redshank) [A162]	Non-b			
		Arenaria interpres (Turnstone) [A169]	Non-b			
		Chroicocephalus ridibundus (Black-headed Gull) [A179]	Non-b			
		Larus canus (Common Gull) [A182]	Non-b			
		Larus fuscus (Lesser Black-backed Gull) [A183]	Non-b			
		Wetland and Waterbirds [A999]				
Ballycotton Bay SPA (004022)	18.5km	*Anas crecca* (Teal) [A052]	Non-b	Increase GW abstraction (karstic) and supply deficit. Rationalise Ballykilty to Killeagh WRZ. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Increase GW abstraction (karstic) and supply deficit. Rationalise Ballykilty to Killeagh WRZ. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
		Charadrius hiaticula (Ringed Plover) [A137]	Non-b			
		Pluvialis apricaria (Golden Plover) [A140]	Non-b			
		Pluvialis squatarola (Grey Plover) [A141]	Non-b			
		Vanellus vanellus (Lapwing) [A142]	Non-b			
		Limosa limosa (Black-tailed Godwit) [A156]	Non-b			
		Limosa lapponica (Bar-tailed Godwit) [A157]	Non-b			
		Numenius arquata (Curlew) [A160]	Non-b			
		Arenaria interpres (Turnstone) [A169]	Non-b			
		Larus canus (Common Gull) [A182]	Non-b			
		Larus fuscus (Lesser Black-backed Gull) [A183]	Non-b			
		Wetland and Waterbirds [A999]				

Table C2.33: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-955 (TG2-SAI-861, TG2-SAI-862, TG2-SAI-863, TG2-SAI-864, TG2-SAI-865) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Caha Mountains SAC (000093)	0m	**Annex I habitats:** Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]	New Inchybegga Impoundment (Cullomane) and new WTP. To supply Bantry deficit and transfer west to supply WRZs full demands. Rationalise Castletownbere, Glengarriff, Adrigole and	New Inchybegga Impoundment (Cullomane) and new WTP. To supply Bantry deficit and transfer west to supply WRZs full demands. Rationalise Castletownbere, Glengarriff, Adrigole and	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024] *Trichomanes speciosum* (Killarney Fern) [1421]	Reenmeen West to Bantry. Option study area is within/adjacent to this European site. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Reenmeen West to Bantry. Option study area is within/adjacent to this European site. No operational impacts are predicted due to nature of works.	
Glengarriff Harbour and Woodland SAC (000090)	0m	**Annex I habitats:** Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]	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)	Option study area is within this European site. No operational impacts are predicted due to nature of works.	**Y**
Roaringwater Bay and Islands SAC (000101)	20km	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] **Annex II species:** *Phocoena phocoena* (Harbour Porpoise) [1351] *Lutra lutra* (Otter) [1355] *Halichoerus grypus* (Grey Seal) [1364]	Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Option study area is hydrologically linked to this European site. No operational impacts are predicted given distance from site.	**Y**
Dunbeacon Shingle SAC (002280)	8.5km	**Annex I habitats:** Perennial vegetation of stony banks [1220]	Option study area is close to a hydrological link to this European site.	Option study area is close to a hydrological link to this European site.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
			No impacts are predicted given distance from site, and due to a lack of hydrological link.	No impacts are predicted given distance from site, and due to a lack of hydrological link.	
Reen Point Shingle SAC (002281)	9km	**Annex I habitats:** Perennial vegetation of stony banks [1220]	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Sheep's Head SAC (000102)	9km	**Annex I habitats:** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] **Annex II species:** *Geomalacus maculosus* (Kerry Slug) [1024]	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Farranamanagh Lough SAC (002189)	18km	**Annex I habitats:** Coastal lagoons [1150] Perennial vegetation of stony banks [1220]	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.34: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-955 (TG2-SAI-861, TG2-SAI-862, TG2-SAI-863, TG2-SAI-864, TG2-SAI-865) 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	
Beara Peninsula SPA (004155)	1.1km	*Fulmarus glacialis* (Fulmar) [A009] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	New Inchybegga Impoundment (Cullomane) and new WTP. To supply Bantry deficit and transfer west to supply WRZs full demands. Rationalise Castletownbere, Glengarriff, Adrigole and Reenmeen West to Bantry. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	New Inchybegga Impoundment (Cullomane) and new WTP. To supply Bantry deficit and transfer west to supply WRZs full demands. Rationalise Castletownbere, Glengarriff, Adrigole and Reenmeen West to Bantry. Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Sheep's Head to Toe Head SPA (004156)	9km	*Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.35: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-960 (TG2-SAI-882, TG2-SAI-883) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Kenmare River SAC (002158)	100m	**Annex I habitats:** Large shallow inlets and bays [1160]	Rationalise Allihies to Ballydonegan GWS. Rationalise Cluain Court Allihies to Allihies. The option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Rationalise Allihies to Ballydonegan GWS. Rationalise Cluain Court Allihies to Allihies. The option study area is hydrologically linked to this European site.	**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] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Submerged or partially submerged sea caves [8330] **Annex II species:** *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra (*Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]	- Disturbance (including biological disturbance)	No operational impacts predicted due to nature of works.	

Table C2.36: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-960 (TG2-SAI-882, TG2-SAI-883) 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	
Beara Peninsula SPA (004155)	100m	*Fulmarus glacialis* (Fulmar) [A009] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	Rationalise Allihies to Ballydonegan GWS.Rationalise Cluain Court Allihies to Allihies. The option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Allihies to Ballydonegan GWS.Rationalise Cluain Court Allihies to Allihies. The option study area is hydrologically linked to this European site. No operational impacts predicted due to nature of works.	**Y**
Iveragh Peninsula SPA (004154)	14km	*Fulmarus glacialis* (Fulmar) [A009] *Falco peregrinus* (Peregrine) [A103] *Rissa tridactyla* (Kittiwake) [A188] *Uria aalge* (Guillemot) [A199]	Breed Breed Breed	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**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	
		Pyrrhocorax pyrrhocorax (Chough) [A346]	Breed			
The Bull and The Cow Rocks SPA (004066)	14.5km	*Hydrobates pelagicus* (Storm Petrel) [A014] *Morus bassanus* (Gannet) [A016] *Fratercula arctica* (Puffin) [A204]	Breed Breed Breed	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Deenish Island and Scariff Island SPA (004175)	15.6km	*Fulmarus glacialis* (Fulmar) [A009] *Puffinus puffinus* (Manx Shearwater) [A013] *Hydrobates pelagicus* (Storm Petrel) [A014] *Larus fuscus* (Lesser Black-backed Gull) [A183] *Sterna paradisaea* (Arctic Tern) [A194]	Breed Breed Breed Breed Breed	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.37: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-962 (TG2-SAI-887, TG2-SAI-888) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Roaringwater Bay and Islands SAC (000101)	1.7km	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] **Annex II species:** *Phocoena phocoena* (Harbour Porpoise) [1351] *Lutra lutra* (Otter) [1355] *Halichoerus grypus* (Grey Seal) [1364]	Upgrade Ballyhilty WTP and supply spare capacity to Skibbereen 2 - Baltimore and Schull WRZ. Upgrade Lake Cross WTP and supply deficit from Skibbereen 1 WRZ. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Upgrade Ballyhilty WTP and supply spare capacity to Skibbereen 2 - Baltimore and Schull WRZ. Upgrade Lake Cross WTP and supply deficit from Skibbereen 1 WRZ. Option study area is hydrologically linked to this European site. No operational impacts predicted.	**Y**
Lough Hyne Nature Reserve and Environs SAC (000097)	3.9km	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170] Submerged or partially submerged sea caves [8330]	Upgrade Ballyhilty WTP and supply spare capacity to Skibbereen 2 - Baltimore and Schull WRZ. Upgrade Lake Cross WTP and supply deficit from Skibbereen 1 WRZ. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Upgrade Ballyhilty WTP and supply spare capacity to Skibbereen 2 - Baltimore and Schull WRZ. Upgrade Lake Cross WTP and supply deficit from Skibbereen 1 WRZ. Option study area is hydrologically linked to this European site. No operational impacts predicted.	**Y**

Table C2.38: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-962 (TG2-SAI-887, TG2-SAI-888) 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	
Sheep's Head to Toe Head SPA (004156)	3.9km	*Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	Upgrade Ballyhilty WTP and supply spare capacity to Skibbereen 2 - Baltimore and Schull WRZ. Upgrade Lake Cross WTP and supply deficit from Skibbereen 1 WRZ. Option study area is close to a hydrological link to this European site. No impacts predicted.	Upgrade Ballyhilty WTP and supply spare capacity to Skibbereen 2 - Baltimore and Schull WRZ. Upgrade Lake Cross WTP and supply deficit from Skibbereen 1 WRZ. Option study area is close to a hydrological link to this European site. No operational impacts predicted.	**N**

Table C2.39: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-963 (TG2-SAI-889, TG2-SAI-890, TG2-SAI-964) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note: no SACs within ZOI for TG2-SAI-963.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Cork Harbour SPA (004030)	2.6km	*Tachybaptus ruficollis* (Little Grebe) [A004]	Non-b	New GW abstraction and upgrade Minane Bridge WTP. Rationalise Roberts Cove and Nohoval to Minane Bridge WRZ and supply deficit from Minane WRZ. The option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	New GW abstraction and upgrade Minane Bridge WTP. Rationalise Roberts Cove and Nohoval to Minane Bridge WRZ and supply deficit from Minane WRZ. The option study area is hydrologically linked to this European site. No operational impacts predicted due to distance from site.	**Y**
		Podiceps cristatus (Great Crested Grebe) [A005]	Non-b			
		Phalacrocorax carbo (Cormorant) [A017]	Non-b			
		Ardea cinerea (Grey Heron) [A028]	Non-b			
		Tadorna tadorna (Shelduck) [A048]	Non-b			
		Anas penelope (Wigeon) [A050]	Non-b			
		Anas crecca (Teal) [A052]	Non-b			
		Anas acuta (Pintail) [A054]	Non-b			
		Anas clypeata (Shoveler) [A056]	Non-b			
		Mergus serrator (Red-breasted Merganser) [A069]	Non-b			
		Haematopus ostralegus (Oystercatcher) [A130]	Non-b			
		Pluvialis apricaria (Golden Plover) [A140]	Non-b			
		Pluvialis squatarola (Grey Plover) [A141]	Non-b			
		Vanellus vanellus (Lapwing) [A142]	Non-b			
		Calidris alpina (Dunlin) [A149]	Non-b			
		Limosa limosa (Black-tailed Godwit) [A156]	Non-b			
		Limosa lapponica (Bar-tailed Godwit) [A157]	Non-b			
		Numenius arquata (Curlew) [A160]	Non-b			
		Tringa totanus (Redshank) [A162]	Non-b			
		Chroicocephalus ridibundus (Black-headed Gull) [A179]	Non-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	
		Larus canus (Common Gull) [A182]	Non-b			
		Larus fuscus (Lesser Black-backed Gull) [A183]	Non-b			
		Sterna hirundo (Common Tern) [A193]	Breed			
		Wetland and Waterbirds [A999]				

Table C2.40: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAI-971 (TG2-SAI-939, TG2-SAI-940, TG2-SAI-941, TG2-SAI-942, TG2-SAI-943, TG2-SAI-944, TG2-SAI-945, TG2-SAI-946, TG2-SAI-947, TG2-SAI-948, TG2-SAI-949, TG2-SAI-950, TG2-SAI-951, TG2-SAI-952, TG2-SAI-953, TG2-SAI-954, TG2-SAI-955, TG2-SAI-956, TG2-SAI-957, TG2-SAI-958, TG2-SAI-959, TG2-SAI-960) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Courtmacsherry Estuary SAC (001230)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Increase SW abstraction at Inniscarra and upgrade WTP. Interconnect with Bandon Regional and Clonakilty. Maintain allowable abstraction from Owenacurra River and supply deficit from Inniscarra for Midleton WRZ. Rationalise Knockburden, Templemartin & Garranes, Aghabullogue, Coolineagh, Corbally, Clash Leamleara, Ballincurrig Lisgoold, Walshtown, Grenagh, Stoneview Blarney, Cullen, Ballyshoneen, Vicarstown, Ballinagree, Rylane, Bayview, Tibbotstown and Clashanamid WRZs. 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)	Increase SW abstraction at Inniscarra and upgrade WTP. Interconnect with Bandon Regional and Clonakilty. Maintain allowable abstraction from Owenacurra River and supply deficit from Inniscarra for Midleton WRZ. Rationalise Knockburden, Templemartin & Garranes, Aghabullogue, Coolineagh, Corbally, Clash Leamleara, Ballincurrig Lisgoold, Walshtown, Grenagh, Stoneview Blarney, Cullen, Ballyshoneen, Vicarstown, Ballinagree, Rylane, Bayview, Tibbotstown and Clashanamid WRZs. Option Study area is within this European site. No operational impacts predicted due to distance from site to abstraction.	**Y**
Great Island Channel SAC (001058)	1.5km	**Annex I habitats** Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	Option Study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Option Study area is hydrologically linked to this European site. No operational impacts predicted due to distance from site to abstraction.	**Y**
Myross Wood SAC (001070)	2.3km	**Annex II species:** *Trichomanes speciosum* (Killarney Fern) [1421]	Option Study area is hydrologically linked to this European site. No impacts are predicted given distance from site and due to QI designated within SAC.	Option Study area is hydrologically linked to this European site. No operational impacts predicted due to distance from site to abstraction.	**N**
Ardmore Head SAC (002123)	12.9km	**Annex I habitats:** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.41: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAI-971 (TG2-SAI-939, TG2-SAI-940, TG2-SAI-941, TG2-SAI-942, TG2-SAI-943, TG2-SAI-944, TG2-SAI-945, TG2-SAI-946, TG2-SAI-947, TG2-SAI-948, TG2-SAI-949, TG2-SAI-950, TG2-SAI-951, TG2-SAI-952, TG2-SAI-953, TG2-SAI-954, TG2-SAI-955, TG2-SAI-956, TG2-SAI-957, TG2-SAI-958, TG2-SAI-959, TG2-SAI-960) 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	
Courtmacsherry Bay SPA (004219)	0m	*Gavia immer* (Great Northern Diver) [A003] *Tadorna tadorna* (Shelduck) [A048] *Anas penelope* (Wigeon) [A050] *Mergus serrator* (Red-breasted Merganser) [A069] *Pluvialis apricaria* (Golden Plover) [A140] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Chroicocephalus ridibundus* (Black-headed Gull) [A179] *Larus canus* (Common Gull) [A182] 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	Increase SW abstraction at Inniscarra and upgrade WTP. Interconnect with Bandon Regional and Clonakilty. Maintain allowable abstraction from Owenacurra River and supply deficit from Inniscarra for Midleton WRZ. Rationalise Knockburden, Templemartin & Garranes, Aghabullogue, Coolineagh, Corbally, Clash Leamleara, Ballincurrig Lisgoold, Walshtown, Grenagh, Stoneview Blarney, Cullen, Ballyshoneen, Vicarstown, Ballinagree, Rylane, Bayview, Tibbotstown and Clashanamid WRZs. 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)	Increase SW abstraction at Inniscarra and upgrade WTP. Interconnect with Bandon Regional and Clonakilty. Maintain allowable abstraction from Owenacurra River and supply deficit from Inniscarra for Midleton WRZ. Rationalise Knockburden, Templemartin & Garranes, Aghabullogue, Coolineagh, Corbally, Clash Leamleara, Ballincurrig Lisgoold, Walshtown, Grenagh, Stoneview Blarney, Cullen, Ballyshoneen, Vicarstown, Ballinagree, Rylane, Bayview, Tibbotstown and Clashanamid WRZs. Option Study area is within this European site. No operational impacts predicted due to distance from site to abstraction.	**Y**
Cork Harbour SPA (004030)	1km	*Tachybaptus ruficollis* (Little Grebe) [A004] *Podiceps cristatus* (Great Crested Grebe) [A005] *Phalacrocorax carbo* (Cormorant) [A017] *Ardea cinerea* (Grey Heron) [A028] *Tadorna tadorna* (Shelduck) [A048] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Anas acuta* (Pintail) [A054] *Anas clypeata* (Shoveler) [A056] *Mergus serrator* (Red-breasted Merganser) [A069] *Haematopus ostralegus* (Oystercatcher) [A130] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162]	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	Option Study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Option Study area is hydrologically linked to this European site. No operational impacts predicted due to distance from site to abstraction.	**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	
		Chroicocephalus ridibundus (Black-headed Gull) [A179] *Larus canus* (Common Gull) [A182] *Larus fuscus* (Lesser Black-backed Gull) [A183] *Sterna hirundo* (Common Tern) [A193] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Breed			
Sovereign Islands SPA (004124)	11.9km	*Phalacrocorax carbo* (Cormorant) [A017]	Breed	Option Study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Option Study area is hydrologically linked to this European site. No operational impacts predicted due to distance from site to abstraction.	**Y**
Seven Heads SPA (004191)	16.7km	*Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Old Head of Kinsale SPA (004021)	14.4km	*Rissa tridactyla* (Kittiwake) [A188] *Uria aalge* (Guillemot) [A199]	Breed Breed	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Sheep's Head to Toe Head SPA (004156)	16.2km	*Falco peregrinus* (Peregrine) [A103] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Galley Head to Duneen Point SPA (004190)	16.8km	*Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Helvick Head to Ballyquin SPA (004192)	17.3km	*Phalacrocorax carbo* (Cormorant) [A017] *Falco peregrinus* (Peregrine) [A103] *Larus argentatus* (Herring Gull) [A184] *Rissa tridactyla* (Kittiwake) [A188] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed Breed Breed	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Option Study area is close to a hydrological link to this European site. No impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C2.42: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAI-780 leading to potential LSEs. Note: no SACs within ZOI for TG2-SAI-780.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Roaringwater Bay and Islands SAC (000101)	350m	**Annex I habitats:** Large shallow inlets and bays [1160] Reefs [1170]	WTP upgrade surrounded by SAC but not within the SAC. The island of Cape Clear which the WTP is on is surrounded by the SAC. No potential to impact any of the QIs from the upgrade	WTP upgrade surrounded by SAC but not within the SAC.	**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] European dry heaths [4030] Submerged or partially submerged sea caves [8330] **Annex II species:** *Phocoena phocoena* (Harbour Porpoise) [1351] *Lutra lutra* (Otter) [1355] *Halichoerus grypus* (Grey Seal) [1364]	works given the nature of the works and due to a lack of hydrological link. Therefore, no impacts are predicted.	The island of Cape Clear which the WTP is on is surrounded by the SAC. No potential to impact any of the QIs from the upgrade works given the nature of the works and due to a lack of hydrological link. Therefore, no impacts are predicted.	

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 TG2-SAJ-287).

Table C3.1: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-291 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	2.6km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.2: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAJ-291 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	
Blackwater Estuary SPA (004028)	6.5km	*Anas penelope* (Wigeon) [A050] *Pluvialis apricaria* (Golden Plover) [A140] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.3: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-223 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	4.8km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.4: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAJ-223 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	
Blackwater Estuary SPA (004028)	13.8km	*Anas penelope* (Wigeon) [A050] *Pluvialis apricaria* (Golden Plover) [A140] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.5: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-272 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-272.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	2.4km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	WTP upgrade. Option study area is in close proximity to a hydrological link to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade. Option study area is in close proximity to a hydrological link to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.6: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-128 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	0m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-*	Increase GW abstraction, WTP upgrade, new storage, upgrade pumping station. Option study area is hydrologically linked to this European site. Study area within SAC. Within ZOC. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction, WTP upgrade, new storage, upgrade pumping station. Option study area is hydrologically linked to this European site. Study area within SAC. Within ZOC. - 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	
		Padion, Alnion incanae, Salicion albae) [91E0] **<u>Annex II species</u>** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.7: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAJ-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	
Blackwater Estuary SPA (004028)	14.8km	*Anas penelope* (Wigeon) [A050] *Pluvialis apricaria* (Golden Plover) [A140] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW abstraction, WTP upgrade, new storage, upgrade pumping station. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, WTP upgrade, new storage, upgrade pumping station. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.8: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-188 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-188.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	2.8km	**<u>Annex I habitats</u>** 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 (*Glauco-Puccinellietalia maritimae*) [1330]	WTP upgrades. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrades. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.9: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-262 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	2.5km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096]	WTP upgrade. Option study area is in close proximity to a hydrological link to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade. Option study area is in close proximity to a hydrological link to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Lampetra fluviatilis (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAJ-262 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	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	1.8km	*Circus cyaneus* (Hen Harrier) [A082]	Breed	WTP upgrade. No impacts are predicted given the nature of the works, distance from the SPA, and due to a lack of hydrological link.	WTP upgrade. No operational impacts are predicted given the nature of the works, distance from the SPA, and due to a lack of hydrological link.	**N**

Table C3.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-162 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-162.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	2km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]	Increase GW abstraction and WTP upgrades Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction and WTP upgrade. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. No operational impacts are predicted as the abstraction ZOC does not overlap with the SAC.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Austropotamobius pallipes (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-167 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-167.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	1.8km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction and WTP upgrade. Option study area is in close proximity to a hydrological link to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction and WTP upgrade. Option study area is in close proximity to a hydrological link to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. No operational impacts are predicted as the abstraction ZOC does not overlap with the SAC.	**Y**

Table C3.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-281 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	1.8km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	WTP upgrade. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. European site is downstream of study area. No operational impacts are predicted.	**Y**
Lower River Suir SAC (002137)	4.4km	**Annex I habitats** Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels [6430] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103]	Option study area is in close proximity to a hydrological link to this European site. However, impacts are unlikely given distance from both site and hydrological link.	Option study area is in close proximity to a hydrological link to this European site. No operational impacts are predicted given distance from both site and hydrological link.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Salmo salar (Salmon) [1106] *Lutra lutra* (Otter) [1355]			

Table C3.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG2-SAJ-281 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	
Blackwater Callows SPA (004094)	8.9km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	WTP upgrade. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-531 (TG2-SAJ-260 and TG2-SAJ-325) combined leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	0m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103]	Increase GW abstraction, WTP upgrade, new mains, decommission different WTP and abstraction. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. SAC is not within the ZOC, but there is a hydrological link between the ZOC and the SAC. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction, WTP upgrade, new mains, decommission different WTP and abstraction. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. SAC is not within the ZOC, but there is a hydrological link between the ZOC and the 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	
		Salmo salar (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			
Lower River Suir SAC (002137)	6.3km	**Annex I habitats** Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels [6430] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]	Option study area is in close proximity to a hydrological link to this European site. However, impacts are unlikely given distance from both site and hydrological link.	Option study area is in close proximity to a hydrological link to this European site. No operational impacts are predicted given distance from both site and hydrological link.	**N**

Table C3.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-531 (TG2-SAJ-260 and TG2-SAJ-325) 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	
Blackwater Callows SPA (004094)	6km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction, WTP upgrade, new mains, decommission different WTP and abstraction. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, WTP upgrade, new mains, decommission different WTP and abstraction. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-601 (TG2-SAJ-425 and TG2-SAJ-426) combined leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	3.9km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction, two WTP upgrades, decommission different WTP. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, two WTP upgrades, decommission different WTP. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. No operational impacts are predicted.	**Y**
Lower River Suir SAC (002137)	2.2km	**Annex I habitats** Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels [6430] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103]	Option study area is close to a hydrological link to this European site. However, impacts are unlikely given distance from both site and hydrological link.	Option study area is close to a hydrological link to this European site. No operational impacts are predicted unlikely given distance from both site and hydrological link.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Salmo salar (Salmon) [1106] *Lutra lutra* (Otter) [1355]			
Galtee Mountains SAC (000646)	9.4km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	Option study area is close to a hydrological link to this European site. However, impacts are unlikely given distance from site, and due to the study area being downstream of the European site.	Option study area is close to a hydrological link to this European site. No operational impacts are predicted given distance from site, and due to the study area being downstream of the European site.	**N**

Table C3.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-601 (TG2-SAJ-425 and TG2-SAJ-426) 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	
Blackwater Callows SPA (004094)	9km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction, two WTP upgrades, decommission different WTP. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, two WTP upgrades, decommission different WTP. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**

Table C3.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-597 (TG2-SAJ-406, TG2-SAJ-407, TG2-SAJ-408, TG2-SAJ-409, TG2-SAJ-411, TG2-SAJ-412, TG2-SAJ-413, TG2-SAJ-414 and TG2-SAJ-415) combined 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	
Blackwater River (Cork/Waterford) SAC (002170)	0m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	Increase GW abstraction from karstic region, WTP upgrades, decommission different WTPs, new mains run within or adjacent to SAC. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. SAC not within ZOC. SAC is adjacent to ZOC, both of which are within karst aquifer. - Physical loss of habitats/supporting habitat - Mortality	Increase GW abstraction from karstic region, WTP upgrades, decommission different WTPs, new mains run within or adjacent to SAC. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. SAC not within ZOC. SAC is adjacent to ZOC, both of which are within karst aquifer.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	- Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	- Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	
Ballyhoura Mountains SAC (002036)	10km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Carrigeenamronety Hill SAC (002037)	15.5km	**Annex I habitats** European dry heaths [4030] **Annex II species** *Trichomanes speciosum* (Killarney Fern) [1421]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C3.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-597 (TG2-SAJ-406, TG2-SAJ-407, TG2-SAJ-408, TG2-SAJ-409, TG2-SAJ-411, TG2-SAJ-412, TG2-SAJ-413, TG2-SAJ-414 and TG2-SAJ-415) 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	
Blackwater Callows SPA (004094)	17.5km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction, WTP upgrades, decommission different WTPs, new mains. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, WTP upgrades, decommission different WTPs, new mains. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**
Kilcolman Bog SPA (004095)	3.5km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas crecca* (Teal) [A052] *Anas clypeata* (Shoveler) [A056]	Non-b Non-b Non-b	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**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	
		Wetland and Waterbirds [A999]				

Table C3.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-520 (TG2-SAJ-154, TG2-SAJ-155 and TG2-SAJ-278) combined leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note: No SPAs within ZoI for TG2-SAJ-520.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	3.2km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase two GW abstractions, two WTP upgrades, decommission different WTP and abstraction, new mains, new pumps. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. SAC not within ZOC. - Habitat degradation – changes in water quality (pollution)	Increase two GW abstractions, two WTP upgrades, decommission different WTP and abstraction, new mains, new pumps. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. SAC not within ZOC. No operational impacts are predicted given that the ZOC and SAC do not overlap, and due to the abstraction being sustainable.	**Y**
Ballyhoura Mountains SAC (002036)	12.6km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Carrigeenamronety Hill SAC (002037)	20.5km	**Annex I habitats** European dry heaths [4030]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Annex II species *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-611 (TG2-SAJ-455, TG2-SAJ-456, TG2-SAJ-457 and TG2-SAJ-458) combined leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	0m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction, WTP upgrade, decommission different WTPs, new mains, new pumps, new storage. Mains cross SAC. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction, WTP upgrade, decommission different WTPs, new mains, new pumps, new storage. Mains cross SAC. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Further trial well tests will be required but due to there being no overlap between the ZOC and the SAC, it is predicted that the increased GW abstraction will not impact the SAC, therefore no operational impacts are predicted.	**Y**
Ardmore Head SAC (002123)	5.6km	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Ballymacoda (Clonpriest and Pillmore) SAC (000077)	8.9km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C3.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-611 (TG2-SAJ-455, TG2-SAJ-456, TG2-SAJ-457 and TG2-SAJ-458) 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	
Blackwater Estuary SPA (004028)	465m	*Anas penelope* (Wigeon) [A050] *Pluvialis apricaria* (Golden Plover) [A140] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW abstraction, WTP upgrade, decommission different WTPs, new mains, new pumps, new storage. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction, WTP upgrade, decommission different WTPs, new mains, new mains, new pumps, new storage. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**
Helvick Head to Ballyquin SPA (004192)	5.7km	*Phalacrocorax carbo* (Cormorant) [A017] *Falco peregrinus* (Peregrine) [A103] *Larus argentatus* (Herring Gull) [A184] *Rissa tridactyla* (Kittiwake) [A188] *Pyrrhocorax pyrrhocorax* (Chough) [A346]	Breed Breed Breed Breed Breed	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Ballymacoda Bay SPA (004023)	7.4km	*Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Charadrius hiaticula* (Ringed Plover) [A137] *Pluvialis apricaria* (Golden Plover) [A140] *Pluvialis squatarola* (Grey Plover) [A141] *Vanellus vanellus* (Lapwing) [A142] *Calidris alba* (Sanderling) [A144] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] *Arenaria interpres* (Turnstone) [A169] *Chroicocephalus ridibundus* (Black-headed Gull) [A179] *Larus canus* (Common Gull) [A182] *Larus fuscus* (Lesser Black-backed Gull) [A183] 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	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C3.24: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-627 (TG2-SAJ-511, TG2-SAJ-512 and TG2-SAJ-513) combined 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	
Blackwater River (Cork/Waterford) SAC (002170)	0m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase two GW abstractions, WTP upgrades, new mains run within or adjacent to SAC. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Within ZOC. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase two GW abstractions, WTP upgrades, new mains run within or adjacent to SAC. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Within ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Carrigeenamronety Hill SAC (002037)	4.8km	**Annex I habitats** European dry heaths [4030] **Annex II species** *Trichomanes speciosum* (Killarney Fern) [1421]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Ballyhoura Mountains SAC (002036)	5.6km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C3.25: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-627 (TG2-SAJ-511, TG2-SAJ-512 and TG2-SAJ-513) 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	
Blackwater Callows SPA (004094)	1.3km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase two GW abstractions, WTP upgrades, new mains. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase two GW abstractions, WTP upgrades, new mains. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**
Kilcolman Bog SPA (004095)	12.1km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas crecca* (Teal) [A052] *Anas clypeata* (Shoveler) [A056] Wetland and Waterbirds [A999]	Non-b Non-b Non-b	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C3.26: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-609 (TG2-SAJ-449, TG2-SAJ-450 and TG2-SAJ-451) combined 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	
Blackwater River (Cork/Waterford) SAC (002170)	150m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	New GW abstraction, new WTP, new mains, new mains, new pumps, new storage, decommission different WTPs. Option study area is hydrologically linked to this European site. Abstraction from same karst region SAC is within. - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction, new WTP, new mains, new mains, new pumps, new storage, decommission different WTPs. Option study area is hydrologically linked to this European site. Abstraction from same karst region SAC is within. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C3.27: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-609 (TG2-SAJ-449, TG2-SAJ-450 and TG2-SAJ-451) 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	
Blackwater Estuary SPA (004028)	10.3km	*Anas penelope* (Wigeon) [A050] *Pluvialis apricaria* (Golden Plover) [A140] *Vanellus vanellus* (Lapwing) [A142] *Calidris alpina* (Dunlin) [A149] *Limosa limosa* (Black-tailed Godwit) [A156] *Limosa lapponica* (Bar-tailed Godwit) [A157] *Numenius arquata* (Curlew) [A160] *Tringa totanus* (Redshank) [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	New GW abstraction, new WTP, new mains, new mains, new pumps, new storage, decommission different WTPs. Option study area is hydrologically linked to this European site. European site is downstream of study area. - Habitat degradation – changes in water quality (pollution)	New GW abstraction, new WTP, new mains, new mains, new pumps, new storage, decommission different WTPs. Option study area is hydrologically linked to this European site. European site is downstream of study area. No operational impacts are predicted.	**Y**
Blackwater Callows SPA (004094)	5.2km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	New GW abstraction, new WTP, new mains, new mains, new pumps, new storage, decommission different WTPs. Option study area is hydrologically linked to this European site. However, no impacts are predicted given distance from site, and due the SPA being upstream of the study area.	New GW abstraction, new WTP, new mains, new mains, new pumps, new storage, decommission different WTPs. Option study area is hydrologically linked to this European site. However, no impacts are predicted given distance from site, and due the SPA being upstream of the study area.	**N**

Table C3.28: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-595 (TG2-SAJ-396, TG2-SAJ-397, TG2-SAJ-398, TG2-SAJ-399, TG2-SAJ-400 and TG2-SAJ-401) combined 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	
Blackwater River (Cork/Waterford) SAC (002170)	0m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092]	Increase GW abstraction, upgrade WTP, new mains, decommission different WTPs. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Within ZOC. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction, upgrade WTP, new mains, decommission different WTPs. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Within ZOC. - 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	
		Petromyzon marinus (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.29: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-595 (TG2-SAJ-396, TG2-SAJ-397, TG2-SAJ-398, TG2-SAJ-399, TG2-SAJ-400 and TG2-SAJ-401) 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	
Blackwater Callows SPA (004094)	415m	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction, upgrade WTP, new mains, decommission different WTPs. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction, upgrade WTP, new mains, decommission different WTPs. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**

Table C3.30: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-616 (TG2-SAJ-466) combined leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note: No SPAs within ZoI for TG2-SAJ-616.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	5.9km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	Increase GW abstraction, upgrade WTP, new mains, decommission different WTP. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, upgrade WTP, new mains, decommission different WTP. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Annex II species *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.31: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-617 (TG2-SAJ-467 and TG2-SAJ-468) combined 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	
Blackwater River (Cork/Waterford) SAC (002170)	6.8km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	New GW abstraction, new WTP, WTP upgrades, decommission different WTP, new mains. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. - Habitat degradation – changes in water quality (pollution)	New GW abstraction, new WTP, WTP upgrades, decommission different WTP, new mains. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Carrigeenamronety Hill SAC (002037)	2.5km	**Annex I habitats** European dry heaths [4030] **Annex II species** *Trichomanes speciosum* (Killarney Fern) [1421]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Ballyhoura Mountains SAC (002036)	5km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Galtee Mountains SAC (000646)	11.7km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C3.32: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-617 (TG2-SAJ-467 and TG2-SAJ-468) 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	
Blackwater Callows SPA (004094)	7.7km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	New GW abstraction, new WTP, WTP upgrades, decommission different WTP, new mains. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	New GW abstraction, new WTP, WTP upgrades, decommission different WTP, new mains. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**
Kilcolman Bog SPA (004095)	15.8km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas crecca* (Teal) [A052] *Anas clypeata* (Shoveler) [A056] Wetland and Waterbirds [A999]	Non-b Non-b Non-b	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C3.33: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-614 (TG2-SAJ-462) combined 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	
Blackwater River (Cork/Waterford) SAC (002170)	610m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Option is associated with SAJ and SAK. - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Option is associated with SAJ and SAK. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C3.34: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-614 (TG2-SAJ-462) 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	
Blackwater Callows SPA (004094)	615m	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site. Option is associated with SAJ and SAK. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site. Option is associated with SAJ and SAK. No operational impacts are predicted.	**Y**

Table C3.35: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-613 (TG2-SAJ-461) combined 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	
Lower River Suir SAC (002137)	9.8km	**Annex I habitats** Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels [6430] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**
Blackwater River (Cork/Waterford) SAC (002170)	15.1km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099]	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. No operational impacts are predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Alosa fallax fallax (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			
Galtee Mountains SAC (000646)	5.3km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Carrigeenamronety Hill SAC (002037)	6.3km	**Annex I habitats** European dry heaths [4030] **Annex II species** *Trichomanes speciosum* (Killarney Fern) [1421]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Moanour Mountain SAC (002257)	8.1km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**
Ballyhoura Mountains SAC (002036)	8.5km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

Table C3.36: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-613 (TG2-SAJ-461) 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	
Blackwater Callows SPA (004094)	19.6km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas penelope* (Wigeon) [A050] *Anas crecca* (Teal) [A052] *Limosa limosa* (Black-tailed Godwit) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction, upgrade WTP, decommission different WTP, new mains. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**

Table C3.37: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-600 (TG2-SAJ-423 and TG2-SAJ-424) combined 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	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Lutra lutra* (Otter) [1355]	Upgrade WTP, decommission different WTP, new mains, new storage, new pump. Mains cross SAC. 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)	Upgrade WTP, decommission different WTP, new mains, new storage, new pump. Mains cross SAC. Option study area is hydrologically linked to this European site. No operational impacts are predicted.	**Y**
Blackwater River (Cork/Waterford) SAC (002170)	7.3km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092]	No impacts are predicted given distance from site, and due to a lack of hydrological link.	No operational impacts are predicted given distance from site, and due to a lack of hydrological link.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Petromyzon marinus (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.38: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-600 (TG2-SAJ-423 and TG2-SAJ-424) 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	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	0m	*Circus cyaneus* (Hen Harrier) [A082]	Breed	Upgrade WTP, decommission different WTP, new mains, new storage, new pump. - Physical loss of habitats/supporting habitat - Disturbance (including biological disturbance)	Upgrade WTP, decommission different WTP, new mains, new storage, new pump. No operational impacts are predicted.	**Y**

Table C3.39: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-628 (TG2-SAJ-514) combined leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-628.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Shannon SAC (002165)	19km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	New pump, new storage, new mains, upgrade existing pump, decommission WTP and abstraction. Option study area is hydrologically linked to this European site. This option has screened in for LSEs despite the distance from the site due to the extent of the works required which will cross numerous waterbodies. - Habitat degradation – changes in water quality (pollution)	New pump, new storage, new mains, upgrade existing pump, decommission WTP and abstraction. Option study area is hydrologically linked to this European site. This option has screened in for LSEs despite the distance from the site due to the extent of the works required which will cross numerous waterbodies. No operational impacts are predicted due to distance from site.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Lutra lutra* (Otter) [1355]			

Table C3.40: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-629 (TG2-SAJ-515, TG2-SAJ-516 and TG2-SAJ-517) combined 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	
Blackwater River (Cork/Waterford) SAC (002170)	0m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103]	Three new GW abstractions, new pumps, new mains, new storage, upgrade WTPs, decommission different WTP. Mains cross the SAC. Abstractions from same karst region that SAC is within. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Abstraction pressures on surface flows unknown and require further site investigation. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance	Three new GW abstractions, new pumps, new mains, new storage, upgrade WTPs, decommission different WTP. Mains cross the SAC. Abstractions from same karst region that SAC is within. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Abstraction pressures on surface flows unknown and require further site investigation. - 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	
		Salmo salar (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.41: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-629 (TG2-SAJ-515, TG2-SAJ-516 and TG2-SAJ-517) 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	
Kilcolman Bog SPA (004095)	2.9km	*Cygnus cygnus* (Whooper Swan) [A038] *Anas crecca* (Teal) [A052] *Anas clypeata* (Shoveler) [A056] Wetland and Waterbirds [A999]	Non-b Non-b Non-b	Three new GW abstractions, new pumps, new mains, new storage upgrade WTPs, decommission different WTP. No impacts are predicted given distance from site, and due to a lack of hydrological link.	Three new GW abstractions, new pumps, new mains, new storage upgrade WTPs, decommission different WTP. No operational impacts are predicted distance from site, and due to a lack of hydrological link.	**N**

Table C3.42: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-630 (TG2-SAJ-518 and TG2-SAJ-519) combined leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts. Note: No SPAs within ZoI for TG2-SAJ-630.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	3.9km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096]	New GW abstraction, new WTP, new pumps, new mains, new storage, decommission different WTPs. Abstraction from same karst region that SAC is within. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Abstraction pressures on surface flows unknown and require further site investigation. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance	New GW abstraction, new WTP, new pumps, new mains, new storage, decommission different WTPs. Abstraction from same karst region that SAC is within. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Abstraction pressures on surface flows unknown and require further site investigation. - 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	
		Lampetra fluviatilis (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.43: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with grouped option TG2-SAJ-631 (TG2-SAJ-520, TG2-SAJ-521, TG2-SAJ-522, TG2-SAJ-523, TG2-SAJ-524, TG2-SAJ-525, TG2-SAJ-526, TG2-SAJ-527 and TG2-SAJ-528) combined 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	
Blackwater River (Cork/Waterford) SAC (002170)	0m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	Two new GW abstractions, new pumps, new mains, new storage, new WTP, upgrade WTPs, decommission different WTPs. Mains cross the SAC. Abstraction from same karst region that SAC is within. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Abstraction pressures on surface flows unknown and require further site investigation. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance	Two new GW abstractions, new pumps, new mains, new storage, new WTP, upgrade WTPs, decommission different WTPs. Mains cross the SAC. Abstraction from same karst region that SAC is within. Option study area is hydrologically linked to this European site, and is within freshwater pearl mussel catchment zone. Abstraction pressures on surface flows unknown and require further site investigation. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	4.6km	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae*) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea [3130]	Two new GW abstractions, new pumps, new mains, new storage, new WTP, upgrade WTPs, decommission different WTPs. No impacts are predicted due to a lack of hydrological link and given the distance from the SAC.	Two new GW abstractions, new pumps, new mains, new storage, new WTP, upgrade WTPs, decommission different WTPs. No operational impacts are predicted due to a lack of hydrological link and given the distance from the SAC.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] 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 *Rhynchosporion* [7150] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] **<u>Annex II species</u>** *Geomalacus maculosus* (Kerry Slug) [1024] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421] *Najas flexilis* (Slender Naiad) [1833] *Alosa fallax killarnensis* (Killarney Shad) [5046]			

Table C3.44: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with grouped option TG2-SAJ-631 (TG2-SAJ-520, TG2-SAJ-521, TG2-SAJ-522, TG2-SAJ-523, TG2-SAJ-524, TG2-SAJ-525, TG2-SAJ-526, TG2-SAJ-527 and TG2-SAJ-528) 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	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	4.6km	*Circus cyaneus* (Hen Harrier) [A082]	Breed	Two new GW abstractions, new pumps, new mains, new storage, new WTP, upgrade WTPs, decommission different WTPs. No impacts are predicted due to a lack of hydrological link and given the distance from the SPA.	Two new GW abstractions, new pumps, new mains, new storage, new WTP, upgrade WTPs, decommission different WTPs. No operational impacts are predicted due to a lack of hydrological link and given the distance from the SPA.	**N**

Table C3.45: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-295 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-295.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	490m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	WTP upgrade only. No impacts are predicted due to a lack of hydrological link, the distance from the SAC and the works being upgrades only that will fall inside the existing footprint of the WTP.	WTP upgrade only. No impacts are predicted due to a lack of hydrological link, the distance from the SAC and the works being upgrades only that will fall inside the existing footprint of the WTP.	**N**

Table C3.46: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-304 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-304.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	830m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	WTP upgrade only. No impacts are predicted due to a lack of hydrological link, the distance from the SAC and the works being upgrades only that will fall inside the existing footprint of the WTP.	WTP upgrade only. No impacts are predicted due to a lack of hydrological link, the distance from the SAC and the works being upgrades only that will fall inside the existing footprint of the WTP.	**N**

Table C3.47: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-294 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-294.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	1km	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	WTP upgrade only. No impacts are predicted due to a lack of hydrological link, the distance from the SAC and the works being upgrades only that will fall inside the existing footprint of the WTP.	WTP upgrade only. No impacts are predicted due to a lack of hydrological link, the distance from the SAC and the works being upgrades only that will fall inside the existing footprint of the WTP.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Annex II species *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C3.48: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG2-SAJ-141 leading to potential LSEs. Note: No SPAs within ZoI for TG2-SAJ-141.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackwater River (Cork/Waterford) SAC (002170)	980m	**Annex I habitats** 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 (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Trichomanes speciosum* (Killarney Fern) [1421]	WTP upgrade only. No impacts are predicted due to a lack of hydrological link, the distance from the SAC and the works being upgrades only that will fall inside the existing footprint of the WTP.	WTP upgrade only. No impacts are predicted due to a lack of hydrological link, the distance from the SAC and the works being upgrades only that will fall inside the existing footprint of the WTP.	**N**