Winter 2023

Regional Water Resources Plan South East

Natura Impact Statement

Appendix C

Tionscadal Éireann
Project Ireland
2040

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

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

Limitation: This report has been prepared on behalf of, and for the exclusive use of Jacobs' Client (Uisce Éireann), and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

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Appendix C

Likely Significant Effects

Tables

Note: TG3-SAK-476 is part of the Preferred Approach for SAK, but is assessed in the SAJ Preferred Approach (within grouped option TG2-SAJ-614) in the RWRP South West NIS.

Table C1.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-055 leading to potential LSEs. Note: No SPAs within ZoI for TG3-SAK-055.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Galtee Mountains SAC (000646)	3.7km	**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]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, the nature of the works, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**
Lower River Suir SAC (002137)	9.9km	**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]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of a hydrological link to this European site. No impacts predicted given the WTP upgrade is 335m from the hydrological link to this European site, the distance from site, and the nature of the works.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of a hydrological link to this European site. No operational impacts predicted.	**N**

Table C1.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-073 leading to potential LSEs. Note: No SPAs within ZoI for TG3-SAK-073.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	900m	**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]	New GW and upgrade Jamestown WTP to supply deficit (progressing as project to address RAL). New GW abstraction, new storage, new watermains and WTP upgrade in the vicinity of this European site. Works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW and upgrade Jamestown WTP to supply deficit (progressing as project to address RAL). New GW abstraction, new storage, new watermains and WTP upgrade in the vicinity of this European site. Works are hydrologically linked to this European site. This GW abstraction overlies productive fissured bedrock which this European site also overlies. However, no operational impacts are predicted due to the abstraction being 6km from where the European site overlies the bedrock.	**Y**
Hugginstown Fen SAC (000404)	7.1km	**Annex I habitats** Alkaline fens [7230]	New GW and upgrade Jamestown WTP to supply deficit (progressing as project to address RAL). New GW abstraction, new storage, new watermains and WTP upgrade in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	New GW and upgrade Jamestown WTP to supply deficit (progressing as project to address RAL). New GW abstraction, new storage, new watermains and WTP upgrade in the vicinity of this European site. No operational impacts predicted due to distance from site and the abstraction and European site overlying different aquifers	**N**

Table C1.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-077 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Barrow And River Nore SAC (002162)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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 existing spring and BH and upgrade Callan WTP to supply deficit. Increase one GW abstraction, replace pumping station and upgrade Callan WTP within this European site. Increase one GW abstraction and new reservoir adjacent to this European site. Works are hydrologically linked to this European site. European site within Zone of Contribution (ZOC) of abstraction. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction from existing spring and BH and upgrade Callan WTP to supply deficit. Increase one GW abstraction, replace pumping station and upgrade Callan WTP within this European site. Increase one GW abstraction and new reservoir adjacent to this European site. Works are hydrologically linked to this European site. European site within Zone of Contribution (ZOC) of abstraction. - Habitat degradation – hydrological/ hydrogeological changes	**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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]		- Water table/availability	

Table C1.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-077 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Nore SPA (004233)	1.7km	Kingfisher (*Alcedo atthis*) [A229]	Breed	Increase GW abstraction from existing spring and BH and upgrade Callan WTP to supply deficit. Increase two GW abstractions, replace pumping station, new reservoir and upgrade Callan WTP in the vicinity of this European site. Works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction from existing spring and BH and upgrade Callan WTP to supply deficit. Increase two GW abstractions, replace pumping station, new reservoir and upgrade Callan WTP in the vicinity of this European site. Works are hydrologically linked to this European site. No operational impacts predicted.	**Y**

Table C1.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-106 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Kilduff, Devilsbit Mountain	3.7km	**Annex I habitats** European dry heaths [4030]	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
SAC (000934)		Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]	WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Whitefield WTP, and abandon Templetuohy WTP in the vicinity of this European site. No operational impacts predicted.	
Lower River Suir SAC (002137)	9.7km	**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]	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the vicinity of hydrological links to this European site. Some works hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the vicinity of hydrological links to this European site. Some works hydrologically linked to this European site. No operational impacts predicted.	**Y**

Table C1.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-106 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Nore SPA (004233)	16.9km	Kingfisher (*Alcedo atthis*) [A229]	Breed	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the Zone of Influence (ZoI) of this European site. No impacts predicted given the distance from site and the QI present.	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the Zone of Influence (ZoI) of this European site. No operational impacts predicted.	**N**
Slievefelim to Silvermines Mountains SPA (004165)	17.1km	Hen Harrier (*Circus cyaneus*) [A082]	Breed	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the ZoI of this European site. No impacts predicted given the distance from site and the QI present.	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Slieve Bloom Mountains SPA (004160)	17.6km	Hen Harrier (*Circus cyaneus*) [A082]	Breed	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the ZoI of this European site. No impacts predicted given the distance from site and the QI present.	Rationalise Templetuohy to Templemore [rationalise to College Hill WTP]. Rationalisation within WRZ. Increase GW abstraction, new pump, upgrade Templemore College Hill WTP, upgrade Whitefield WTP, and abandon Templetuohy WTP in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-120 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	0m	**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]	New SW abstraction from Aherlow River and upgrade Rossadrehid WTP, Thomastown Augmentation WTP, Springmount Source WTP and Farranamnagh WTP for WQ. New SW abstraction, new mains and WTP upgrade within this European site. New pumping station, new reservoir, three WTP upgrades and new mains in the vicinity of this European site. Some works are hydrologically linked to this European site. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction from Aherlow River and upgrade Rossadrehid WTP, Thomastown Augmentation WTP, Springmount Source WTP and Farranamnagh WTP for WQ. New SW abstraction, new mains and WTP upgrade within this European site. New pumping station, new reservoir, three WTP upgrades and new mains in the vicinity of this European site. Some works are hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Galtee Mountains SAC (000646)	520m	**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]	New SW abstraction from Aherlow River and upgrade Rossadrehid WTP, Thomastown Augmentation WTP, Springmount Source WTP and Farranamnagh WTP for WQ. New SW abstraction, new pumping station, new reservoir, WTP upgrade and new mains in the vicinity of this European site. European site is hydrologically linked upstream of the works. No impacts predicted given the works are downstream of this European site, the distance from site, and the QI present.	New SW abstraction from Aherlow River and upgrade Rossadrehid WTP, Thomastown Augmentation WTP, Springmount Source WTP and Farranamnagh WTP for WQ. New SW abstraction, new pumping station, new reservoir, WTP upgrade and new mains in the vicinity of this European site. European site is hydrologically linked upstream of the works. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Siliceous rocky slopes with chasmophytic vegetation [8220]			

Table C1.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-120 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	
Slievefelim to Silvermines Mountains SPA (004165)	19.2km	Hen Harrier (*Circus cyaneus*) [A082]	Breed	New SW abstraction from Aherlow River and upgrade Rossadrehid WTP, Thomastown Augmentation WTP, Springmount Source WTP and Farranamnagh WTP for WQ. 3 WTP upgrades WTP in the ZoI of this European site. No impacts predicted given the distance from site and the QI present.	New SW abstraction from Aherlow River and upgrade Rossadrehid WTP, Thomastown Augmentation WTP, Springmount Source WTP and Farranamnagh WTP for WQ. 3 WTP upgrades WTP in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-180 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
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] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]	New GW abstraction, new WTP to supply deficit and upgrade of Fawnagown WTP for WQ purposes. New GW abstraction, new pumps, new balancing tank, new storage, new WTP, WTP upgrade, and new mains in the vicinity of this European site. New mains adjacent to hydrological link to this European site. GW abstraction from karstic region European site overlies. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction, new WTP to supply deficit and upgrade of Fawnagown WTP for WQ purposes. New GW abstraction, new pumps, new balancing tank, new storage, new WTP, WTP upgrade, and new mains in the vicinity of this European site. New mains adjacent to hydrological link to this European site. GW abstraction from karstic region European site overlies. However, no operational impacts predicted due to the GW abstraction site being over 10km from area of European site that overlies the same karstic region.	**Y**

Table C1.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-180 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	
Slievefelim to Silvermines Mountains SPA (004165)	19.6km	Hen Harrier (*Circus cyaneus*) [A082]	Breed	New GW abstraction, new WTP to supply deficit and upgrade of Fawnagown WTP for WQ purposes. Works in the ZoI of this European site. No impacts predicted given the distance from site and the QI present.	New GW abstraction, new WTP to supply deficit and upgrade of Fawnagown WTP for WQ purposes. Works in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-211 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	0m	**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 from two BHs and upgrade Ballylooby Springs WTP to supply deficit. Increase GW abstraction, upgrade pumping station, upgrade WTP, and new mains within this European site. Two WTP upgrades and new mains in the vicinity of this European site. Some of the works are hydrologically linked to this European site. European site within ZOC of abstraction. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction from two BHs and upgrade Ballylooby Springs WTP to supply deficit. Increase GW abstraction, upgrade pumping station, upgrade WTP, and new mains within this European site. two WTP upgrades and new mains in the vicinity of this European site. Some of the works are hydrologically linked to this European site. European site within ZOC of abstraction. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Galtee Mountains SAC (000646)	2.6km	**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]	Increase GW abstraction from two BHs and upgrade Ballylooby Springs WTP to supply deficit. 3 WTP upgrades, increase GW abstraction, upgrade pumping station, and new mains in the vicinity of this European site. European site is hydrologically linked upstream of the works. No impacts predicted given the works are downstream of this European site, the distance from site, and the QI present.	Increase GW abstraction from two BHs and upgrade Ballylooby Springs WTP to supply deficit. 3 WTP upgrades, increase GW abstraction, upgrade pumping station, and new mains in the vicinity of this European site. European site is hydrologically linked upstream of the works. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Siliceous rocky slopes with chasmophytic vegetation [8220]			

Table C1.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-211 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Blackwater Callows SPA (004094)	16.6km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction from two BHs and upgrade Ballylooby Springs WTP to supply deficit. Works in the ZoI of this European site. - Disturbance (including biological disturbance)	Increase GW abstraction from two BHs and upgrade Ballylooby Springs WTP to supply deficit. Works in the ZoI of this European site. No operational impacts predicted.	**Y**

Table C1.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-386 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] *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]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade is in the vicinity of and adjacent to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade is in the vicinity of and adjacent to a hydrological link to 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	
		Trichomanes speciosum (Killarney Fern) [1421]			
Lower River Suir SAC (002137)	7.4km	**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] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade is in the vicinity of this European site. No impacts predicted given the distance from site and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade is in the vicinity of this European site. No operational impacts predicted.	**N**

Table C1.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-386 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)	9.3km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] 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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Dungarvan Harbour SPA (004032)	17.8km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141]	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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Turnstone (*Arenaria interpres*) [A169]	Non-b			
		Wetland and Waterbirds [A999]				
Blackwater Estuary SPA (004028)	21.1km	Wigeon *(Anas penelope)* [A050]	Non-b	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site, and adjacent to a hydrological link to this European site. No impacts predicted given the nature of the works, and the distance from site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site, and adjacent to a hydrological link to this European site. No operational impacts predicted.	**N**
		Golden Plover *(Pluvialis apricaria)* [A140]	Non-b			
		Lapwing *(Vanellus vanellus)* [A142]	Non-b			
		Dunlin *(Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit *(Limosa limosa)* [A156]	Non-b			
		Bar-tailed Godwit *(Limosa lapponica)* [A157]	Non-b			
		Curlew *(Numenius arquata)* [A160]	Non-b			
		Redshank *(Tringa totanus)* [A162]	Non-b			
		Wetland and Waterbirds [A999]				

Table C1.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-387 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Glendine Wood SAC (002324)	38m	**Annex II species** *Trichomanes speciosum* (Killarney Fern) [1421]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. One WTP upgrade is adjacent to and hydrologically linked to this European site. Other 2 WTP upgrades in the vicinity of this European site. No impacts predicted given the nature of the works and the QI present.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. One WTP upgrade is adjacent to and hydrologically linked to this European site. Other 2 WTP upgrades in the vicinity of this European site. No operational impacts predicted.	**N**

Table C1.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-387 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	
Dungarvan Harbour SPA (004032)	1.8km	Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. All three WTP upgrades in the vicinity of this European site. Two of the WTPs are hydrologically linked to this European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. All three WTP upgrades in the vicinity of this European site. Two of the WTPs are hydrologically linked to this European site.	**Y**
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	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	
		Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	- Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	No operational impacts predicted.	
Mid-Waterford Coast SPA (004193)	5.8km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. All three WTP upgrades in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. All three WTP upgrades in the ZoI of this European site. No operational impacts predicted.	**N**
Helvick Head to Ballyquin SPA (004192)	8.2km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. All three WTP upgrades in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. All three WTP upgrades in the ZoI of this European site. No operational impacts predicted.	**N**
Blackwater Estuary SPA (004028)	18.5km	Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999]	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. All three WTP upgrades in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. All three WTP upgrades in the ZoI of this European site. No operational impacts predicted.	**N**
Blackwater Callows SPA (004094)	18.5km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] 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. All three WTP upgrades in the ZoI of this European site. No impacts predicted given the nature of the works, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. All three WTP upgrades in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-392 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Ardmore Head SAC (002123)	1.9km	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**

Table C1.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-392 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	
Helvick Head to Ballyquin SPA (004192)	3.1km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Blackwater Estuary SPA (004028)	5.3km	Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999]	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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Ballymacoda Bay SPA (004023)	10.4km	Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	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	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Common Gull (*Larus canus*) [A182]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Wetland and Waterbirds [A999]				
Dungarvan Harbour SPA (004032)	12.4km	Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Turnstone (*Arenaria interpres*) [A169]	Non-b			
		Wetland and Waterbirds [A999]				

Table C1.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-416 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)	2.1km	**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] *Taxus baccata* woods of the British Isles [91J0] **Annex II species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the nature of the works, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**

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 C1.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-416 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	
Dungarvan Harbour SPA (004032)	5.8km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Mid-Waterford Coast SPA (004193)	14.2km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Helvick Head to Ballyquin SPA (004192)	14.8km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Blackwater Callows SPA (004094)	15.6km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] 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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Blackwater Estuary SPA (004028)	16.8km	Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999]	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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-441 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	870m	**<u>Annex I habitats</u>** 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] **<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]	New GW abstraction (karstic) and new WTP to supply deficit. New GW abstraction, new WTP, new pump, new reservoir, new mains and upgrade WTP in the vicinity of this European site. GW abstraction site overlies same karstic region as this European site. WTP upgrade hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction (karstic) and new WTP to supply deficit. New GW abstraction, new WTP, new pump, new reservoir, new mains and upgrade WTP in the vicinity of this European site. GW abstraction site overlies same karstic region as this European site. WTP upgrade 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	
Nier Valley Woodlands SAC (000668)	1.9km	**Annex I habitats** Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	New GW abstraction (karstic) and new WTP to supply deficit. WTP upgrade, new GW abstraction, new WTP, new pump, new reservoir, and new mains in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	New GW abstraction (karstic) and new WTP to supply deficit. WTP upgrade, new GW abstraction, new WTP, new pump, new reservoir, and new mains in the vicinity of this European site. No operational impacts predicted.	**N**
Blackwater River (Cork/Waterford) SAC (002170)	4.4km	**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] *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] *Trichomanes speciosum* (Killarney Fern) [1421]	New GW abstraction (karstic) and new WTP to supply deficit. WTP upgrade, new GW abstraction, new WTP, new pump, new reservoir, and new mains in the vicinity of this European site. No impacts predicted given the distance from site, and a lack of source-pathway-receptor between works and site.	New GW abstraction (karstic) and new WTP to supply deficit. WTP upgrade, new GW abstraction, new WTP, new pump, new reservoir, and new mains in the vicinity of this European site. No operational impacts predicted.	**N**
Comeragh Mountains SAC (001952)	6.2km	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] 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] 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]	New GW abstraction (karstic) and new WTP to supply deficit. WTP upgrade, new GW abstraction, new WTP, new pump, new reservoir, and new mains in the vicinity of this European site. No impacts predicted given the distance from site, and a lack of source-pathway-receptor between works and site.	New GW abstraction (karstic) and new WTP to supply deficit. WTP upgrade, new GW abstraction, new WTP, new pump, new reservoir, and new mains in the vicinity of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Annex II species *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]			

Table C1.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-441 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	
Dungarvan Harbour SPA (004032)	16.7km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	New GW abstraction (karstic) and new WTP to supply deficit. Works in the ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction (karstic) and new WTP to supply deficit. Works in the ZoI of this European site. No operational impacts predicted.	**Y**
Blackwater Callows SPA (004094)	19km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	New GW abstraction (karstic) and new WTP to supply deficit. Works in the ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction (karstic) and new WTP to supply deficit. Works in the ZoI of this European site. No operational impacts predicted.	**Y**

Table C1.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-444 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)	480m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220]	Increase GW abstraction from Tooraneena BH and upgrade Touraneena WTP to supply deficit. Increase GW abstraction and WTP upgrade in the vicinity of, and in close proximity to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction from Tooraneena BH and upgrade Touraneena WTP to supply deficit. Increase GW abstraction and WTP upgrade in the vicinity of, and in close proximity to a hydrological link to this European site.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		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] *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] *Trichomanes speciosum* (Killarney Fern) [1421]	- Disturbance (including biological disturbance)	No operational impacts predicted due to there being no overlap between the ZOC of abstraction and this European site.	

Table C1.24: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-444 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	
Dungarvan Harbour SPA (004032)	11.9km	Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b	Increase GW abstraction from Tooraneena BH and upgrade Touraneena WTP to supply deficit. Works in the ZoI of this European site. No impacts predicted given the nature of the works, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Tooraneena BH and upgrade Touraneena WTP to supply deficit. Works in the ZoI of this European site. No operational impacts predicted.	**N**
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Turnstone (*Arenaria interpres*) [A169]	Non-b			
		Wetland and Waterbirds [A999]				

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)	16.5km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction from Tooraneena BH and upgrade Touraneena WTP to supply deficit. Works in the ZoI of this European site. No impacts predicted given the nature of the works, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Tooraneena BH and upgrade Touraneena WTP to supply deficit. Works in the ZoI of this European site.	
Mid-Waterford Coast SPA (004193)	17.7km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Increase GW abstraction from Tooraneena BH and upgrade Touraneena WTP to supply deficit. Works in the ZoI of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Tooraneena BH and upgrade Touraneena WTP to supply deficit. Works in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.25: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-450 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Comeragh Mountains SAC (001952)	2.5km	**<u>Annex I habitats</u>** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] 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] 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] **<u>Annex II species</u>** *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the vicinity of this European site. No impacts predicted given the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the vicinity of this European site. No operational impacts predicted.	**N**
Glendine Wood SAC (002324)	4.5km	**<u>Annex II species</u>** *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the vicinity of this European site. No impacts predicted given the distance, the nature of the works, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the vicinity of this European site. No operational impacts predicted.	**N**

Table C1.26: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-450 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	
Dungarvan Harbour SPA (004032)	6.2km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the ZoI of this European site. - Disturbance (including biological disturbance)	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the ZoI of this European site. No operational impacts predicted.	**Y**
Mid-Waterford Coast SPA (004193)	6.8km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the ZoI of this European site. Works near a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the ZoI of this European site. Works near a hydrological link to this European site. No operational impacts predicted.	**Y**
Helvick Head to Ballyquin SPA (004192)	11.3km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the ZoI of this European site. No impacts predicted given the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Kilrossanty BH and upgrade Kilrossanty WTP to supply deficit. Increase GW abstraction, upgrade WTP and replace pumping station in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.27: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-472 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)	3.7km	**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 Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the vicinity of this European site. No impacts predicted given the distance from site, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the vicinity of this European site. No operational impacts predicted due to there being no overlap between the ZOC of abstraction and this European site.	**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] 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] *Trichomanes speciosum* (Killarney Fern) [1421]			

Table C1.28: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-472 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	
Dungarvan Harbour SPA (004032)	2.1km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the vicinity of this European site. New mains hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the vicinity of this European site. New mains hydrologically linked to this European site. No operational impacts predicted.	**Y**
Helvick Head to Ballyquin SPA (004192)	8.3km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103]	Breed Breed	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction,	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase	**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	
		Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed	upgrade WTP and new mains in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	GW abstraction, upgrade WTP and new mains in the ZoI of this European site. No operational impacts predicted.	
Blackwater Estuary SPA (004028)	11.1km	Wigeon *(Anas penelope)* [A050] Golden Plover *(Pluvialis apricaria)* [A140] Lapwing *(Vanellus vanellus)* [A142] Dunlin *(Calidris alpina*) [A149] Black-tailed Godwit *(Limosa limosa)* [A156] Bar-tailed Godwit *(Limosa lapponica)* [A157] Curlew *(Numenius arquata)* [A160] Redshank *(Tringa totanus)* [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the ZoI of this European site. No operational impacts predicted.	**N**
Mid-Waterford Coast SPA (004193)	13.2km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the ZoI of this European site. No operational impacts predicted.	**N**
Blackwater Callows SPA (004094)	17.7km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the ZoI of this European site. - Disturbance (including biological disturbance)	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the ZoI of this European site. No operational impacts predicted.	**Y**
Ballymacoda Bay SPA (004023)	19.4km	Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183]	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	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from Ballyguiry BH and upgrade Ballyguiry WTP to supply deficit. Increase GW abstraction, upgrade WTP and new mains in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Wetland and Waterbirds [A999]				

Table C1.29: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-477 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)	2.2km	**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] *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] *Trichomanes speciosum* (Killarney Fern) [1421]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site and of hydrological links to this European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site and of hydrological links to this European site. No operational impacts predicted.	**Y**

Table C1.30: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-477 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)	11.1km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] 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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Dungarvan Harbour SPA (004032)	11.6km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Blackwater Estuary SPA (004028)	17.6km	Wigeon *(Anas penelope)* [A050] Golden Plover *(Pluvialis apricaria)* [A140] Lapwing *(Vanellus vanellus)* [A142] Dunlin *(Calidris alpina*) [A149] Black-tailed Godwit *(Limosa limosa)* [A156] Bar-tailed Godwit *(Limosa lapponica)* [A157] Curlew *(Numenius arquata)* [A160] Redshank *(Tringa totanus)* [A162] Wetland and Waterbirds [A999]	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. WTP upgrade in the ZoI of this European site and in vicinity of hydrological links to this European site. However, no impacts predicted given the distance from site, the nature of the works, and the QI present.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site and in vicinity of hydrological links to this European site. No operational impacts predicted.	**N**
Mid-Waterford Coast SPA (004193)	19.8km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Helvick Head to Ballyquin SPA (004192)	20.3km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184]	Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed	No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.		

Table C1.31: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-478 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)	2.4km	**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] *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] *Trichomanes speciosum* (Killarney Fern) [1421]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**
Ardmore Head SAC (002123)	4.9km	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**

Table C1.32: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-478 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	
Helvick Head to Ballyquin SPA (004192)	1.9km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site and of a hydrological link to this 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. WTP upgrade in the vicinity of this European site and of a hydrological link to this European site. No operational impacts predicted.	**Y**
Blackwater Estuary SPA (004028)	7.6km	Wigeon *(Anas penelope)* [A050] Golden Plover *(Pluvialis apricaria)* [A140] Lapwing *(Vanellus vanellus)* [A142] Dunlin *(Calidris alpina*) [A149] Black-tailed Godwit *(Limosa limosa)* [A156] Bar-tailed Godwit *(Limosa lapponica)* [A157] Curlew *(Numenius arquata)* [A160] Redshank *(Tringa totanus)* [A162] Wetland and Waterbirds [A999]	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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Dungarvan Harbour SPA (004032)	8.6km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Ballymacoda Bay SPA (004023)	13.7km	Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Sanderling (*Calidris alba*) [A144]	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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Turnstone (*Arenaria interpres*) [A169]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Common Gull (*Larus canus*) [A182]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Wetland and Waterbirds [A999]				
Mid-Waterford Coast SPA (004193)	18.5km	Cormorant (*Phalacrocorax carbo*) [A017]	Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
		Peregrine (*Falco peregrinus*) [A103]	Breed			
		Herring Gull (*Larus argentatus*) [A184]	Breed			
		Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed			

Table C1.33: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-481 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	5.3km	**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]	Increase GW abstraction from BH and Ballyshunnock WTP to supply deficit. Increase GW abstraction, upgrade WTP and upgrade pump station in the vicinity of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from BH and Ballyshunnock WTP to supply deficit. Increase GW abstraction, upgrade WTP and upgrade pump station in the vicinity of this European site. No operational impacts predicted due to there being no overlap between the ZOC of abstraction and this European site.	**N**

Table C1.34: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-481 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Mid-Waterford Coast SPA (004193)	10.4km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Increase GW abstraction from BH and Ballyshunnock WTP to supply deficit. Increase GW abstraction, upgrade WTP and upgrade pump station in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from BH and Ballyshunnock WTP to supply deficit. Increase GW abstraction, upgrade WTP and upgrade pump station in the ZoI of this European site. No operational impacts predicted.	**N**
Tramore Back Strand SPA (004027)	15.5km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW abstraction from BH and Ballyshunnock WTP to supply deficit. Increase GW abstraction, upgrade WTP and upgrade pump station in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from BH and Ballyshunnock WTP to supply deficit. Increase GW abstraction, upgrade WTP and upgrade pump station in the ZoI of this European site. No operational impacts predicted.	**N**
Dungarvan Harbour SPA (004032)	21.6km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Increase GW abstraction from BH and Ballyshunnock WTP to supply deficit. Increase GW abstraction, upgrade WTP and upgrade pump station in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction from BH and Ballyshunnock WTP to supply deficit. Increase GW abstraction, upgrade WTP and upgrade pump station in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.35: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-509 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Comeragh Mountains SAC (001952)	1.8km	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site.	**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] 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** *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]	No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	No operational impacts predicted.	
Blackwater River (Cork/Waterford) SAC (002170)	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] *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] *Trichomanes speciosum* (Killarney Fern) [1421]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**

Table C1.36: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-509 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	
Dungarvan Harbour SPA (004032)	8.4km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Mid-Waterford Coast SPA (004193)	13km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Helvick Head to Ballyquin SPA (004192)	15.8km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Blackwater Callows SPA (004094)	19.7km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] 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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.37: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-525 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Comeragh Mountains SAC (001952)	1.8km	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] 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] 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** *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**
Glendine Wood SAC (002324)	8.1km	**Annex II species** *Trichomanes speciosum* (Killarney Fern) [1421]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.38: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-525 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Mid-Waterford Coast SPA (004193)	6.5km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site and adjacent to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site and adjacent to a hydrological link to this European site. No operational impacts predicted.	**Y**
Dungarvan Harbour SPA (004032)	9.5km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143]	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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Turnstone (*Arenaria interpres*) [A169]	Non-b			
		Wetland and Waterbirds [A999]				
Helvick Head to Ballyquin SPA (004192)	13.3km	Cormorant (*Phalacrocorax carbo*) [A017]	Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
		Peregrine (*Falco peregrinus*) [A103]	Breed			
		Herring Gull (*Larus argentatus*) [A184]	Breed			
		Kittiwake (*Rissa tridactyla*) [A188]	Breed			
		Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed			

Table C1.39: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-548 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	4.1km	**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]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**
Comeragh Mountains	7.1km	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
SAC (001952)		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] 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** *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]	No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.		

Table C1.40: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-548 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Mid-Waterford Coast SPA (004193)	11.6km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Tramore Back Strand SPA (004027)	19.3km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Wetland and Waterbirds [A999]	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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Dungarvan Harbour SPA (004032)	19.7km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142]	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. WTP upgrade in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Knot (*Calidris canutus*) [A143]	Non-b			
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Turnstone (*Arenaria interpres*) [A169]	Non-b			
		Wetland and Waterbirds [A999]				

Table C1.41: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with options TG3-SAK-560 and TG3-SAK-618 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 Suir SAC (002137)	0m	**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]	New GW abstraction and new WTP to partly supply deficit. Increase GW abstraction from Portlaw BH and Portlaw spring and upgrade Portlaw WTP to partly supply deficit. New mains cross this European site. New GW abstraction, two increased GW abstractions, new pump, new balancing tank, new WTP, new mains, and upgrade WTP adjacent to or in the vicinity of this European site. Some of the works are hydrologically linked to this European site. New GW abstraction and this European site within same karstic region. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and new WTP to partly supply deficit. Increase GW abstraction from Portlaw BH and Portlaw spring and upgrade Portlaw WTP to partly supply deficit. New mains cross this European site. New GW abstraction, two increased GW abstractions, new pump, new balancing tank, new WTP, new mains, and upgrade WTP adjacent to or in the vicinity of this European site. Some of the works are hydrologically linked to this European site. New GW abstraction and this European site within same karstic region. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
River Barrow And River Nore SAC (002162)	18.1km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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 and new WTP to partly supply deficit. Increase GW abstraction from Portlaw BH and Portlaw spring and upgrade Portlaw WTP to partly supply deficit. New mains are hydrologically linked to this European site via the Clodiagh River and the River Suir. No impacts predicted given the the distance from site, and the natural attenuation of the watercourses linking the works to the site.	New GW abstraction and new WTP to partly supply deficit. Increase GW abstraction from Portlaw BH and Portlaw spring and upgrade Portlaw WTP to partly supply deficit. New mains are hydrologically linked to this European site via the Clodiagh River and the River Suir. No operational impacts predicted.	**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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]			

Table C1.42: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with options TG3-SAK-560 and TG3-SAK-618 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	
Mid-Waterford Coast SPA (004193)	11.6km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	New GW abstraction and new WTP to partly supply deficit. Increase GW abstraction from Portlaw BH and Portlaw spring and upgrade Portlaw WTP to partly supply deficit. Works in the ZoI of this European site. No impacts predicted given the the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	New GW abstraction and new WTP to partly supply deficit. Increase GW abstraction from Portlaw BH and Portlaw spring and upgrade Portlaw WTP to partly supply deficit. Works in the ZoI of this European site. No operational impacts predicted.	**N**
Tramore Back Strand SPA (004027)	16.2km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b	New GW abstraction and new WTP to partly supply deficit. Increase GW abstraction from Portlaw BH and Portlaw spring and upgrade Portlaw WTP to partly supply deficit. Works in the ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction and new WTP to partly supply deficit. Increase GW abstraction from Portlaw BH and Portlaw spring and upgrade Portlaw WTP to partly supply deficit. Works in the ZoI of this European site. No operational impacts 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	
		Curlew (*Numenius arquata*) [A160] Wetland and Waterbirds [A999]	Non-b			

Table C1.43: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-569 leading to potential LSEs. Note: No SPAs within ZoI for TG3-SAK-569.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	230m	**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]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in close proximity to this European site and to hydrological link to this 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. WTP upgrade in close proximity to this European site and to hydrological link to this European site. No operational impacts predicted.	**Y**
Nier Valley Woodlands SAC (000668)	6.2km	**Annex I habitats** Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the vicinity of this European site. No operational impacts predicted.	**N**

Table C1.44: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-625 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)	1.9km	**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] *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] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the vicinity of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the vicinity of this European site. No operational impacts predicted.	**N**
Ardmore Head SAC (002123)	4.9km	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the vicinity of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the vicinity of this European site. No operational impacts predicted.	**N**

Table C1.45: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-625 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	
Helvick Head to Ballyquin SPA (004192)	4km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Blackwater Estuary SPA (004028)	4.7km	Wigeon *(Anas penelope)* [A050] Golden Plover *(Pluvialis apricaria)* [A140] Lapwing *(Vanellus vanellus)* [A142] Dunlin *(Calidris alpina*) [A149] Black-tailed Godwit *(Limosa limosa)* [A156] Bar-tailed Godwit *(Limosa lapponica)* [A157] Curlew *(Numenius arquata)* [A160] Redshank *(Tringa totanus)* [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the ZoI of this European site. No operational impacts predicted.	**N**
Dungarvan Harbour SPA (004032)	10.7km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the ZoI of this European site. No operational impacts predicted.	**N**
Ballymacoda Bay SPA (004023)	11.1km	Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	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	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, upgrade WTP, and upgrade pump in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Common Gull (*Larus canus*) [A182]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Wetland and Waterbirds [A999]				

Table C1.46: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-648 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	1.6km	**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]	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the vicinity of this European site. Works adjacent to hydrological links to this European site. GW abstraction and this European site within same karstic region. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the vicinity of this European site. Works adjacent to hydrological links to this European site. GW abstraction and this European site within same karstic region. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
River Barrow And River Nore SAC (002162)	7.2km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the vicinity of this European site. Works hydrologically linked to this European site via hydrological links to the River Suir. - Habitat degradation – changes in water quality (pollution)	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the vicinity of this European site. Works hydrologically linked to this European site via hydrological links to the River Suir. No operational impacts predicted due to distance from site and the abstraction and European site overlying different aquifers.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]			
Hugginstown Fen SAC (000404)	6.4km	**Annex I habitats** Alkaline fens [7230]	Bring back Silverspring WTP to production and supply deficit. WTP upgrade in the vicinity of this European site, and also adjacent to a hydrological link to this European site. No impacts predicted given the distance from site, the QI present, and due to the works being downstream of this European site.	Bring back Silverspring WTP to production and supply deficit. WTP upgrade in the vicinity of this European site, and also adjacent to a hydrological link to this European site. No operational impacts predicted due to distance from site and the abstraction and European site overlying different aquifers.	**N**

Table C1.47: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-648 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	
Tramore Back Strand SPA (004027)	12.9km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, and a lack of source-pathway-receptor between works and site.	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the ZoI of this European site. No operational impacts predicted.	**N**
River Nore SPA (004233)	15.1km	Kingfisher (*Alcedo atthis*) [A229]	Breed	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the ZoI of this European site.	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
				No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.		
Mid-Waterford Coast SPA (004193)	16.5km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction and three WTP upgrades in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Bring back Silverspring WTP to production and supply deficit. Increase GW abstraction andthree WTP upgrades in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.48: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-837 (TG3-SAK-265, TG3-SAK-269, TG3-SAK-271, TG3-SAK-273, TG3-SAK-289) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	35m	**<u>Annex I habitats</u>** 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] **<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]	New GW abstraction and new Linguan WTP to supply deficit. Rationalise Rathgormack, Ballyknock, Crehanagh and Garravoone WRZs. New GW abstraction, WTP, storage, mains and pump, upgrade Linguan WTP, and decommission Coolnamuck WTP adjacent to this European site. New pumps, storage, mains, upgrade Crotty's Lake WTP, and decommission Rathgormack WTP, Crehanagh WTP, Garravoone WTP, and Ballyknock WTP in vicinity of this European site. Some of the works hydrologically linked to this European site. New GW abstraction overlies same karst aquifer as this European site. - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and new Linguan WTP to supply deficit. Rationalise Rathgormack, Ballyknock, Crehanagh and Garravoone WRZs. New GW abstraction, WTP, storage, mains and pump, upgrade Linguan WTP, and decommission Coolnamuck WTP adjacent to this European site. New pumps, storage, mains, upgrade Crotty's Lake WTP, and decommission Rathgormack WTP, Crehanagh WTP, Garravoone WTP, and Ballyknock WTP in vicinity of this European site. Some of the works hydrologically linked to this European site. New GW abstraction overlies same karst aquifer as this European site. However, previous trial well tests indicate no interaction between the aquifer and the river waterbody, therefore no operational impacts are predicted.	**Y**
Comeragh Mountains SAC (001952)	3.8km	**<u>Annex I habitats</u>** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] 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]	New GW abstraction and new Linguan WTP to supply deficit. Rationalise Rathgormack, Ballyknock, Crehanagh and Garravoone WRZs. New pumps, storage, and mains and decommission Rathgormack WTP in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	New GW abstraction and new Linguan WTP to supply deficit. Rationalise Rathgormack, Ballyknock, Crehanagh and Garravoone WRZs. New pumps, storage, and mains and decommission Rathgormack WTP in the vicinity of this European site. No operational impacts predicted due to the GW abstraction being 13km from this European site.	**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** *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]			
River Barrow And River Nore SAC (002162)	16.4km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	New GW abstraction and new Linguan WTP to supply deficit. Rationalise Rathgormack, Ballyknock, Crehanagh and Garravoone WRZs. Some of the works are hydrologically linked to this European site. However, no impacts predicted given the distance between the works and the site.	New GW abstraction and new Linguan WTP to supply deficit. Rationalise Rathgormack, Ballyknock, Crehanagh and Garravoone WRZs. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**N**

Table C1.49: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-837 (TG3-SAK-265, TG3-SAK-269, TG3-SAK-271, TG3-SAK-273, TG3-SAK-289) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Mid-Waterford Coast SPA (004193)	17.5km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	New GW abstraction and new Linguan WTP to supply deficit. Rationalise Rathgormack, Ballyknock, Crehanagh and Garravoone WRZs. The works are in the ZoI of this European site. No impacts predicted given the nature of the works, the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	New GW abstraction and new Linguan WTP to supply deficit. Rationalise Rathgormack, Ballyknock, Crehanagh and Garravoone WRZs. The works are in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.50: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-853 (TG3-SAK-222, TG3-SAK-239) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	0m	**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 abstraction at Mullinbawn spring and upgrade Mullinbawn WTP to supply deficit to neighboring WRZ in deficit. Interconnect Coalbrook/Commons and Fethard & Mullenbawn and supply deficit from Fethard & Mullenbawn [Mullinbawn WTP]. Increase GW abstraction, and replace pump and Mullinbawn WTP within this European site. Upgrade Fethard WTP and Dualla WTP in close proximity to this European site. New pumps, storage and mains, and upgrade Coalbrook WTP, Commons WTP and Ballincurry WTP in the vicinity of this European site. Some works hydrologically linked to this European site. European site within ZOC of abstraction. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase abstraction at Mullinbawn spring and upgrade Mullinbawn WTP to supply deficit to neighboring WRZ in deficit. Interconnect Coalbrook/Commons and Fethard & Mullenbawn and supply deficit from Fethard & Mullenbawn [Mullinbawn WTP]. Increase GW abstraction, and replace pump and Mullinbawn WTP within this European site. Upgrade Fethard WTP and Dualla WTP in close proximity to this European site. New pumps, storage and mains, and upgrade Coalbrook WTP, Commons WTP and Ballincurry WTP in the vicinity of this European site. Some works hydrologically linked to this European site. European site within ZOC of abstraction. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
River Barrow And River Nore SAC (002162)	2.9km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	Increase abstraction at Mullinbawn spring and upgrade Mullinbawn WTP to supply deficit to neighboring WRZ in deficit. Interconnect Coalbrook/Commons and Fethard & Mullenbawn and supply deficit from Fethard & Mullenbawn [Mullinbawn WTP]. New pumps, storage and mains, and upgrade Coalbrook WTP, Commons WTP and Ballincurry WTP in the vicinity of this European site. Some works hydrologically linked to this European site.	Increase abstraction at Mullinbawn spring and upgrade Mullinbawn WTP to supply deficit to neighboring WRZ in deficit. Interconnect Coalbrook/Commons and Fethard & Mullenbawn and supply deficit from Fethard & Mullenbawn [Mullinbawn WTP]. New pumps, storage and mains, and upgrade Coalbrook WTP, Commons WTP and Ballincurry WTP in the vicinity of this European site.	**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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	- Habitat degradation – changes in water quality (pollution)	Some works hydrologically linked to this European site. No operational impacts predicted.	

Table C1.51: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-853 (TG3-SAK-222, TG3-SAK-239) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Nore SPA (004233)	16.3km	Kingfisher (*Alcedo atthis*) [A229]	Breed	Increase abstraction at Mullinbawn spring and upgrade Mullinbawn WTP to supply deficit to neighboring WRZ in deficit. Interconnect Coalbrook/Commons and Fethard & Mullenbawn and supply deficit from Fethard & Mullenbawn [Mullinbawn WTP]. The works are in the ZoI of this European site. Some works hydrologically linked to this European site. No impacts predicted given the distance from site and the QI present.	Increase abstraction at Mullinbawn spring and upgrade Mullinbawn WTP to supply deficit to neighboring WRZ in deficit. Interconnect Coalbrook/Commons and Fethard & Mullenbawn and supply deficit from Fethard & Mullenbawn [Mullinbawn WTP]. The works are in the ZoI of this European site. Some works hydrologically linked to this European site. No operational impacts predicted.	**N**

Table C1.52: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-949 (TG3-SAK-356, TG3-SAK-399, TG3-SAK-438, TG3-SAK-495, TG3-SAK-501, TG3-SAK-530, TG3-SAK-538, TG3-SAK-555, TG3-SAK-604 and TG3-SAK-608) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	0m	**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]	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. New SW abstraction and new mains within this European site. New pump, new reservoir, new storage, new mains and WTP upgrade adjacent to this European site. Other works including new pumps, new storage, new mains and decommission 10 WTPs in the vicinity of this European site. Some works hydrologically linked to this European site. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. New SW abstraction and new mains within this European site. New pump, new reservoir, new storage, new mains and WTP upgrade adjacent to this European site. Other works including new pumps, new storage, new mains and decommission 10 WTPs in the vicinity of this European site. Some works hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Comeragh Mountains SAC (001952)	2.7km	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] 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] 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** *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. New pumps, new storage, new mains and decommission 10 WTPs in the vicinity of this European site. Some works hydrologically linked to this European site. No impacts predicted given the distance from site and due to the works being downstream of the site.	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. New pumps, new storage, new mains and decommission 10 WTPs in the vicinity of this European site. Some works hydrologically linked to this European site. No operational impacts predicted.	**N**
Tramore Dunes and Backstrand SAC (000671)	4.4km	**Annex I habitats** 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]	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. New pumps, new storage, new mains,	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. New pumps, new storage,	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		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]	WTP upgrade, and decommission three WTPs in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	new mains, WTP upgrade, and decommission three WTPs in the vicinity of this European site. No operational impacts predicted.	
River Barrow And River Nore SAC (002162)	14.4km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. New pumps, new storage, new mains, WTP upgrade, and decommission three WTPs in the vicinity of this European site. Some works hydrologically linked to this European site via hydrological links to the River Suir. - Habitat degradation – changes in water quality (pollution)	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. New pumps, new storage, new mains, WTP upgrade, and decommission three WTPs in the vicinity of this European site. Some works hydrologically linked to this European site via hydrological links to the River Suir. No operational impacts predicted.	**Y**

Table C1.53: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-949 (TG3-SAK-356, TG3-SAK-399, TG3-SAK-438, TG3-SAK-495, TG3-SAK-501, TG3-SAK-530, TG3-SAK-538, TG3-SAK-555, TG3-SAK-604 and TG3-SAK-608) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Mid-Waterford Coast SPA (004193)	3.2km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. Works in the ZoI of this European site, with some works, mainly new watermains, hydrologically linked to the site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. Works in the ZoI of this European site, with some works, mainly new watermains, hydrologically linked to the site. No operational impacts predicted.	**Y**
Tramore Back Strand SPA (004027)	4.5km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. Works, mainly new watermains, in the ZoI of this European site. - Disturbance (including biological disturbance)	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. Works, mainly new watermains, in the ZoI of this European site. No operational impacts predicted.	**Y**
Dungarvan Harbour SPA (004032)	10.5km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. Works, mainly new watermains, new pumps, new storage and decommissioned WTPs, in the ZoI of this European site. - Disturbance (including biological disturbance)	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. Works, mainly new watermains, new pumps, new storage and decommissioned WTPs, in the ZoI of this European site. No operational impacts predicted.	**Y**
Helvick Head to Ballyquin SPA (004192)	13.5km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188]	Breed Breed Breed Breed	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East Waterford WRZ. Works, mainly new watermains, new	New SW abstraction from River Suir upstream of Carrick-on-Suir. Pump raw water to Adamstown WTP and treat at Adamstown WTP to supply deficit. Rationalise Ballyogarty, Kilmacthomas, Faha, Smoore, Fews, Kill/Ballylaneen, Scrahan, Dunhill - Cois Coille and Dunhill Ballinageeragh to East	**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	
		Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed	pumps, new storage and decommissioned WTPs, in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Waterford WRZ. Works, mainly new watermains, new pumps, new storage and decommissioned WTPs, in the ZoI of this European site. No operational impacts predicted.	

Table C1.54: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-973 (TG3-SAK-672, TG3-SAK-673, TG3-SAK-674, TG3-SAK-675, TG3-SAK-676, TG3-SAK-677, TG3-SAK-756) 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] *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] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/Ballyduff (LCB) WRZ. New mains within this European site. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) adjacent or in close proximity to this European site. Some of the works are hydrologically linked to this European site. Both new and increased GW abstractions overlie same karst aquifer as this European site. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/Ballyduff (LCB) WRZ. New mains within this European site. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) adjacent or in close proximity to this European site. Some of the works are hydrologically linked to this European site. Both new and increased GW abstractions overlie same karst aquifer as this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C1.55: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-973 (TG3-SAK-672, TG3-SAK-673, TG3-SAK-674, TG3-SAK-675, TG3-SAK-676, TG3-SAK-677, TG3-SAK-756) 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)	500m	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the vicinity or ZoI of this European site. Some of the new mains are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the vicinity or ZoI of this European site. Some of the new mains are hydrologically linked to this European site. No operational impacts predicted.	**Y**
Dungarvan Harbour SPA (004032)	8.8km	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this European site. - Disturbance (including biological disturbance)	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this European site. No operational impacts predicted.	**Y**
Blackwater Estuary SPA (004028)	9.9km	Wigeon *(Anas penelope)* [A050] Golden Plover *(Pluvialis apricaria)* [A140] Lapwing *(Vanellus vanellus)* [A142] Dunlin *(Calidris alpina*) [A149] Black-tailed Godwit *(Limosa limosa)* [A156] Bar-tailed Godwit *(Limosa lapponica)* [A157] Curlew *(Numenius arquata)* [A160] Redshank *(Tringa totanus)* [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well	**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	
				European site. Some of works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	WTP and Lacken WTP) in the ZoI of this European site. Some of works are hydrologically linked to this European site. No operational impacts predicted.	
Helvick Head to Ballyquin SPA (004192)	15.7km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this European site. No operational impacts predicted.	**N**
Mid-Waterford Coast SPA (004193)	18km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this European site. No operational impacts predicted.	**N**
Ballymacoda Bay SPA (004023)	20.2km	Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169]	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 GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW (to include commissioning new TW) abstraction from existing BH and upgrade LCB Lismore Deerpark WTP to supply deficit. New GW abstraction and upgrade WTP LCB Cappoquin WTP to partly supply deficit. Rationalise Lacken, Kereen and Moores Well, Monatarriff, Carrignagower and Ballysaggart to Lismore/Cappoquin/ Ballyduff (LCB) WRZ. New GW abstraction, mains, pumps, and storage, increased GW abstraction, upgrade pump and three WTPs (LCB Cappoquin WTP, LCB Lismore Deerpark WTP and LCB Ballyduff WTP), and decommission five WTPs (Ballysaggart WTP, Monatarrif WTP, Carrignagower WTP, Moore's Well WTP and Lacken WTP) in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Common Gull (*Larus canus*) [A182]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Wetland and Waterbirds [A999]				

Table C1.56: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-975 (TG3-SAK-684, TG3-SAK-685, TG3-SAK-686, TG3-SAK-687, TG3-SAK-688, TG3-SAK-689) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	0m	**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]	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains within this European site. New pumps, mains and storage, and upgrade Ironsmill WTP, Stooke WTP and Thurles WTP adjacent to or in close proximity to this European site. New pumps, storage and mains, upgrade Hollyford WTP, and decommission Littleton WTP, Two Mile Borris WTP, Glengar WTP, and Curragheen WTP in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains within this European site. New pumps, mains and storage, and upgrade Ironsmill WTP, Stooke WTP and Thurles WTP adjacent to or in close proximity to this European site. New pumps, storage and mains, upgrade Hollyford WTP, and decommission Littleton WTP, Two Mile Borris WTP, Glengar WTP, and Curragheen WTP in ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted as there are no new or increased abstractions associated with this option, only maintained abstractions.	**Y**
Lower River Shannon SAC (002165)	140m	**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]	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains, upgrade Ironsmill WTP and decommission Glengar WTP adjacent to or in close proximity to this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains, upgrade Ironsmill WTP and decommission Glengar WTP adjacent to or in close proximity to this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted as there are no new or increased abstractions associated with this option, only maintained abstractions.	**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]			
Anglesey Road SAC (002125)	975m	**Annex I habitats:** Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains, upgrade Ironsmill WTP and decommission Glengar WTP adjacent to or in close proximity to this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains, upgrade Ironsmill WTP and decommission Glengar WTP adjacent to or in close proximity to this European site. No operational impacts predicted as there are no new or increased abstractions associated with this option, only maintained abstractions.	**N**
Philipston Marsh SAC (001847)	1.6km	**Annex I habitats:** Transition mires and quaking bogs [7140]	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains, upgrade Ironsmill WTP and decommission Glengar WTP adjacent to or in close proximity to this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains, upgrade Ironsmill WTP and decommission Glengar WTP adjacent to or in close proximity to this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted as there are no new or increased abstractions associated with this option, only maintained abstractions.	**Y**

Table C1.57: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-975 (TG3-SAK-684, TG3-SAK-685, TG3-SAK-686, TG3-SAK-687, TG3-SAK-688, TG3-SAK-689) 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	
Slievefelim to Silvermines Mountains SPA (004165)	2.9km	Hen Harrier (*Circus cyaneus*) [A082]	Breed	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains, upgrade Ironsmill WTP and decommission Glengar WTP in ZoI of this European site. - Disturbance (including biological disturbance)	Supply spare capacity from Thurles to neighbouring WRZs in deficit. Rationalise Horse and Jockey, Littleton, and Two Mile Borris to Thurles WRZ. Interconnect Dundrum Regional and Thurles and supply deficit from Thurles. Rationalise Glengar to Dundrum regional WRZ. New mains, upgrade Ironsmill WTP and decommission Glengar WTP in ZoI of this European site. No operational impacts predicted.	**Y**

Table C1.58: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-983 (TG3-SAK-733, TG3-SAK-734, TG3-SAK-735, TG3-SAK-736, TG3-SAK-737, TG3-SAK-738, TG3-SAK-739, TG3-SAK-740, TG3-SAK-741, TG3-SAK-742, TG3-SAK-743) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Lower River Suir SAC (002137)	0m	**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]	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. New SW abstraction and mains within this European site. New pumps, mains and storage, upgrade Goatenbridge WTP and Templetney WTP, and decommission Glenary WTP, Ballinvir WTP, Ahenny WTP, Russelstown WTP, Kilmanahan WTP, Clonmel-Poulavanogue WTP, Poulavanogue WTP and Glennagad WTP adjacent to or in close proximity to this European site. New WTP, pumps, storage and mains, upgrade Monroe WTP, and decommission Kilcash WTP and Tullohea WTP in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. New SW abstraction and mains within this European site. New pumps, mains and storage, upgrade Goatenbridge WTP and Templetney WTP, and decommission Glenary WTP, Ballinvir WTP, Ahenny WTP, Russelstown WTP, Kilmanahan WTP, Clonmel-Poulavanogue WTP, Poulavanogue WTP and Glennagad WTP adjacent to or in close proximity to this European site. New WTP, pumps, storage and mains, upgrade Monroe WTP, and decommission Kilcash WTP and Tullohea WTP in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Nier Valley Woodlands SAC (000668)	6.8km	**Annex I habitats** Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. Some of the works are in the ZoI of this European site.	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
			No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Poulavanogue. Some of the works are in the ZoI of this European site. No operational impacts predicted.	
Comeragh Mountains SAC (001952)	9.5km	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] 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] 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** *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. Some of the works are in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. Some of the works are in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.59: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-983 (TG3-SAK-733, TG3-SAK-734, TG3-SAK-735, TG3-SAK-736, TG3-SAK-737, TG3-SAK-738, TG3-SAK-739, TG3-SAK-740, TG3-SAK-741, TG3-SAK-742, TG3-SAK-743) 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)	13km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. Some of the works are in the ZoI of this European site. - Disturbance (including biological disturbance)	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. Some of the works are in the ZoI of this European site. No operational impacts predicted.	**Y**
River Nore SPA (004233)	12.1km	Kingfisher (*Alcedo atthis*) [A229]	Breed	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. Some of the works are in the ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	New abstraction from the River Suir and new WTP at Barne site to supply deficit. Interconnect Templetney/Brackford Bridge and Ardfinnan Regional with Clonmel WRZ. Rationalise Russelstown, Kilmanahan, Tullohea, Kilcash, Ahenny and Ballinvir, Glenagad and Poulavanogue. Some of the works are in the ZoI of this European site. No operational impacts predicted.	**N**

Table C1.60: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-985c (TG3-SAK-748, TG3-SAK-749, TG3-SAK-750, TG3-SAK-751, TG3-SAK-752, TG3-SAK-753) 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]	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Increased SW abstraction within this European site. Carrigmore WTP adjacent to this European site. New pumps, storage and mains, upgrade pumps, and decommission Herbertstown WTP and Kilteely WTP in vicinity of this European site. Some of the works are hydrologically linked to this European site. - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Increased SW abstraction within this European site. Carrigmore WTP adjacent to this European site. New pumps, storage and mains, upgrade pumps, and decommission Herbertstown WTP and Kilteely WTP in vicinity of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Glen Bog SAC (001430)	2.6km	**Annex I habitats:** Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including new pumps, storage and mains, and decommission Herbertstown WTP, Hospital WTP 1, Hospital WTP 2 and Kilteely WTP are in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including new pumps, storage and mains, and decommission Herbertstown WTP, Hospital WTP 1, Hospital WTP 2 and Kilteely WTP are in the vicinity of this European site. No operational impacts predicted.	**N**
Moanour Mountain SAC (002257)	3.2km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including new mains and decommission Galbally WTP are in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including new mains and decommission Galbally WTP are in the vicinity of this European site. No operational impacts predicted.	**N**
Galtee Mountains	5.2km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010]	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
SAC (000646)		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]	new pumps, storage and mains, and decommission Galbally WTP, Knocklong Church Road WTP and Ballylanders WTP are in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Clareville (SA8). Some of the works including new pumps, storage and mains, and decommission Galbally WTP, Knocklong Church Road WTP and Ballylanders WTP are in the vicinity of this European site. No operational impacts predicted.	
Philipston Marsh SAC (001847)	5.6km	**Annex I habitats:** Transition mires and quaking bogs [7140]	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including decommission Carrigmore WTP are in the vicinity of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including decommission Carrigmore WTP are in the vicinity of this European site. No operational impacts predicted.	**N**
Lower River Suir SAC (002137)	6.5km	**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]	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). New pumps, storage and mains, upgrade pumps, and decommission Knocklong WTP, Hospital WTP 1, Hospital WTP 2, Knocklong Church Road WTP, Kilteely WTP, Galbally WTP, Ballylanders WTP and Carrigmore WTP in the vicinity of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). New pumps, storage and mains, upgrade pumps, and decommission Knocklong WTP, Hospital WTP 1, Hospital WTP 2, Knocklong Church Road WTP, Kilteely WTP, Galbally WTP, Ballylanders WTP and Carrigmore WTP in the vicinity of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**Y**

Table C1.61: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-985c (TG3-SAK-748, TG3-SAK-749, TG3-SAK-750, TG3-SAK-751, TG3-SAK-752, TG3-SAK-753) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Shannon and River Fergus Estuaries SPA (004077)	6.2km	Cormorant (*Phalacrocorax carbo*) [A017] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Scaup (*Aythya marila*) [A062] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Wetland and Waterbirds [A999]	Breed Non-b	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including increased SW abstraction and upgrade pumps are in the ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including increased SW abstraction and upgrade pumps are in the ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts are predicted.	**Y**
Slievefelim to Silvermines Mountains SPA (004165)	6.3km	Hen Harrier (*Circus cyaneus*) [A082]	Breed	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including new pumps and, mains, increased SW abstraction, upgrade pumps, and decommission Herbertstown WTP, Kilteely WTP and Carrigmrore WTP are in the ZoI of this European site. No impacts predicted given the distance from site and the QI present.	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including new pumps and, mains, increased SW abstraction, upgrade pumps, and decommission Herbertstown WTP, Kilteely WTP and Carrigmrore WTP are in the ZoI of this European site. No operational impacts predicted.	**N**
Lough Derg (Shannon) SPA (004058)	14km	Cormorant (*Phalacrocorax carbo*) [A017] Tufted Duck (*Aythya fuligula*) [A061] Goldeneye (*Bucephala clangula*) [A067] Common Tern (*Sterna hirundo*) [A193] Wetland and Waterbirds [A999]	Breed Non-b Non-b Breed	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including increased SW abstraction and upgrade pumps are in the ZoI of this European site. No impacts predicted given the distance from site and the QI present.	Rationalise Carrigmore, Kilteely, Herbertstown, Knocklong/Hospital, Ballylanders and Galbally to Clareville WTP (Limerick City). This option involves the increased SW abstraction at Clareville (SA8). Some of the works including increased SW abstraction and upgrade pumps are in the ZoI of this European site. No operational impacts are predicted.	**N**

Table C1.62: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAK-995 (TG3-SAK-783, TG3-SAK-784, TG3-SAK-785) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Glendine Wood SAC (002324)	1.7km	**Annex II species** *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, storage, and mains, increase GW abstraction, upgrade Ballinamuck WTP, and decommission Stradbally WTP and Graiguenageeha WTP in close proximity to or in ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, storage, and mains, increase GW abstraction, upgrade Ballinamuck WTP, and decommission Stradbally WTP and Graiguenageeha WTP in close proximity to or in ZoI of this European site. No operational impacts predicted.	**N**
Helvick Head SAC (000665)	4.8km	**Annex I habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, storage, and mains, increase GW abstraction, upgrade Ballinamuck WTP, and decommission Stradbally WTP and Graiguenageeha WTP in ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, storage, and mains, increase GW abstraction, upgrade Ballinamuck WTP, and decommission Stradbally WTP and Graiguenageeha WTP in ZoI of this European site. No operational impacts predicted.	**N**
Blackwater River (Cork/Waterford) SAC (002170)	6.4km	**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] *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] *Trichomanes speciosum* (Killarney Fern) [1421]	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, storage, and mains, increase GW abstraction, upgrade Ballinamuck WTP, and decommission Stradbally WTP and Graiguenageeha WTP in ZoI of this European site. No impacts predicted given the distance from site and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, storage, and mains, increase GW abstraction, upgrade Ballinamuck WTP, and decommission Stradbally WTP and Graiguenageeha WTP in ZoI of this European site. No operational impacts predicted as the ZOC of the abstraction does not intercept this European site.	**N**

Table C1.63: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAK-995 (TG3-SAK-783, TG3-SAK-784, TG3-SAK-785) 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	
Dungarvan Harbour SPA (004032)	0m	Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] 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	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New mains within this European site. New pumps, mains and storage, increased GW abstraction and WTP upgrade adjacent to this European site. Other new mains and decommission WTPs in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Physical loss of habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New mains within this European site. New pumps, mains and storage, increased GW abstraction and WTP upgrade adjacent to this European site. Other new mains and decommission WTPs in ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**Y**
Mid-Waterford Coast SPA (004193)	25m	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New mains adjacent to this European site. New pumps, mains and storage, increased GW abstraction, WTP upgrade and decommission WTPs in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New mains adjacent to this European site. New pumps, mains and storage, increased GW abstraction, WTP upgrade and decommission WTPs in ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**Y**
Helvick Head to Ballyquin SPA (004192)	4.8km	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Breed Breed Breed Breed Breed	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, mains and storage, increased GW abstraction, WTP upgrade and decommission WTPs in ZoI of this European site. No impacts predicted given the distance from site, the QI present, and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, mains and storage, increased GW abstraction, WTP upgrade and decommission WTPs in ZoI of this European site. No operational impacts predicted.	**N**
Blackwater Estuary SPA (004028)	16.3km	Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, mains and storage, increased GW abstraction, WTP upgrade and decommission WTPs in ZoI of this European site. No impacts predicted given the QI present and a lack of source-pathway-receptor between works and site.	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, mains and storage, increased GW abstraction, WTP upgrade and decommission WTPs in ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Blackwater Callows SPA (004094)	19.8km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, mains and storage, increased GW abstraction, WTP upgrade and decommission WTPs in ZoI of this European site. - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Ballinamuck WTP to supply deficit. Rationalise Graiguenageeha and Stradbally to Dungarvan WRZ. New pumps, mains and storage, increased GW abstraction, WTP upgrade and decommission WTPs in ZoI of this European site. No operational impacts predicted.	**Y**

Table C2.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAL-015 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Barrow And River Nore SAC (002162)	670m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	Increase GW abstraction from Busherstown Springs and upgrade Glenmore WTP to supply deficit. Works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction from Busherstown Springs and upgrade Glenmore WTP to supply deficit. Works are hydrologically linked to this European site. The GW abstraction overlies the same bedrock aquifer as the European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**

Table C2.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAL-015 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Nore SPA (004233)	10.5km	Kingfisher (*Alcedo atthis*) [A229]	breed	Increase GW abstraction from Busherstown Springs and upgrade Glenmore WTP to supply deficit. Works are hydrologically linked to this European site. No impacts predicted given the distance from site and the European site is upstream of the works.	Increase GW abstraction from Busherstown Springs and upgrade Glenmore WTP to supply deficit. Works are hydrologically linked to this European site. No operational impacts predicted	**N**

Table C2.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAL-073 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Barrow And River Nore SAC (002162)	230m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. The new watermains crosses a hydrological link to this site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. The new PS, three new reservoirs and new watermains between New Ross and Adamstown. The new watermains crosses a hydrological link to this site. No operational impacts predicted given the new GW abstraction takes place 13km from the European site and the works overlie a different aquifer to the European site.	**Y**
Slaney River Valley SAC (000781)	5.7km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *Petromyzon marinus* (Sea Lamprey) [1095]	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. No impacts predicted given the closest works take place 540m from a hydrological link to this European site.	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. Though the GW abstraction overlies the same fissured bedrock aquifer as the European site no operational impacts predicted as the abstraction takes place over 5km from this European site.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Lampetra planeri (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]			
Bannow Bay SAC (000697)	9km	**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] Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. The new watermains crosses a hydrological link to this site. - Habitat degradation – changes in water quality (pollution)	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. The new PS, three new reservoirs and new watermains between New Ross and Adamstown. The new watermains crosses a hydrological link to this site. No operational impacts predicted given the distance and the GW abstraction overlies a different aquifer to this European site.	**Y**

Table C2.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAL-073 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Wexford Harbour and Slobs SPA (004076)	9.8km	Little Grebe (*Tachybaptus ruficollis*) [A004]	non-b	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. All the new infrastructure is in the vicinity of the European site. - Disturbance (including biological disturbance)	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. All the new infrastructure is in the vicinity of the European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	non-b			
		Grey Heron (*Ardea cinerea*) [A028]	non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	non-b			
		Shelduck (*Tadorna tadorna*) [A048]	non-b			
		Wigeon (*Anas penelope*) [A050]	non-b			
		Teal (*Anas crecca*) [A052]	non-b			
		Mallard (*Anas platyrhynchos*) [A053]	non-b			
		Pintail (*Anas acuta*) [A054]	non-b			
		Scaup (*Aythya marila*) [A062]	non-b			
		Goldeneye (*Bucephala clangula*) [A067]	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	
		Red-breasted Merganser (*Mergus serrator*) [A069]	non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	non-b			
		Coot (*Fulica atra*) [A125]	non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	non-b			
		Lapwing (*Vanellus vanellus*) [A142]	non-b			
		Knot (*Calidris canutus*) [A143]	non-b			
		Sanderling (*Calidris alba*) [A144]	non-b			
		Dunlin (*Calidris alpina*) [A149]	non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	non-b			
		Curlew (*Numenius arquata*) [A160]	non-b			
		Redshank (*Tringa totanus*) [A162]	non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	non-b			
		Little Tern (*Sterna albifrons*) [A195]	non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	non-b			
		Wetland and Waterbirds [A999]				
Bannow Bay SPA (004033)	12.9km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	non-b	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. The new watermains crosses a hydrological link to this site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. The new watermains crosses a hydrological link to this site. No operational impacts predicted.	**Y**
		Shelduck (*Tadorna tadorna*) [A048]	non-b			
		Pintail (*Anas acuta*) [A054]	non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	non-b			
		Lapwing (*Vanellus vanellus*) [A142]	non-b			
		Knot (*Calidris canutus*) [A143]	non-b			
		Dunlin (*Calidris alpina*) [A149]	non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	non-b			
		Curlew (*Numenius arquata*) [A160]	non-b			
		Redshank (*Tringa totanus*) [A162]	non-b			
		Wetland and Waterbirds [A999]				
Ballyteige Burrow SPA (004020)	18.8km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	non-b	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. All the new infrastructure is in the vicinity of the European site. - Disturbance (including biological disturbance)	New GW abstraction, new WTP and new wellfield located south of New Ross WRZ. Upgrade Castlemoyle WTP to supply deficit. New PS, three new reservoirs and new watermains between New Ross and Adamstown. All the new infrastructure is in the vicinity of the European site. No operational impacts predicted.	**Y**
		Shelduck (*Tadorna tadorna*) [A048]	non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	non-b			
		Lapwing (*Vanellus vanellus*) [A142]	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	
		Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Wetland and Waterbirds [A999]	non-b non-b			

Table C2.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAL-078 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Barrow And River Nore SAC (002162)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. All new infrastructure is within this European site. - Physical loss of habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. All new infrastructure is within this European site. The GW abstraction overlies the same gravel aquifer and bedrock aquifer as the European site. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Thomastown Quarry SAC (002252)	3.4km	**Annex I habitats** Petrifying springs with tufa formation (*Cratoneurion*) [7220]	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. New GW abstraction in the vicinity of this European site.	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. New GW abstraction in the vicinity of this European site.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
			No impacts predicted given the distance from site and a lack of source-receptor-pathway between works and site.	No operational impacts predicted given the distance of the GW abstraction and because the works overlie a bedrock aquifer which is separated from the European site by a region of karstified aquifer.	
Lower River Suir SAC (002137)	5.3km	**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]	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. WTP upgrade in the Zone of Influence (ZoI) of this European site. No impacts predicted given the distance from site and a lack of source-receptor-pathway between works and site.	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. WTP upgrade in the Zone of Influence (ZoI) of this European site. No operational impacts predicted.	**N**
Hugginstown Fen SAC (000404)	6.4km	**Annex I habitats** Alkaline fens [7230]	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. WTP upgrade in the ZoI of this European site. No impacts predicted given the distance from site and a lack of source-receptor-pathway between works and site.	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

Table C2.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAL-078 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Nore SPA (004233)	30m	Kingfisher (*Alcedo atthis*) [A229]	breed	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. All new infrastructure is 30m from this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction, new WTP, new PS, new watermains and new reservoir at existing Bennetsbridge WTP site. Decommission Kilmaganny WTP. All new infrastructure is 30m from this European site. No operational impacts predicted.	**Y**

Table C2.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAL-511 (TG3-SAL-007, TG3-SAL-052) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Barrow And River Nore SAC (002162)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. New watermains within European site. Upgrade Troyswood WTP and decommission Ballyragget WTP adjacent to European site. Decommission Radestown WTP in vicinity of this European site. Works 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 Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. New watermains within European site. Upgrade Troyswood WTP and decommission Ballyragget WTP adjacent to European site. Decommission Radestown WTP in vicinity of this European site. Works hydrologically linked to 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	
Cullahill Mountain SAC (000831)	8.3km	**Annex I habitats** Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. Works are in the vicinity of this European site. No impacts predicted given distance and a lack of source-receptor-pathway between works and site.	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. Works are in the vicinity of this European site. No operational impacts predicted.	**N**
Spahill and Clomantagh Hill SAC (000849)	9.3km	**Annex I habitats** Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. Works are in the vicinity of this European site. No impacts predicted given distance and a lack or source-receptor-pathway between works and site.	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. Works are in the vicinity of this European site. No operational impacts predicted.	**N**
The Loughans SAC (000407)	13.4km	**Annex I habitats** Turloughs [3180]	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. Works are in the vicinity of this European site. No impacts predicted given distance and a lack or source-receptor-pathway between works and site.	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. Works are in the vicinity of this European site. No operational impacts predicted.	**N**
Galmoy Fen SAC (001858)	14.2km	**Annex I habitats** Alkaline fens [7230]	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. Works are in the vicinity of this European site. No impacts predicted given distance and a lack or source-receptor-pathway between works and site.	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. Works are in the vicinity of this European site. No operational impacts predicted.	**N**

Table C2.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAL-511 (TG3-SAL-007, TG3-SAL-052) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Nore SPA (004233)	0m	Kingfisher (*Alcedo atthis*) [A229]	breed	Upgrade Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. New watermains within European site. Upgrade Troyswood WTP and decommission Ballyragget WTP adjacent to European site. Decommission Radestown WTP in vicinity of this European site. Works 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 Troyswood WTP and abandon Radestown WTP. Rationalise Ballyragget to Kilkenny City WRZ for increased resilience and long term OPEX savings. New watermains within European site. Upgrade Troyswood WTP and decommission Ballyragget WTP adjacent to European site. Decommission Radestown WTP in vicinity of this European site. Works hydrologically linked to this European site. No operational impacts predicted.	**Y**

Table C2.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAL-521 (TG3-SAL-036, TG3-SAL-039) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Barrow And River Nore SAC (002162)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	New GW abstraction and upgrade Thomastown PS and WTP. Decommission existing Graiguenamanagh WTP. New watermains between Graiguenamanagh and Thomastown. New infrastructure at Thomastown including GW abstraction is within or adjacent to the European site. New watermains at Graiguenamanagh runs adjacent to the European site. Works hydrologically linked to this European site. Abstraction and European site within same ZOC. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and upgrade Thomastown PS and WTP. Decommission existing Graiguenamanagh WTP. New watermains between Graiguenamanagh and Thomastown. New infrastructure at Thomastown including GW abstraction is within or adjacent to the European site. New watermains at Graiguenamanagh runs adjacent to the European site. Works hydrologically linked to this European site. European site within same ZOC. - Habitat degradation – hydrological/ hydrogeological changes - Water table/availability	**Y**
Blackstairs Mountains SAC (000770)	4.6km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	New GW abstraction and upgrade Thomastown PS and WTP. Decommission existing Graiguenamanagh WTP. New watermains between Graiguenamanagh and Thomastown. Works are 50m from a hydrological link to this European site. No impacts are predicted given the works take place 50m from a hydrological link to this European site but the European site is upstream from the works.	New GW abstraction and upgrade Thomastown PS and WTP. Decommission existing Graiguenamanagh WTP. New watermains between Graiguenamanagh and Thomastown. Works are 50m from a hydrological link to this European site. No operational impacts are predicted.	**N**
Hugginstown Fen SAC (000404)	11.3km	**Annex I habitats** Alkaline fens [7230]	New GW abstraction and upgrade Thomastown PS and WTP. Decommission existing Graiguenamanagh WTP. New watermains between Graiguenamanagh and Thomastown. Works are in the vicinity of this European site. No impacts predicted given distance and a lack or source-receptor-pathway between works and site.	New GW abstraction and upgrade Thomastown PS and WTP. Decommission existing Graiguenamanagh WTP. New watermains between Graiguenamanagh and Thomastown. Works are in the vicinity of this European site. No operational impacts are predicted.	**N**

Table C2.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAL-521 (TG3-SAL-036, TG3-SAL-039) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Nore SPA (004233)	30m	Kingfisher (*Alcedo atthis*) [A229]	breed	New GW abstraction and upgrade Thomastown PS and WTP. Decommission existing Graiguenamanagh WTP. New watermains between Graiguenamanagh and Thomastown. New infrastructure at Thomastown 50m from the European site. New watermains at Graiguenamanagh runs adjacent to the European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and upgrade Thomastown PS and WTP. Decommission existing Graiguenamanagh WTP. New watermains between Graiguenamanagh and Thomastown. New infrastructure at Thomastown 50m from the European site. New watermains at Graiguenamanagh runs adjacent to the European site. No operational impacts predicted	**Y**

Table C2.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAL-526 (TG3-SAL-083, TG3-SAL-084, TG3-SAL-085) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Barrow And River Nore SAC (002162)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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]	New GW abstraction and new WTP located at Woodquater to supply full demand and maintain existing abstraction. Rationalise Ballinkillen and Borris WRZs to Gowran-Goresbridge-Paulstown WRZ. Works are within, adjacent to or in the vicinity of this European site. Two new watermains cross this European site at different points. New pumps within this European site, and Borris WTP to be abandoned adjacent to European site. New GW abstraction, new WTP, two new pumps, new balancing tank, new pipeline, upgrade Gowran Goresbridge Paulstown WTP, and abandon two WTPs (Choill Rua WTP and Ballinkillin WTP) all in the vicinity of this European site. Works are 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 and new WTP located at Woodquater to supply full demand and maintain existing abstraction. Rationalise Ballinkillen and Borris WRZs to Gowran-Goresbridge-Paulstown WRZ. Works are within, adjacent to or in the vicinity of this European site. Two new watermains cross this European site at different points. New pumps within this European site, and Borris WTP to be abandoned adjacent to European site. New GW abstraction, new WTP, two new pumps, new balancing tank, new pipeline, Gowran Goresbridge Paulstown WTP, and abandon two WTPs (Choill Rua WTP and Ballinkillin WTP) all in the vicinity of this European site. Works are hydrologically linked to this European site. However, no operational impacts are predicted given that the new GW abstraction is 3.5km away from the European site, and the abstraction overlies a different bedrock aquifer to the European site, and does not share a Zone of Contribution (ZOC) with the European site.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Trichomanes speciosum (Killarney Fern) [1421] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]			
Blackstairs Mountains SAC (000770)	7.2km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	New GW abstraction and new WTP located at Woodquater to supply full demand and maintain existing abstraction. Rationalise Ballinkillen and Borris WRZs to Gowran-Goresbridge-Paulstown WRZ. Some of the works are in the vicinity of this European site. New watermains and abandon Borris WTP and Ballinkillin WTP in the vicinity of this European site. Works are hydrologically linked to this European site, however, works are downstream of this site. No impacts are predicted given the distance from site, the QI present, and due to the works being downstream of this European site.	New GW abstraction and new WTP located at Woodquater to supply full demand and maintain existing abstraction. Rationalise Ballinkillen and Borris WRZs to Gowran-Goresbridge-Paulstown WRZ. Some of the works are in the vicinity of this European site. New watermains and abandon Borris WTP and Ballinkillin WTP in the vicinity of this European site. Works are hydrologically linked to this European site, however, works are downstream of this site. No operational impacts are predicted given the distance from the site, and that the new GW abstraction overlies a different bedrock aquifer to this European site and does not share a ZOC with the European site.	**N**

Table C2.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAL-526 (TG3-SAL-083, TG3-SAL-084, TG3-SAL-085) leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
River Nore SPA (004233)	9.6km	Kingfisher (*Alcedo atthis*) [A229]	breed	New GW abstraction and new WTP located at Woodquater to supply full demand and maintain existing abstraction. Rationalise Ballinkillen and Borris WRZs to Gowran-Goresbridge-Paulstown WRZ. Some of the works are in the vicinity of this European site. Closest works are the new GW abstraction and new pipeline to the east of the European site. No impacts are predicted given the distance from site and a lack of source-receptor-pathway between works and site.	New GW abstraction and new WTP located at Woodquater to supply full demand and maintain existing abstraction. Rationalise Ballinkillen and Borris WRZs to Gowran-Goresbridge-Paulstown WRZ. Some of the works are in the vicinity of this European site. Closest works are the new GW abstraction and new pipeline to the east of the European site. No operational impacts are predicted.	**N**

Table C3.01: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-017 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	550m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP and new storage in close proximity to the European site but there is no hydrological link. No impacts predicted given the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP and new storage in close proximity to the European site but there is no hydrological link. No operational impacts predicted.	**N**

Table C3.02: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-017 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	
Cahore Marshes SPA (004143)	15.6km	Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] 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. Upgrade WTP and new storage in the Zone of Influence (ZoI) of this European site. - Disturbance (including biological disturbance)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP and new storage in the Zone of Influence (ZoI) of this European site. No operational impacts predicted.	**Y**
Wexford Harbour and Slobs SPA (004076)	17.6km	Little Grebe (*Tachybaptus ruficollis*) [A004] Great Crested Grebe (*Podiceps cristatus*) [A005] Cormorant (*Phalacrocorax carbo*) [A017] Grey Heron (*Ardea cinerea*) [A028] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048]	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. Upgrade WTP and new storage in the ZoI of this European site. - Disturbance (including biological disturbance)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP and new storage in the ZoI of this European site. No operational impacts 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	
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				

Table C3.03: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-029 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	1.1km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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]	New GW abstraction and new WTP to partly supply full demand (abandon existing SW source). New GW abstraction, pumps, storage, WTP and mains in vicinity of this European site. Decommission WTP further from European site but in ZoI. Some of the works are hydrologically linked to this European site and GW abstraction overlies the same bedrock aquifer as this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and new WTP to partly supply full demand (abandon existing SW source). New GW abstraction, pumps, storage, WTP and mains in vicinity of this European site. Decommission WTP further from European site but in ZoI. Some of the works are hydrologically linked to this European site and GW abstraction overlies the same bedrock aquifer as 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	
		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] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]			

Table C3.04: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-029 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	
Wexford Harbour and Slobs SPA (004076)	11.8km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	New GW abstraction and new WTP to partly supply full demand (abandon existing SW source). New GW abstraction, pumps, storage, WTP and mains, and decommission WTP in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and new WTP to partly supply full demand (abandon existing SW source). New GW abstraction, pumps, storage, WTP and mains, and decommission WTP in ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	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	
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
Cahore Marshes SPA (004143)	18.8km	Wigeon (*Anas penelope*) [A050]	Non-b	New GW abstraction and new WTP to partly supply full demand (abandon existing SW source). New GW abstraction, pumps, storage, WTP and mains in ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction and new WTP to partly supply full demand (abandon existing SW source). New GW abstraction, pumps, storage, WTP and mains in ZoI of this European site. No operational impacts predicted.	**Y**
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				

Table C3.05: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-036 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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]	New GW abstraction and upgrade Carrickduff WTP to supply deficit. New mains, increase GW abstraction and upgrade pumps within this European site. New GW abstraction and pumps adjacent to this European site. New storage, WTP upgrade, and new mains in vicinity of this European site. Some of the works are hydrologically linked to this European site. This European site overlies the Zone of Contribution (ZOC) of the GW abstraction to be increased, and also overlies the same bedrock aquifer as the new GW abstraction. - Physical loss of habitats/supporting habitat - Mortality - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and upgrade Carrickduff WTP to supply deficit. New mains, increase GW abstraction and upgrade pumps within this European site. New GW abstraction and pumps adjacent to this European site. New storage, WTP upgrade, and new mains in vicinity of this European site. Some of the works are hydrologically linked to this European site. This European site overlies the Zone of Contribution (ZOC) of the GW abstraction to be increased, and also overlies the same bedrock aquifer as the new GW abstraction. - 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	
		Phoca vitulina (Harbour Seal) [1365]			
Blackstairs Mountains SAC (000770)	4.3km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	New GW abstraction and upgrade Carrickduff WTP to supply deficit. Works are in the ZoI of this European site. New watermains cross a hydrological link to this European site. This European site overlies the same bedrock aquifer as the new GW abstraction. No impacts predicted due to the QI present, the distance from the works, and the European site being upstream from the works.	New GW abstraction and upgrade Carrickduff WTP to supply deficit. Works are in the ZoI of this European site. New watermains cross a hydrological link to this European site. This European site overlies the same bedrock aquifer as the new GW abstraction. However, no operational impacts predicted due to the GW abstraction location being over 5km from this European site.	**N**

Table C3.06: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-036 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	
Wexford Harbour and Slobs SPA (004076)	19km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	New GW abstraction and upgrade Carrickduff WTP to supply deficit. Works are in the ZoI of this European site. New watermains cross a hydrological link to this European site. - Disturbance (including biological disturbance)	New GW abstraction and upgrade Carrickduff WTP to supply deficit. Works are in the ZoI of this European site. New watermains cross a hydrological link to this European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	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	
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				

Table C3.07: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-044 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackstairs Mountains SAC (000770)	1.2km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	Increase GW abstraction and upgrade Ballycrystal WTP to supply deficit. New mains, increase GW abstraction, and upgrade pumps and WTP in the vicinity of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade Ballycrystal WTP to supply deficit. New mains, increase GW abstraction, and upgrade pumps and WTP in the vicinity of this European site. No operational impacts predicted due to this European site being outside of the ZOC of the GW abstraction.	**N**
River Barrow And River Nore SAC (002162)	2.6km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096]	Increase GW abstraction and upgrade Ballycrystal WTP to supply deficit. New mains, increase GW abstraction, and upgrade pumps and WTP in the vicinity of this European site. No impacts predicted due to the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade Ballycrystal WTP to supply deficit. New mains, increase GW abstraction, and upgrade pumps and WTP in the vicinity of this European site. No operational impacts predicted due to this European site being outside of the ZOC of the GW abstraction.	**N**

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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]			
Slaney River Valley SAC (000781)	7.7km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Increase GW abstraction and upgrade Ballycrystal WTP to supply deficit. New mains, increase GW abstraction, and upgrade pumps and WTP in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction and upgrade Ballycrystal WTP to supply deficit. New mains, increase GW abstraction, and upgrade pumps and WTP in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. No operational impacts predicted due to this European site being outside of the ZOC of the GW abstraction.	**Y**

Table C3.08: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-044 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	
Wexford Harbour and Slobs SPA (004076)	14.3km	Little Grebe (*Tachybaptus ruficollis*) [A004] Great Crested Grebe (*Podiceps cristatus*) [A005] Cormorant (*Phalacrocorax carbo*) [A017] Grey Heron (*Ardea cinerea*) [A028] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW abstraction and upgrade Ballycrystal WTP to supply deficit. New mains, increase GW abstraction, and upgrade pumps and WTP in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Ballycrystal WTP to supply deficit. New mains, increase GW abstraction, and upgrade pumps and WTP in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. No operational impacts 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	
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				

Table C3.09: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-050 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Blackstairs Mountains SAC (000770)	2.7km	**Annex I habitats** Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	Increase GW abstraction and upgrade Ballindaggin WTP to supply deficit. New storage, increase GW abstraction, and upgrade WTP in the vicinity of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade Ballindaggin WTP to supply deficit. New storage, increase GW abstraction, and upgrade WTP in the vicinity of this European site. No operational impacts predicted due to this European site being outside of the ZOC of the GW abstraction.	**N**
River Barrow And River Nore SAC (002162)	5.4km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170]	Increase GW abstraction and upgrade Ballindaggin WTP to supply deficit. New storage, increase GW abstraction, and upgrade WTP in the ZoI of this European site. No impacts predicted due to the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade Ballindaggin WTP to supply deficit. New storage, increase GW abstraction, and upgrade WTP in the ZoI of this European site.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]		No operational impacts predicted due to this European site being outside of the ZOC of the GW abstraction.	
Slaney River Valley SAC (000781)	7.1km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Increase GW abstraction and upgrade Ballindaggin WTP to supply deficit. New storage, increase GW abstraction, and upgrade WTP in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction and upgrade Ballindaggin WTP to supply deficit. New storage, increase GW abstraction, and upgrade WTP in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. No operational impacts predicted due to this European site being outside of the ZOC of the GW abstraction.	**Y**

Table C3.10: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-050 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Wexford Harbour and Slobs SPA (004076)	11.9km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	Increase GW abstraction and upgrade Ballindaggin WTP to supply deficit. New storage, increase GW abstraction, and upgrade WTP in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Ballindaggin WTP to supply deficit. New storage, increase GW abstraction, and upgrade WTP in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				

Table C3.11: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-061 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	2.3km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Increase GW abstraction and upgrade Monageer WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in the vicinity of this European site. The works are adjacent to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Monageer WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in the vicinity of this European site. The works are adjacent to a hydrological link to this European site. No operational impacts predicted due to this European site being outside of the ZOC of the GW abstraction.	**Y**

Table C3.12: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-061 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Wexford Harbour and Slobs SPA (004076)	7.1km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	Increase GW abstraction and upgrade Monageer WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Monageer WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in the ZoI of this European site. The works are adjacent to a hydrological link to this European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	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	
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
The Raven SPA (004019)	15.1km	Red-throated Diver (*Gavia stellata*) [A001] Cormorant (*Phalacrocorax carbo*) [A017] Common Scoter (*Melanitta nigra*) [A065] Grey Plover (*Pluvialis squatarola*) [A141] Sanderling (*Calidris alba*) [A144] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b	Increase GW abstraction and upgrade Monageer WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in the ZoI of this European site. - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Monageer WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in the ZoI of this European site. No operational impacts predicted.	**Y**
Cahore Marshes SPA (004143)	16.9km	Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction and upgrade Monageer WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in the ZoI of this European site. - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade Monageer WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in the ZoI of this European site. No operational impacts predicted.	**Y**

Table C3.13: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-073 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	1.9km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in ZoI of this European site. No impacts predicted due to the nature of the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in ZoI of this European site. No operational impacts predicted.	**N**

Table C3.14: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-073 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Wexford Harbour and Slobs SPA (004076)	4.6km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in ZoI of this European site. No impacts predicted due to the nature of the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in ZoI of this European site. No operational impacts predicted.	**N**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	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	
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
The Raven SPA (004019)	20.7km	Red-throated Diver (*Gavia stellata*) [A001] Cormorant (*Phalacrocorax carbo*) [A017] Common Scoter (*Melanitta nigra*) [A065] Grey Plover (*Pluvialis squatarola*) [A141] Sanderling (*Calidris alba*) [A144] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	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. WTP upgrade in ZoI of this European site. No impacts predicted due to the nature of the works, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in ZoI of this European site. No operational impacts predicted.	**N**

Table C3.15: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-100 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	4.3km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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]	New GW abstraction and upgrade Clonroche WTP to supply full demand. New GW abstraction and mains, and upgrade WTP and pumps in ZoI of this European site. Some of the works are hydrologically linked to this European site. New GW abstraction from productive fissured bedrock that this European site overlies. - Habitat degradation – changes in water quality (pollution)	New GW abstraction and upgrade Clonroche WTP to supply full demand. New GW abstraction and mains, and upgrade WTP and pumps in ZoI of this European site. Some of the works are hydrologically linked to this European site. New GW abstraction from productive fissured bedrock that this European site overlies. However, no operational impacts predicted due to the GW abstraction location being 4.3km from this	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		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] *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] *Phoca vitulina* (Harbour Seal) [1365]		European site, which is outside of the 3km buffer for productive fissured bedrock.	

Table C3.16: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-100 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	
Wexford Harbour and Slobs SPA (004076)	11.7km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	New GW abstraction and upgrade Clonroche WTP to supply full demand. New GW abstraction and mains, and upgrade WTP and pumps in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and upgrade Clonroche WTP to supply full demand. New GW abstraction and mains, and upgrade WTP and pumps in ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	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	
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
Bannow Bay SPA (004033)	18.6km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b	New GW abstraction and upgrade Clonroche WTP to supply full demand. New GW abstraction and mains, and upgrade WTP and pumps in ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction and upgrade Clonroche WTP to supply full demand. New GW abstraction and mains, and upgrade WTP and pumps in ZoI of this European site. No operational impacts predicted.	**Y**
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Wetland and Waterbirds [A999]				
River Nore SPA (004233)	19.7km	Kingfisher (*Alcedo atthis*) [A229]	Breed	New GW abstraction and upgrade Clonroche WTP to supply full demand. New GW abstraction and mains, and upgrade WTP and pumps in ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW abstraction and upgrade Clonroche WTP to supply full demand. New GW abstraction and mains, and upgrade WTP and pumps in ZoI of this European site. No operational impacts predicted.	**N**

Table C3.17: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-105 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	5.9km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140]	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in ZoI of this European site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in ZoI of this European site.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		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] *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] *Phoca vitulina* (Harbour Seal) [1365]	No impacts predicted due to the nature of the works, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	However, no operational impacts predicted as there are no European sites within the ZOC of this abstraction.	

Table C3.18: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-105 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	
Wexford Harbour and Slobs SPA (004076)	9.9km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in ZoI of this European site. No impacts predicted due to the nature of the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in ZoI of this European site. No operational impacts predicted.	**N**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	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	
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
Bannow Bay SPA (004033)	14.2km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in ZoI of this European site. No impacts predicted due to the nature of the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in ZoI of this European site. No operational impacts predicted.	**N**
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Wetland and Waterbirds [A999]				
Ballyteige Burrow SPA (004020)	19.1km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in ZoI of this European site. No impacts predicted due to the nature of the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade WTP to supply deficit. Increase GW abstraction, and upgrade WTP and pumps in ZoI of this European site. No operational impacts predicted.	**N**
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Wetland and Waterbirds [A999]				

Table C3.19: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-108 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
River Barrow And River Nore SAC (002162)	7.1km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted due to the nature of the works, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
Slaney River Valley SAC (000781)	9.9km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted due to the nature of the works, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

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] *Phoca vitulina* (Harbour Seal) [1365]			

Table C3.20: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-108 leading to potential LSEs. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
Bannow Bay SPA (004033)	14.2km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted due to the nature of the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Wetland and Waterbirds [A999]				
Wexford Harbour and Slobs SPA (004076)	15.5km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted due to the nature of the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	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	
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
River Nore SPA (004233)	17.7km	Kingfisher (*Alcedo atthis*) [A229]	Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No impacts predicted due to the nature of the works, the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. WTP upgrade in the ZoI of this European site. No operational impacts predicted.	**N**

Table C3.21: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with options TG3-SAM-127 & TG3-SAM-207 combined leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Screen Hills SAC (000708)	430m	**Annex I habitats** Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] European dry heaths [4030]	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in vicinity of this European site. Increase GW abstraction, upgrade two WTPs and pumps, and new mains in ZoI of this European site. Some of the new watermains are hydrologically linked to this European site. New GW abstraction from gravel aquifer that this European site overlies. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in vicinity of this European site. Increase GW abstraction, upgrade two WTPs, and pumps, and new mains in ZoI of this European site. Some of the new watermains are hydrologically linked to this European site. New GW abstraction from gravel aquifer that this European site overlies. However, no operational impacts predicted due to the GW abstraction location being 3.7km from this	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
				European site, which is outside of the 1km buffer for gravel aquifers.	
Slaney River Valley SAC (000781)	1.3km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in vicinity of this European site. Increase GW abstraction, upgrade two WTPs and pumps, and new mains in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in vicinity of this European site. Increase GW abstraction, upgrade two WTPs and pumps, and new mains in ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted due to this European site overlying a different aquifer than the abstractions.	**Y**
Raven Point Nature Reserve SAC (000710)	3.9km	**Annex I habitats** Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] 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]	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains, increase GW abstraction, and upgrade two WTPs and pumps in ZoI of this European site. Some of the works are hydrologically linked to this European site. No impacts predicted due to the QI present.	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains, increase GW abstraction, and upgrade two WTPs and pumps in ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted due to this European site overlying a different aquifer than the abstractions.	**N**
Kilmuckridge-Tinnaberna Sandhills SAC (001741)	5.6km	**Annex I habitats** 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 GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. Upgrade WTP ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. Upgrade WTP ZoI of this European site. No operational impacts predicted.	**N**

Table C3.22: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-127 & TG3-SAM-207 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	
Wexford Harbour and Slobs SPA (004076)	1.3km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in vicinity of this European site. Increase GW abstraction, upgrade two WTPs and pumps, and new mains in ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in vicinity of this European site. Increase GW abstraction, upgrade two WTPs and pumps, and new mains in ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
The Raven SPA (004019)	2km	Red-throated Diver (*Gavia stellata*) [A001]	Non-b	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains, increase GW abstraction, and upgrade two WTPs and pumps in ZoI of this European site. Some of the works are hydrologically linked to this European site.	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains, increase GW abstraction, and upgrade two WTPs and pumps in ZoI of this	**Y**
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Common Scoter (*Melanitta nigra*) [A065]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	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	
		Sanderling (*Calidris alba*) [A144] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b	- Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	
Cahore Marshes SPA (004143)	11.4km	Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains, increase GW abstraction, and upgrade two WTPs and pumps in ZoI of this European site. - Disturbance (including biological disturbance)	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains, increase GW abstraction, and upgrade two WTPs and pumps in ZoI of this European site. No operational impacts predicted.	**Y**
Lady's Island Lake SPA (004009)	20.5km	Gadwall (*Anas strepera*) [A051] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Sandwich Tern (*Sterna sandvicensis*) [A191] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Wetland and Waterbirds [A999]	Non-b Breed Breed Breed Breed Breed	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in ZoI of this European site. No operational impacts predicted.	**N**
Tacumshin Lake SPA (004092)	20.6km	Little Grebe (*Tachybaptus ruficollis*) [A004] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Gadwall (*Anas strepera*) [A051] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Tufted Duck (*Aythya fuligula*) [A061] Coot (*Fulica atra*) [A125] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] 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	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in ZoI of this European site. No impacts predicted due to the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Increase GW abstraction and upgrade WTP to partly supply deficit. New GW and new WTP to partly supply deficit. New GW abstraction, pumps, storage, WTP and mains in ZoI of this European site. No operational impacts predicted.	**N**

Table C3.23: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-141 leading to potential LSEs. Note: No SPAs within ZoI for TG3-SAM-141.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	3.9km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Increase GW abstraction and upgrade Ballinavortha WTP to supply deficit. Increase GW abstraction and upgrade WTP in ZoI of this European site. The works are near a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	Increase GW abstraction and upgrade Ballinavortha WTP to supply deficit. Increase GW abstraction and upgrade WTP in ZoI of this European site. The works are near a hydrological link to this European site. No operational impacts predicted due to this European site being outside of the ZOC of the GW abstraction.	**Y**

Table C3.24: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-144 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	4.7km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP in ZoI of this European site. The WTP upgrade is hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP in ZoI of this European site. The WTP upgrade is hydrologically linked to 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	
		Salmo salar (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]			

Table C3.25: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-144 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	
Wicklow Mountains SPA (004040)	20km	Merlin (*Falco columbarius*) [A098] Peregrine (*Falco peregrinus*) [A103]	Breed Breed	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP in ZoI of this European site. No impacts predicted due to the nature of the works, the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP in ZoI of this European site. No operational impacts predicted.	**N**

Table C3.26: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-146 leading to potential LSEs. Note: No SPAs within ZoI for TG3-SAM-146.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	870m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Upgrade existing WTP for water quality improvements. The WRZ is not in deficit. Upgrade WTP in vicinity of this European site. The WTP upgrade is near a hydrological link to this 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. Upgrade WTP in vicinity of this European site. The WTP upgrade is near a hydrological link to this European site. No operational impacts predicted.	**Y**

Table C3.27: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-148 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Tacumshin Lake SAC (000709)	4.1km	**Annex I habitats** Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Slaney River Valley SAC (000781)	7.6km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. This European site overlies the ZOC of the new GW abstraction. No impacts predicted due to the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. This European site overlies the ZOC of the new GW abstraction. However, no operational impacts predicted due to the abstraction location being 7.6km from this European site and due to previous hydrogeological assessments.	**N**
Ballyteige Burrow SAC (00696)	7.9km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] 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] Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. Works are near a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution)	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. Works are near a hydrological link to 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	
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150] Humid dune slacks [2190]			
Lady's Island Lake SAC (000704)	8.7km	**Annex I habitats** Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220]	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts predicted.	**N**

Table C3.28: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-148 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	
Tacumshin Lake SPA (004092)	4.3km	Little Grebe (*Tachybaptus ruficollis*) [A004] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Gadwall (*Anas strepera*) [A051] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Tufted Duck (*Aythya fuligula*) [A061] Coot (*Fulica atra*) [A125] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] 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	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts predicted.	**Y**
Wexford Harbour and Slobs SPA (004076)	5.1km	Little Grebe (*Tachybaptus ruficollis*) [A004] Great Crested Grebe (*Podiceps cristatus*) [A005] Cormorant (*Phalacrocorax carbo*) [A017] Grey Heron (*Ardea cinerea*) [A028] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts 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	
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
Ballyteige Burrow SPA (004020)	8.5km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. Works are near a hydrological link to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. Works are near a hydrological link to this European site. No operational impacts predicted.	**Y**
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Wetland and Waterbirds [A999]				
Lady's Island Lake SPA (004009)	8.7km	Gadwall (*Anas strepera*) [A051]	Non-b	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts predicted.	**N**
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Breed			
		Sandwich Tern (*Sterna sandvicensis*) [A191]	Breed			
		Roseate Tern (*Sterna dougallii*) [A192]	Breed			
		Common Tern (*Sterna hirundo*) [A193]	Breed			
		Arctic Tern (*Sterna paradisaea*) [A194]	Breed			
		Wetland and Waterbirds [A999]				

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 Raven SPA (004019)	10.7km	Red-throated Diver (*Gavia stellata*) [A001] Cormorant (*Phalacrocorax carbo*) [A017] Common Scoter (*Melanitta nigra*) [A065] Grey Plover (*Pluvialis squatarola*) [A141] Sanderling (*Calidris alba*) [A144] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts predicted.	**Y**
Saltee Islands SPA (004002)	12.3km	Fulmar (*Fulmarus glacialis*) [A009] Gannet (*Morus bassanus*) [A016] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica*) [A204]	Breed Breed Breed Breed Breed Breed Breed Breed Breed Breed	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Keeragh Islands SPA (004118)	16.3km	Cormorant (*Phalacrocorax carbo*) [A017]	Breed	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Bannow Bay SPA (004033)	16.8km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Pintail (*Anas acuta*) [A054] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] 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	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. - Disturbance (including biological disturbance)	New GW abstraction and upgrade Mayglass WTP to supply deficit. Bring unused BHs back to production (GW abstraction from existing BHs currently not in supply). New GW abstraction and mains and upgrade pumps and WTP in the ZoI of this European site. No operational impacts predicted.	**Y**

Table C3.29: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-149 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	330m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP in vicinity of this European site. New GW abstraction, pumps, WTP and mains in ZoI of this European site. New GW abstraction from productive fissured bedrock that this European site overlies. - Disturbance (including biological disturbance)	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP in vicinity of this European site. New GW abstraction, pumps, WTP and mains in ZoI of this European site. New GW abstraction from productive fissured bedrock that this European site overlies. However, no operational impacts predicted due to the abstraction location being 5.7km from this European site, which is outside of the 3km buffer for productive fissured bedrock.	**Y**
Bannow Bay SAC (000697)	5.5km	**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] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	New GW wellfield at Adamstown and new WTP to supply deficit. New GW abstraction, pumps, WTP and mains in ZoI of this European site. New mains are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	New GW wellfield at Adamstown and new WTP to supply deficit. New GW abstraction, pumps, WTP and mains in ZoI of this European site. New mains are hydrologically linked to this European site. No operational impacts predicted.	**Y**
Ballyteige Burrow SAC (00696)	10.6km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] *Salicornia* and other annuals colonising mud and sand [1310]	New GW wellfield at Adamstown and new WTP to supply deficit. New GW abstraction, pumps, WTP and mains in ZoI of this European site. New mains are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	New GW wellfield at Adamstown and new WTP to supply deficit. New GW abstraction, pumps, WTP and mains in ZoI of this European site. New mains are hydrologically linked to 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	
		Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150] Humid dune slacks [2190]			

Table C3.30: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-149 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	
Wexford Harbour and Slobs SPA (004076)	1km	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP in vicinity of this European site. New GW abstraction, pumps, WTP and mains in ZoI of this European site. - Disturbance (including biological disturbance)	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP in vicinity of this European site. New GW abstraction, pumps, WTP and mains in ZoI of this European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	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	
		Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Lesser Black-backed Gull (*Larus fuscus*) [A183] Little Tern (*Sterna albifrons*) [A195] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b Non-b			
The Raven SPA (004019)	8km	Red-throated Diver (*Gavia stellata*) [A001] Cormorant (*Phalacrocorax carbo*) [A017] Common Scoter (*Melanitta nigra*) [A065] Grey Plover (*Pluvialis squatarola*) [A141] Sanderling (*Calidris alba*) [A144] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. - Disturbance (including biological disturbance)	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. No operational impacts predicted.	**Y**
Bannow Bay SPA (004033)	9.5km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Pintail (*Anas acuta*) [A054] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] 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	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. New mains are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. New mains are hydrologically linked to this European site. No operational impacts predicted.	**Y**
Ballyteige Burrow SPA (004020)	10.8km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. New mains are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. New mains are hydrologically linked to this European site. No operational impacts predicted.	**Y**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Wetland and Waterbirds [A999]				
Keeragh Islands SPA (004118)	14.4km	Cormorant (*Phalacrocorax carbo*) [A017]	Breed	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. No operational impacts predicted.	**N**
Tacumshin Lake SPA (004092)	14.4km	Little Grebe (*Tachybaptus ruficollis*) [A004] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Gadwall (*Anas strepera*) [A051] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Tufted Duck (*Aythya fuligula*) [A061] Coot (*Fulica atra*) [A125] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] 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	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. - Disturbance (including biological disturbance)	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. No operational impacts predicted.	**Y**
Lady's Island Lake SPA (004009)	15.9km	Gadwall (*Anas strepera*) [A051] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Sandwich Tern (*Sterna sandvicensis*) [A191] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Wetland and Waterbirds [A999]	Non-b Breed Breed Breed Breed Breed	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. No operational impacts predicted.	**N**
Saltee Islands SPA (004002)	19.5km	Fulmar (*Fulmarus glacialis*) [A009] Gannet (*Morus bassanus*) [A016] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica*) [A204]	Breed Breed Breed Breed Breed Breed Breed Breed Breed Breed	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	New GW wellfield at Adamstown and new WTP to supply deficit. Upgrade WTP and new GW abstraction, pumps, WTP and mains in ZoI of this European site. No operational impacts predicted.	**N**

Table C3.31: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-198 leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	1.9km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Upgrade two WTPs, storage and decommission Ballygarron WTP in the ZoI of this European site. No impacts predicted due to the nature of the works, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Upgrade two WTPs, storage and decommission Ballygarron WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Kilmuckridge-Tinnaberna Sandhills SAC (001741)	2.9km	**Annex I habitats** Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Decommission Ballygarron WTP in the ZoI of this European site. No impacts predicted due to the nature of the works, the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Decommission Ballygarron WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Cahore Polders and Dunes SAC (000700)	4.9km	**Annex I habitats** Annual vegetation of drift lines [1210] 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]	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Decommission Ballygarron WTP in the ZoI of this European site. No impacts predicted due to the nature of the works, the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Decommission Ballygarron WTP in the ZoI of this European site. No operational impacts predicted.	**N**

Table C3.32: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-198 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	
Cahore Marshes SPA (004143)	4.8km	Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Upgrade two WTPs, storage and decommission Ballygarron WTP in the ZoI of this European site. No impacts predicted due to the nature of the works, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Upgrade two WTPs, storage and decommission Ballygarron WTP in the ZoI of this European site. No operational impacts predicted.	**N**
The Raven SPA (004019)	9.1km	Red-throated Diver (*Gavia stellata*) [A001] Cormorant (*Phalacrocorax carbo*) [A017] Common Scoter (*Melanitta nigra*) [A065] Grey Plover (*Pluvialis squatarola*) [A141] Sanderling (*Calidris alba*) [A144] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Decommission Ballygarron WTP in the ZoI of this European site. No impacts predicted due to the nature of the works, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Decommission Ballygarron WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Wexford Harbour and Slobs SPA (004076)	14.9km	Little Grebe (*Tachybaptus ruficollis*) [A004] Great Crested Grebe (*Podiceps cristatus*) [A005] Cormorant (*Phalacrocorax carbo*) [A017] Grey Heron (*Ardea cinerea*) [A028] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Mallard (*Anas platyrhynchos*) [A053] Pintail (*Anas acuta*) [A054] Scaup (*Aythya marila*) [A062] Goldeneye (*Bucephala clangula*) [A067] Red-breasted Merganser (*Mergus serrator*) [A069] Hen Harrier (*Circus cyaneus*) [A082] Coot (*Fulica atra*) [A125] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina)* [A149]	Non-b Non-b	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Decommission Ballygarron WTP in the ZoI of this European site. No impacts predicted due to the nature of the works, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Kilmuckridge WTP to new Ballyminaunhill WTP. Rationalisation within WRZ. Decommission Ballygarron WTP in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Potential for LSEs
				Construction	Operation	
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				

Table C3.33: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-501 (TG3-SAM-004) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Kilpatrick Sandhills SAC (001742)	5.7km	**Annex I habitats** Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150]	Rationalise Coolgreaney to Arklow WRZ (SA 1 increase GW abstraction). New pumps and mains, increase two GW abstractions, upgrade pumps and WTP, and decommission Knockgreany WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Coolgreaney to Arklow WRZ (SA 1 increase GW abstraction). New pumps and mains, increase two GW abstractions, upgrade pumps and WTP, and decommission Knockgreany WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Buckroney-Brittas Dines and Fen SAC (000729)	6.2km	**Annex I habitats** Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] 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] Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150] Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170] Humid dune slacks [2190] Alkaline fens [7230]	Rationalise Coolgreaney to Arklow WRZ (SA 1 increase GW abstraction). New pumps and mains, increase two GW abstractions, upgrade pumps and WTP, and decommission Knockgreany WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Coolgreaney to Arklow WRZ (SA 1 increase GW abstraction). New pumps and mains, increase two GW abstractions, upgrade pumps and WTP, and decommission Knockgreany WTP in the ZoI of this European site. No operational impacts predicted.	**N**

Table C3.34: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-501 (TG3-SAM-004) 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	
Wicklow Mountains SPA (004040)	16.5km	Merlin (*Falco columbarius*) [A098] Peregrine (*Falco peregrinus*) [A103]	Breed Breed	Rationalise Coolgreaney to Arklow WRZ (SA 1 increase GW abstraction). New pumps and mains, increase two GW abstractions, upgrade pumps and WTP, and decommission Knockgreany WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Coolgreaney to Arklow WRZ (SA 1 increase GW abstraction). New pumps and mains, increase two GW abstractions, upgrade pumps and WTP, and decommission Knockgreany WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Wicklow Head SPA (004127)	20.5km	Kittiwake (*Rissa tridactyla*) [A188]	Breed	Rationalise Coolgreaney to Arklow WRZ (SA 1 increase GW abstraction). New pumps and mains, increase two GW abstractions, upgrade pumps and WTP, and decommission Knockgreany WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Coolgreaney to Arklow WRZ (SA 1 increase GW abstraction). New pumps and mains, increase two GW abstractions, upgrade pumps and WTP, and decommission Knockgreany WTP in the ZoI of this European site. No operational impacts predicted.	**N**

Table C3.35: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-547 (TG3-SAM-140) leading to potential LSEs. Note: No SPAs within ZoI for TG3-SAM-547.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	940m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *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] *Phoca vitulina* (Harbour Seal) [1365]	Rationalise Ballingate to Tinahely WRZ (not in deficit). New pump, storage and mains and decommission Ballingate WTP in vicinity of this European site. New mains are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Ballingate to Tinahely WRZ (not in deficit). New pump, storage and mains and decommission Ballingate WTP in vicinity of this European site. New mains are hydrologically linked to this European site. No operational impacts predicted.	**Y**

Table C3.36: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-575 (TG3-SAM-224, TG3-SAM-225) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Bannow Bay SAC (000697)	990m	**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] Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New mains and WTP upgrade in the vicinity of this European site. New GW abstraction, pumps, storage, WTP and mains, and decommission Carrickbyrne WTP in the ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution)	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New mains and WTP upgrade in the vicinity of this European site. New GW abstraction, pumps, storage, WTP and mains, and decommission Carrickbyrne WTP in the ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted due to this European site overlying a different aquifer to the GW abstraction location.	**Y**
River Barrow And River Nore SAC (002162)	3.8km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *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] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] 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** *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016] *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] *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. New GW abstraction from productive fissured bedrock that this European site overlies. No impacts predicted due to the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. New GW abstraction from productive fissured bedrock that this European site overlies. However, no operational impacts predicted due to the GW abstraction location being 3.8km from this European site, which is outside of the 3km buffer for productive fissured bedrock.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Hook Head SAC (000764)	7.4km	**Annex I habitats** Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No impacts predicted due to the distance from the works, the QI present, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Lower River Suir SAC (002137)	8.1km	**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]	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. New GW abstraction from productive fissured bedrock that this European site overlies. No impacts predicted due to the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. New GW abstraction from productive fissured bedrock that this European site overlies. However, no operational impacts predicted due to the GW abstraction location being 8.1km from this European site, which is outside of the 3km buffer for productive fissured bedrock.	**N**
Ballyteige Burrow SAC (00696)	8.7km	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] 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] Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No impacts predicted due to the distance from the works, the QI present, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No operational impacts predicted.	**N**

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
		Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150] Humid dune slacks [2190]			

Table C3.37: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-575 (TG3-SAM-224, TG3-SAM-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	
Bannow Bay SPA (004033)	2.8km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Pintail (*Anas acuta*) [A054] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] 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	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New mains and WTP upgrade in the vicinity of this European site. New GW abstraction, pumps, storage, WTP and mains, and decommission Carrickbyrne WTP in the ZoI of this European site. Some of the works are hydrologically linked to this European site. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New mains and WTP upgrade in the vicinity of this European site. New GW abstraction, pumps, storage, WTP and mains, and decommission Carrickbyrne WTP in the ZoI of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**Y**
Ballyteige Burrow SPA (004020)	9.1km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b Non-b	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. - Disturbance (including biological disturbance)	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No operational impacts predicted.	**Y**
Keeragh Islands SPA (004118)	9.2km	Cormorant (*Phalacrocorax carbo*) [A017]	Breed	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Wexford Harbour and	14.4km	Little Grebe (*Tachybaptus ruficollis*) [A004] Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b Non-b	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and	**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	
Slobs SPA (004076)		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b	WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. - Disturbance (including biological disturbance)	mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No operational impacts predicted.	
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Knot (*Calidris canutus*) [A143]	Non-b			
		Sanderling (*Calidris alba*) [A144]	Non-b			
		Dunlin (*Calidris alpina)* [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [A160]	Non-b			
		Redshank (*Tringa totanus*) [A162]	Non-b			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Non-b			
		Lesser Black-backed Gull (*Larus fuscus*) [A183]	Non-b			
		Little Tern (*Sterna albifrons*) [A195]	Non-b			
		Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Non-b			
		Wetland and Waterbirds [A999]				
Tramore Back Strand SPA (004027)	17.8km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. - Disturbance (including biological disturbance)	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No operational impacts predicted.	**Y**
		Golden Plover (*Pluvialis apricaria*) [A140]	Non-b			
		Grey Plover (*Pluvialis squatarola*) [A141]	Non-b			
		Lapwing (*Vanellus vanellus*) [A142]	Non-b			
		Dunlin (*Calidris alpina*) [A149]	Non-b			
		Black-tailed Godwit (*Limosa limosa*) [A156]	Non-b			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]	Non-b			
		Curlew (*Numenius arquata*) [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	
		Wetland and Waterbirds [A999]				
River Nore SPA (004233)	19.7km	Kingfisher (*Alcedo atthis*) [A229]	Breed	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No operational impacts predicted.	**N**
Saltee Islands SPA (004002)	20.5km	Fulmar (*Fulmarus glacialis*) [A009] Gannet (*Morus bassanus*) [A016] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200]	Breed Breed Breed Breed Breed Breed Breed Breed Breed	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No impacts predicted due to the QI present, the distance from the works, and the lack of source-pathway-receptor between the works and the European site.	Rationalise Carrigbyrne to South Regional WRZ. New GW abstraction and new WTP to supply deficit. New GW abstraction, pumps, storage, WTP and mains, upgrade WTP, and decommission Carrickbyrne WTP in the ZoI of this European site. No operational impacts predicted.	**N**
		Puffin (*Fratercula arctica*) [A204]	Breed			

Table C3.38: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SACs) with option TG3-SAM-576 (TG3-SAM-226, TG3-SAM-227, TG3-SAM-228, TG3-SAM-229, TG3-SAM-230) leading to potential LSEs.

European Sites	Distance from Option Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Potential for LSEs
			Construction	Operation	
Slaney River Valley SAC (000781)	0m	**Annex I habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099]	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, and upgrade WTP within this European site. New pumps and mains adjacent to this European site. New pumps, storage and mains, upgrade two WTPs, and decommission four WTPs in vicinity of this European site. Some of the works are 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 River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, and upgrade WTP within this European site. New pumps and mains adjacent to this European site. New pumps, storage and mains, upgrade two WTPs, and decommission four WTPs in vicinity of this European site. Some of the works are hydrologically linked to this European site. However, no operational impacts are predicted from this increase in abstraction due to the small scale of the abstraction (approximately 2.3% of Q95 in total).	**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] *Phoca vitulina* (Harbour Seal) [1365]			
Raven Point Nature Reserve SAC (000710)	13.5km	**Annex I habitats** Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] 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]	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Some of the works are in the ZoI and hydrologically linked to this European site via the Slaney River and Wexford Harbour. No impacts predicted due to the QI present, and the distance from the works and the European site.	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Some of the works are in the ZoI and hydrologically linked to this European site via the Slaney River and Wexford Harbour. No operational impacts predicted.	**N**

Table C3.39: Source-Pathway- Receptor Analysis – potential impact pathways connecting European Sites (SPAs) with option TG3-SAM-576 (TG3-SAM-226, TG3-SAM-227, TG3-SAM-228, TG3-SAM-229, TG3-SAM-230) 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	
Wexford Harbour and Slobs SPA (004076)	45m	Little Grebe (*Tachybaptus ruficollis*) [A004]	Non-b	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains, and upgrade WTP adjacent to this European site. New pumps, storage and mains, upgrade two WTPs, and decommission four WTPs in vicinity of this European site. Some of the works are hydrologically linked to this European site. - Physical loss of habitats/supporting habitat - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains, and upgrade WTP adjacent to this European site. New pumps, storage and mains, upgrade two WTPs, and decommission four WTPs in vicinity of this European site. Some of the works are hydrologically linked to this European site. No operational impacts predicted.	**Y**
		Great Crested Grebe (*Podiceps cristatus*) [A005]	Non-b			
		Cormorant (*Phalacrocorax carbo*) [A017]	Non-b			
		Grey Heron (*Ardea cinerea*) [A028]	Non-b			
		Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Non-b			
		Whooper Swan (*Cygnus cygnus*) [A038]	Non-b			
		Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Non-b			
		Shelduck (*Tadorna tadorna*) [A048]	Non-b			
		Wigeon (*Anas penelope*) [A050]	Non-b			
		Teal (*Anas crecca*) [A052]	Non-b			
		Mallard (*Anas platyrhynchos*) [A053]	Non-b			
		Pintail (*Anas acuta*) [A054]	Non-b			
		Scaup (*Aythya marila*) [A062]	Non-b			
		Goldeneye (*Bucephala clangula*) [A067]	Non-b			
		Red-breasted Merganser (*Mergus serrator*) [A069]	Non-b			
		Hen Harrier (*Circus cyaneus*) [A082]	Non-b			
		Coot (*Fulica atra*) [A125]	Non-b			
		Oystercatcher (*Haematopus ostralegus*) [A130]	Non-b			
		Golden Plover (*Pluvialis apricaria*) [A140]	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	
		Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina)* [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Lesser Black-backed Gull (*Larus fuscus*) [A183] Little Tern (*Sterna albifrons*) [A195] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] 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			
The Raven SPA (004019)	13.6km	Red-throated Diver (*Gavia stellata*) [A001] Cormorant (*Phalacrocorax carbo*) [A017] Common Scoter (*Melanitta nigra*) [A065] Grey Plover (*Pluvialis squatarola*) [A141] Sanderling (*Calidris alba*) [A144] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b Non-b Non-b	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains, upgrade three WTPs, and decommission four WTPs in vicinity of this European site. Some of the works are hydrologically linked to this European site via the Slaney River and Wexford Harbour. - Habitat degradation – changes in water quality (pollution) - Disturbance (including biological disturbance)	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains, upgrade three WTPs, and decommission four WTPs in vicinity of this European site. Some of the works are hydrologically linked to this European site via the Slaney River and Wexford Harbour. No operational impacts predicted.	**Y**
Bannow Bay SPA (004033)	16.6km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Pintail (*Anas acuta*) [A054] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] 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 from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains, upgrade three WTPs, and decommission four WTPs in vicinity of this European site. - Disturbance (including biological disturbance)	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains, upgrade three WTPs, and decommission four WTPs in vicinity of this European site. No operational impacts predicted.	**Y**
Ballyteige Burrow SPA (004020)	17.2km	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Golden Plover (*Pluvialis apricaria*) [A140]	Non-b Non-b Non-b	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains,	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW	**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	
		Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Wetland and Waterbirds [A999]	Non-b Non-b Non-b Non-b	upgrade three WTPs, and decommission four WTPs in vicinity of this European site. - Disturbance (including biological disturbance)	abstraction, new storage, pumps and mains, upgrade three WTPs, and decommission four WTPs in vicinity of this European site. No operational impacts predicted.	
Tacumshin Lake SPA (004092)	19.1km	Little Grebe (*Tachybaptus ruficollis*) [A004] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Gadwall (*Anas strepera*) [A051] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Tufted Duck (*Aythya fuligula*) [A061] Coot (*Fulica atra*) [A125] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] 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	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains, upgrade three WTPs, and decommission four WTPs in vicinity of this European site. - Disturbance (including biological disturbance)	Increase SW abstraction from River Slaney and upgrade Vinegar Hill WTP to supply deficit. Rationalise Bree, Ballyhogue, Glynn and Marshalstown to Enniscorthy WRZ. Increase SW abstraction, new storage, pumps and mains, upgrade three WTPs, and decommission four WTPs in vicinity of this European site. No operational impacts predicted.	**Y**