

Autumn 2022



Regional Water Resources Plan—Eastern and Midlands

Natura Impact Statement
Appendix E



Tionscadal Éireann
Project Ireland
2040

Data disclaimer: This document uses best available data at time of writing. Some sources may have been updated in the interim period. 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 documentation.

Baseline data included in the RWRP-EM 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 Irish Water data sets. Data sources will be detailed in the relevant sections of the RWRP-EM. 2019 was selected as the base year to align with the planning period (2019-2025) of the NWRP.

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Appendix E

In-combination Tables

Table E1: SA1-Potential in-combination effects with other projects and options within SA1

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 1					
<p>SA1-Group 3 (17c, 57c, 23c, 53c, 51c, 52c, 87)</p> <p>Including rationalisation of Water Treatment Plants, reservoirs and pumping stations.</p> <p>Option study area is directly adjacent to Deputy's Pass Nature Reserve SAC. There is potential for the spread of invasive species given that the works are adjacent to the SAC boundary. No operational impacts are predicted.</p> <p>Option study area is less than 1km and hydrologically linked to Wicklow Mountains SAC. There is potential for disturbance to otter. The new pipeline runs adjacent to the Avonmore River which flows from the SAC which may provide supporting habitat for otter. No operational impacts are predicted. No potential for impacts to QI habitats are predicted as the study area is located downstream of the SAC.</p> <p>Option study area is ca. 2.8km and hydrologically linked to the Murrough Wetlands SAC. There is potential for pollution of watercourses during construction that could affect hydrologically connected habitats. No operational impacts are predicted.</p> <p>Option study area is ca. 4.5km from and hydrologically linked to Magherabeg Dunes SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. No operational impacts are predicted.</p> <p>Option study area is ca. 4.5km from and hydrologically linked to Buckroney-Brittas Dunes and Fen SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts are predicted.</p> <p>Option study area is ca. 1.7km from The Murrough SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Disturbance Habitat degradation Spread of invasive non-native species 	<p><u>Arklow Flood Relief Scheme, Arklow Sewerage Scheme Wastewater Treatment Plant and Arklow Historic Town Core</u></p> <p>Arklow Flood Relief Scheme, Arklow Sewerage Scheme Wastewater Treatment Plant, and Arklow Historic Town Core projects are located approximately 17km south of Deputy's Pass Nature Reserve SAC therefore no in-combination effects are predicted.</p> <p>Arklow Flood Relief Scheme, Arklow Sewerage Scheme Wastewater Treatment Plant, and Arklow Historic Town Core projects are located approximately 24km south-east of Wicklow Mountains SAC therefore no in-combination effects are predicted.</p> <p>Arklow Flood Relief Scheme, Arklow Sewerage Scheme Wastewater Treatment Plant, and Arklow Historic Town Core projects are located approximately 23km south-west of The Murrough Wetlands SAC and The Murrough SPA therefore no in-combination effects are predicted.</p> <p>Arklow Flood Relief Scheme, Arklow Sewerage Scheme Wastewater Treatment Plant, and Arklow Historic Town Core projects are located approximately 12km north of Magherabeg Dunes SAC therefore no in-combination effects are predicted.</p> <p>Arklow Flood Relief Scheme, Arklow Sewerage Scheme Wastewater Treatment Plant, and Arklow Historic Town Core projects are located approximately 3km south of Buckroney-Brittas Dunes and Fen SAC. The Natura Impact Statement for the Arklow Wastewater Treatment Plant project concluded that there would be no impacts to this SAC with the implementation of appropriate mitigation measures. Appropriate assessment screening of the Arklow Local Area Plan concluded that impacts on Natura 2000 sites were extremely unlikely. There is no potential for impacts from the Arklow Flood Relief Scheme given the distance to this SAC. Therefore, there no in-combination effects are predicted.</p>	No	N/A	N

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>SA1-71 Upgrade Tinahely WTP for Water Quality Purposes Option study area is approximately 800m and hydrologically linked to the Slaney River Valley SAC. There is potential for pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>Arklow Flood Relief Scheme, Arklow Sewerage Scheme Wastewater Treatment Plant and Arklow Historic Town Core</u> Arklow Flood Relief Scheme, Arklow Sewerage Scheme Wastewater Treatment Plant, and Arklow Historic Town Core projects are located approximately 14km northeast of Slaney River Valley SAC, therefore no in-combination effects are predicted.</p>	No	N/A	N
<p>All Preferred Options The European sites that may be impacted by options within Study Area 1 are Wicklow Mountains SAC, Deputy's Pass Nature Reserve SAC, The Murrough Wetlands SAC, The Murrough SPA, Buckroney-Brittis Dunes and Fen SAC, Magherabeg Dunes SAC and Slaney River Valley SAC.</p>	<ul style="list-style-type: none"> Disturbance Habitat degradation Spread of invasive non-native species 	<p><u>All Preferred Options</u> Option SA1-Group 3 is the only option within SA1 with potential for impacts on Buckroney-Brittis Dunes and Fen SAC, Wicklow Mountains SAC, Deputy's Pass Nature Reserve SAC, The Murrough Wetlands SAC, Magherabeg Dunes SAC and The Murrough SPA. Therefore, there is no potential for in-combination effects to these European sites. Option SA1-71 is the only option within SA1 with potential for impacts on Slaney River Valley SAC. Therefore, there is no potential for in-combination effects to this European site.</p>	No	N/A	N

Table E2: Potential in-combination effects with other projects and options within SA2

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 2					
<p>SA2-13</p> <p>Increased GW abstraction for Ballyknockan Vallemount Public Supply and refurb Ballyknockan WTP</p> <p>Wicklow Mountains SAC is less than 600m and hydrologically linked to this option Study Area. There is potential for construction disturbance to otter as works for this Option lies adjacent to a stream which flows from the SAC and may provide supporting habitat for otter. No operational impacts are predicted.</p> <p>Poulaphouca Reservoir SPA is less than 1km from this Option study area. There is potential for construction disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Disturbance 	<p><u>Making Baltinglass the Hub for South West Wicklow</u></p> <p>Wicklow Mountains SAC is approximately 13km east and upstream of 'Making Baltinglass the Hub for South West Wicklow' development and therefore no in-combination effects are predicted.</p> <p>Poulaphouca Reservoir SPA is approximately 20km north-east of 'Making Baltinglass the Hub for South West Wicklow' development and therefore no in-combination effects are predicted.</p> <p><u>Arklow to Shillelagh Recreational Trail</u></p> <p>Wicklow Mountains SAC is approximately 11km north and upstream of this project and therefore no in-combination effects are predicted.</p> <p>Poulaphouca Reservoir SPA is approximately 30km north of this project and therefore no in-combination effects are predicted.</p> <p><u>N11/M11 Junction 4 to Junction 14 Improvement Scheme</u></p> <p>Wicklow Mountains SAC is approximately 6km west and upstream of this project and therefore no in-combination effects are predicted.</p> <p>Poulaphouca Reservoir SPA is approximately 23km west of this project and therefore no in-combination effects are predicted.</p>	No	N/A	N
<p>SA2-35</p> <p>Water Treatment Plant upgrade for WQ issues at Rathdangan (Grangecon WTP)</p> <p>Option study area is 1.5km from Wicklow Mountains SAC. There is potential for construction disturbance to otter. The works for this Option lies adjacent to a stream which flows from the SAC and may provide supporting habitat for otter. No operational impacts are predicted.</p> <p>Option study area is 2.2km from and hydrologically linked to Slaney River Valley SAC. Potential changes in water quality from pollution of watercourses during construction could affect QI species and hydrologically connected habitats. There is also potential for disturbance to otter. The new pipeline runs adjacent to a watercourse which flows into the SAC and may provide supporting habitat for otter. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Disturbance Habitat degradation 	<p><u>Making Baltinglass the Hub for South West Wicklow</u></p> <p>Wicklow Mountains SAC is approximately 13km east and upstream of 'Making Baltinglass the Hub for South West Wicklow' development and therefore no in-combination effects are predicted.</p> <p>A freshwater stretch of the River Slaney, component part of the Slaney River Valley SAC, passes through the centre of Baltinglass. The project 'Making Baltinglass the Hub for South West Wicklow' covers a number of improvement projects within the town such as upgrading parking and footpaths, as well as supporting a number of town developments. Potential for in-combination effects from disturbance and pollution during construction.</p> <p><u>Arklow to Shillelagh Recreational Trail</u></p> <p>Wicklow Mountains SAC is approximately 11km north and upstream of this project and therefore no in-combination effects are predicted.</p> <p>This recreational trail passes through Tinahely to Shillelagh, adjacent to the Slaney River Valley SAC. Therefore, there is potential for in-combination impacts from disturbance and pollution during construction.</p> <p><u>N11/M11 Junction 4 to Junction 14 Improvement Scheme</u></p> <p>Wicklow Mountains SAC is approximately 6km west and upstream of this project and therefore no in-combination effects are predicted.</p> <p>Slaney River Valley SAC is approximately 30km south-west of this project and therefore no in-combination effects are predicted.</p>	<p>Yes - from habitat degradation and disturbance impacts on Slaney River Valley SAC if construction phase is concurrent with Making Baltinglass the Hub for South West Wicklow.</p> <p>Yes - from habitat degradation and disturbance impacts on Slaney River Valley SAC if construction phase concurrent with Arklow to Shillelagh Recreational Trail</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
<p>SA2-38</p> <p>Water Treatment Plant upgrade for Kiltegan public supply</p> <p>Option study area is 3.6km from and hydrologically linked to Slaney River Valley SAC. Potential changes in water quality from pollution of watercourses during construction could affect QI species and hydrologically connected habitats. There is also potential for</p>	<ul style="list-style-type: none"> Disturbance Habitat degradation Spread of invasive non-native species 	<p><u>Making Baltinglass the Hub for South West Wicklow</u></p> <p>A freshwater stretch of the River Slaney, component part of the Slaney River Valley SAC, passes through the centre of Baltinglass. The project 'Making Baltinglass the Hub for South West Wicklow' covers a number of improvement projects within the town such as upgrading parking and footpaths, as well as supporting a number of town developments. Potential for in-combination effects from disturbance and pollution during construction.</p> <p><u>Arklow to Shillelagh Recreational Trail</u></p>	<p>Yes - from habitat degradation, spread of invasive non-native species and disturbance impacts on Slaney River Valley SAC if construction phase is concurrent with Making Baltinglass the Hub for South West Wicklow.</p> <p>Yes - from habitat degradation,</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either</p>	N

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against Identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
disturbance to otter from construction works and the spread of invasive species given that the works are within the SAC boundary. No operational impacts are predicted.		This recreational trail passes through Tinahely to Shillelagh, adjacent to the Slaney River Valley SAC . Therefore, there is potential for in-combination impacts from disturbance and pollution during construction. <u>N11/M11 Junction 4 to Junction 14 Improvement Scheme</u> Slaney River Valley SAC is approximately 30km south-west of this project and therefore no in-combination effects are predicted.	spread of invasive non-native species and disturbance impacts on Slaney River Valley SAC if construction phase concurrent with Arklow to Shillelagh Recreational Trail	alone or in-combination with other plans or projects.	
SA2-24 Increase GW abstraction for Grangecon Public Supply and Water Treatment Plant upgrade Option study area is 15.4km from and hydrologically linked to the River Nore and River Barrow SAC . Potential changes in water quality from pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts are predicted.	<ul style="list-style-type: none"> Habitat degradation 	<u>Making Baltinglass the Hub for South West Wicklow</u> The River Nore and River Barrow SAC is approximately 7km west of 'Making Baltinglass the Hub for South West Wicklow' development and therefore no in-combination effects are predicted. <u>Arklow to Shillelagh Recreational Trail</u> The River Nore and River Barrow SAC is approximately 25km south-west of this project, therefore no in-combination effects are predicted. <u>N11/M11 Junction 4 to Junction 14 Improvement Scheme</u> The River Nore and River Barrow SAC is approximately 50km south-west of this project, therefore no in-combination effects are predicted.	No	N/A	N
SA2-40 Increase GW abstraction for Knocknagilky Public Supply and Water Treatment Plant upgrade Option study area is 1.8km from and hydrologically linked to Slaney River Valley SAC . Potential changes in water quality from pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts are predicted.	<ul style="list-style-type: none"> Habitat degradation 	<u>Making Baltinglass the Hub for South West Wicklow</u> A freshwater stretch of the River Slaney, component part of the Slaney River Valley SAC , passes through the centre of Baltinglass. The project 'Making Baltinglass the Hub for South West Wicklow' covers a number of improvement projects within the town such as upgrading parking and footpaths, as well as supporting a number of town developments. Potential for in-combination effects from construction pollution. <u>Arklow to Shillelagh Recreational Trail</u> This recreational trail passes through Tinahely to Shillelagh, adjacent to the Slaney River Valley SAC . Therefore, there is potential for in-combination impacts from construction pollution. <u>N11/M11 Junction 4 to Junction 14 Improvement Scheme</u> Slaney River Valley SAC is approximately 30km south-west of this project and therefore no in-combination effects are predicted.	Yes - from habitat degradation impacts on Slaney River Valley SAC if construction phase is concurrent with Making Baltinglass the Hub for South West Wicklow. Yes - from habitat degradation impacts on Slaney River Valley SAC if construction phase concurrent with Arklow to Shillelagh Recreational Trail	General Mitigation Measures are outlined in Section 6.3.3 With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects	N
SA2-30d Connection to Rathvilly (GDA – Lough Derg source). Water Treatment Plant upgrade of Rathvilly for WQ issues and upgrade of Hacketstown WTP Option pipeline crosses and is hydrologically linked to Slaney River Valley SAC . There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Potential pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact fish, restrict access to spawning habitat and smother freshwater pearl mussel and affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that the works are within the SAC boundary. No operational impacts are predicted.	<ul style="list-style-type: none"> Habitat loss Mortality Disturbance Habitat degradation Spread of invasive non-native species 	<u>Making Baltinglass the Hub for South West Wicklow</u> A freshwater stretch of the River Slaney, component part of the Slaney River Valley SAC , passes through the centre of Baltinglass. The project 'Making Baltinglass the Hub for South West Wicklow' covers a number of improvement projects within the town such as upgrading parking and footpaths, as well as supporting a number of town developments. Potential for in-combination effects from construction impacts. <u>Arklow to Shillelagh Recreational Trail</u> This recreational trail passes through Tinahely to Shillelagh, adjacent to the Slaney River Valley SAC . Therefore, there is potential for in-combination impacts from construction impacts. <u>N11/M11 Junction 4 to Junction 14 Improvement Scheme</u> Slaney River Valley SAC is approximately 30km south-west of this project and therefore no in-combination effects are predicted.	Yes - from habitat loss, habitat degradation, mortality of QI species, spread of invasive non-native species and disturbance impacts on Slaney River Valley SAC if construction phases are concurrent with Making Baltinglass the Hub for South West Wicklow. Yes - from habitat loss, habitat degradation, mortality of QI species, spread of invasive non-native species and disturbance impacts on Slaney River Valley SAC if construction phase concurrent with Arklow to Shillelagh Recreational Trail	General Mitigation Measures are outlined in Section 6.3.3 Option specific mitigation in Section 6.3.4 With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects	N

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against Identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>SA2-01 New GW abstraction at Baltinglass and Water Treatment Plant upgrade</p> <p>Option pipeline crosses and is hydrologically linked to Slaney River Valley SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Potential pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact fish, restrict access to spawning habitat and smother freshwater pearl mussel and affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that the works are within the SAC boundary. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat loss Mortality Disturbance Habitat degradation Spread of invasive non-native species 	<p><u>Making Baltinglass the Hub for South West Wicklow</u></p> <p>A freshwater stretch of the River Slaney, component part of the Slaney River Valley SAC, passes through the centre of Baltinglass. The project 'Making Baltinglass the Hub for South West Wicklow' covers a number of improvement projects within the town such as upgrading parking and footpaths, as well as supporting a number of town developments. Potential for in-combination effects from construction impacts.</p> <p><u>Arklow to Shillelagh Recreational Trail</u></p> <p>This recreational trail passes through Tinahely to Shillelagh, adjacent to the Slaney River Valley SAC. Therefore, there is potential for in-combination impacts from construction impacts.</p> <p><u>N11/M11 Junction 4 to Junction 14 Improvement Scheme</u></p> <p>Slaney River Valley SAC is approximately 30km south-west of this project and therefore no in-combination effects are predicted.</p>	<p>Yes - from habitat loss, habitat degradation, mortality of QI species, spread of invasive non-native species and disturbance impacts on Slaney River Valley SAC if construction phases are concurrent with Making Baltinglass the Hub for South West Wicklow.</p> <p>Yes - from habitat loss, habitat degradation, mortality of QI species, spread of invasive non-native species and disturbance impacts on Slaney River Valley SAC if construction phase concurrent with Arklow to Shillelagh Recreational Trail</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Option specific mitigation are outlined in Section 6.3.4</p> <p>Yield Assessment as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA2-28 Increase GW abstraction for Knockanarrigan Davidstown Public Supply and Water Treatment Plant upgrade</p> <p>Option study area is 280m from Slaney River Valley SAC. There is potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>Making Baltinglass the Hub for South West Wicklow</u></p> <p>A freshwater stretch of the River Slaney, component part of the Slaney River Valley SAC, passes through the centre of Baltinglass. The project 'Making Baltinglass the Hub for South West Wicklow' covers a number of improvement projects within the town such as upgrading parking and footpaths, as well as supporting a number of town developments. Potential for in-combination effects from construction pollution.</p> <p><u>Arklow to Shillelagh Recreational Trail</u></p> <p>This recreational trail passes through Tinahely to Shillelagh, adjacent to the Slaney River Valley SAC. Therefore, there is potential for in-combination impacts from construction pollution.</p> <p><u>N11/M11 Junction 4 to Junction 14 Improvement Scheme</u></p> <p>Slaney River Valley SAC is approximately 30km south-west of this project and therefore no in-combination effects are predicted.</p>	<p>Yes - from habitat degradation impacts on Slaney River Valley SAC if construction phase is concurrent with Making Baltinglass the Hub for South West Wicklow.</p> <p>Yes - from habitat degradation impacts on Slaney River Valley SAC if construction phase concurrent with Arklow to Shillelagh Recreational Trail</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>All Preferred Options within SA2</p> <p>The European sites that may be impacted by options within Study Area 2 are Wicklow Mountains SAC, Poulaphouca Reservoir SPA, Slaney River Valley SAC and River Nore and River Barrow SAC.</p>	<ul style="list-style-type: none"> Habitat loss Mortality Disturbance Habitat degradation Spread of invasive non-native species 	<p><u>All Preferred Options</u></p> <p>There is potential for in-combination effects from the projects within SA2 to the Slaney River Valley SAC given that options SA2-35, SA2-38, SA2-40, SA2-30d, SA2-01 and SA2-28 have the potential for impacts including habitat loss, habitat degradation, mortality of QI species, spread of invasive non-native species and disturbance impacts.</p> <p>There is potential for disturbance to otter within Wicklow Mountains SAC from options SA2-13 and SA2-35. However, given that these options are both located outside of the SAC and over 19km apart there is no potential for in-combination effects to this European site.</p> <p>Option SA2-13 is the only option within SA2 with potential for impacts on Poulaphouca Reservoir SPA. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA2-24 is the only option within SA2 with potential for impacts on the River Nore and River Barrow SAC. Therefore, there is no potential for in-combination effects to this European site.</p>	<p>Yes - from habitat loss, habitat degradation, mortality of QI species, spread of invasive non-native species and disturbance impacts on Slaney River Valley SAC if construction phases are concurrent.</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Option specific mitigation in Section 6.3.4</p> <p>Yield Assessment as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects</p>	<p>N</p>

Table E3: SA3 In-combination assessment of preferred approach with other relevant projects and options within SA3

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 3					
<p>SA3-523 (Group 23 options – 96, 100, 97, 98, 102, 99, 101)</p> <p>Including rationalisation of Water Treatment Plants and supply of deficit.</p> <p>Option study area is directly adjacent and hydrologically linked to River Boyne and River Blackwater SAC. Option pipeline crosses this European site. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact fish and restrict access to spawning habitat. Potential changes in water quality from pollution during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that the works are within the SAC boundary. No operational impacts are predicted.</p> <p>Option study area is directly adjacent to Lough Bane and Lough Glass SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during demolition works given that the works are adjacent to the SAC. Pollution during demolition works could pose an impact to white-clawed crayfish. Pollution during demolition could cause degradation of QI habitat. There is potential for the spread of invasive species given that the works are adjacent to the SAC. No operational impacts are predicted.</p> <p>Option study area is directly adjacent to River Boyne and River Blackwater SPA. There is potential for mortality and disturbance to kingfisher during the breeding season given that the works are within the SPA boundary. Changes in water quality because of pollution (associated with sediment runoff, or accidental spillage) could impact fish</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Ashbourne Road and Public Realm & Department of Education site, Castle Street, Ashbourne</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 20km north-west of Ashbourne Road and Public Realm & Department of Education site, Castle Street, Ashbourne schemes and therefore no in-combination effects are predicted. Lough Bane and Lough Glass SAC is approximately 54km north-west of the schemes at Ashbourne and therefore no in-combination effects are predicted.</p> <p><u>Boyne Navigation and Greenway</u></p> <p>The Boyne Canal system is a series of canals running parallel to the River Boyne from Drogheda to Navan and project relates to restoration at and around the canal. River Boyne and River Blackwater SAC & SPA are adjacent to the scheme. Potential for in-combination effects from construction disturbance, impacts to habitats, pollution and mortality. Lough Bane and Lough Glass SAC is approximately 30km west of the most westerly part of the scheme at Navan and therefore no in-combination effects are predicted.</p> <p><u>Drogheda and Dundalk Water Supply Schemes</u></p> <p>This project for Irish Water involves the design, construction, operation and maintenance of modernization and upgrade to the Staleen and Cavan Hill water treatment works. River Boyne and River Blackwater SAC & SPA are approximately 25km south of the scheme at Cavan Hill and therefore no in-combination effects are predicted. Staleen Hill water treatment works is approximately 1km south of River Boyne and River Blackwater SAC & SPA. Potential for in-combination effects from disturbance, spread of invasive species, pollution and habitat loss and mortality during construction. Lough Bane and Lough Glass SAC is approximately 30km/60km north-west/south-west of the schemes and therefore no in-combination effects are predicted.</p> <p><u>Drogheda Courthouse - PPP: Ongoing Unitary Charge Payments</u></p> <p>The courts bundle PPP Project comprises the development of new courthouse buildings in Drogheda, Letterkenny, Limerick and Wexford and also the refurbishment and extension works to existing courthouses in Cork, Mullingar and Waterford. River Boyne and River Blackwater SAC is approximately 1km from the scheme and the River Boyne and River Blackwater SPA is approximately 3kms from the scheme in Drogheda, therefore there is the potential for in-combination effects from disturbance and pollution during construction. Lough Bane and Lough Glass SAC is approximately 53m west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Drogheda Flood Relief Scheme</u></p> <p>The proposed flood relief scheme at Drogheda, Co. Louth, for which the CFRAM Programme estimated a total preliminary cost of €16.83 million, would involve construction of a series of hard defences (flood embankments and walls) along the River Boyne and improvement of conveyance, hard defences and a flow diversion channel on various tributaries, protecting 381 properties when completed. River Boyne and River Blackwater SAC is within/in the proximity of the scheme footprint and River Boyne and River Blackwater SPA is within</p>	<p>Yes - from disturbance, mortality spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction phase concurrent with Boyne Navigation and Greenway works.</p> <p>Yes - from disturbance, spread of invasive species, habitat loss and habitat degradation and mortality impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction phase concurrent with Drogheda and Dundalk Water Supply Schemes works</p> <p>Yes – from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA with Drogheda Courthouse - PPP: Ongoing Unitary Charge Payments works</p> <p>Yes – from mortality, disturbance, habitat degradation and spread of invasives impacts on River Boyne and River Blackwater SAC & SPA if construction phase concurrent with Drogheda Flood Relief Scheme works</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction concurrent with Farganstown</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>populations, having potential indirect impacts on kingfisher through reduced prey availability. No operational impacts are predicted.</p>		<p>approximately 1km of the scheme footprint, therefore there is the potential for in-combination effects from construction disturbance, pollution, mortality and spread of invasive species. Lough Bane and Lough Glass SAC is approximately 53km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Farganstown</u></p> <p>The first phase of this development will see 445 homes being provided, with a good mix of social, affordable and private homes in the overall numbers. In time, there is potential to deliver up to 1,600 new homes in the area in subsequent phases. River Boyne and River Blackwater SAC & SPA are less than 1km from the scheme. Potential for in-combination effects from construction disturbance and pollution. Lough Bane and Lough Glass SAC is approximately 40km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Flowerhill Regeneration Project, Navan Active Land Management Project, and Navan Mid Meath Programme, Railway Street Regeneration and County Archive</u></p> <p>River Boyne and River Blackwater SAC & SPA are less than 1km from these schemes. Potential for in-combination effects from construction disturbance and pollution. Lough Bane and Lough Glass SAC is approximately 30km west from these schemes and therefore no in-combination effects are predicted.</p> <p><u>Greater Dublin Area Groundwater Augmentation</u></p> <p>River Boyne and River Blackwater SAC & SPA lie within the scheme footprint within the Lucan aquifer region. Potential for in-combination effects from construction disturbance, spread of invasive species and pollution. Lough Bane and Lough Glass SAC is approximately 50km north-east of the western extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Kells Creative Placemaking (Phase 1) - Kells Courthouse Cultural Hub and Kells Printworks and Topography Centre, and Kells Heritage Development</u></p> <p>Kells heritage-led regeneration outlines a planned Printworks at the former sawmills which will be the location for an exemplary 19th century printing press and the conversion of the former courthouse into a visitor centre and cultural hub. River Boyne and River Blackwater SAC & SPA are less than 1km from these schemes however such works would be confined to Kells Town centre and are therefore unlikely to impact the river and therefore no in-combination effects are predicted Lough Bane and Lough Glass SAC is approximately 126km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Laytown to Bettystown Link Road</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 5km north-west of the northern extent of this scheme at Bettystown. The scheme is intended to significantly improve the alignment of the R150 and will also significantly improve accessibility to the area for pedestrians, cyclists and all road user. The scheme is not hydrologically linked to the river and therefore no in-combination effects are predicted Lough Bane and Lough Glass SAC is approximately 60km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Libraries Capital Programme - Virginia Library, and Virginia Civic Centre</u></p> <p>This scheme sees the roll-out of a new Library Capital Investment Programme for the period 2016-2021 for 16 library capital developments. River Boyne and River Blackwater SAC & SPA is approximately 5km south-east of this small-scale development scheme. If construction impacts the source of the river at Lough Ramor which is adjacent to Virginia Town via pollution, there may be potential for</p>	<p>works</p> <p>Yes – from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction concurrent with Flowerhill Regeneration Project, Navan Active Land Management Project, and Navan Mid Meath Programme, Railway Street Regeneration and County Archive works</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction concurrent with Greater Dublin Area Groundwater Augmentation works</p> <p>Yes - from habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction concurrent with Libraries Capital Programme - Virginia Library, and Virginia Civic Centre works</p> <p>Yes – from mortality, disturbance, spread of invasive species, habitat loss and degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction concurrent with N2 Slane Bypass works</p> <p>Yes - from disturbance impacts on River Boyne and River Blackwater SAC & SPA if construction concurrent with St Paul's National School works</p>		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>in-combination effects. Lough Bane and Lough Glass SAC is approximately 17km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N2 Slane Bypass</u></p> <p>This scheme crosses River Boyne and River Blackwater SAC & SPA and therefore there may be in-combination effects from disturbance, spread of invasive species, mortality, pollution and habitat loss during construction. Lough Bane and Lough Glass SAC is approximately 41km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>St Paul's National School</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 1km from the scheme. Potential for in-combination effects from disturbance during construction. Lough Bane and Lough Glass SAC is approximately 50km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Trim Library and Cultural Centre</u></p> <p>The development will consist of the construction of the Trim Library & Cultural Centre in a total of 1,162.4 m2 which will be part single, part two and part three storey in height. The development will also include associated site development works, drainage and hard landscaping works including pedestrian access from High Street and vehicular & service access from St. Loman's Street. River Boyne and River Blackwater SAC & SPA are less than 1km from the scheme. Potential for in-combination effects from construction disturbance and pollution. Lough Bane and Lough Glass SAC is approximately 29km north-west of the scheme so no in-combination effects are predicted.</p> <p><u>Westgate Vision Drogheda</u></p> <p>It is anticipated that Westgate Vision will be delivered in three stages over a 10 year plus time frame. Initial work, due to be carried out over the first three years, will improve the visual amenity and public facilities in the immediate area. This will include repairing and repainting prominent buildings, removal of inappropriate signage and the provision of high-quality shop fronts, soft landscaping of public areas and facilitating pedestrian access through Old Abbey Lane to Narrow West Street. The Vision also promotes investment in the sensitive adaption and reuse of vacant buildings, as well as the development of vacant lands for new homes and businesses. River Boyne and River Blackwater SAC passes through/is in proximity to the centre of Drogheda however as the scheme will be confined to a number of small-scale improvements throughout the town no impacts to the river are anticipated. Therefore, no in-combination effects are predicted. Lough Bane and Lough Glass SAC is approximately 53km west of the scheme so no in-combination effects are predicted.</p> <p><u>N51 Park and Ride Facility</u></p> <p>The development will consist of a new offline bus bay along the westbound lane of the N51. River Boyne and River Blackwater SAC & SPA are adjacent to the scheme. Potential for in-combination effects from construction disturbance, impacts to habitats, pollution, spread of invasive species and mortality. Lough Bane and Lough Glass SAC is approximately 10km north of the scheme and upstream so no in-combination effects are predicted.</p> <p><u>Archdeaconry Glebe Housing Development</u></p> <p>The development will consist of the construction of 22 housing units in total,</p>	<p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction concurrent with Trim Library and Cultural Centre works</p> <p>Yes - from mortality, disturbance, spread of invasive species, habitat loss and degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction concurrent with N51 Park and Ride Facility works</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction concurrent with Archdeaconry Glebe Housing development works</p>		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>including all site development works with access from the existing Blackwater Heights estate. River Boyne and River Blackwater SAC & SPA are within 400m of the scheme. Potential for in-combination effects from construction disturbance and pollution. Lough Bane and Lough Glass SAC is approximately 18km west of the scheme so no in-combination effects are predicted.</p> <p><u>Rathoath Pedestrian and Cycling Scheme</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 14km from this scheme with no hydrological link, therefore no in-combination effects are predicted. Lough Bane and Lough Glass SAC is approximately 48km north-west of the scheme so no in-combination effects are predicted.</p> <p><u>Nobber Fire Station Development</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 12km from this scheme with no hydrological link, therefore no in-combination effects are predicted. Lough Bane and Lough Glass SAC is approximately 30km south-west of the scheme so no in-combination effects are predicted.</p> <p><u>N52 Grange to Clontail Scheme</u></p> <p>Realignment of the N52 National Secondary route from approximately 300m south west of Cassidy's Cross to approximately 300m northeast of Mitchelstown Cross. River Boyne and River Blackwater SAC & SPA are approximately 12km from this scheme with no hydrological link, therefore no in-combination effects are predicted. Lough Bane and Lough Glass SAC is approximately 30km south-west of the scheme so no in-combination effects are predicted.</p> <p><u>Lagore Road, Dunshaughlin Housing scheme</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 13km from this scheme with no hydrological link, therefore no in-combination effects are predicted. Lough Bane and Lough Glass SAC is approximately 45km north-west of the scheme so no in-combination effects are predicted.</p> <p><u>Castle Street, Ashbourne Housing scheme.</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 18km from this scheme with no hydrological link, therefore no in-combination effects are predicted. Lough Bane and Lough Glass SAC is approximately 52km north-west of the scheme so no in-combination effects are predicted.</p>			
<p>SA3-77 New local GW abstraction Option study area is 5.7km from and hydrologically linked to River Boyne and River Blackwater SAC. Potential changes in water quality from pollution of watercourses during construction could affect QI species and hydrologically connected habitats. There is potential for disturbance to otter using supporting habitat beyond the boundary of the SAC. There is also potential for the spread of invasive species via the hydrological link to the SAC. There is likely a high association between surface water and groundwater</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Ashbourne Road and Public Realm & Department of Education site, Castle Street, Ashbourne</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 20km north-west of Ashbourne Road and Public Realm & Department of Education site, Castle Street, Ashbourne schemes and therefore no in-combination effects are predicted.</p> <p><u>Boyne Navigation and Greenway</u></p> <p>The Boyne Canal system is a series of canals running parallel to the River Boyne from Drogheda to Navan and project relates to restoration at and around the canal. River Boyne and River Blackwater SAC & SPA are adjacent to the scheme. Potential for in-combination effects from construction disturbance, spread of invasive species and pollution.</p> <p><u>Drogheda and Dundalk Water Supply Schemes</u></p> <p>This project for Irish Water involves the design, construction, operation and</p>	<p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction phase concurrent with Boyne Navigation and Greenway works</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>flows; a high Baseflow Index (BFI). Therefore, the potential for impacts on QI habitats or aquatic QI species utilising this European site through a reduction in flows/water levels. Option involves abstraction from nearby surface water bodies which are all upstream of the River Boyne, which could lead to hydrological changes that could impact QI species.</p> <p>Option study area is 5.7km from and hydrologically linked to River Boyne and River Blackwater SPA. Potential changes in water quality from pollution (associated with construction sediment runoff, or accidental spillage) could impact fish populations, having potential indirect impacts on kingfisher through reduced prey availability. No operational impacts are predicted.</p>		<p>maintenance of modernization and upgrade to the Staleen and Cavan Hill water treatment works. River Boyne and River Blackwater SAC & SPA are approximately 25km south of the scheme at Cavan Hill and therefore no in-combination effects are predicted. Staleen Hill water treatment works is approximately 1km south of River Boyne and River Blackwater SAC & SPA. Potential for in-combination effects from disturbance, pollution and spread of invasive species, during construction.</p> <p><u>Drogheda Courthouse - PPP: Ongoing Unitary Charge Payments</u></p> <p>The courts bundle PPP Project comprises the development of new courthouse buildings in Drogheda, Letterkenny, Limerick and Wexford and also the refurbishment and extension works to existing courthouses in Cork, Mullingar and Waterford. River Boyne and River Blackwater SAC are approximately 1km from the scheme in Drogheda. Potential for in-combination effects from disturbance and pollution during construction.</p> <p><u>Drogheda Flood Relief Scheme</u></p> <p>The proposed flood relief scheme at Drogheda, Co. Louth, for which the CFRAM Programme estimated a total preliminary cost of €16.83 million, would involve construction of a series of hard defences (flood embankments and walls) along the River Boyne and improvement of conveyance, hard defences and a flow diversion channel on various tributaries, protecting 381 properties when completed. River Boyne and River Blackwater SAC is within/in the proximity of the scheme footprint and River Boyne and River Blackwater SPA is within approximately 1km of the scheme footprint. Potential for in-combination effects from construction disturbance, pollution and spread of invasive species. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Farganstown</u></p> <p>The first phase of this development will see 445 homes being provided, with a good mix of social, affordable and private homes in the overall numbers. In time, there is potential to deliver up to 1,600 new homes in the area in subsequent phases. River Boyne and River Blackwater SAC & SPA are less than 1km from the scheme. Potential for in-combination effects from construction disturbance and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Flowerhill Regeneration Project, Navan Active Land Management Project, and Navan Mid Meath Programme, Railway Street Regeneration and County Archive</u></p> <p>River Boyne and River Blackwater SAC & SPA are less than 1km from these schemes. Potential for in-combination effects from construction disturbance and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Greater Dublin Area Groundwater Augmentation</u></p> <p>River Boyne and River Blackwater SAC & SPA lie within the scheme footprint within the Lucan aquifer region. Potential for in-combination effects from construction disturbance, spread of invasive species and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Kells Creative Placemaking (Phase 1) - Kells Courthouse Cultural Hub and Kells Printworks and Topography Centre, and Kells Heritage Development</u></p> <p>Kells heritage-led regeneration outlines a planned Printworks at the former sawmills which will be the location for an exemplary 19th century printing press</p>	<p>phase concurrent with Drogheda and Dundalk Water Supply Schemes works</p> <p>Yes – from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) with Drogheda Courthouse - PPP: Ongoing Unitary Charge Payments works</p> <p>Yes – from disturbance, habitat degradation and spread of invasives impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction phase concurrent with Drogheda Flood Relief Scheme works and from habitat degradation on River Boyne and River Blackwater SAC during operation</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Farganstown works and from habitat degradation on River Boyne and River Blackwater SAC during operation</p> <p>Yes – from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Flowerhill Regeneration Project, Navan Active Land Management Project, and Navan Mid Meath Programme, Railway Street Regeneration and County Archive works and</p>		

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		<p>and the conversion of the former courthouse into a visitor centre and cultural hub. River Boyne and River Blackwater SAC & SPA are less than 1km from these schemes however such works would be confined to Kells Town centre and are therefore unlikely to impact the river and therefore no in-combination effects are predicted.</p> <p><u>Laytown to Bettystown Link Road</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 5km north-west of the northern extent of this scheme at Bettystown. The scheme is intended to significantly improve the alignment of the R150 and will also significantly improve accessibility to the area for pedestrians, cyclists and all road user. The scheme is not hydrologically linked to the river and therefore no in-combination effects are predicted</p> <p><u>Libraries Capital Programme - Virginia Library, and Virginia Civic Centre</u></p> <p>This scheme sees the roll-out of a new Library Capital Investment Programme for the period 2016-2021 for 16 library capital developments. River Boyne and River Blackwater SAC & SPA is approximately 5km south-east of this small-scale development scheme. If construction impacts the source of the river at Lough Ramor which is adjacent to Virginia Town via pollution, there may be potential for in-combination effects.</p> <p><u>N2 Slane Bypass</u></p> <p>This scheme crosses River Boyne and River Blackwater SAC & SPA and therefore there may be in-combination effects from disturbance, spread of invasive species and pollution during construction. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>St Paul's National School</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 1km from the scheme. Potential for in-combination effects from disturbance during construction.</p> <p><u>Trim Library and Cultural Centre</u></p> <p>The development will consist of the construction of the Trim Library & Cultural Centre in a total of 1,162.4 m² which will be part single, part two and part three storey in height. The development will also include associated site development works, drainage and hard landscaping works including pedestrian access from High Street and vehicular & service access from St. Loman's Street. River Boyne and River Blackwater SAC & SPA are less than 1km from the scheme. Potential for in-combination effects from construction disturbance and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Westgate Vision Drogheda</u></p> <p>It is anticipated that Westgate Vision will be delivered in three stages over a 10 year plus time frame. Initial work, due to be carried out over the first three years, will improve the visual amenity and public facilities in the immediate area. This will include repairing and repainting prominent buildings, removal of inappropriate signage and the provision of high-quality shop fronts, soft landscaping of public areas and facilitating pedestrian access through Old Abbey Lane to Narrow West Street. The Vision also promotes investment in the sensitive adaption and reuse of vacant buildings, as well as the development of vacant lands for new homes and businesses. River Boyne and River Blackwater SAC passes through/is in proximity to the centre of Drogheda however as the scheme will be confined to a number of small-scale improvements throughout the town no impacts to the river</p>	<p>from habitat degradation on River Boyne and River Blackwater SAC during operation</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Greater Dublin Area Groundwater Augmentation works and from habitat degradation on River Boyne and River Blackwater SAC during operation</p> <p>Yes - from habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction concurrent with Libraries Capital Programme - Virginia Library, and Virginia Civic Centre works</p> <p>Yes – from disturbance, spread of invasive species and degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with N2 Slane Bypass works and from habitat degradation on River Boyne and River Blackwater SAC during operation</p> <p>Yes - from disturbance impacts on River Boyne and River Blackwater SAC if construction concurrent with St Paul's National School works</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA</p>		

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		<p>are anticipated. Therefore, no in-combination effects are predicted.</p> <p><u>N51 Park and Ride Facility</u> The development will consist of a new offline bus bay along the westbound lane of the N51. River Boyne and River Blackwater SAC & SPA are adjacent to the scheme. Potential for in-combination effects from construction disturbance, pollution and spread of invasive species. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Archdeaconry Glebe Housing Development</u> The development will consist of the construction of 22 housing units in total, including all site development works with access from the existing Blackwater Heights estate. River Boyne and River Blackwater SAC & SPA are within 400m of the scheme. Potential for in-combination effects from construction disturbance and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Rathoath Pedestrian and Cycling Scheme</u> River Boyne and River Blackwater SAC & SPA are approximately 14km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Nobber Fire Station Development</u> River Boyne and River Blackwater SAC & SPA are approximately 12km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>N52 Grange to Clontail Scheme</u> Realignment of the N52 National Secondary route from approximately 300m south west of Cassidy’s Cross to approximately 300m northeast of Mitchelstown Cross. River Boyne and River Blackwater SAC & SPA are approximately 12km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Lagore Road, Dunshaughlin Housing scheme</u> River Boyne and River Blackwater SAC & SPA are approximately 13km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Castle Street, Asbourne Housing scheme</u> River Boyne and River Blackwater SAC & SPA are approximately 18km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p>	<p>(habitat degradation only) if construction concurrent with Trim Library and Cultural Centre works and from habitat degradation on River Boyne and River Blackwater SAC during operation</p> <p>Yes - from disturbance, spread of invasive species and degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with N51 Park and Ride Facility works and from habitat degradation on River Boyne and River Blackwater SAC during operation</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Archdeaconry Glebe Housing development works and from habitat degradation on River Boyne and River Blackwater SAC during operation</p>		
<p>SA3-88 Upgrade Moynalty WTP for water quality purposes Option study area is 5.5km from and hydrologically linked to River Boyne and River Blackwater SAC. Potential changes in water quality from pollution of watercourses during construction could affect QI species and hydrologically connected habitats. There is potential for</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Ashbourne Road and Public Realm & Department of Education site, Castle Street, Ashbourne</u> River Boyne and River Blackwater SAC & SPA are approximately 20km north-west of Ashbourne Road and Public Realm & Department of Education site, Castle Street, Ashbourne schemes and therefore no in-combination effects are predicted.</p> <p><u>Boyne Navigation and Greenway</u> The Boyne Canal system is a series of canals running parallel to the River Boyne from Drogheda to Navan and project relates to restoration at and around the canal. River Boyne and River Blackwater SAC & SPA are adjacent to the</p>	<p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction phase concurrent with Boyne Navigation and Greenway works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-</p>	<p>N</p>

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<p>disturbance to otter using supporting habitat beyond the boundary of the SAC. There is also potential for the spread of invasive species via the hydrological link to the SAC. No operational impacts are predicted.</p> <p>Option study area is 5.5km from and hydrologically linked to River Boyne and River Blackwater SPA. Potential changes in water quality from pollution (associated with construction sediment runoff, or accidental spillage) could impact fish populations, having potential indirect impacts on kingfisher through reduced prey availability. No operational impacts are predicted.</p>		<p>scheme. Potential for in-combination effects from construction disturbance, spread of invasive species and pollution.</p> <p><u>Drogheda and Dundalk Water Supply Schemes</u> This project for Irish Water involves the design, construction, operation and maintenance of modernization and upgrade to the Staleen and Cavan Hill water treatment works. River Boyne and River Blackwater SAC & SPA are approximately 25km south of the scheme at Cavan Hill and therefore no in-combination effects are predicted. Staleen Hill water treatment works is approximately 1km south of River Boyne and River Blackwater SAC & SPA. Potential for in-combination effects from disturbance, pollution and spread of invasive species, during construction.</p> <p><u>Drogheda Courthouse - PPP: Ongoing Unitary Charge Payments</u> The courts bundle PPP Project comprises the development of new courthouse buildings in Drogheda, Letterkenny, Limerick and Wexford and also the refurbishment and extension works to existing courthouses in Cork, Mullingar and Waterford. River Boyne and River Blackwater SAC are approximately 1km from the scheme in Drogheda. Potential for in-combination effects from disturbance and pollution during construction.</p> <p><u>Drogheda Flood Relief Scheme</u> The proposed flood relief scheme at Drogheda, Co. Louth, for which the CFRAM Programme estimated a total preliminary cost of €16.83 million, would involve construction of a series of hard defences (flood embankments and walls) along the River Boyne and improvement of conveyance, hard defences and a flow diversion channel on various tributaries, protecting 381 properties when completed. River Boyne and River Blackwater SAC is within/in the proximity of the scheme footprint and River Boyne and River Blackwater SPA is within approximately 1km of the scheme footprint. Potential for in-combination effects from construction disturbance, pollution and spread of invasive species.</p> <p><u>Farganstown</u> The first phase of this development will see 445 homes being provided, with a good mix of social, affordable and private homes in the overall numbers. In time, there is potential to deliver up to 1,600 new homes in the area in subsequent phases. River Boyne and River Blackwater SAC & SPA are less than 1km from the scheme. Potential for in-combination effects from construction disturbance and pollution.</p> <p><u>Flowerhill Regeneration Project, Navan Active Land Management Project, and Navan Mid Meath Programme, Railway Street Regeneration and County Archive</u> River Boyne and River Blackwater SAC & SPA are less than 1km from these schemes. Potential for in-combination effects from construction disturbance and pollution.</p> <p><u>Greater Dublin Area Groundwater Augmentation</u> River Boyne and River Blackwater SAC & SPA lie within the scheme footprint within the Lucan aquifer region. Potential for in-combination effects from construction disturbance, spread of invasive species and pollution.</p> <p><u>Kells Creative Placemaking (Phase 1) - Kells Courthouse Cultural Hub and Kells Printworks and Topography Centre, and Kells Heritage Development</u> Kells heritage-led regeneration outlines a planned Printworks at the former</p>	<p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction phase concurrent with Drogheda and Dundalk Water Supply Schemes works</p> <p>Yes – from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) with Drogheda Courthouse - PPP: Ongoing Unitary Charge Payments works</p> <p>Yes – from disturbance, habitat degradation and spread of invasives impacts on River Boyne and River Blackwater SAC (habitat degradation only) if construction phase concurrent with Drogheda Flood Relief Scheme works</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Farganstown works</p> <p>Yes – from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Flowerhill Regeneration Project, Navan Active Land Management Project, and Navan Mid Meath Programme, Railway Street Regeneration and County Archive works</p>	<p>combination with other plans or projects.</p>	

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>sawmills which will be the location for an exemplary 19th century printing press and the conversion of the former courthouse into a visitor centre and cultural hub. River Boyne and River Blackwater SAC & SPA are less than 1km from these schemes however such works would be confined to Kells Town centre and are therefore unlikely to impact the river and therefore no in-combination effects are predicted.</p> <p><u>Laytown to Bettystown Link Road</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 5km north-west of the northern extent of this scheme at Bettystown. The scheme is intended to significantly improve the alignment of the R150 and will also significantly improve accessibility to the area for pedestrians, cyclists and all road user. The scheme is not hydrologically linked to the river and therefore no in-combination effects are predicted</p> <p><u>Libraries Capital Programme - Virginia Library, and Virginia Civic Centre</u></p> <p>This scheme sees the roll-out of a new Library Capital Investment Programme for the period 2016-2021 for 16 library capital developments. River Boyne and River Blackwater SAC & SPA is approximately 5km south-east of this small-scale development scheme. If construction impacts the source of the river at Lough Ramor which is adjacent to Virginia Town via pollution, there may be potential for in-combination effects.</p> <p><u>N2 Slane Bypass</u></p> <p>This scheme crosses River Boyne and River Blackwater SAC & SPA and therefore there may be in-combination effects from disturbance, spread of invasive species and pollution during construction.</p> <p><u>St Paul's National School</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 1km from the scheme. Potential for in-combination effects from disturbance during construction.</p> <p><u>Trim Library and Cultural Centre</u></p> <p>The development will consist of the construction of the Trim Library & Cultural Centre in a total of 1,162.4 m2 which will be part single, part two and part three storey in height. The development will also include associated site development works, drainage and hard landscaping works including pedestrian access from High Street and vehicular & service access from St. Loman's Street. River Boyne and River Blackwater SAC & SPA are less than 1km from the scheme. Potential for in-combination effects from construction disturbance and pollution.</p> <p><u>Westgate Vision Drogheda</u></p> <p>It is anticipated that Westgate Vision will be delivered in three stages over a 10 year plus time frame. Initial work, due to be carried out over the first three years, will improve the visual amenity and public facilities in the immediate area. This will include repairing and repainting prominent buildings, removal of inappropriate signage and the provision of high-quality shop fronts, soft landscaping of public areas and facilitating pedestrian access through Old Abbey Lane to Narrow West Street. The Vision also promotes investment in the sensitive adaption and reuse of vacant buildings, as well as the development of vacant lands for new homes and businesses. River Boyne and River Blackwater SAC passes through/is in proximity to the centre of Drogheda however as the scheme will be confined to a number of small-scale improvements throughout the town no impacts to the river are anticipated. Therefore, no in-combination effects are predicted.</p>	<p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Greater Dublin Area Groundwater Augmentation works</p> <p>Yes - from habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction concurrent with Libraries Capital Programme - Virginia Library, and Virginia Civic Centre works</p> <p>Yes – from disturbance, spread of invasive species and degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with N2 Slane Bypass works</p> <p>Yes - from disturbance impacts on River Boyne and River Blackwater SAC if construction concurrent with St Paul's National School works</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Trim Library and Cultural Centre works</p> <p>Yes - from disturbance, spread of invasive species and degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat</p>		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p><u>N51 Park and Ride Facility</u> The development will consist of a new offline bus bay along the westbound lane of the N51. River Boyne and River Blackwater SAC & SPA are adjacent to the scheme. Potential for in-combination effects from construction disturbance, pollution and spread of invasive species.</p> <p><u>Archdeaconry Glebe Housing Development</u> The development will consist of the construction of 22 housing units in total, including all site development works with access from the existing Blackwater Heights estate. River Boyne and River Blackwater SAC & SPA are within 400m of the scheme. Potential for in-combination effects from construction disturbance and pollution.</p> <p><u>Rathoath Pedestrian and Cycling Scheme</u> River Boyne and River Blackwater SAC & SPA are approximately 14km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Nobber Fire Station Development</u> River Boyne and River Blackwater SAC & SPA are approximately 12km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>N52 Grange to Clontail Scheme</u> Realignment of the N52 National Secondary route from approximately 300m south west of Cassidy’s Cross to approximately 300m northeast of Mitchelstown Cross. River Boyne and River Blackwater SAC & SPA are approximately 12km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Lagore Road, Dunshaughlin Housing scheme</u> River Boyne and River Blackwater SAC & SPA are approximately 13km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Castle Street, Asbourne Housing scheme</u> River Boyne and River Blackwater SAC & SPA are approximately 18km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p>	<p>degradation only) if construction concurrent with N51 Park and Ride Facility works</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (habitat degradation only) if construction concurrent with Archdeaconry Glebe Housing development works</p>		
<p>SA3-47 Increase existing GW abstraction and increase capacity at WTP. Option study area is directly adjacent and hydrologically linked to River Boyne and River Blackwater SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact fish and restrict access to</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Ashbourne Road and Public Realm & Department of Education site, Castle Street, Ashbourne</u> River Boyne and River Blackwater SAC & SPA are approximately 20km north-west of Ashbourne Road and Public Realm & Department of Education site, Castle Street, Ashbourne schemes and therefore no in-combination effects are predicted.</p> <p><u>Boyne Navigation and Greenway</u> The Boyne Canal system is a series of canals running parallel to the River Boyne from Drogheda to Navan and project relates to restoration at and around the canal. River Boyne and River Blackwater SAC & SPA are adjacent to the scheme. Potential for in-combination effects from construction disturbance, spread of invasive species and pollution.</p> <p><u>Drogheda and Dundalk Water Supply Schemes</u></p>	<p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction phase concurrent with Boyne Navigation and Greenway works</p> <p>Yes – from disturbance, spread of invasive species and habitat degradation impacts on River</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>spawning habitat. Potential changes in water quality from pollution during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that the works are within the SAC boundary. Operational impacts are possible. There will be an increase in abstraction within this European site, and there is likely a high association between surface water and groundwater flows; a high Baseflow Index (BFI). An increase in abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact on QI species or habitats. Therefore, there is potential for impacts on aquatic QI species utilising this European site through a reduction in flows/water levels.</p> <p>Option study area is directly adjacent and hydrologically linked to the River Boyne and River Blackwater SPA. Potential changes in water quality from pollution (associated with construction sediment runoff, or accidental spillage) could impact fish populations, having potential indirect impacts on kingfisher through reduced prey availability. There is potential for mortality and disturbance to kingfisher during the breeding season given that the works are within the SPA boundary. No operational impacts are predicted.</p>		<p>This project for Irish Water involves the design, construction, operation and maintenance of modernization and upgrade to the Staleen and Cavan Hill water treatment works. River Boyne and River Blackwater SAC & SPA are approximately 25km south of the scheme at Cavan Hill and therefore no in-combination effects are predicted. Staleen Hill water treatment works is approximately 1km south of River Boyne and River Blackwater SAC & SPA. Potential for in-combination effects from disturbance, pollution and spread of invasive species, during construction.</p> <p><u>Drogheda Courthouse - PPP: Ongoing Unitary Charge Payments</u></p> <p>The courts bundle PPP Project comprises the development of new courthouse buildings in Drogheda, Letterkenny, Limerick and Wexford and also the refurbishment and extension works to existing courthouses in Cork, Mullingar and Waterford. River Boyne and River Blackwater SAC are approximately 1km from the scheme in Drogheda. Potential for in-combination effects from disturbance and pollution during construction.</p> <p><u>Drogheda Flood Relief Scheme</u></p> <p>The proposed flood relief scheme at Drogheda, Co. Louth, for which the CFRAM Programme estimated a total preliminary cost of €16.83 million, would involve construction of a series of hard defences (flood embankments and walls) along the River Boyne and improvement of conveyance, hard defences and a flow diversion channel on various tributaries, protecting 381 properties when completed. River Boyne and River Blackwater SAC is within/in the proximity of the scheme footprint and River Boyne and River Blackwater SPA is within approximately 1km of the scheme footprint. Potential for in-combination effects from construction disturbance, pollution and spread of invasive species. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Farganstown</u></p> <p>The first phase of this development will see 445 homes being provided, with a good mix of social, affordable and private homes in the overall numbers. In time, there is potential to deliver up to 1,600 new homes in the area in subsequent phases. River Boyne and River Blackwater SAC & SPA are less than 1km from the scheme. Potential for in-combination effects from construction disturbance and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Flowerhill Regeneration Project, Navan Active Land Management Project, and Navan Mid Meath Programme, Railway Street Regeneration and County Archive</u></p> <p>River Boyne and River Blackwater SAC & SPA are less than 1km from these schemes. Potential for in-combination effects from construction disturbance and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Greater Dublin Area Groundwater Augmentation</u></p> <p>River Boyne and River Blackwater SAC & SPA lie within the scheme footprint within the Lucan aquifer region. Potential for in-combination effects from construction disturbance, spread of invasive species and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Kells Creative Placemaking (Phase 1) - Kells Courthouse Cultural Hub and Kells Printworks and Topography Centre, and Kells Heritage Development</u></p> <p>Kells heritage-led regeneration outlines a planned Printworks at the former</p>	<p>Boyne and River Blackwater SAC & SPA (not invasive species) if construction phase concurrent with Drogheda and Dundalk Water Supply Schemes works</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC if construction phase concurrent with Drogheda Courthouse - PPP: Ongoing Unitary Charge Payments works</p> <p>Yes - from disturbance, habitat degradation and spread of invasives impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction phase concurrent with Drogheda Flood Relief Scheme works and from habitat degradation on River Boyne and River Blackwater SAC during operation from habitat degradation</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction phase concurrent with Farganstown works and from habitat degradation on River Boyne and River Blackwater SAC during operation from habitat degradation</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction phase concurrent with Flowerhill Regeneration Project, Navan Active Land Management Project, and</p>		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>sawmills which will be the location for an exemplary 19th century printing press and the conversion of the former courthouse into a visitor centre and cultural hub. River Boyne and River Blackwater SAC & SPA are less than 1km from these schemes however such works would be confined to Kells Town centre and are therefore unlikely to impact the river and therefore no in-combination effects are predicted.</p> <p><u>Laytown to Bettystown Link Road</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 5km north-west of the northern extent of this scheme at Bettystown. The scheme is intended to significantly improve the alignment of the R150 and will also significantly improve accessibility to the area for pedestrians, cyclists and all road user. The scheme is not hydrologically linked to the river and therefore no in-combination effects are predicted</p> <p><u>Libraries Capital Programme - Virginia Library, and Virginia Civic Centre</u></p> <p>This scheme sees the roll-out of a new Library Capital Investment Programme for the period 2016-2021 for 16 library capital developments. River Boyne and River Blackwater SAC & SPA is approximately 5km south-east of this small-scale development scheme. If construction impacts the source of the river at Lough Ramor which is adjacent to Virginia Town via pollution, there may be potential for in-combination effects.</p> <p><u>N2 Slane Bypass</u></p> <p>This scheme crosses River Boyne and River Blackwater SAC & SPA and therefore there may be in-combination effects from disturbance, spread of invasive species and pollution during construction. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>St Paul's National School</u></p> <p>River Boyne and River Blackwater SAC & SPA are approximately 1km from the scheme. Potential for in-combination effects from disturbance during construction.</p> <p><u>Trim Library and Cultural Centre</u></p> <p>The development will consist of the construction of the Trim Library & Cultural Centre in a total of 1,162.4 m2 which will be part single, part two and part three storey in height. The development will also include associated site development works, drainage and hard landscaping works including pedestrian access from High Street and vehicular & service access from St. Loman's Street. River Boyne and River Blackwater SAC & SPA are less than 1km from the scheme. Potential for in-combination effects from construction disturbance and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Westgate Vision Drogheda</u></p> <p>It is anticipated that Westgate Vision will be delivered in three stages over a 10 year plus time frame. Initial work, due to be carried out over the first three years, will improve the visual amenity and public facilities in the immediate area. This will include repairing and repainting prominent buildings, removal of inappropriate signage and the provision of high-quality shop fronts, soft landscaping of public areas and facilitating pedestrian access through Old Abbey Lane to Narrow West Street. The Vision also promotes investment in the sensitive adaption and reuse of vacant buildings, as well as the development of vacant lands for new homes and businesses. River Boyne and River Blackwater SAC passes through/is in proximity to the centre of Drogheda however as the scheme will be confined to a</p>	<p>Navan Mid Meath Programme, Railway Street Regeneration and County Archive works and from habitat degradation on River Boyne and River Blackwater SAC during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction phase concurrent with Greater Dublin Area Groundwater Augmentation works and from habitat degradation on River Boyne and River Blackwater SAC during operation from habitat degradation</p> <p>Yes - from habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction phase concurrent with Libraries Capital Programme - Virginia Library, and Virginia Civic Centre works</p> <p>Yes - from disturbance, habitat loss, spread of invasive species and degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction phase concurrent with N2 Slane Bypass works and from habitat degradation on River Boyne and River Blackwater SAC during operation</p> <p>Yes - from disturbance impacts on River Boyne and River Blackwater SAC & SPA if construction phase concurrent with St Paul's National School works</p>		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>number of small-scale improvements throughout the town no impacts to the river are anticipated. Therefore, no in-combination effects are predicted.</p> <p><u>N51 Park and Ride Facility</u> The development will consist of a new offline bus bay along the westbound lane of the N51. River Boyne and River Blackwater SAC & SPA are adjacent to the scheme. Potential for in-combination effects from construction disturbance, impacts to habitats, pollution, spread of invasive species and mortality. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Archdeaconry Glebe Housing Development</u> The development will consist of the construction of 22 housing units in total, including all site development works with access from the existing Blackwater Heights estate. River Boyne and River Blackwater SAC & SPA are within 400m of the scheme. Potential for in-combination effects from construction disturbance and pollution. In-combination effects during operation may result in habitat degradation to the SAC.</p> <p><u>Rathoath Pedestrian and Cycling Scheme</u> River Boyne and River Blackwater SAC & SPA are approximately 14km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Nobber Fire Station Development</u> River Boyne and River Blackwater SAC & SPA are approximately 12km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>N52 Grange to Clontail Scheme</u> Realignment of the N52 National Secondary route from approximately 300m south west of Cassidy’s Cross to approximately 300m northeast of Mitchelstown Cross. River Boyne and River Blackwater SAC & SPA are approximately 12km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Lagore Road, Dunshaughlin Housing scheme</u> River Boyne and River Blackwater SAC & SPA are approximately 13km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p> <p><u>Castle Street, Asbourne Housing scheme.</u> River Boyne and River Blackwater SAC & SPA are approximately 18km from this scheme with no hydrological link, therefore no in-combination effects are predicted.</p>	<p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction phase concurrent with Trim Library and Cultural Centre works and from habitat degradation on River Boyne and River Blackwater SAC during operation from habitat degradation</p> <p>Yes - from mortality, disturbance, spread of invasive species, habitat loss and degradation impacts on River Boyne and River Blackwater SAC & SPA (not invasive species) if construction concurrent with N51 Park and Ride Facility works and from habitat degradation on River Boyne and River Blackwater SAC during operation from habitat degradation</p> <p>Yes - from disturbance and habitat degradation impacts on River Boyne and River Blackwater SAC & SPA if construction concurrent with Archdeaconry Glebe Housing development works and from habitat degradation on River Boyne and River Blackwater SAC during operation from habitat degradation</p>		
<p>All Preferred Options The European sites that may be impacted by options within Study Area 3 are River Boyne and River Blackwater SAC & SPA and Lough Bane and Lough Glass SAC.</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>All Preferred Options</u> There is potential for in-combination effects from the projects within SA3 to River Boyne and River Blackwater SAC & SPA given that options SA3-523, SA3-77, SA3-88 and SA3-47 have the potential for impacts including habitat loss (options 523 and 47 only) and disturbance, spread of invasives and pollution (options 523, 77, 88 and 47) during construction. There is the potential for changes in water table/availability which could lead to hydrological changes such as reduced flows which could have an impact on water quality (options 47 and 77). Option SA3-523 is the only option within SA3 with potential for impacts on Lough</p>	<p>Yes – from habitat loss, disturbance, spread of invasives, habitat degradation and water table/availability impacts on River Boyne and River Blackwater SAC & SPA if construction of options is concurrent and during operation</p>	<p>General Mitigation Measures are outlined in Section 6.3.3 Hydrogeological modelling as in Section 6.3.5 Yield assessment as in Section 6.3.5</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		Bane and Lough Glass SAC. Therefore, there is no potential for in-combination effects to this European site.		With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	

Table E4: SA4 - Potential in-combination effects with other projects and options within SA4

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 4					
<p>SA4-99 Upgrade Clonbullogue WTP Option study area is 5km from and hydrologically linked to River Boyne and River Blackwater SAC. Potential pollution during construction could affect QI species and hydrologically connected habitats. There is potential for the spread of invasive species given that the option study area is hydrologically linked to the SAC. No operational impacts predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Spread of invasive non-native species 	<p><u>Mullingar Courthouse - PPP: Ongoing Unitary Charge Payments, Railway Terrace, Mullingar, Mullingar Radiation Department, Ardmore Road, Mullingar, Blackhall, Mullingar, Mullingar Theatres, Canal Avenue & Environs Regeneration Project, Kinnefad Regeneration, Mullingar Greenway Recreational Hub and proposed Mullingar Town Bus Service</u> River Boyne and River Blackwater SAC is approximately 12km north-west of these schemes however they are not directly hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>The Yard, Abbeyshrule - Community and Economic Hub</u> River Boyne and River Blackwater SAC is approximately 39km south-west of the scheme and therefore no in-combination effects are predicted</p> <p><u>Community Facilities Enfield</u> River Boyne and River Blackwater SAC is approximately 10km north-west of the scheme but not hydrologically linked so no in-combination effects are predicted</p> <p><u>Edenderry Masterplan, Edenderry Regeneration - Phase 1, and Libraries Capital Programme - Edenderry Library</u> River Boyne and River Blackwater SAC is approximately 12km north-east of the scheme. Whilst they are hydrologically linked the scheme is locally restricted and small in extent and therefore no in-combination effects are predicted.</p> <p><u>Castlepollard Regeneration</u> River Boyne and River Blackwater SAC is approximately 9km east of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p><u>Historic Granard Motte Project</u> River Boyne and River Blackwater SAC is approximately 26km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Kearney's Field, Tullamore, Co. Offaly</u> River Boyne and River Blackwater SAC is approximately 37km north-east of the scheme and therefore no in-combination effects are predicted.</p>	No	N/A	N
<p>SA4-98 Upgrade Clonbullogue WTP Option study area is 11.5km from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution during construction could affect QI species and hydrologically connected habitats. No operational impacts predicted.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>Mullingar Courthouse - PPP: Ongoing Unitary Charge Payments, Railway Terrace, Mullingar, Mullingar Radiation Department, Ardmore Road, Mullingar, Blackhall, Mullingar, Mullingar Theatres, Canal Avenue & Environs Regeneration Project, Kinnefad Regeneration, Mullingar Greenway Recreational Hub and proposed Mullingar Town Bus Service</u> River Barrow and River Nore SAC is approximately 40km south of these schemes and therefore no in-combination effects are predicted.</p> <p><u>The Yard, Abbeyshrule - Community and Economic Hub</u> River Barrow and River Nore SAC is approximately 47km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Community Facilities Enfield</u> River Barrow and River Nore SAC is approximately 32km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Edenderry Masterplan, Edenderry Regeneration - Phase 1, and Libraries Capital Programme - Edenderry Library</u> River Barrow and River Nore SAC is approximately 20km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Castlepollard Regeneration</u></p>	No	N/A	N

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>River Barrow and River Nore SAC is approximately 56km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Historic Granard Motte Project</u></p> <p>River Barrow and River Nore SAC is approximately 66km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 12km south of the scheme but not hydrologically linked so no in-combination effects are predicted.</p>			
<p>SA4-501 Connecting to New Shannon Source Option study area is 3m from Lough Ennell SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are directly adjacent to the SAC boundary. Potential pollution of watercourses during construction could affect hydrologically connected habitats. Potential for the spread of invasive species given that the works are directly adjacent to the SAC boundary. No operational impacts predicted.</p> <p>Option study area is 25m from Lough Lene SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. Potential for the spread of invasive species given that the works are in close proximity to the SAC boundary. No operational impacts predicted.</p> <p>Option study area is 200m from River Boyne and River Blackwater SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. Potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that the works are hydrologically linked to the SAC. No operational impacts predicted.</p> <p>Option study area is 670m from Lough Owel SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. Potential for the spread of invasive species given that the works are hydrologically linked to the SAC. No operational impacts predicted.</p> <p>Option study area is 7.4km from River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts predicted.</p> <p>Option study area is 9km from Garriskil Bog</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Mullingar Courthouse - PPP: Ongoing Unitary Charge Payments, Railway Terrace, Mullingar, Mullingar Radiation Department, Ardmore Road, Mullingar, Blackhall, Mullingar, Mullingar Theatres, Canal Avenue & Environs Regeneration Project, Kinnegad Regeneration, Mullingar Greenway Recreational Hub and proposed Mullingar Town Bus Service</u></p> <p>Lough Ennell SAC & SPA are approximately 3km south-west of these schemes. A number of urban developments are planned as part of various regeneration programs within Mullingar. Mullingar is hydrologically connected to Lough Ennell SAC & SPA through the River Brosna and therefore there may be in-combination effects from pollution and from spread of invasive species during construction.</p> <p>Lough Lene SAC is approximately 16km north-east of these schemes and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SAC is approximately 12km north-east of these schemes however they are not directly hydrologically connected and therefore no in-combination effects are predicted.</p> <p>Lough Owel SAC & SPA are approximately 3.5km north-west of these schemes and hydrologically connected to Mullingar via Lough Owel Feeder and therefore there may be in-combination effects from pollution during construction.</p> <p>River Barrow and River Nore SAC is approximately 40km south of these schemes and therefore no in-combination effects are predicted.</p> <p>Garriskil Bog SAC & SPA are approximately 15km north-west of these schemes and therefore no in-combination effects are predicted.</p> <p>Charleville Wood SAC is approximately 30km south-west of these schemes and therefore no in-combination effects are predicted.</p> <p>Slieve Bloom Mountains SAC is approximately 45km south-west of these schemes and therefore no in-combination effects are predicted.</p> <p>Lough Ree SAC & SPA are approximately 33km west of these schemes and therefore no in-combination effects are predicted.</p> <p>Lough Iron SPA is approximately 10km north-west and not hydrologically connected to the scheme so no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SPA is approximately 16km north-east of these schemes and therefore no in-combination effects are predicted.</p> <p>Lough Derravarragh SPA is approximately 10km north of these schemes however they are not directly hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>The Yard, Abbeyshrule - Community and Economic Hub</u></p> <p>Lough Ennell SAC & SPA are approximately 19km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Lene SAC is approximately 28km east of the scheme and therefore no in-combination effects are predicted.</p>	<p>Yes – from habitat degradation and loss, disturbance, and from spread of invasive species impacts on Lough Ennell SAC & SPA and Lough Owel SAC & SPA if construction phase concurrent with Mullingar Courthouse - PPP: Ongoing Unitary Charge Payments, Railway Terrace, Mullingar, Mullingar Radiation Department, Ardmore Road, Mullingar, Blackhall, Mullingar, Mullingar Theatres, Canal Avenue & Environs Regeneration Project, Kinnegad Regeneration, Mullingar Greenway Recreational Hub and proposed Mullingar Town Bus Service works.</p> <p>Yes - from habitat degradation impacts on Lough Ree SAC & SPA if construction concurrent with The Yard, Abbeyshrule - Community and Economic Hub works.</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. No operational impacts predicted.</p> <p>Option study area is 9.5km from Charleville Wood SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts predicted.</p> <p>Option study area is 12.1km from Slieve Bloom Mountains SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. No operational impacts predicted.</p> <p>Option study area is 13.2km from Lough Ree SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts predicted.</p> <p>Option study area is within Lough Iron SPA. There is potential for some loss of/damage to supporting habitats (e.g. foraging habitats) to QI species during construction works given that the works are within the SPA boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact prey species relied on by QI. There is potential for pollution of waterbodies during construction that could impact on the wetland habitat used by QI bird species. Potential pollution of watercourses during construction could have indirect effects on QI bird species through impacts upon prey species. Potential for disturbance to QI birds using supporting habitats in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland), as well as within the SPA given the study area is within the SPA. No operational impacts predicted.</p> <p>Option study area is 225m from River Boyne and River Blackwater SPA. There is potential for pollution of waterbodies during construction that could impact on the wetland habitat used by kingfisher. Potential pollution of watercourses during construction could have indirect effects on kingfisher through impacts upon prey species. Potential for disturbance to kingfisher using habitats situated within the immediate hinterland of the SPA, or in areas outside of the SPA but ecologically connected to it, given the study area is in close proximity to the SPA which is a breeding site. No operational impacts predicted.</p>		<p>River Boyne and River Blackwater SAC is approximately 39km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Owel SAC & SPA are approximately 16km west of the scheme and therefore no in-combination effects are predicted.</p> <p>River Barrow and River Nore SAC is approximately 47km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Garriskil Bog SAC & SPA are approximately 15km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Charleville Wood SAC is approximately 35km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Slieve Bloom Mountains SAC is approximately 50km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Ree SAC & SPA are approximately 13km west of the scheme. A number of developments are planned as part of this project in Abbeysrule. Abbeysrule is hydrologically connected to Lough Ree SAC & SPA. There may be in-combination effects from pollution during construction on SAC and SPA.</p> <p>Lough Iron SPA is approximately 11km east and upstream of the scheme so no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SPA is approximately 35km east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Derravarragh SPA is approximately 18km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Community Facilities Enfield</u></p> <p>Lough Ennell SAC & SPA are approximately 36km west of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Lene SAC is approximately 36km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SAC is approximately 10km north-west of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p>Lough Owel SAC & SPA are approximately 39km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p>River Barrow and River Nore SAC is approximately 32km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p>Garriskil Bog SAC & SPA are approximately 48km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p>Charleville Wood SAC is approximately 48km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p>Slieve Bloom Mountains SAC is approximately 55km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Ree SAC & SPA are approximately 68km west of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Iron SPA is approximately 46km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SPA is approximately 10km north-west of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p>Lough Derravarragh SPA is approximately 38km north-west of the scheme and therefore no in-combination effects are predicted.</p>	No		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Option study area is 250m from Lough Ennell SPA. There is potential for pollution of waterbodies during construction that could impact on the wetland habitat used by QI bird species. Potential pollution of watercourses during construction could have indirect effects on QI bird species through impacts upon prey species. Potential for disturbance to QI birds using supporting habitats in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts predicted.</p> <p>Option study area is 270m from Lough Derravarragh SPA. There is potential for pollution of waterbodies during construction that could impact on the wetland habitat used by QI bird species. Potential pollution of watercourses during construction could have indirect effects on QI bird species through impacts upon prey species. Potential for disturbance to QI birds using supporting habitats in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts predicted.</p> <p>Option study area is 670m from Lough Owel SPA. There is potential for pollution of waterbodies during construction that could impact on the wetland habitat used by QI bird species. Potential pollution of watercourses during construction could have indirect effects on QI bird species through impacts upon prey species. Potential for disturbance to QI birds using supporting habitats in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts predicted.</p> <p>Option study area is 9km from Garriskil Bog SPA. There is potential for pollution of waterbodies during construction that could impact on the wetland habitat used by Greenland White-fronted Goose. Potential pollution of watercourses during construction could have indirect effects on Greenland White-fronted Goose through impacts upon prey species. No operational impacts predicted.</p> <p>Option study area is 13.2km from Lough Ree SPA. There is potential for pollution of waterbodies during construction that could impact on the wetland habitat used by QI bird species. Potential pollution of watercourses during construction could have indirect effects on QI bird species through impacts upon prey</p>		<p><u>Edenderry Masterplan, Edenderry Regeneration - Phase 1, and Libraries Capital Programme - Edenderry Library</u></p> <p>Lough Ennell SAC & SPA are approximately 25km south-east of these schemes and therefore no in-combination effects are predicted.</p> <p>Lough Lene SAC is approximately 36km north of these schemes and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SAC is approximately 12km north-east of these schemes. Whilst they are hydrologically linked the schemes are locally restricted and small in extent and therefore no in-combination effects are predicted.</p> <p>Lough Owel SAC & SPA are approximately 32km north-west of these schemes and therefore no in-combination effects are predicted.</p> <p>River Barrow and River Nore SAC is approximately 20km south of these schemes and therefore no in-combination effects are predicted.</p> <p>Garriskil Bog SAC & SPA are approximately 43km north-west of these schemes and therefore no in-combination effects are predicted.</p> <p>Charleville Wood SAC is approximately 32km west of these schemes and therefore no in-combination effects are predicted.</p> <p>Slieve Bloom Mountains SAC is approximately 38km south-west of these schemes and therefore no in-combination effects are predicted.</p> <p>Lough Ree SAC & SPA are approximately 58km west of these schemes and therefore no in-combination effects are predicted.</p> <p>Lough Iron SPA is approximately 38km north-west of these schemes and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SPA is approximately 14km north-east of these schemes. Whilst they are hydrologically linked the schemes are locally restricted and small in extent and therefore no in-combination effects are predicted.</p> <p>Lough Derravarragh SPA is approximately 34km north-west of these schemes and therefore no in-combination effects are predicted.</p> <p><u>Castlepollard Regeneration</u></p> <p>Lough Ennell SAC & SPA are approximately 21km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Lene SAC is approximately 3km east of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SAC is approximately 9km east of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p>Lough Owel SAC & SPA are approximately 12km south-west of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p>River Barrow and River Nore SAC is approximately 56km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Garriskil Bog SAC & SPA are approximately 10km west of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p>Charleville Wood SAC is approximately 47km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p>Slieve Bloom Mountains SAC is approximately 62km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Ree SAC & SPA are approximately 39km west of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Iron SPA is approximately 13km south-west of the scheme but not</p>	<p>No</p> <p>No</p>		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
species. No operational impacts predicted.		<p>hydrologically linked so no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SPA is approximately 17km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Derravarragh SPA is approximately 5km south-west of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p><u>Historic Granard Motte Project</u></p> <p>Lough Ennell SAC & SPA are approximately 32km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Lene SAC is approximately 20km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SAC is approximately 26km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Owel SAC & SPA are approximately 20km south of the scheme and therefore no in-combination effects are predicted.</p> <p>River Barrow and River Nore SAC is approximately 66km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Garriskil Bog SAC & SPA are approximately 13km south of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p>Charleville Wood SAC is approximately 56km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Slieve Bloom Mountains SAC is approximately 71km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Ree SAC & SPA are approximately 33km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Iron SPA is approximately 17km south of the scheme and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SPA is approximately 34km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Derravarragh SPA is approximately 14km south-east of the scheme. A number of developments are planned as part of this project in Granard. Granard is hydrologically connected to Lough Derravarragh SPA through the Rathcronan and Inny Rivers. There may be in-combination effects from pollution on SPA during construction.</p> <p><u>Kearney's Field, Tullamore, Co. Offaly</u></p> <p>Lough Ennell SAC & SPA are approximately 18km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Lene SAC is approximately 45km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SAC is approximately 37km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Owel SAC & SPA are approximately 30km north of the scheme and therefore no in-combination effects are predicted.</p> <p>River Barrow and River Nore SAC is approximately 12km south of the scheme but not hydrologically linked so no in-combination effects are predicted.</p> <p>Garriskil Bog SAC & SPA are approximately 40km north of the scheme and therefore no in-combination effects are predicted.</p> <p>Charleville Wood SAC is approximately 2km south-west of the scheme but not</p>	<p>Yes - from habitat degradation and disturbance impacts on Lough Derravarragh SPA if construction concurrent with Historic Granard Motte Project works.</p> <p>No</p>		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>hydrologically linked so no in-combination effects are predicted.</p> <p>Slieve Bloom Mountains SAC is approximately 16km south of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Ree SAC & SPA are approximately 32km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Iron SPA is approximately 33km north of the scheme and therefore no in-combination effects are predicted.</p> <p>River Boyne and River Blackwater SPA is approximately 41km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p>Lough Derravarragh SPA is approximately 39km north-east of the scheme and therefore no in-combination effects are predicted.</p>			
<p>All Preferred Options</p> <p>The European sites that may be impacted by options within Study Area 4 are River Boyne and River Blackwater SAC, River Barrow and River Nore SAC, Lough Ennell SAC & SPA, Lough Lene SAC, Lough Owel SAC & SPA, Garriskil Bog SAC & SPA, Charleville Wood SAC, Slieve Bloom Mountains SAC, Lough Ree SAC & SPA, Lough Iron SPA, River Boyne and River Blackwater SPA, and Lough Derravarragh SPA.</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>All Preferred Options</u></p> <p>There is potential for in-combination effects from the projects within SA4 to River Boyne and River Blackwater SAC given that options SA4-99 and SA4-501 have the potential for impacts. Potential for in-combination from spread of invasive species, pollution and disturbance (options 99 and 501 only) during construction.</p> <p>There is potential for in-combination effects from the preferred options within SA4 on the River Barrow and River Nore SAC given that potential for impacts for options SA4-98 and SA4-501 have been identified. Potential for in-combination effects from pollution during construction (options 98 and 501 only).</p> <p>Option SA4-501 is the only option within SA4 with potential for impacts on Lough Ennell SAC & SPA, Lough Lene SAC, Lough Owel SAC & SPA, Garriskil Bog SAC & SPA, Charleville Wood SAC, Slieve Bloom Mountains SAC, Lough Ree SAC & SPA, Lough Iron SPA, River Boyne and River Blackwater SPA, and Lough Derravarragh SPA. Therefore, there is no potential for in-combination effects to these European sites.</p>	<p>Yes – from spread of invasive species, habitat degradation and disturbance impacts on River Boyne and River Blackwater SAC if construction of options is concurrent.</p> <p>Yes – from habitat degradation impacts on River Barrow and River Nore SAC if construction of options is concurrent.</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Table E5: SA5-Potential in-combination effects with other projects and options within SA5

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 5					
<p>SA5-02 New GW abstraction at Ahascragh Option study area is ca. 4.6km and hydrologically linked to River Suck Callows SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). There is a risk during operation to the wetland used by migratory waterbirds due to the underlying karst/gravel aquifer at the abstraction point. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Water table/availability 	<p><u>Life Sciences Innovation Hub in Monksland, Athlone</u> River Suck Callows SPA is approximately 17km west of these schemes so no in-combination effects are predicted. <u>Portiuncula University Hospital 50 bed ward block</u> This project is due to start construction in mid-2021. The target date for completion of the 50-bed ward block is 2022. River Suck Callows SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance during construction. In-combination effects during operation may result in habitat degradation. <u>Raheen, Clara social housing scheme for 38 units.</u> River Suck Callows SPA is approximately 30km south-west of the scheme and therefore no in-combination effects are predicted. <u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u> River Suck Callows SPA is approximately 19km west of these schemes so no in-combination effects are predicted. <u>Turraun to Shannon Harbour Link Greenway</u> River Suck Callows SPA is approximately 10km and upstream from this scheme, so no in-combination effects are predicted. <u>Viewing Tower at Mote Forest Park</u> River Suck Callows SPA is approximately 7km from this scheme with no hydrological link, so no in-combination effects are predicted.</p>	<p>Yes – from disturbance impacts on River Suck Callows SPA if construction phase concurrent with Portiuncula University Hospital 50 bed ward block works and during operation from habitat degradation</p>	<p>General Mitigation Measures are outlined in Section 6.3.3 Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA5-09a Increase River Shannon SW abstraction and upgrade Athlone WTP Option study area includes an increase in abstraction from the River Shannon. It is 1.1km and hydrologically linked to River Shannon Callows SAC. There is potential for some loss of/damage to supporting habitat during construction works given that the works are within River Shannon. Potential pollution of watercourses during construction could affect hydrologically connected habitats. Potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that this Option includes an increase in abstraction from the River Shannon. During operation there is a risk this abstraction will reduce water flow in the River Shannon, which could impact otter. There is also potential for impacts on otter utilising watercourse hydrologically linked to this European site through a reduction in flows/water levels. Option study area is less than 600m and</p>	<ul style="list-style-type: none"> Habitat loss Disturbance Spread of invasive non-native species Habitat degradation Water table/availability 	<p><u>Life Sciences Innovation Hub in Monksland, Athlone</u> River Shannon Callows SAC is approximately 2.6km south-east of these localized works so no in-combination effects are predicted. Lough Ree SAC is ca. 2.7km east of the scheme so no in-combination effects are predicted. Lough Ree SPA is ca. 2.7km east of the scheme and therefore there may be in-combination effects from disturbance. Middle Shannon Callows SPA is approximately 2.6km south-east of the scheme and therefore there may be in-combination effects from disturbance. <u>Portiuncula University Hospital 50 bed ward block</u> This project is due to start construction in mid-2021. The target date for completion of the 50-bed ward block is 2022. River Shannon Callows SAC is approximately 13.2km south of the scheme so no in-combination effects are predicted. Lough Ree SAC and SPA is 21.6km east of the scheme so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 13.2km south of the scheme so no in-combination effects are predicted. <u>Raheen, Clara social housing scheme for 38 units.</u> River Shannon Callows SAC is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted. Lough Ree SAC and SPA are approximately 24km north-west of the scheme and therefore no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted. <u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u></p>	<p>Yes - from disturbance impacts on Lough Ree SPA and Middle Shannon Callows SPA if construction phase concurrent with Life Sciences Innovation Hub in Monksland, Athlone works</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Shannon Callows SAC, Lough Ree SAC and SPA (disturbance only) and Middle Shannon Callows SPA (disturbance only) if construction phase concurrent with Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar) works and during</p>	<p>General Mitigation Measures are outlined in Section 6.3.3 Hydrological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>hydrologically linked to Lough Ree SAC. Potential for disturbance to otter from construction works due to their proximity to the SAC. There is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential during operation for effects to the hydrologically linked groundwater dependent habitats of this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p> <p>Option study area is less than 600m and hydrologically linked to Lough Ree SPA. There is potential for disturbance to QI birds within the SPA during construction, using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts predicted.</p> <p>Option study area is 1.1km from Middle Shannon Callows SPA. There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>		<p>River Shannon Callows SAC is less than 1km from these schemes therefore there may be in-combination effects from disturbance, spread of invasive species and pollution during construction. In-combination effects during operation may result in habitat degradation. Lough Ree SAC & SPA are less than 1km from the scheme therefore there may be in-combination effects from disturbance on both sites. In-combination effects during operation may result in habitat degradation to Lough Ree SAC. Middle Shannon Callows SPA is less than 1km from the scheme therefore there may be in-combination effects from disturbance.</p> <p><u>Turraun to Shannon Harbour Link Greenway</u></p> <p>River Shannon Callows SAC is approximately 1km from this scheme, therefore there is potential for in-combination effects from habitat degradation and disturbance during construction. In-combination effects during operation may result in habitat degradation. Lough Ree SAC & SPA are approximately 22km and upstream from this scheme, so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 1km from this scheme, therefore there is potential for in-combination effects from disturbance.</p> <p><u>Viewing Tower at Mote Forest Park</u></p> <p>River Shannon Callows SAC is approximately 24km from this scheme, so no in-combination effects are predicted. Lough Ree SAC and SPA are approximately 2km from this scheme, however the AA screening report for this scheme concluded that there would be no likely significant effects on any European Sites either alone or in-combination with other plans or projects. Middle Shannon Callows SPA is approximately 24km from this scheme, so no in-combination effects are predicted.</p>	<p>operation from habitat degradation (only Lough Ree SAC)</p> <p>Yes – from disturbance and habitat degradation impacts on River Shannon Callows SAC and Middle Shannon Callows SPA (disturbance only) if construction phase concurrent with Turraun to Shannon Harbour Link Greenway works and during operation from habitat degradation (not Middle Shannon Callows SPA)</p>		
<p>SA5-17a</p> <p>Increase abstraction from River Suck</p> <p>Option study area is within the River Suck Callows SPA. There is potential for pollution of wetland habitat that could pose a risk to migratory waterbirds. There is potential for disturbance to QI birds within the SPA, using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). During operation abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species. There is potential for impacts on aquatic QI species utilising watercourse hydrologically linked to this European site through a reduction in flows/water levels.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Water table/availability 	<p><u>Life Sciences Innovation Hub in Monksland, Athlone</u></p> <p>River Suck Callows SPA is approximately 17km west of these schemes so no in-combination effects are predicted.</p> <p><u>Portiuncula University Hospital 50 bed ward block</u></p> <p>This project is due to start construction in mid-2021. The target date for completion of the 50-bed ward block is 2022. River Suck Callows SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance. In-combination effects during operation may result in habitat degradation.</p> <p><u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u></p> <p>River Suck Callows SPA is approximately 19km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Turraun to Shannon Harbour Link Greenway</u></p> <p>River Suck Callows SPA is approximately 10km and upstream from this scheme, so no in-combination effects are predicted.</p> <p><u>Viewing Tower at Mote Forest Park</u></p> <p>River Suck Callows SPA is approximately 7km from this scheme with no hydrological</p>	<p>Yes – from disturbance impacts on River Suck Callows SPA if construction phase concurrent with Portiuncula University Hospital 50 bed ward block works and during operation from habitat degradation</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>SA5-80 Upgrade Banagher WTP to address WQ issue</p> <p>Option study area is less than 550m and hydrologically linked to River Shannon Callows SAC. There is potential for some loss of/damage to supporting habitat during construction works given the proximity of the works to the SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that the works are hydrologically linked to the SAC. No operational impacts are predicted.</p> <p>Option study area is ca. 550m from Middle Shannon Callows SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p> <p>Option study area is 3.7km from All Saints Bog SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat loss Habitat degradation Disturbance Spread of invasive non-native species 	<p>link, so no in-combination effects are predicted.</p> <p><u>Life Sciences Innovation Hub in Monksland, Athlone</u> River Shannon Callows SAC is approximately 2.6km south-east of these localized works so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 2.6km south-east of the scheme and therefore there may be in-combination effects from disturbance. All Saints Bog SPA is approximately 29km south-west of the scheme so no in-combination effects are predicted.</p> <p><u>Portiuncula University Hospital 50 bed ward block</u> This project is due to start construction in mid-2021. The target date for completion of the 50-bed ward block is 2022. River Shannon Callows SAC is approximately 13.2km south of the scheme so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 13.2km south of the scheme so no in-combination effects are predicted. All Saints Bog SPA is approximately 24km south of the scheme so no in-combination effects are predicted.</p> <p><u>Raheen, Clara social housing scheme for 38 units</u> River Shannon Callows SAC is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted. All Saints Bogs SPA is approximately 32km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u> River Shannon Callows SAC is less than 1km from these schemes therefore there may be in-combination effects from disturbance, spread of invasives and pollution. Middle Shannon Callows SPA is less than 1km from the scheme therefore there may be in-combination effects from disturbance. All Saints Bogs SPA is approximately 30km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Turraun to Shannon Harbour Link Greenway</u> River Shannon Callows SAC is approximately 1km from this scheme, therefore there is potential for in-combination effects from habitat degradation and disturbance. Middle Shannon Callows SPA is approximately 1km from this scheme, therefore there is potential for in-combination effects from disturbance. All Saints Bog SPA is approximately 8km from this scheme, therefore no in-combination effects are predicted.</p> <p><u>Viewing Tower at Mote Forest Park</u> River Shannon Callows SAC is approximately 24km from this scheme, so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 24km from this scheme, so no in-combination effects are predicted. All Saints Bog SPA is approximately 50km from this scheme, therefore no in-combination effects are predicted.</p>	<p>Yes - from disturbance impacts on Middle Shannon Callows SPA if construction phase concurrent with Life Sciences Innovation Hub in Monksland, Athlone works</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Shannon Callows SAC and Middle Shannon Callows SPA (disturbance only) if construction phase concurrent with Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar) works</p> <p>Yes – from disturbance and habitat degradation impacts on River Shannon Callows SAC and Middle Shannon Callows SPA (disturbance only) if construction phase concurrent with Turraun to Shannon Harbour Link Greenway works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA5-81 Upgrade Clontotin BH to address WQ issue</p> <p>Option study area is 2.5km and hydrologically linked to River Shannon Callows SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Life Sciences Innovation Hub in Monksland, Athlone</u> River Shannon Callows SAC is approximately 2.6km south-east of these localized works so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 2.6km south-east of the scheme and therefore there may be in-combination effects from disturbance. All Saints Bog SPA is approximately 29km south-west of the scheme so no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 28km south-west of the scheme so no in-combination effects are predicted.</p> <p><u>Portiuncula University Hospital 50 bed ward block</u> This project is due to start construction in mid-2021. The target date for completion of</p>	<p>Yes - from disturbance impacts on Middle Shannon Callows SPA if construction phase concurrent with Life Sciences Innovation Hub in Monksland, Athlone works</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination</p>	<p>N</p>

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<p>potential for the spread of invasive species given that the works are hydrologically linked to the SAC. No operational impacts are predicted.</p> <p>Option study area is 2.5km from Middle Shannon Callows SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p> <p>Option study area is 2.5km from All Saints Bog SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p> <p>Option study area is 4.5km from River Little Brosna Callows SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>		<p>the 50-bed ward block is 2022. River Shannon Callows SAC is approximately 13.2km south of the scheme so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 13.2km south of the scheme so no in-combination effects are predicted. All Saints Bog SPA is approximately 24km south of the scheme so no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 21km south of the scheme so no in-combination effects are predicted.</p> <p><u>Raheen, Clara social housing scheme for 38 units</u></p> <p>River Shannon Callows SAC is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted. All Saints Bogs SPA is approximately 32km south-west of the scheme and therefore no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 34km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u></p> <p>River Shannon Callows SAC is less than 1km from these schemes therefore there may be in-combination effects from disturbance, spread of invasive species and pollution. Middle Shannon Callows SPA is less than 1km from the scheme therefore there may be in-combination effects from disturbance. All Saints Bogs SPA is approximately 30km south of the scheme and therefore no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 30km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Turraun to Shannon Harbour Link Greenway</u></p> <p>River Shannon Callows SAC is approximately 1km from this scheme, therefore there is potential for in-combination effects from habitat degradation and disturbance. Middle Shannon Callows SPA is approximately 1km from this scheme, therefore there is potential for in-combination effects from disturbance. All Saints Bog SPA is approximately 8km from this scheme, therefore no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 9.5km from this scheme, therefore no in-combination effects are predicted.</p> <p><u>Viewing Tower at Mote Forest Park</u></p> <p>River Shannon Callows SAC is approximately 24km from this scheme, so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 24km from this scheme, so no in-combination effects are predicted. All Saints Bog SPA is approximately 50km from this scheme, therefore no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 50km from this scheme, therefore no in-combination effects are predicted.</p>	<p>Shannon Callows SAC and Middle Shannon Callows SPA (disturbance only) if construction phase concurrent with Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar) works</p> <p>Yes – from disturbance and habitat degradation impacts on River Shannon Callows SAC and Middle Shannon Callows SPA (disturbance only) if construction phase concurrent with Turraun to Shannon Harbour Link Greenway works</p>	with other plans or projects.	
<p>SA5-517</p> <p>Increase abstraction from the R. Camcor and upgrade WTP to supply Birr and Kinnity</p> <p>Option study area is 3.7km and hydrologically linked to Dovegrove Callows SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). During operation there is</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Water table/availability 	<p><u>Life Sciences Innovation Hub in Monksland, Athlone</u></p> <p>Dovegrove Callows SPA is approximately 33km south-west of the scheme and therefore no in-combination effects are predicted</p> <p><u>Portiuncula University Hospital 50 bed ward block</u></p> <p>This project is due to start construction in mid-2021. The target date for completion of the 50-bed ward block is 2022. Dovegrove Callows SPA is approximately 30km south of the scheme and therefore no in-combination effects are predicted</p> <p><u>Raheen, Clara social housing scheme for 38 units</u></p> <p>Dovegrove Callows SPA is approximately 33km south-west of the scheme and therefore no in-combination effects are predicted</p> <p><u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone</u></p>	No	N/A	N

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<p>a risk to the wetland used by migratory waterbirds due to the underlying karst/gravel aquifer at the abstraction point. There is potential for impacts on aquatic QI species utilising watercourse hydrologically linked to this European site through a reduction in flows/water levels.</p>		<p><u>Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u></p> <p>Dovegrove Callows SPA is approximately 33km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Turraun to Shannon Harbour Link Greenway</u></p> <p>Dovegrove Callows SPA is approximately 11km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Viewing Tower at Mote Forest Park</u></p> <p>Dovegrove Callows SPA is approximately 55km south of the scheme and therefore no in-combination effects are predicted.</p>			
<p>SA5-84 Upgrade Clara and Moyclare WTP Option study area is 7km from and hydrologically linked to River Shannon Callows SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>Life Sciences Innovation Hub in Monksland, Athlone</u></p> <p>River Shannon Callows SAC is approximately 2.6km south-east of these localized works so no in-combination effects are predicted.</p> <p><u>Portiuncula University Hospital 50 bed ward block</u></p> <p>This project is due to start construction in mid-2021. The target date for completion of the 50-bed ward block is 2022. River Shannon Callows SAC is approximately 13.2km south of the scheme so no in-combination effects are predicted.</p> <p><u>Raheen, Clara social housing scheme for 38 units</u></p> <p>River Shannon Callows SAC is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u></p> <p>River Shannon Callows SAC is less than 1km from these schemes therefore there may be in-combination effects from pollution.</p> <p><u>Turraun to Shannon Harbour Link Greenway</u></p> <p>River Shannon Callows SAC is approximately 1km from this scheme, therefore there is potential for in-combination effects from habitat degradation.</p> <p><u>Viewing Tower at Mote Forest Park</u></p> <p>River Shannon Callows SAC is approximately 24km from this scheme, so no in-combination effects are predicted.</p>	<p>Yes - from habitat degradation impacts on River Shannon Callows SAC if construction phase concurrent with Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar) works</p> <p>Yes – from habitat degradation impacts on River Shannon Callows SAC if construction phase concurrent with Turraun to Shannon Harbour Link Greenway works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA5-37b Increase GW abstraction at Mount Talbot Spring Option study area is 1.2km from Four Roads Turlough SAC & SPA. Abstraction point is within a karstic aquifer which connects the site to the SAC within 5km. This SAC contains a groundwater dependent QI habitat that could be affected by abstraction potentially resulting in LSE. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitat. There is potential for disturbance during construction to QI birds using supporting habitats in areas outside of the SPA but ecologically connected to it (e.g. grassland,</p>	<ul style="list-style-type: none"> Disturbance Habitat degradation Water table/availability 	<p><u>Life Sciences Innovation Hub in Monksland, Athlone</u></p> <p>Four Roads Turlough SAC & SPA are approximately 17.8km north-west of the scheme so no in-combination effects are predicted. Lisduff Turlough SAC is approximately 20km north-west of the scheme and therefore no in-combination effects are predicted. Lough Croan Turlough SAC is approximately 13km north-west of the scheme so no in-combination effects are predicted. River Suck Callows SPA is approximately 17km west of these schemes so no in-combination effects are predicted.</p> <p><u>Portiuncula University Hospital 50 bed ward block</u></p> <p>This project is due to start construction in mid-2021. The target date for completion of the 50-bed ward block is 2022. Four Roads Turlough SAC & SPA are approximately 19.8km north-east of the scheme so no in-combination effects are predicted. Lisduff Turlough SAC is approximately 24km north-east of the scheme and therefore no in-combination effects are predicted. Lough Croan Turlough SAC is approximately 18km north-east of the scheme so no in-combination effects are predicted. River Suck Callows SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance during construction. In-combination effects during</p>	<p>Yes – from disturbance and habitat degradation impacts on River Suck Callows SPA if construction phase concurrent with Portiuncula University Hospital 50 bed ward block works and during operation from habitat degradation</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>arable farmland). During operation a potential lowering in groundwater level could impact QI birds indirectly through degradation of supporting groundwater dependent habitat within the SPA. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species. Option study area is 3.4km from Lisduff Turlough SAC. No construction impacts predicted. Abstraction point is within a karstic aquifer which connects the site to the SAC within 5km. This SAC contains a groundwater dependent QI habitat that could be affected by operational abstraction potentially resulting in LSE. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitat.</p> <p>Option study area is 5km from Lough Croan Turlough SAC. No construction impacts predicted. Abstraction point is within a karstic aquifer which connects the site to the SAC within 5km. This SAC contains a groundwater dependent QI habitat that could be affected by operational abstraction potentially resulting in LSE. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitat.</p> <p>Option study area is directly adjacent to River Suck Callows SPA. There is potential for disturbance during construction to QI birds using supporting habitats in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). During operation a potential lowering in groundwater level could impact QI birds indirectly through degradation of supporting groundwater dependent habitat within the SPA. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species.</p>		<p>operation may result in habitat degradation.</p> <p><u>Raheen, Clara social housing scheme for 38 units</u></p> <p>Four Roads Turlough SAC & SPA are approximately 43km north-west of the scheme and therefore no in-combination effects are predicted. Lisduff Turlough SAC is approximately 47km north-west of the scheme and therefore no in-combination effects are predicted. Lough Croan Turlough SAC is approximately 39km north-west of the scheme and therefore no in-combination effects are predicted. River Suck Callows SPA is approximately 30km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u></p> <p>Four Roads Turlough SAC & SPA are approximately 20km north-west of the scheme and therefore no in-combination effects are predicted. Lisduff Turlough SAC is approximately 23km north-west of the scheme and therefore no in-combination effects are predicted. Lough Croan Turlough SAC is approximately 15km north-west of the scheme so no in-combination effects are predicted. River Suck Callows SPA is approximately 19km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Turraun to Shannon Harbour Link Greenway</u></p> <p>Four Roads Turlough SAC & SPA are approximately 38km north of the scheme and therefore no in-combination effects are predicted. Lisduff Turlough SAC is approximately 41km north of the scheme and therefore no in-combination effects are predicted. Lough Croan Turlough SAC is approximately 33km north of the scheme and therefore no in-combination effects are predicted. River Suck Callows SPA is approximately 10km and upstream from this scheme, so no in-combination effects are predicted.</p> <p><u>Viewing Tower at Mote Forest Park</u></p> <p>Four Roads Turlough SAC & SPA are approximately 11km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Turlough SAC is approximately 7.7km south-west of the scheme and therefore no in-combination effects are predicted. Lough Croan Turlough SAC is approximately 12km south-west of the scheme so no in-combination effects are predicted. River Suck Callows SPA is approximately 7km from this scheme with no hydrological link, so no in-combination effects are predicted.</p>			
<p>SA5-518</p> <p>Increase GW abstraction at Killeglan and Lisbrock and upgrade Killeglan and Lisbrock WTPs</p> <p>Option study area is approximately 1.3km from Ballynamona Bog and Corkin Lough SAC. The abstraction point is within a karstic aquifer which connects the site to the SAC within 5km. This SAC contains a</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Water table/availability 	<p><u>Life Sciences Innovation Hub in Monksland, Athlone</u></p> <p>Ballynamona Bog and Corkin Lough SAC is approximately 5.5km north-west of this scheme. No potential impact pathway given distance from site, lack of hydrological connection and the QI feature it supports, so no in-combination effects are predicted. Castlesampson Esker SAC is approximately 4.9km west of this scheme. No potential impact pathway given distance from site, lack of hydrological connection and the QI feature it supports. so no in-combination effects are predicted. River Shannon Callows SAC is approximately 2.6km south-east of these localized works so no in-combination effects are predicted. Lough Ree SAC is ca. 2.7km east of the scheme so no in-combination effects are predicted. Lough Ree SPA is ca. 2.7km east of the scheme</p>	<p>Yes - from disturbance impacts on Lough Ree SPA if construction phase concurrent with Life Sciences Innovation Hub in Monksland, Athlone works</p> <p>Yes – from disturbance and habitat degradation impacts on River Suck Callows SPA if construction phase concurrent</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>groundwater dependent QI habitat that could be impacted by abstraction. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitat.</p> <p>Option study area is approximately 3.5km from Castlesampson Esker SAC. The abstraction point is within a karstic aquifer which connects the site to the SAC within 5km. This SAC contains a groundwater dependent QI habitat that could be impacted by abstraction. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitat.</p> <p>Option study area is approximately 4km from and hydrologically linked to Lough Ree SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that the works are hydrologically linked to the SAC. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats. There is potential for impacts on otter utilising watercourse hydrologically linked to this European site through a reduction in flows/water levels.</p> <p>Option study area is approximately 8.5km from and hydrologically linked to River Shannon Callows SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive species given that the works are hydrologically linked to the SAC.</p> <p>Option study area is approximately 4km from and hydrologically linked to Lough Ree SPA. There is potential for disturbance to QI birds using supporting habitats in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). There is potential for pollution of wetland habitat that could pose a risk to migratory waterbirds. A potential lowering in groundwater level could impact QI birds indirectly through degradation of supporting groundwater dependent habitat within the SPA. Abstraction could lead to hydrological</p>		<p>and therefore there may be in-combination effects from disturbance. River Suck Callows SPA is approximately 17km west of these schemes so no in-combination effects are predicted.</p> <p><u>Portiuncula University Hospital 50 bed ward block</u></p> <p>This project is due to start construction in mid-2021. The target date for completion of the 50-bed ward block is 2022. Ballynamona Bog and Corkin Lough SAC is approximately 14.6km east of the scheme therefore no in-combination effects are predicted. Castlesampson Esker SAC is approximately 13.7km east of the scheme therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 13.2km south of the scheme therefore no in-combination effects are predicted. Lough Ree SAC and SPA is 21.6km east of the scheme so no in-combination effects are predicted. River Suck Callows SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance during construction during construction. In-combination effects during operation may result in habitat degradation.</p> <p><u>Raheen, Clara social housing scheme for 38 units</u></p> <p>Ballynamona Bog and Corkin Lough SAC is approximately 29km north-west of these localized works so no in-combination effects are predicted. Castlesampson Esker SAC is approximately 29km north-west of these localized works so no in-combination effects are predicted. Lough Ree SAC is approximately 24km north-west of the scheme and therefore no in-combination effects are predicted. Lough Ree SPA is approximately 24km north-west of the scheme and therefore no in-combination effects are predicted. River Suck Callows SPA is approximately 30km south-west of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar)</u></p> <p>Ballynamona Bog and Corkin Lough SAC is approximately 7km west of this scheme. No potential impact pathway given distance from site, lack of hydrological connection and the QI feature it supports, so no in-combination effects are predicted. Castlesampson Esker SAC is approximately 7km west of this scheme. No potential impact pathway given distance from site, lack of hydrological connection and the QI feature it supports. so no in-combination effects are predicted. Lough Ree SAC is less than 1km from the scheme therefore there may be in-combination effects from disturbance and pollution during construction. In-combination effects during operation may result in habitat degradation. Lough Ree SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance. River Suck Callows SPA is approximately 19km west of these schemes so no in-combination effects are predicted. River Shannon Callows SAC is less than 1km from these schemes therefore there may be in-combination effects from disturbance, spread of invasive species and pollution.</p> <p><u>Turraun to Shannon Harbour Link Greenway</u></p> <p>Ballynamona Bog and Corkin Lough SAC is approximately 25km north of this scheme, so no in-combination effects are predicted. Castlesampson Esker SAC is approximately 23km north of this scheme, so no in-combination effects are predicted. Lough Ree SAC & SPA are approximately 22km and upstream from this scheme, so no in-combination effects are predicted. River Suck Callows SPA is approximately 10km and upstream from this scheme, so no in-combination effects are predicted. River Shannon Callows SAC is approximately 1km from this scheme, therefore there is potential for in-combination effects from habitat degradation and</p>	<p>with Portiuncula University Hospital 50 bed ward block works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive species and habitat degradation impacts on River Shannon Callows SAC, on Lough Ree SAC (disturbance and habitat degradation only) and on Lough Ree SPA (disturbance only) if construction phase concurrent with Athlone Institute of Technology STEM building, Lissywollen, Athlone, Athlone Sewerage Scheme, Athlone Town Centre Regeneration and Enhancement, Athlone Tourism Cultural Quarter, Loughanaskin, and South Westmeath Regional Water Supply Scheme (Athlone and Mullingar) works and during operation from habitat degradation (not River Shannon Callows SAC)</p> <p>Yes – from disturbance and habitat degradation impacts on River Shannon Callows SAC if construction phase concurrent with Turraun to Shannon Harbour Link Greenway works</p>	<p>adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>changes (reduced flows – impacting on water quality) that could impact QI bird species.</p> <p>Option study area is approximately 4km from and hydrologically linked to River Suck Callows SPA. There is potential for disturbance to QI birds using supporting habitats in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). There is potential for pollution of wetland habitat that could pose a risk to migratory waterbirds. A potential lowering in groundwater level could impact QI birds indirectly through degradation of supporting groundwater dependent habitat within the SPA. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI bird species.</p>		<p>disturbance.</p> <p><u>Viewing Tower at Mote Forest Park</u></p> <p>Ballynamona Bog and Corkin Lough SAC is approximately 18km south of this scheme, so no in-combination effects are predicted. Castlesampson Esker SAC is approximately 20km south of this scheme, so no in-combination effects are predicted. Lough Ree SAC and SPA are approximately 2km from this scheme, however the AA screening report for this scheme concluded that there would be no likely significant effects on any European Sites either alone or in-combination with other plans or projects. River Shannon Callows SAC is approximately 24km from this scheme, so no in-combination effects are predicted.</p>			
<p>All Preferred Options</p> <p>The European sites that may be impacted by options within Study Area 5 are River Suck Callows SPA, River Shannon Callow SAC, Lough Ree SAC & SPA, Middle Shannon Callows SPA, All Saints Bog SPA, River Little Brosna Callows SPA, Dovegrove Callows SPA, Four Roads Turlough SAC & SPA, Lisduff Turlough SAC, Lough Croan Turlough SAC, Ballynamona Bog and Corkin Lough SAC and Castlesampson Esker SAC.</p>	<ul style="list-style-type: none"> Habitat loss Disturbance Spread of invasive non-native species Habitat degradation Water table/availability 	<p><u>All Preferred Options</u></p> <p>There is potential for in-combination effects from the preferred options within SA5 to River Suck Callows SPA given that options SA5-02, SA5-17a, SA5-37b and SA5-518 have potential for impacts. Potential for in-combination from disturbance (all options listed above) during construction and hydrological changes and water table/availability impacts (all options listed above) during operation.</p> <p>There is potential for in-combination effects from the projects within SA5 to River Shannon Callows SAC given that options SA5-09a, SA5-80, SA5-81, SA5-84 and SA5-518 have potential for impacts. Potential for in-combination effects from habitat loss (options 09a and 80 only), disturbance and spread of invasive species (options 09a, 80, 81 and 518 only) and pollution (all options listed above) during construction. Hydrological changes and water table/availability impacts (09a only) during operation.</p> <p>There is potential for in-combination effects from the projects within SA5 to Middle Shannon Callows SPA given that options SA5-09a, SA5-80 and SA5-81 have the potential for impacts. Potential for in-combination effects from disturbance during construction.</p> <p>There is potential for in-combination effects from the projects within SA5 to All Saints Bog SPA given that options SA5-80 and SA5-81 have the potential for impacts. Potential for in-combination effects from disturbance during construction.</p> <p>There is potential for in-combination effects from the projects within SA5 to Lough Ree SAC & SPA, given that options SA5-09a and SA5-518 have the potential for impacts. Potential for in-combination effects from disturbance during construction, and from hydrological changes and water table/availability impacts (Lough Ree SAC only) during operation.</p> <p>Option SA5-81 is the only option within SA5 with potential for impacts on River Little Brosna Callows SPA. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA5-517 is the only option within SA5 with potential for impacts on Dovegrove Callows SPA. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA5-37b is the only option within SA5 with potential for impacts on Four Roads Turlough SAC & SPA, Lisduff Turlough SAC and Lough Croan Turlough SAC. Therefore, there is no potential for in-combination effects to these European sites.</p>	<p>Yes – from habitat degradation, and disturbance impacts on River Suck Callows SPA if construction of options is concurrent and during operation from habitat degradation</p> <p>Yes – from habitat loss, disturbance, spread of invasive species, habitat degradation and water table/availability impacts on River Shannon Callow SAC if construction of options is concurrent and during operation from habitat degradation</p> <p>Yes – from disturbance impacts on Middle Shannon Callows SPA if construction of options is concurrent</p> <p>Yes – from disturbance impacts on All Saints Bog SPA if construction of options is concurrent</p> <p>Yes – from disturbance impacts on Lough Ree SAC & SPA if construction of options is concurrent and from habitat degradation and water table/availability impacts on Lough Ree SAC during operation</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		Option SA5-518 is the only option within SA5 with potential for impacts on Ballynamona Bog and Corkin Lough SAC and Castlesampson Esker SAC . Therefore, there is no potential for in-combination effects to these European sites.			

Table E6: SA6-Potential in-combination effects with other projects and options within SA6

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 6					
<p>SA6-193 Connect to New Shannon Source via Srowland</p> <p>Option study area pipeline crosses and is hydrologically linked to River Barrow and River Nore SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact fish and restrict access to spawning habitat. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are within the SAC boundary. No operational impacts are predicted.</p> <p>This option study area is ca. 40m from Slaney River Valley SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are adjacent to the SAC boundary. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u> River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore no in-combination effects are predicted. Slaney River Valley SAC is approximately 63km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u> River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slaney River Valley SAC is approximately 30km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Town</u> River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slaney River Valley SAC is approximately 10km east of the scheme and not hydrologically linked and therefore no in-combination effects are predicted.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u> River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. Slaney River Valley SAC is approximately 10km east of the scheme and not hydrologically linked and therefore no in-combination effects are predicted.</p> <p><u>Emo Court, Laois</u> River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slaney River Valley SAC is approximately 38km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter, Portlaoise Southern Distributor Road, and Portlaoise 40 bed Residential Mental Health Unit</u> River Barrow and River Nore SAC is 11km away and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. Slaney River Valley SAC is approximately 44km east of the scheme no in-combination effects are predicted as they are not hydrologically linked.</p> <p><u>Altamont House and Gardens</u> River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted. Slaney River Valley SAC is within 1km of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u> The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected, therefore no in-combination effects are predicted. Slaney River Valley SAC is approximately 61km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Slaney River Valley SAC if</p>	<p>General Mitigation Measures are outlined in Section 6.3.3 Option specific mitigation as in Section 6.3.4</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		A new 10.6MI reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted. Slaney River Valley SAC is approximately 2km west of this scheme, however it is not hydrologically linked and therefore no in-combination effects are predicted.	construction phase concurrent with Altamont House and Gardens works		
<p>SA6-197 Upgrade Leighlinbridge WTP Option study area is less than 200m from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are adjacent to the SAC boundary. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u> River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u> River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Town</u> River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u> River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species.</p> <p><u>Emo Court, Laois</u> River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u> River Barrow and River Nore SAC is 11km away and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution.</p> <p><u>Altamont House and Gardens</u> River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u> The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u> A new 10.6MI reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA6-19</p>	<ul style="list-style-type: none"> Habitat loss 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p>		<p>General Mitigation</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Increase GW to supply deficit and upgrade Old Leighlin WTP.</p> <p>Option study area is less than 100m from and hydrologically linked to River Barrow and River Nore SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are adjacent to the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact fish and restrict access to spawning habitat. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are adjacent to the SAC boundary. Option includes refurbishment of existing GW abstraction. There is a risk this groundwater abstraction will reduce water flow in the underground aquifer during operation. This groundwater abstraction is within a karstic aquifer, less than 5km from the SAC. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p>	<ul style="list-style-type: none"> • Mortality risk • Habitat degradation • Disturbance • Spread of invasive non-native species • Water table/availability 	<p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and is not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation from habitat degradation</p>	<p>Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	
<p>SA6-24</p> <p>Increase GW abstraction to supply deficit</p>	<ul style="list-style-type: none"> • Habitat degradation • Disturbance 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not</p>	<p>Yes - from disturbance, spread of invasive non-native species and</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p>	<p>N</p>

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<p>Option study area is ca. 4.4km from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works hydrologically linked to the SAC. No potential impact pathway. Although there is a groundwater abstraction, the SAC is not within the zone of contribution (ZOC). Therefore, given the distance from the site and the QI features it supports there is no potential for LSE during operation.</p>	<ul style="list-style-type: none"> Spread of invasive non-native species 	<p>predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>	<p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	
<p>SA6-191 Upgrade Bagenalstown WTP</p> <p>Option study area is less than 400m from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from disturbance, spread of invasive non-native species and</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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hydrologically linked to the SAC. No operational impacts are predicted.		<p>may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>		
<p>SA6-33</p> <p>New GW abstraction, WTP and watermains</p> <p>Option study area is 1.3km from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to the SAC. No operational impacts are predicted.</p> <p>Option study area is 3.6km from and hydrologically linked to Slaney River Valley SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted. Slaney River Valley SAC is approximately 63km south-east of the scheme and therefore no in-combination effects.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slaney River Valley SAC is approximately 30km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slaney River Valley SAC is approximately 10km east of the scheme and not hydrologically linked and therefore no in-combination effects are predicted.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to the SAC. No operational impacts are predicted.</p>		<p>species. Slaney River Valley SAC is approximately 10km east of the scheme and not hydrologically linked and therefore no in-combination effects are predicted.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slaney River Valley SAC is approximately 38km south-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. Slaney River Valley SAC is approximately 44km east of the scheme no in-combination effects are predicted as they are not hydrologically linked.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted. Slaney River Valley SAC is within 1km of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore no in-combination effects are predicted. Slaney River Valley SAC is approximately 61km south-east of the scheme and therefore no in-combination effects.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted. Slaney River Valley SAC is approximately 2km west of this scheme, however it is not hydrologically linked and therefore no in-combination effects are predicted.</p>	<p>and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Slaney River Valley SAC if construction phase concurrent with Altamont House and Gardens works.</p>		
<p>SA6-38</p> <p>New GW abstraction to supply deficit and upgrade to Mount Finn WTP to improve water quality</p> <p>Option study area is approximately 720m from the Loughans SAC. No impacts during construction are predicted. The new GW abstraction is within a karst bedrock as is the Loughans SAC which is 720m away and is designated for turlough habitat; a sensitive GWDTE. Further studies are required on the current conservation status of this SAC and ZOC of the abstraction relative to the SAC. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>Loughans SAC is approximately 60km south of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>Loughans SAC is approximately 55km south-west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Town</u></p> <p>Loughans SAC is approximately 42km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>impact QI habitat.</p> <p>Option study area is approximately 11.5km and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works hydrologically linked to the SAC. No potential impact pathway during operation. Although there is a groundwater abstraction, the SAC is not within the zone of contribution (ZOC). Therefore, given the distance from the site and the QI features it supports there is no potential for LSE.</p>		<p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>Loughans SAC is approximately 42km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species.</p> <p><u>Emo Court, Laois</u></p> <p>River Loughans SAC is approximately 50km south of the of the scheme and therefore no in-combination effects are predicted. Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>Loughans SAC is approximately 34km south-west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution.</p> <p><u>Altamont House and Gardens</u></p> <p>Loughans SAC is approximately 47km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. Loughans SAC is approximately 60km south of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. Loughans SAC is approximately 56km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>works</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>		
<p>SA6-45a</p> <p>New GW abstraction/wellfield and upgrade Castlecomer WTP</p> <p>Option study area is within and hydrologically linked to River Barrow and River Nore SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact fish and restrict access to</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>spawning habitat. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are within the SAC boundary. During operation there is a risk this groundwater abstraction will reduce water flow in the underground aquifer. There is a potential groundwater link via the fissured bedrock aquifer to this European site. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species and habitats.</p>		<p>degradation.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u> River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation.</p> <p><u>Emo Court, Laois</u> River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore, there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u> River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Altamont House and Gardens</u> River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u> The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u> A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and from habitat degradation during operation</p>		
<p>SA6-53a Increase GW to supply deficit and upgrade Galmoy WTP Option study area is ca. 2.5km from Galmoy Fen SAC. There is potential for impacts to water table/ availability. While outside the same karst bedrock is still potentially within ZOI as this SAC has highly sensitive alkaline fen FOI. Further studies are required on ZOI of the abstraction and current conservation status of alkaline fen in Galmoy Fen SAC. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitat.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u> Galmoy Fen SAC is approximately 50km south of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u> Galmoy Fen SAC is approximately 48km south-west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Town</u> Galmoy Fen SAC is approximately 41km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance,</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Option study area is ca. 8.3km and hydrologically linked to River Barrow and River Nore SAC. Potential changes in water quality (pollution) during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works hydrologically linked to the SAC. Study area is adjacent to a karst aquifer. However, the SAC is not within the zone of contribution (ZOC). Therefore, given the distance from the site and the QI features it supports there is no potential for LSE during operation.</p>		<p>spread of invasive non-native species and pollution. <u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u> Galmoy Fen SAC is approximately 41km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. <u>Emo Court, Laois</u> Galmoy Fen SAC is approximately 41km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. <u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u> Galmoy Fen SAC is approximately 28km south-west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. <u>Altamont House and Gardens</u> Galmoy Fen SAC is approximately 55km south of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted. <u>Residential Development at Clonminch Road, Tullamore</u> The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. Galmoy Fen SAC is approximately 50km south of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted. <u>Moate Reservoir, Rathvilly</u> A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. Galmoy Fen SAC is approximately 58km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>works</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>		
<p>SA6-57a New GW abstraction/wellfield development Option study area is 8.8km from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species due to the hydrological link</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u> River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted. <u>Monasterevin Town Centre Regeneration</u> River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. <u>Carlow Town</u> River Barrow and River Nore SAC runs through Carlow Town and therefore there</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of</p>	<p>General Mitigation Measures are outlined in Section 6.3.3 Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination</p>	<p>N</p>

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<p>to the SAC. Option study area is within a karstic aquifer. Although this European site is not within the zone of contribution (ZOC), there is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential for impacts to QI species utilizing watercourses hydrologically linked to this European site and further study required on ground water and surface water links required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p>		<p>may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation from habitat degradation</p>	<p>with other plans or projects.</p>	
<p>SA6-64</p> <p>Increase GW to supply deficit and upgrade Rosenallis WTP</p> <p>Option study area is 3km from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from pollution.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the</p>	<p>Yes - from habitat degradation on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>scheme therefore there may be in-combination effects from pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from pollution.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>		
<p>SA6-69a</p> <p>Increase GW abstraction to supply deficit and upgrade Derryguile WTP</p> <p>Option study area is approximately 2.3km and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. Although this European site is not within the zone of contribution (ZOC), there is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential during operation for LSE to the watercourse hydrologically linked to this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species and habitats.</p>	<ul style="list-style-type: none"> Habitat degradation Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from pollution.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from pollution.</p> <p><u>Altamont House and Gardens</u></p>	<p>Yes – from habitat degradation on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from disturbance and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6MI reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation</p>		
<p>SA6-77</p> <p>Increase GW abstraction and upgrade Le Bergerie WTP</p> <p>Option study area is ca. 1km from River Barrow and River Nore SAC. No construction impacts are predicted given the distance from the site and lack of hydrological link. There is a risk this groundwater abstraction will reduce water flow in the underground aquifer. This groundwater abstraction is within a karstic aquifer, less than 5km from the SAC. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species and habitats.</p>	<ul style="list-style-type: none"> Habitat degradation Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects during operation resulting in habitat degradation.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects during operation resulting in habitat degradation.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow. River Barrow and River Nore SAC</u> is less than 2.5km from this scheme and therefore there may be in-combination effects during operation resulting in habitat degradation.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme. No in-combination effects are predicted during construction or operation.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. There may be in-combination effects during operation resulting in habitat degradation.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6MI reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme</p>	<p>Yes – from habitat degradation on River Barrow and River Nore SAC if operational phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - from disturbance and habitat degradation impacts on River Barrow and River Nore SAC if operational phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if operational phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if operational phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>SA6-86a</p> <p>Increase GW abstraction to supply deficit and upgrade Arles WTP</p> <p>Option study area is 2.4km and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p>and not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u> River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u> River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Carlow Town</u> River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from pollution.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u> River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Emo Court, Laois</u> River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u> River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from pollution.</p> <p><u>Altamont House and Gardens</u> River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u> The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u> A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>Yes - from habitat degradation on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works</p> <p>Yes - habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA6-90</p> <p>Increase GW abstraction to supply deficit and upgrade The Strand WTP</p> <p>Option study area is ca. 800m from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u> River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u> River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>from construction works. There is also potential for the spread of invasive non-native species given that the works hydrologically linked to the SAC. Although this European site is not within the zone of contribution (ZOC), there is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential during operation for LSE to the watercourse hydrologically linked to this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species and habitats.</p>		<p><u>Carlow Town</u> River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u> River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation.</p> <p><u>Emo Court, Laois</u> River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme therefore there may be in-combination effects from pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u> River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. There may be in-combination effects from habitat degradation.</p> <p><u>Altamont House and Gardens</u> River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u> The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u> A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation from habitat degradation</p>	<p>effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	
<p>SA6-94 Increase GW abstraction to supply deficit and upgrade Coolenagh WTP Option study area is 2.4km and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u> River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u> River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Town</u> River Barrow and River Nore SAC runs through Carlow Town and therefore there</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of</p>	<p>General Mitigation Measures are outlined in Section 6.3.3 Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination</p>	<p>N</p>

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<p>hydrologically linked to the SAC. There is a risk this groundwater abstraction will reduce water flow in the underground aquifer during operation. This groundwater abstraction is within a karstic aquifer, less than 5km from the SAC. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species and habitats.</p>		<p>may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation from habitat degradation</p>	<p>with other plans or projects.</p>	
<p>SA6-99 Increase GW abstraction to supply deficit and upgrade Donaghmore WTP Option study area is 7.7km and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works hydrologically linked to the SAC. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore</p>	<p>Yes - from disturbance and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Corrig Glen, Station Road, Portarlinton, Co. Laois works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>there may be in-combination effects from pollution and spread of invasive non-native species.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>Town Centre Regeneration works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works</p> <p>Yes - from habitat degradation, disturbance and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works</p>		
<p>SA6-104</p> <p>Increase GW abstraction to supply deficit and upgrade Camross WTP</p> <p>Option study area is 0.17km from and hydrologically linked to River Barrow and River Nore SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact fish and restrict access to spawning habitat. Potential pollution of watercourses during</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC & River Nore SPA are approximately 11km south-east and 30km south of the scheme respectively and not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. River Nore SPA is approximately 32km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works hydrologically linked to the SAC. There is potential for impacts via groundwater abstraction during operation via the productive fissured bedrock aquifer. The SAC is 170m from the site of proposed abstraction increase point, well within the 3km range at which impacts should be considered. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species and habitats.</p> <p>Option study area is 3.1km and hydrologically linked to River Nore SPA. Potential pollution of watercourses during construction could have indirect effects on through impacts upon prey species. No operational impacts are predicted.</p>		<p>and pollution. In-combination effects during operation may result in habitat degradation. River Nore SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation. River Nore SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. River Nore SPA is approximately 23km south-west with no hydrological link and therefore no in-combination effects are predicted.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC & River Nore SPA are 11km and hydrologically linked to the scheme. The European Sites are connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. There may be in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation on River Barrow and River Nore SAC.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC and River Nore SPA are approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC and River Nore SPA are approximately 9km south-east and 30km south of the scheme respectively and not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6ML reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC and River Nore SPA are approximately 11km north-west and 42km west of the scheme respectively and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC & SPA (habitat degradation only) if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation River Barrow and River Nore SAC from habitat degradation</p>		
<p>SA6-105 Increase GW abstraction to supply deficit and upgrade Kyle WTP</p> <p>Option study area is approximately 4.2km and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>hydrologically linked to the SAC. There is a risk this groundwater abstraction will reduce water flow in the underground aquifer. This groundwater abstraction is within a gravel aquifer likely overlying a karstic aquifer, less than 5km from the SAC. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species and habitats.</p>		<p>may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation from habitat degradation</p>	<p>with other plans or projects.</p>	
<p>SA6-113a Increase GW abstraction to supply deficit and upgrade Swan WTP Option study area is ca. 2km and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works hydrologically linked to the SAC. Although this European site is not within the zone of</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on</p>	<p>General Mitigation Measures are outlined in Section 6.3.3 Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>contribution (ZOC), there is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential for LSE during operation to the watercourse hydrologically linked to this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species and habitats.</p>		<p>degradation.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation from habitat degradation</p>		
<p>SA6-122</p> <p>Mountrath - Rationalise Cloonin Hill, Drim and Knocks into 1 WTP to add resilience. Require source protection.</p> <p>Option study area is approximately 500m from Slieve Bloom Mountains SAC. Operational effects only: abstraction point is within a productive fissured aquifer which connects the option study area to the SAC. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitats.</p> <p>Option study area is approximately 4.5km from River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>Slieve Bloom Mountains SAC is approximately 12km south-west and upstream of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted. Slieve Bloom Mountains SPA is approximately 12km south-west and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>Slieve Bloom Mountains SAC is approximately 26km west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution. Slieve Bloom Mountains SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Town</u></p> <p>Slieve Bloom Mountains SAC is approximately 42km north-west of the schemes and therefore no in-combination effects are predicted. River Barrow and River Nore SAC</p>	<p>Yes – from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>connected habitats. No operational impacts.</p> <p>Option study area is less than 100m from Slieve Bloom Mountains SPA. There is potential for disturbance to QI birds given the proximity of the study area to the SPA. No operational impacts are predicted.</p>		<p>runs through Carlow Town and therefore there may be in-combination effects from pollution. In-combination effects during operation may result in habitat degradation. Slieve Bloom Mountains SPA is approximately 42km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution. In-combination effects during operation may result in habitat degradation. Slieve Bloom Mountains SAC is approximately 42km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Emo Court, Laois</u></p> <p>Slieve Bloom Mountains SAC is approximately 15km west and upstream of any hydrological connections to the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from pollution. Slieve Bloom Mountains SPA is approximately 15km west and upstream of any hydrological connections to the scheme and therefore no in-combination effects are predicted</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>Slieve Bloom Mountains SAC is approximately 15km west and upstream of any hydrological connections to the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from pollution. Slieve Bloom Mountains SPA is approximately 15km west and upstream of any hydrological connections to the schemes and therefore no in-combination effects are predicted</p> <p><u>Altamont House and Gardens</u></p> <p>Slieve Bloom Mountains SAC is approximately 60km north-west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 60km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. Slieve Bloom Mountains SAC is approximately 14km south-west and upstream of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 12km south-west and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6MI reservoir is to be constructed adjacent to the existing Rathvilly reservoir. Slieve Bloom Mountains SAC is approximately 54km north-west and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 54km north-west and therefore no in-combination effects are predicted.</p>	<p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and during operation</p>		

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>SA6-553 (139, 144e)</p> <p>Increase GW abstraction at Fermoyle and WTP upgrades</p> <p>Option study area is 500m from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the option study area is hydrologically linked to the SAC. There is a risk this increase in groundwater abstraction will reduce water flow in the underground aquifer. This groundwater abstraction is within a karstic aquifer, less than 5km from the SAC. There is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, during operation there is potential for LSE to the watercourse hydrologically linked to this European site and further detailed study required. An increase in abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p> <p>Option study area is ca. 180m from Lisbigney Bog SAC. No potential impact pathway during construction given distance from site and the QI feature it supports. There is a risk this groundwater abstraction will reduce water flow in the underground aquifer during operation. This groundwater abstraction is within a karstic aquifer, less than 5km from the SAC. hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p> <p>Option Study area is 560m from River Nore SPA. There is potential for disturbance to QI birds given the proximity of the study area to the SPA. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC & River Nore SPA are approximately 11km south-east and 30km south of the scheme respectively and not hydrologically connected and therefore in-combination effects are not predicted. Lisbigney Bog SAC is approximately 46km south-east and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. River Nore SPA is approximately 32km south-west of the scheme and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 36km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. River Nore SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 28km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation. River Nore SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 28km west and therefore no in-combination effects are predicted.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. River Nore SPA is approximately 23km south-west with no hydrological link and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 28km south-west so no in-combination effects are predicted.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. Lisbigney Bog SAC is approximately 20km south of the schemes and therefore no in-combination effects are predicted.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC and River Nore SPA are approximately 18km and 42km west of the scheme respectively and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 44km north-west and therefore no in-combination effects are predicted.</p>	<p>Yes - potential for in-combination disturbance, spread of invasive non-native species and pollution impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC and River Nore SPA are approximately 9km south-east and 30km south of the scheme respectively and not hydrologically connected and therefore in-combination effects are not predicted. Lisbigney Bog SAC is approximately 46km south-east and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC and River Nore SPA are approximately 11km north-west and 42km west of the scheme respectively and not hydrologically connected and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 42km west and upstream of the scheme and therefore no in-combination effects are predicted.</p>	Mental Health Unit works and from habitat degradation during operation		
<p>SA6-126</p> <p>Increase GW abstraction to supply deficit and upgrade Five Wells WTP</p> <p>Option study area is 3.5km from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are within the SAC boundary. During operation there is a risk this groundwater abstraction will reduce water flow in the underground aquifer. This groundwater abstraction is within a gravel aquifer, within the SAC. There is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential for LSE to the watercourse hydrologically linked to this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p> <p>Option study area is approximately 4.5km from Lisbigney Bog SAC. No potential impact pathway during construction given distance from site and the QI features it supports. There is a risk this groundwater abstraction will reduce water flow in the underground aquifer during operation. This groundwater abstraction is within a gravel aquifer adjacent to a karst aquifer which underlies this SAC. This has the potential to impact on groundwater dependent habitats</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east and not hydrologically connected and therefore in-combination effects are not predicted. Lisbigney Bog SAC is approximately 46km south-east and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. Lisbigney Bog SAC is approximately 36km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. Lisbigney Bog SAC is approximately 28km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation. Lisbigney Bog SAC is approximately 28km west of the scheme and therefore no in-combination effects are predicted</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Lisbigney Bog SAC is approximately 28km south-west so no in-combination effects are predicted</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during</p>	<p>Yes - potential for in-combination disturbance, spread of invasive non-native species and pollution impacts on River Barrow and River Nore SAC with Monasterevin Town Centre Regeneration and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>and species. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p>		<p>operation may result in habitat degradation. Lisbigney Bog SAC is approximately 20km south of the schemes and therefore no in-combination effects are predicted.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 44km north-west and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east and and not hydrologically connected and therefore in-combination effects are not predicted. Lisbigney Bog SAC is approximately 46km south-east and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6MI reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 42km west and upstream of the scheme and therefore no in-combination effects are predicted.</p>	<p>SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and from habitat degradation during operation</p>		
<p>SA6-156</p> <p>Increase GW abstraction to supply deficit and upgrade Ballyroan WTP</p> <p>Option study area is ca. 7km from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works hydrologically linked to the SAC. Although this European site is not within the zone of contribution (ZOC), there is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential for impacts to QI species utilizing the watercourse hydrologically linked to this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore, there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation.</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town works and during operation from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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		<p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east and not hydrologically connected and therefore in-combination effects are not predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6MI reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted.</p>	<p>River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and from habitat degradation during operation</p>		
<p>SA6-552 (180c, 184)</p> <p>New connection point from New Shannon Source connecting to Tullamore and Mountbolus</p> <p>Option study area is 1.6km from and hydrologically linked to Charleville Wood SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for the spread of invasive non-native species given that the study area is hydrologically linked. No operational impacts are predicted.</p> <p>Option study area is 1.2km from and hydrologically linked to Clonaslee Eskers and Derry Bog SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for the spread of invasive non-native species given that the study area is hydrologically linked. No operational impacts are predicted.</p> <p>Option study area is 2m from Slieve Bloom Mountains SPA. There is potential for disturbance to QI birds given the proximity of the study area to the SPA. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>Charleville Wood SAC is within 100m of the scheme and therefore there may be in-combination effects from pollution and the spread of invasive non-native species. Clonaslee Eskers and Derry Bog SAC is approximately 12km south-west of the scheme. Given the lack of a hydrological link, no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 12km south-west and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>Charleville Wood SAC is approximately 31km north-west of the scheme and therefore no in-combination effects are predicted. Clonaslee Eskers and Derry Bog SAC is approximately 33km west of the scheme and therefore no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Town</u></p> <p>Charleville Wood SAC is approximately 60km north-west of the scheme and therefore no in-combination effects are predicted. Clonaslee Eskers and Derry Bog SAC is approximately 55km north-west of the scheme and therefore no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 42km north-west of the schemes and therefore no in-combination effects are predicted.</p> <p><u>Emo Court, Laois</u></p> <p>Charleville Wood SAC is approximately 25km north-west of the scheme and therefore no in-combination effects are predicted. Clonaslee Eskers and Derry Bog SAC is approximately 26km west of the scheme and therefore no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 15km west and upstream of any hydrological connections to the scheme and therefore no in-combination effects are predicted.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>Charleville Wood SAC is approximately 25km north-west of the scheme and therefore no in-combination effects are predicted. Clonaslee Eskers and Derry Bog SAC is approximately 22km north-west of the scheme and therefore no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 15km west and</p>	<p>Yes – from habitat degradation and spread of invasive non-native species impacts on Charleville Wood SAC if construction phase concurrent with Tullamore Urban Area & Kearney's Field works</p> <p>Yes – from habitat degradation and spread of invasive non-native species impacts on Charleville Wood SAC if construction phase concurrent with the Residential Development at Clonminch Road, Tullamore works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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		<p>upstream of any hydrological connections to the schemes and therefore no in-combination effects are predicted.</p> <p><u>Altamont House and Gardens</u></p> <p>Charleville Wood SAC is approximately 62km north-west of the scheme and therefore no in-combination effects are predicted. Clonaslee Eskers and Derry Bog SAC is approximately 56km north-west of the scheme and therefore no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 60km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. Charleville Wood SAC is within 100m of the scheme and therefore there may be in-combination effects from pollution and the spread of invasive non-native species. Clonaslee Eskers and Derry Bog SAC is approximately 12km south-west of the scheme. Given a lack of a hydrological link no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 12km south-west and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. Charleville Wood SAC is approximately 70km north-west of the scheme and therefore no in-combination effects are predicted. Clonaslee Eskers and Derry Bog SAC is approximately 68km north-west of the scheme and therefore no in-combination effects are predicted. Slieve Bloom Mountains SPA is approximately 54km north-west and therefore no in-combination effects are predicted.</p>			
<p>SA6-149</p> <p>Increase GW to supply deficit and upgrade Aughafeerish WTP</p> <p>Option study area is 3.1km from and hydrologically linked to River Barrow and River Nore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. there is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to the SAC. Option study area is within a gravel aquifer. There is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential for impacts to QI species utilising watercourse hydrologically linked to this European site and further study required on ground water and surface water links required. An increase in abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p> <p>Option study area is 4.9km from Lisbigney Bog SAC. Option study area is within a</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>Tullamore Urban Area & Kearney's Field, Tullamore, Co. Offaly</u></p> <p>River Barrow and River Nore SAC is approximately 11km south-east of the scheme and not hydrologically connected and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 46km south-east and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Monasterevin Town Centre Regeneration</u></p> <p>River Barrow and River Nore SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. Lisbigney Bog SAC is approximately 36km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Town</u></p> <p>River Barrow and River Nore SAC runs through Carlow Town and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. Lisbigney Bog SAC is approximately 28km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road, Carlow.</u></p> <p>River Barrow and River Nore SAC is less than 2.5km from this scheme and therefore there may be in-combination effects from pollution and spread of invasive non-native species. In-combination effects during operation may result in habitat degradation. Lisbigney Bog SAC is approximately 28km west and therefore no in-combination effects are predicted.</p> <p><u>Emo Court, Laois</u></p> <p>River Barrow and River Nore SAC is less than 1km and hydrologically linked to the scheme and therefore, there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Lisbigney Bog SAC is approximately</p>	<p>Yes - potential for in-combination disturbance, spread of invasive non-native species and pollution impacts on River Barrow and River Nore SAC if construction phase concurrent with Monasterevin Town Centre Regeneration works and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Carlow Town and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from habitat degradation and spread of invasive non-native species impacts on River Barrow and River Nore SAC if construction phase concurrent</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>gravel aquifer adjacent to a karst aquifer. There is a risk this groundwater abstraction will reduce water flow in the underground aquifer. This groundwater abstraction is within a gravel aquifer adjacent to a karst aquifer which underlies this SAC. This has the potential to impact on groundwater dependent habitats and species. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p>		<p>28km south-west so no in-combination effects are predicted.</p> <p><u>Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit</u></p> <p>River Barrow and River Nore SAC is 11km and hydrologically linked to the scheme. This European Site is connected to the Local Area Plan (LAP) area by the Triogue River, which flows through Portlaoise and merges with the SAC approximately 10km downstream of the local area plan boundary. Potential for in-combination effects from spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. Lisbigney Bog SAC is approximately 20km south of the schemes and therefore no in-combination effects are predicted.</p> <p><u>Altamont House and Gardens</u></p> <p>River Barrow and River Nore SAC is approximately 18km west of the scheme and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 44km north-west and therefore no in-combination effects are predicted.</p> <p><u>Residential Development at Clonminch Road, Tullamore</u></p> <p>The development will consist of 358 no. dwellings in detached, semi-detached, terraced/townhouse, terraced/duplex and apartment form and in buildings ranging in height from 2-5 storeys. River Barrow and River Nore SAC is approximately 9km south-east of the scheme and not hydrologically connected and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 46km south-east and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Moate Reservoir, Rathvilly</u></p> <p>A new 10.6Ml reservoir is to be constructed adjacent to the existing Rathvilly reservoir. River Barrow and River Nore SAC is approximately 11km north-west of this scheme and not hydrologically connected and therefore no in-combination effects are predicted. Lisbigney Bog SAC is approximately 42km west and upstream of the scheme and therefore no in-combination effects are predicted.</p>	<p>with Carlow Wastewater Treatment Plant, Carrigbrook, Tullow Road works and during operation on River Barrow and River Nore SAC from habitat degradation</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Emo Court works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction phase concurrent with Libraries Capital Programme - Portlaoise Library, Portlaoise - A Low Carbon Town, Presentation Convent & Lands, Portlaoise, Portlaoise - A Cultural Quarter and Portlaoise 40 bed Residential Mental Health Unit works and from habitat degradation during operation</p>		
<p>All Preferred Options</p> <p>The European sites that may be impacted by options within Study Area 6 are River Barrow and River Nore SAC, Slaney River Valley SAC, Galmoy Fen SAC, River Nore SPA, Slieve Bloom Mountains SAC and SPA, Lisbigney Bog SAC, Charleville Wood SAC, Clonaslee Eskers and Derry Bog SAC and The Loughans SAC.</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>All Preferred Options</u></p> <p>There is potential for in-combination effects from the projects within SA6 to River Barrow and River Nore SAC given that options SA6-193, SA6-197, SA6-19, SA6-24, SA6-191, SA6-33, SA6-38, SA6-53a, SA6-57a, SA6-64, SA6-69a, SA6-77, SA6-86a, SA6-90, SA6-94, SA6-99, SA6-104, SA6-105, SA6-113a, SA6-122, SA6-553, SA6-126, SA6-156, SA6-45a, SA6-149 have the potential for impacts. Potential for in-combination from habitat loss (options 104, 193, 19, and 45a only) mortality (options 193, 19, 104 and 45a only), spread of invasive non-native species (option 193, 197, 19, 24, 191, 33, 38, 53a, 57a, 94, 99, 104, 105, 113a, 553, 126, 156, 149 and 45a only), disturbance (option 193, 197, 19, 24, 191, 33, 38, 53a, 57a, 90, 94, 99, 104, 105, 113a, 553, 126, 156, 149 and 45a only) and pollution (193, 197, 19, 24, 191, 33, 38, 53a, 57a, 64, 69a, 86a, 90, 94, 99, 104, 105, 113a, 122, 553, 126, 156, 45a, 149) impacts during construction, and hydrological changes and water table/availability impacts during operation (options 19, 57a, 69a, 77, 90, 94, 104, 105, 113a, 553, 126, 149, 45a and 156 only).</p> <p>There is potential for in-combination effects from the projects within SA6 to Slieve Bloom Mountains SPA given that options SA6-122 and SA6-552 have the potential for impacts. Potential for in-combination from disturbance during construction.</p> <p>There is potential for in-combination effects from the projects within SA6 to Lisbigney Bog SAC given that options SA6-553, SA6-126 and SA6-149 have the potential for impacts. Potential for in-combination effects from hydrological changes and water table/availability impacts during operation.</p> <p>There is potential for in-combination effects from the projects within SA6 to Slaney</p>	<p>Yes – from habitat loss, water table/availability, mortality, disturbance, spread of invasive non-native species and habitat degradation impacts on River Barrow and River Nore SAC if construction of options is concurrent and during operation from habitat degradation.</p> <p>Yes – from disturbance impacts on Slieve Bloom Mountains SPA if construction of options is concurrent.</p> <p>Yes – from habitat degradation and water table/availability impacts on Lisbigney Bog SAC during operation.</p> <p>Yes – from disturbance, spread of invasive non-native species and</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>Yield assessment as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>River Valley SAC given that options SA6-193 and SA6-33 have the potential for impacts. Potential for in-combination from disturbance, spread of invasive non-native species and pollution during construction.</p> <p>Within Study Area 6 options SA6-104 and SA6-553 have potential for impacts to River Nore SPA. However, there is no potential for in-combination effects given the impact pathways that have been identified.</p> <p>Option SA6-122 is the only option within SA6 with potential for impacts on Slieve Bloom Mountains SAC. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA6-38 is the only option within SA6 with potential for impacts on The Loughans SAC. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA6-53a is the only option within SA6 with potential for impacts on Galmoy Fen SAC. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA6-552 is the only option within SA6 with potential for impacts on Charleville Wood SAC and Clonaslee Eskers and Derry Bog SAC. Therefore, there is no potential for in-combination effects to these European sites.</p>	<p>habitat degradation impacts on Slaney River Valley SAC if construction of options is concurrent.</p>		

Table E7: SA7 In-combination assessment of Preferred Approach with other relevant projects and options within SA7

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 7					
<p>SA7-55</p> <p>Portumna - Increase abstraction and Upgrade WTP</p> <p>Option study area is adjacent and hydrologically linked to Lough Derg, North-east Shore SAC. There is potential for some loss of/damage to QI/Annex I habitat during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species. There is potential for the spread of invasive species given that the works are within the SAC boundary. There is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential during operation for effects to the hydrologically linked groundwater dependent habitats of this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p> <p>Option study area is 0.53km and hydrologically linked to River Shannon Callows SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and otter directly or indirectly via impacts to prey species. There is potential for the spread of invasive species given that the works are adjacent to the SAC boundary. There is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential during operation for effects to the hydrologically linked groundwater dependent habitats of this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats.</p> <p>Option study area is directly adjacent to Lough Derg (Shannon) SPA therefore there is potential for disturbance to QI birds using</p>	<ul style="list-style-type: none"> Habitat loss Habitat degradation Water table/availability Disturbance Spread of invasive non-native species 	<p><u>Roscrea Enterprise, Digital and Social Impact Hub</u></p> <p>Lough Derg, North-east Shore SAC is approximately 26km west of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 30km north-west of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>R498 Latteragh realignment</u></p> <p>Part 8 of Tipperary County Council’s planning document for the scheme concluded that it is unlikely that the proposed development will result in significant effects to any European site, in view of their conservation objectives of the habitats or species for which it was designated, either alone or in-combination with other plans or projects¹.</p> <p>Lough Derg, North-east Shore SAC is approximately 23km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 33km north-west of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 23km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Improvements to the boat mooring facilities at Lough Derg Yacht Club</u></p> <p>Lough Derg, North-east Shore SAC is approximately 2.8km east of the scheme and therefore there may be in-combination effects from habitat degradation, disturbance and spread of invasive species. River Shannon Callows SAC is approximately 17.5km east of the scheme and although they are hydrologically linked, the SAC is located upstream of the scheme so no in-combination effects are predicted. Lough Derg (Shannon) SPA is directly adjacent to the scheme and therefore there may be in-combination effects from disturbance.</p>	<p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lough Derg, North-east Shore SAC and disturbance impacts on Lough Derg (Shannon) SPA if construction phase concurrent with the improvements to the boat mooring facilities works at Lough Derg Yacht Club.</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

¹ Tipperary County Council R498 Road Realignment at Latteragh. Part 8 Planning, Vol.1: Particulars, by Tobin Consulting Engineers

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
SPA designated habitats in the vicinity of Portumna WTP. During operation abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species. There is potential for impacts on aquatic QI species utilising watercourse hydrologically linked to this European site through a reduction in flows/water levels.					
SA7-504 (36b, 43a, 54b) New connections from GDA (Lough Derg source) Option study area is 10.9km from and hydrologically linked to Lough Derg, North-east Shore SAC . Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats. No operational impacts are predicted.	<ul style="list-style-type: none"> Habitat degradation 	<p><u>Roscrea Enterprise, Digital and Social Impact Hub</u></p> <p>Lough Derg, North-east Shore SAC is approximately 26km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>R498 Latteragh realignment</u></p> <p>Part 8 of Tipperary County Council’s planning document for the scheme concluded that it is unlikely that the proposed development will result in significant effects to any European site, in view of their conservation objectives of the habitats or species for which it was designated, either alone or in-combination with other plans or projects².</p> <p>Lough Derg, North-east Shore SAC is approximately 23km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Improvements to the boat mooring facilities at Lough Derg Yacht Club</u></p> <p>Lough Derg, North-east Shore SAC is approximately 2.8km east of the scheme and therefore there may be in-combination effects from habitat degradation during construction.</p>	Yes – from habitat degradation impacts on Lough Derg, North-east Shore SAC if construction phase concurrent with the improvements to the boat mooring facilities works at Lough Derg Yacht Club.	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
SA7-63 No deficit – Upgrade WTP Option study area is 8.9km from and hydrologically linked to Sharavogue Bog SAC . Although there is a WTP within 1km proximity of Sharavogue Bog SAC, this was deemed as having no potential impact as there was no pathway between the closest WTP and the SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats. No operation impacts are predicted.	<ul style="list-style-type: none"> Habitat degradation 	<p><u>Roscrea Enterprise, Digital and Social Impact Hub</u></p> <p>Sharavogue Bog SAC is approximately 8km north of and hydrologically linked to this scheme. Therefore, there is potential for in-combination impacts from pollution. In-combination effects during operation may result in habitat degradation.</p> <p><u>R498 Latteragh realignment</u></p> <p>Part 8 of Tipperary County Council’s planning document for the scheme concluded that it is unlikely that the proposed development will result in significant effects to any European site, in view of their conservation objectives of the habitats or species for which it was designated, either alone or in-combination with other plans or projects³.</p> <p>Sharavogue Bog SAC is approximately 27km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Improvements to the boat mooring facilities at Lough Derg Yacht Club</u></p> <p>Sharavogue Bog SAC is approximately 23km east of the scheme and therefore no in-combination effects are predicted.</p>	Yes - from pollution impacts on Sharavogue Bog SAC if construction phase concurrent with Roscrea Enterprise, Digital and Social Impact Hub and during operation from habitat degradation.	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
SA7-23 New GW abstraction from Birr groundwater body (karstic bedrock) and new WTP to supply deficit Option study area is 1.6km from and hydrologically linked to Lough Derg, North-east Shore SAC . Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact QI species and hydrologically connected habitats. There is	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Roscrea Enterprise, Digital and Social Impact Hub</u></p> <p>Lough Derg, North-east Shore SAC is approximately 26km west of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 30km north-west of the scheme and therefore no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 29km north west of the scheme and therefore no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 22km north west of this scheme and therefore no in-combination effects are predicted. Dovegrove Callows SPA is approximately 20km north-west of the scheme so no in-combination effects are predicted.</p> <p><u>R498 Latteragh realignment</u></p> <p>Part 8 of Tipperary County Council’s planning document for the scheme concluded that</p>	Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lough Derg, North-east Shore SAC if construction phase concurrent with the improvements to the boat mooring facilities works at Lough Derg Yacht Club.	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other</p>	N

² Tipperary County Council R498 Road Realignment at Latteragh. Part 8 Planning, Vol.1: Particulars, by Tobin Consulting Engineers

³ Tipperary County Council R498 Road Realignment at Latteragh. Part 8 Planning, Vol.1: Particulars, by Tobin Consulting Engineers

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>potential for the spread of invasive species given that the works are hydrologically linked to this European site. No operation impacts are predicted.</p> <p>Option study area is 3.5km from and hydrologically linked to River Shannon Callows SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact QI species and hydrologically connected habitats. There is potential for the spread of invasive species given that the works are hydrologically linked to this European site. No operational impacts are predicted.</p> <p>Option study area is 2.7km from Middle Shannon Callows SPA. There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p> <p>Option study area is 3.2km from River Little Brosna Callows SPA. There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p> <p>Option study area is 3.4km and hydrologically linked to Dovegrove Callows SPA. There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>		<p>it is unlikely that the proposed development will result in significant effects to any European site, in view of their conservation objectives of the habitats or species for which it was designated, either alone or in-combination with other plans or projects⁴.</p> <p>Lough Derg, North-east Shore SAC is approximately 23km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 33km north-west of the scheme and therefore no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 27km north west of the scheme and therefore no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 35km north-east of the scheme and therefore no in-combination effects are predicted. Dovegrove Callows SPA is approximately 37km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Improvements to the boat mooring facilities at Lough Derg Yacht Club</u></p> <p>Lough Derg, North-east Shore SAC is approximately 2.8km east of the scheme and therefore there may be in-combination effects from habitat degradation, disturbance and spread of invasive species. River Shannon Callows SAC is approximately 17.5km east of the scheme and although they are hydrologically linked, the SAC is located upstream of the scheme so no in-combination effects are predicted. Middle Shannon Callows SPA is approximately 17.5km east of the scheme and although they are hydrologically linked, the SPA is located upstream of the scheme so no in-combination effects are predicted. River Little Brosna Callows SPA is approximately 28km east of the scheme and although they are hydrologically linked, the SPA is located upstream of the scheme so no in-combination effects are predicted. Dovegrove Callows SPA is approximately 30km east of the scheme so no in-combination effects are predicted.</p>		plans or projects.	
<p>SA7-61</p> <p>Nenagh RWSS - WTP Upgrade - no deficit</p> <p>Option study area is adjacent to Lough Derg, North-east Shore SAC. There is potential for some loss of/damage to QI/Annex I habitat during construction works given that the works are adjacent to the SAC boundary. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species. There is potential for</p>	<ul style="list-style-type: none"> Habitat loss Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>Roscrea Enterprise, Digital and Social Impact Hub</u></p> <p>Lough Derg, North-east Shore SAC is approximately 26km west of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>R498 Latteragh realignment</u></p> <p>Part 8 of Tipperary County Council’s planning document for the scheme concluded that it is unlikely that the proposed development will result in significant effects to any European site, in view of their conservation objectives of the habitats or species for which it was designated, either alone or in-combination with other plans or projects⁵.</p> <p>Lough Derg, North-east Shore SAC is approximately 23km north-west of the scheme</p>	Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lough Derg, North-east Shore SAC and disturbance impacts on Lough Derg (Shannon) SPA if construction phase concurrent with the improvements to the boat mooring facilities works at Lough Derg Yacht Club.	General Mitigation Measures are outlined in Section 6.3.3	N

⁴ Tipperary County Council R498 Road Realignment at Latteragh. Part 8 Planning, Vol.1: Particulars, by Tobin Consulting Engineers

⁵ Tipperary County Council R498 Road Realignment at Latteragh. Part 8 Planning, Vol.1: Particulars, by Tobin Consulting Engineers

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>the spread of invasive species given that the works are adjacent to the SAC boundary. No operational impacts are predicted.</p> <p>Option study area is adjacent to Lough Derg (Shannon) SPA. The site is directly adjacent to the SPA therefore there is potential for disturbance to QI birds in the SPA. No operational impacts are predicted.</p>		<p>and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 23km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Improvements to the boat mooring facilities at Lough Derg Yacht Club</u></p> <p>Lough Derg, North-east Shore SAC is approximately 2.8km east of the scheme and therefore there may be in-combination effects from habitat degradation, disturbance and spread of invasive species. Lough Derg (Shannon) SPA is directly adjacent to the scheme and therefore there may be in-combination effects from disturbance.</p>		plans or projects.	
<p>SA7-14</p> <p>New GW abstraction to supply full demand and abandon existing sources.</p> <p>Option study area is 600m from and hydrologically linked to Lough Derg, North-east Shore SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for the spread of invasive species given the hydrological link to the SAC. Although this European site is not within the zone of contribution (ZOC), there is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, during operation there is potential for LSE to the watercourse hydrologically linked to this European site and further detailed study required. Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitats.</p> <p>Option study area is 600m from Lough Derg (Shannon) SPA and hydrologically linked to this European site. There is potential for disturbance to QI birds within the SPA given the proximity of the study area to the SPA. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Spread of invasive non-native species Disturbance Water table/availability 	<p><u>Roscrea Enterprise, Digital and Social Impact Hub</u></p> <p>Lough Derg, North-east Shore SAC is approximately 26km west of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 26km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>R498 Latteragh realignment</u></p> <p>Part 8 of Tipperary County Council’s planning document for the scheme concluded that it is unlikely that the proposed development will result in significant effects to any European site, in view of their conservation objectives of the habitats or species for which it was designated, either alone or in-combination with other plans or projects⁶.</p> <p>Lough Derg, North-east Shore SAC is approximately 23km north-west of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 23km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Improvements to the boat mooring facilities at Lough Derg Yacht Club</u></p> <p>Lough Derg, North-east Shore SAC is approximately 2.8km east of the scheme and therefore there may be in-combination effects from habitat degradation, disturbance and spread of invasive species. Lough Derg (Shannon) SPA is directly adjacent to the scheme and therefore there may be in-combination effects from disturbance.</p>	Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lough Derg, North-east Shore SAC and from disturbance on Lough Derg (Shannon) SPA if construction phase concurrent with the improvements to the boat mooring facilities works at Lough Derg Yacht Club.	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N

⁶ Tipperary County Council R498 Road Realignment at Latteragh. Part 8 Planning, Vol.1: Particulars, by Tobin Consulting Engineers

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>All Preferred Options</p> <p>The European sites that may be impacted by options within Study Area 7 are Lough Derg, North-east Shore SAC, River Shannon Callows SAC, Lough Derg (Shannon) SPA, Dovegrove Callows SPA, Middle Shannon Callows SPA, Sharavogue Bog and River Little Brosna Callows SPA.</p>	<ul style="list-style-type: none"> Habitat loss Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>All Preferred Options</u></p> <p>There is potential for in-combination effects from the projects within SA7 to Lough Derg, North-east Shore SAC given that options SA7-55, SA7-504, SA7-23, SA7-61 and SA7-14 have the potential for impacts. Potential for in-combination effects from habitat loss (options 55 and 61 only), spread of invasive species (options 55, 23, 61 and 14 only) and pollution (all options listed above) during construction, and hydrological changes and water table/availability impacts (options 55 and 14 only) during operation.</p> <p>There is potential for in-combination effects from the projects within SA7 to Lough Derg (Shannon) SPA given that options SA7-55, SA7-61 and SA7-14 have the potential for impacts. Potential for in-combination effects from disturbance (all options listed above) during construction.</p> <p>There is potential for in-combination effects from the projects within SA7 to River Shannon Callows SAC given that options SA7-55 and SA7-23 have the potential for impacts. Potential for in-combination effects from spread of invasive species and pollution during construction.</p> <p>Option SA7-23 is the only option within SA7 with potential for impacts on Middle Shannon Callows SPA, River Little Brosna Callows SPA and Dovegrove Callows SPA. Therefore, there is no potential for in-combination effects to these European sites.</p> <p>Option SA7-63 is the only option within SA7 with potential for impacts on Sharavogue Bog SAC. Therefore, there is no potential for in-combination effects to this European site.</p>	<p>Yes – from habitat loss, spread of invasive species and habitat degradation impacts on Lough Derg, North-east Shore SAC if construction of options is concurrent and during operation from habitat degradation.</p> <p>Yes – from disturbance impacts on Lough Derg, (Shannon) SPA if construction of options is concurrent.</p> <p>Yes – from spread of invasive species and habitat degradation impacts on River Shannon Callows SAC if construction of options is concurrent.</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Table E8: SA8-Potential in-combination effects with other projects and options within SA8

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 8					
<p>SA8-09 Increase abstraction at Castle Lake and upgrade Castle Lake WTP to supply deficit</p> <p>Option study area is approximately 100m from Ratty River Cave SAC. A lesser horseshoe (LHS) bat roost is close to the WTP and the works area is likely to be core foraging habitat for this species. Vegetation, hedgerow or tree clearance associated with the works could sever important commuting routes for LHS bats commuting between their roost site in the SAC and foraging areas outside the confines of the SAC. The effects of noise disturbance, and possible tree clearance would require assessment. No operational impacts are predicted.</p> <p>Option study area is 7km from and hydrologically linked to Lower River Shannon SAC. Option study area is hydrologically linked to this European site. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact QI species and hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to this European site. No operational impacts are predicted.</p> <p>Option study area is ca. 8km and hydrologically linked to River Shannon and River Fergus Estuaries SPA. Potential pollution of waterbodies during construction could impact on the wetland habitat used by QI bird species degrading habitat. There is potential for disturbance to QI birds within the SPA and using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Habitat loss Disturbance Spread of invasive non-native species 	<p><u>N20 Cork to Limerick</u> Ratty River Cave SAC is 20km north-west of the northern extent of the scheme and therefore no in-combination effects are predicted. Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 8km north of the northern extent of the scheme but is not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u> Ratty River Cave SAC is 13km north and upstream of the scheme and therefore no in-combination effects are predicted. Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>Celtic Interconnector Project</u> Ratty River Cave SAC is approximately 106km north-west of the scheme and therefore no in-combination effects are predicted. Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 100km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Ratty River Cave SAC is approximately 23km west of the scheme and therefore no in-combination effects are predicted. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is approximately 19km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Ratty River Cave SAC is approximately 15km north-west of the scheme and therefore no in-combination effects are predicted. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Ratty River Cave SAC is approximately 24.5km north of the scheme and therefore no in-combination effects are predicted. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat loss, disturbance, spread of invasive non-native species and habitat degradation. River Shannon and River Fergus Estuaries SPA is ca. 9km from the scheme and therefore there may be in-combination effects from habitat degradation.</p> <p><u>Bunratty Folk Park</u> Ratty River Cave SAC is approximately 7km north of the scheme and therefore no in-combination effects are predicted. Lower River Shannon SAC is directly adjacent to</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC and disturbance and habitat degradation River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and disturbance and habitat degradation on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from habitat loss, disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and habitat degradation on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from habitat loss, disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and disturbance and pollution impacts on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Bunratty Folk Park works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>the proposed development site, therefore there may be in-combination from habitat loss, disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is within 200m of the proposed development site, therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Ratty River Cave SAC is approximately 9km north-west of the proposed development site and therefore no in-combination effects are predicted. Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 6km south-west of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>			
<p>SA8-01 (in conjunction with SA8-172) Increase GW abstraction at Drumcliffe Springs (Ennis groundwater body – karstic bedrock) and upgrade Drumcliffe WTP to partly supply deficit. In conjunction with advanced leakage reduction.</p> <p>Option study area is ca. 200m from and hydrologically linked to Lower River Shannon SAC. Option study area is hydrologically linked to this European site. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact QI species and hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to this European site. There is the potential for changes in water quality (hydrological changes) and changes to the water table availability during operation. This option involves an increase in groundwater abstraction within a karstic aquifer which could lead to hydrological changes that could impact QI species and habitats. There is potential for impacts on aquatic QI species utilising watercourses hydrologically linked to this European site through a reduction in flows/water levels.</p> <p>Option study area is ca. 5km and hydrologically linked to River Shannon and River Fergus Estuaries SPA. Potential pollution of waterbodies during construction could impact on the wetland habitat used by QI bird species degrading habitat. There is potential for disturbance to QI birds within the SPA and using habitats situated within the immediate hinterland of the SPA or in areas</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 8km north of the northern extent of the scheme but is not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. River Shannon and River Fergus Estuaries SPA is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 100km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. River Shannon and River Fergus Estuaries SPA is approximately 19km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation. River Shannon and River Fergus Estuaries SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC and disturbance and habitat degradation River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Coonagh to Knockalisheen Road works and during operation from habitat degradation on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works and during operation from habitat degradation on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and disturbance and habitat degradation on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works and during operation from habitat degradation on Lower River Shannon SAC</p> <p>Yes – from disturbance, spread of</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>		<p>native species and habitat degradation. In-combination effects during operation may result in habitat degradation. River Shannon and River Fergus Estuaries SPA is ca. 9km from the scheme and therefore there may be in-combination effects from habitat degradation.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is within 200m of the proposed development site, therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>O’Connell’s Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 6km south-west of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>invasive non-native species and habitat degradation impacts on Lower River Shannon SAC and habitat degradation on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works and during operation from habitat degradation on Lower River Shannon SAC</p> <p>Yes – from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and disturbance and pollution impacts on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Bunratty Folk Park works</p>		
<p>SA8-20a</p> <p>Increase GW abstraction from Flagmount BH (poorly productive aquifer) and upgrade existing Flagmount Reservoir Site WTP</p> <p>Option study area is approximately 20m from Slieve Aughty Mountains SPA. There is potential for disturbance to QI birds given the proximity of the study area to the SPA. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Disturbance 	<p><u>N20 Cork to Limerick</u></p> <p>Slieve Aughty Mountains SPA is approximately 34km north of the northern extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Slieve Aughty Mountains SPA is approximately 24km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u></p> <p>Slieve Aughty Mountains SPA is approximately 116km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Slieve Aughty Mountains SPA is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Slieve Aughty Mountains SPA is approximately 25km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>Slieve Aughty Mountains SPA is approximately 38km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u></p> <p>Slieve Aughty Mountains SPA is approximately 21km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>O’Connell’s Quarry Development</u></p> <p>Slieve Aughty Mountains SPA is approximately 18km north of the scheme and therefore no in-combination effects are predicted.</p>	<p>No</p>	<p>N/A</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>SA8-504 (31a)</p> <p>Rationalise O'Briensbridge WRZ to Limerick City WRZ (approx. distance 2.5km, new watermains and network upgrades required)</p> <p>Option study area is 0km from Lower River Shannon SAC. Option pipeline crosses this European site. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact QI species and hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are within the SAC boundary. Option includes increased SW abstraction. There is a risk this surface water abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats. Option includes abstraction adjacent to this European site. Therefore, there is potential for impacts on aquatic QI species utilising watercourses hydrologically linked to this European site through a reduction in flows/water levels.</p> <p>Option study area is 2.6km from River Shannon and River Fergus Estuaries SPA. Potential pollution of waterbodies during construction could impact on the wetland habitat used by QI bird species. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Mortality Habitat loss Disturbance Spread of invasive non-native species Water table/availability 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 8km north of the northern extent of the scheme but is not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability. River Shannon and River Fergus Estuaries SPA is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 100km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability. River Shannon and River Fergus Estuaries SPA is approximately 19km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability. River Shannon and River Fergus Estuaries SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from mortality, habitat loss, disturbance, spread of invasive non-native species and habitat degradation. In-combination effects during operation may result in habitat degradation and changes to water table/availability. River Shannon and River Fergus Estuaries SPA is ca. 9km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from habitat loss, mortality, disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability. River Shannon and River Fergus Estuaries SPA is within 200m of the proposed development site, therefore there may be in-combination effects from disturbance.</p>	<p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC and disturbance and pollution impacts on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Coonagh to Knockalisheen Road works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes – from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and disturbance on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes – from mortality, habitat loss, disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and pollution impacts on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works and during operation from habitat degradation and water table/availability on Lower River</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Option specific mitigation as in Section 6.3.4</p> <p>Hydrological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p><u>O'Connell's Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 6km south-west of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>Shannon SAC</p> <p>Yes – from habitat loss, mortality, disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and disturbance impacts on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Bunratty Folk Park works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p>		
<p>SA8-22</p> <p>Increase GW abstraction from existing BHs (poorly productive aquifer) and upgrade Scarriff WTP</p> <p>Option study area is ca. 15km from Lower River Shannon SAC. Option study area is hydrologically linked to this European site. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact QI species and hydrologically connected habitats. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to this European site. No operational impacts are predicted.</p> <p>Option study area is approximately 250m from Slieve Aughty Mountains SPA. There is potential for disturbance to QI birds given the proximity of the study area to the SPA. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 34km north of the northern extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slieve Aughty Mountains SPA is approximately 24km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 116km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasives and pollution. Slieve Aughty Mountains SPA is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slieve Aughty Mountains SPA is approximately 25km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from disturbance, habitat degradation and spread of invasive non-native species. Slieve Aughty Mountains SPA is approximately 38km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u></p>	<p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes – from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from spread of invasive non-native species and pollution. Slieve Aughty Mountains SPA is approximately 21km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 18km north of the scheme and therefore no in-combination effects are predicted.</p>	Bunratty Folk Park works		
<p>SA8-24</p> <p>Increase GW abstraction from existing Mountshannon BH (poorly productive aquifer) and upgrade Cloonmirran Pumphouse WTP</p> <p>Option study area is ca. 14.5km from Lower River Shannon SAC. Option study area is hydrologically linked to this European site. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact QI species and hydrologically connected habitats. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to this European site. No operational impacts are predicted.</p> <p>Option study area is within Slieve Aughty Mountains SPA. There is potential for disturbance to QI birds given the study area is within the SPA. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 34km north of the northern extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slieve Aughty Mountains SPA is approximately 24km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 116km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasives and pollution. Slieve Aughty Mountains SPA is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. Slieve Aughty Mountains SPA is approximately 25km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from disturbance, habitat degradation and spread of invasive non-native species. Slieve Aughty Mountains SPA is approximately 38km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from spread of invasive non-native species and pollution. Slieve Aughty Mountains SPA is approximately 21km north of the scheme and therefore no in-combination effects are predicted.</p>	<p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes – from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p><u>O'Connell's Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 18km north of the scheme and therefore no in-combination effects are predicted.</p>			
<p>SA8-179</p> <p>Not in deficit – upgrade WTP only</p> <p>Option study area is ca. 15km from and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for the spread of invasive non-native species given that the works are hydrologically linked to this European site. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Spread of invasive non-native species 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from spread of invasive non-native species and pollution.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from spread of invasives and pollution.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from spread of invasive non-native species and pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat degradation and spread of invasive non-native species.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from spread of invasive non-native species and pollution.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>Yes - from spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from the spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA8-21</p> <p>Increase GW abstraction from Feakle public supply new BH (poorly productive aquifer) and upgrade existing Bauragegaun Pump Station WTP</p> <p>Option study area is 20km from and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 34km north of the northern extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from spread of invasive non-native species and pollution. Slieve Aughty Mountains SPA is approximately 24km north of the scheme</p>	<p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>affect hydrologically connected habitats. No operational impacts are predicted.</p> <p>Option study area is within Slieve Aughty Mountains SPA. There is potential for disturbance to QI birds given the study area is within this European site. No operational impacts are predicted.</p>		<p>and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u> Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 116km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from spread of invasives and pollution. Slieve Aughty Mountains SPA is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from spread of invasive non-native species and pollution. Slieve Aughty Mountains SPA is approximately 25km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat degradation. Slieve Aughty Mountains SPA is approximately 38km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u> Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from pollution. Slieve Aughty Mountains SPA is approximately 21km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>O'Connell's Quarry Development</u> Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. Slieve Aughty Mountains SPA is approximately 18km north of the scheme and therefore no in-combination effects are predicted.</p>	<p>concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from pollution impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>	<p>alone or in-combination with other plans or projects.</p>	
<p>SA8-120 Increase existing GW at Woodford Option study area pipeline is within Slieve Aughty Mountains SPA. There is potential for disturbance to QI birds given the study area is within the SPA. No operational impacts are predicted.</p> <p>Option study area is 5.2km from and hydrologically linked to Lough Derg (Shannon) SPA. Potential pollution of waterbodies during construction could impact on the wetland habitat used by QI bird species. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance 	<p><u>N20 Cork to Limerick</u> Slieve Aughty Mountains SPA is approximately 34km north of the northern extent of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 22km north-east of the northern extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u> Slieve Aughty Mountains SPA is approximately 24km north of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 23km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u> Slieve Aughty Mountains SPA is approximately 116km north-west of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 102km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p>	<p>Yes – from pollution impacts on Lough Derg (Shannon) SPA if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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		<p>Slieve Aughty Mountains SPA is approximately 19km north-west of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 1.5km north-west of the scheme and there may be in-combination effects from pollution.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Slieve Aughty Mountains SPA is approximately 25km north-west of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 22 km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West.</p> <p>Slieve Aughty Mountains SPA is approximately 38km north of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 53km north-east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u></p> <p>Slieve Aughty Mountains SPA is approximately 21km north of the proposed development site and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 27km north-east of the proposed development site and therefore no in-combination effects are predicted.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Slieve Aughty Mountains SPA is approximately 18km north of the scheme and therefore no in-combination effects are predicted. Lough Derg (Shannon) SPA is approximately 21km north-east of the scheme and therefore no in-combination effects are predicted.</p>			
<p>SA8-510 (17f, 84, 105, 192)</p> <p>Connect South West Regional, Foynes Shannon and Adare to Limerick City WRZ</p> <p>Option pipeline crosses Lower River Shannon SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact QI species. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are within the SAC boundary. Option involves direct abstraction from this European site which could lead to changes in water table/availability and hydrological changes during operation that could impact QI species and habitats. There is potential for impacts on aquatic QI species utilising watercourses hydrologically linked to this European site through a reduction in</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 8km north of the northern extent of the scheme but is not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution during construction. In-combination effects during operation may result in habitat degradation. River Shannon and River Fergus Estuaries SPA is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance and pollution during construction.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 100km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC and disturbance and habitat degradation on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Coonagh to Knockalisheen Road works and during operation from habitat degradation on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works and during operation from habitat degradation</p> <p>Yes - from disturbance, spread of</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Option specific mitigation as in Section 6.3.4</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>flows/water levels.</p> <p>This option study area runs adjacent to River Shannon and River Fergus Estuaries SPA. Potential pollution of waterbodies during construction could impact on the wetland habitat used by QI bird species. There is potential for disturbance to QI birds given the study area is within the SPA. No operational impacts are predicted.</p>		<p>species and pollution during construction. In-combination effects during operation may result in habitat degradation. River Shannon and River Fergus Estuaries SPA is approximately 19km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution during construction. In-combination effects during operation may result in habitat degradation. River Shannon and River Fergus Estuaries SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance and pollution during construction.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from mortality, habitat loss, disturbance, spread of invasive non-native species and habitat degradation during construction. In-combination effects during operation may result in habitat degradation. River Shannon and River Fergus Estuaries SPA is ca. 9km from the scheme and therefore there may be in-combination effects from habitat degradation during construction.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from habitat loss, mortality, disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is within 200m of the proposed development site, therefore there may be in-combination effects from disturbance and pollution.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 6km south-west of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>invasive non-native species and habitat degradation impacts on Lower River Shannon SAC, disturbance and habitat degradation on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works and during operation from habitat degradation on Lower River Shannon SAC</p> <p>Yes – from mortality, habitat loss, disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC and habitat degradation on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works and during operation from habitat degradation on Lower River Shannon SAC</p> <p>Yes – from habitat loss, mortality, disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and disturbance and pollution impacts on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Bunratty Folk Park works</p>		
<p>SA8-508 (199, 40, 138, 49)</p> <p>Rationalise Cappamore Murroe, Pallasgreen and Doon to Limerick City WRZ</p> <p>Option pipeline crosses Lower River Shannon SAC. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact QI species. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 24km north-east of the northern extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability. Silvermines Mountains SPA is approximately 16km east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. Slievefelim to Silvermines</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>the spread of invasive non-native species given that the works are within the SAC boundary. Option includes increased SW abstraction. There is a risk this surface water abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats. Option includes abstraction adjacent to this European site. Therefore, there is potential for impacts on aquatic QI species utilising watercourses hydrologically linked to this European site through a reduction in flows/water levels.</p> <p>Option study area is within Slievefelim to Silvermines Mountains SPA. There is potential for some loss of/damage to supporting habitats (e.g. foraging habitats) to QI species during construction works given that the works are within the SPA boundary. There is potential for disturbance to QI birds given the study area is within the SPA. No operational impacts are predicted.</p>		<p>Mountains SPA is approximately 83km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasives and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability. Slievefelim to Silvermines Mountains SPA is approximately 6km east upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability. Slievefelim to Silvermines Mountains SPA is approximately 16km east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from mortality, habitat loss, disturbance, spread of invasive non-native species and habitat degradation. In-combination effects during operation may result in habitat degradation and changes to water table/availability. Slievefelim to Silvermines Mountains SPA is approximately 32km east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from habitat loss, mortality, disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability. Slievefelim to Silvermines Mountains SPA is approximately 28km east of the proposed development site and therefore no in-combination effects are predicted.</p> <p><u>O’Connell’s Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 18km east of the scheme and therefore no in-combination effects are predicted.</p>	<p>Shannon Crossing/Killaloe, Bypass/R494 Upgrade works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes – from mortality, habitat loss, disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes – from habitat loss, mortality, disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p>		
<p>SA8-51</p> <p>New GW abstraction from Fedamore groundwater body (karstic) and upgrade Fedamore WTP/new WTP</p> <p>Option study area is 5km from Tory Hill SAC. No potential impact pathway during construction given distance from site and the QI features it supports. There is a risk during operation this groundwater abstraction will reduce water flow in the underground aquifer and impact QI habitats. Abstraction could</p>	<ul style="list-style-type: none"> Habitat degradation Water table/availability 	<p><u>N20 Cork to Limerick</u></p> <p>Tory Hill SAC is approximately 2km upstream of the scheme and therefore no in-combination effects are predicted</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Tory Hill SAC is approximately 15km north and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u></p> <p>Tory Hill SAC is approximately 81km north-west of the scheme and therefore no in-combination effects are predicted.</p>	No	N/A	N

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<p>lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI habitats.</p>		<p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Tory Hill SAC is approximately 30km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Tory Hill SAC is approximately 11km south-east and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Tory Hill SAC is approximately 9.9km south and upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u> Tory Hill SAC is approximately 19km south-east of the proposed development site and therefore no in-combination effects are predicted.</p> <p><u>O'Connell's Quarry Development</u> Tory Hill SAC is approximately 20km south of the proposed development site and therefore no in-combination effects are predicted.</p>			
<p>SA8-52 Increase GW abstraction at Finn's Well and Upgrade Finn's Well WTP Option study area is ca. 20km from and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts are predicted. Although there is a groundwater abstraction this European site is not within the zone of contribution (ZOC).</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>N20 Cork to Limerick</u> Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u> Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Celtic Interconnector Project</u> Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat degradation.</p> <p><u>Bunratty Folk Park</u> Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from pollution.</p> <p><u>O'Connell's Quarry Development</u> Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely</p>	<p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from pollution impacts on Lower River Shannon SAC if construction phase concurrent with</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>SA8-59 Increase GW Abstraction at Martinstown BH and Upgrade Martinstown WTP Option study area is ca. 27km from and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p>significant effects and therefore no in-combination effects are predicted.</p> <p><u>N20 Cork to Limerick</u> Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u> Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Celtic Interconnector Project</u> Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat degradation.</p> <p><u>Bunratty Folk Park</u> Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from pollution.</p> <p><u>O'Connell's Quarry Development</u> Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>Bunratty Folk Park works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA8-516 (65, 114) Rationalise Kilfinnane Ardpatrik to Kilmallock WRZ Option study area is ca. 7.2km and hydrologically linked to Blackwater River (Cork/Waterford) SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>N20 Cork to Limerick</u> Blackwater River (Cork/Waterford) SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Coonagh to Knockalisheen Road</u> Blackwater River (Cork/Waterford) SAC is 49km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u> Blackwater River (Cork/Waterford) SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Blackwater River (Cork/Waterford) SAC is approximately 55km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Blackwater River (Cork/Waterford) SAC is approximately 33km north of the scheme</p>	<p>Yes - from habitat degradation on Blackwater River (Cork/Waterford) SAC if construction phase concurrent with N20 Cork to Limerick works</p> <p>Yes - from habitat degradation on Blackwater River (Cork/Waterford) SAC if construction phase concurrent with Celtic Interconnector Project works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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		<p>and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West.</p> <p>Blackwater River (Cork/Waterford) SAC is ca. 14km south of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u> Blackwater River (Cork/Waterford) SAC is approximately 43km south of the proposed development site and therefore no in-combination effects are predicted.</p> <p><u>O'Connell's Quarry Development</u> Blackwater River (Cork/Waterford) SAC is approximately 46km south of the proposed development site and therefore no in-combination effects are predicted.</p>			
<p>SA8-68 Increase GW Abstraction at Bruree BH and Upgrade Bruree PS WTP Option study area is 18km from and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>N20 Cork to Limerick</u> Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u> Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Celtic Interconnector Project</u> Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat degradation.</p> <p><u>Bunratty Folk Park</u> Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from pollution.</p> <p><u>O'Connell's Quarry Development</u> Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA8-98 Increase GW abstraction from Carrigkerry Spring (poorly productive aquifer) and upgrade Carrigkerry WTP Option study area is within Stack's to</p>	<ul style="list-style-type: none"> Disturbance 	<p><u>N20 Cork to Limerick</u> Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is approximately 26km west of the scheme and therefore no in-combination effect are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p>	<p>Yes - from disturbance on Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. There is potential for disturbance to QI birds given the study area is within the SPA. No operational impacts are predicted.</p>		<p>Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is approximately 35km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u></p> <p>Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is approximately 76km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is approximately 52km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is approximately 4.6km from the scheme and therefore there may be in-combination effects from disturbance.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. The scheme crosses Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA therefore there may be in-combination effects from disturbance.</p> <p><u>Bunratty Folk Park</u></p> <p>Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is approximately 26km south-west of the proposed development site and therefore no in-combination effects are predicted.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is approximately 37km south-west of the proposed development site and therefore no in-combination effects are predicted.</p>	<p>Regeneration Programme works</p> <p>Yes - from disturbance on Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p>	<p>mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	
<p>SA8-100</p> <p>Increase GW abstraction from Glin BH and upgrade existing Glin WTP</p> <p>Option study area is ca. 1.5km and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to this European site. No operational impacts are predicted. Although there is a groundwater abstraction this European site is not within the zone of contribution (ZOC). Therefore, given the distance from the site and the QI features it supports there is no potential for LSE.</p> <p>Option study area is ca. 1.5km from River Shannon and River Fergus Estuaries SPA. There is potential for disturbance to QI</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 8km north of the northern extent of the scheme but is not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 100km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at</p>	<p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA (disturbance only) if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA (disturbance only) if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from disturbance, spread of invasive non-native species and</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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<p>birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>		<p>Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasives and pollution. River Shannon and River Fergus Estuaries SPA is approximately 19km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is less than 1km from the scheme and therefore there may be in-combination effects from disturbance.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and habitat degradation. River Shannon and River Fergus Estuaries SPA is ca. 9km from the scheme, therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from disturbance, spread of invasive non-native species and pollution. River Shannon and River Fergus Estuaries SPA is within 200m of the proposed development site, therefore there may be in-combination effects from disturbance.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. River Shannon and River Fergus Estuaries SPA is approximately 6km south-west of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>habitat degradation impacts on Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA (disturbance only) if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC and disturbance impacts on River Shannon and River Fergus Estuaries SPA if construction phase concurrent with Bunratty Folk Park works</p>		
<p>SA8-177 Rationalise Croom to Limerick City Option study area is approximately 170m from Lower River Shannon SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are adjacent to this European site. Option includes increased SW abstraction. There is a risk this surface water abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats. Option includes abstraction adjacent to this European site. Therefore, there is potential for impacts on aquatic QI species utilising watercourses hydrologically linked to this European site through a reduction in flows/water levels.</p>	<ul style="list-style-type: none"> Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasives and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may</p>	<p>Yes - potential for in-combination disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC with Coonagh to Knockalisheen Road and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of</p>	<p>General Mitigation Measures are outlined in Section 6.3.3 Hydrological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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		<p>be in-combination effects from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and habitat degradation. In-combination effects during operation may result in habitat degradation and changes to water table/availability.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from disturbance, spread of invasive non-native species and pollution. In-combination effects during operation may result in habitat degradation and changes to water table/availability.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes - from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p> <p>Yes – from disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works and during operation from habitat degradation and water table/availability on Lower River Shannon SAC</p>		
<p>SA8-149</p> <p>Increase GW abstraction at Ballingarry and upgrade existing Ballingarry Spring WTP</p> <p>Option study area is ca. 11km from and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>N20 Cork to Limerick</u></p> <p>Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p>	<p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>

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		<p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat degradation.</p> <p><u>Bunratty Folk Park</u> Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from pollution.</p> <p><u>O'Connell's Quarry Development</u> Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>Yes – from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>		
<p>SA8-145 Increase GW Abstraction at Kilcolman Spring and Upgrade Existing Kilcolman WTP Option study area is ca. 15km from and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats.</p>	<ul style="list-style-type: none"> Habitat degradation 	<p><u>N20 Cork to Limerick</u> Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u> Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>Celtic Interconnector Project</u> Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat degradation.</p> <p><u>Bunratty Folk Park</u> Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from pollution.</p> <p><u>O'Connell's Quarry Development</u> Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>SA8-523 (163 & 166) Increase GW at Kilcommon and rationalise Upperchurch to Kilcommon Option study area is approximately 1.4km from and hydrologically linked to Lower River Shannon SAC. Potential pollution of watercourses during construction could</p>	<ul style="list-style-type: none"> Habitat loss Habitat degradation Disturbance 	<p><u>N20 Cork to Limerick</u> Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted. Lower River Suir SAC is approximately 33km east of the scheme and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 24km north-east of the northern extent of the scheme and therefore no in-combination effects are predicted.</p>	<p>Yes – from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes – from habitat degradation</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>With the implementation of mitigation as noted above there will be no adverse</p>	<p>N</p>

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<p>affect hydrologically connected habitats. No operational impacts are predicted.</p> <p>Option study area is 940m from and hydrologically linked to Lower River Suir SAC. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to aquatic species including otter from construction works. There is also potential for the spread of invasive non-native species given that the works are hydrologically linked to this European site. No operational impacts are predicted.</p> <p>Option study area is within Slievefelim to Silvermines Mountains SPA. There is potential for some loss of/damage to hen harrier habitat during construction works given that the works are within the SPA boundary. There is potential for disturbance to QI birds given the study area is within the SPA. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Spread of invasive non-native species 	<p><u>Coonagh to Knockalisheen Road</u></p> <p>Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from pollution. Lower River Suir SAC is approximately 36km east of the scheme and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 16km east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Celtic Interconnector Project</u></p> <p>Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted. Lower River Suir SAC is approximately 40km north of the scheme and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 83km north of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u></p> <p>The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution. Lower River Suir SAC is approximately 26km south-east of the scheme and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 6km east upstream of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u></p> <p>Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from pollution. Lower River Suir SAC is approximately 34km east west of the scheme and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 16km east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u></p> <p>This proposed scheme would cover approximately 45 km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat degradation. Lower River Suir SAC is approximately 45km south-east of the scheme and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 32km east of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Bunratty Folk Park</u></p> <p>Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from pollution. Lower River Suir SAC is approximately 47km west of the proposed development site and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 28km east of the proposed development site and therefore no in-combination effects are predicted.</p> <p><u>O'Connell's Quarry Development</u></p> <p>Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted. Lower River Suir SAC is approximately 37km west of the proposed development site and therefore no in-combination effects are predicted. Slievefelim to Silvermines Mountains SPA is approximately 18km east of the scheme and therefore no in-combination effects are predicted.</p>	<p>impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes – from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes - from habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>	<p>effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>SA8-512 (27 & 118) Rationalise Killaloe and Newport to New Shannon Source</p> <p>Option study area is 0km from Lower River Shannon SAC. The option pipeline crosses this European site. There is potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact QI species. Potential pollution of watercourses during construction could affect hydrologically connected habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are within the SAC boundary. No operational impacts are predicted.</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>N20 Cork to Limerick</u> Lower River Shannon SAC is approximately 8km north of the scheme but not hydrologically connected and therefore no in-combination effects are predicted.</p> <p><u>Coonagh to Knockalisheen Road</u> Lower River Shannon SAC is approximately 1km south of the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>Celtic Interconnector Project</u> Lower River Shannon SAC is approximately 102km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Shannon Crossing/Killaloe, Bypass/R494 Upgrade</u> The proposed Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme will provide a western bypass of Killaloe, a new bridge crossing of the River Shannon and an upgrade of the existing R494 regional road from Ballina to the N7 at Birdhill. Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasives and pollution.</p> <p><u>N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme</u> Lower River Shannon SAC is less than 1km from the scheme and therefore there may be in-combination effects from disturbance, spread of invasive non-native species and pollution.</p> <p><u>N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme</u> This proposed scheme would cover approximately 45km of the N21 from Kilkinlea Lower, Abbeyfeale to Garraunboy, Adare and will incorporate bypasses for the towns of Abbeyfeale and Newcastle West. Lower River Shannon SAC crosses the scheme and therefore there may be in-combination effects from habitat loss, mortality risk, disturbance, spread of invasive non-native species and habitat degradation.</p> <p><u>Bunratty Folk Park</u> Lower River Shannon SAC is directly adjacent to the proposed development site, therefore there may be in-combination from habitat loss, mortality, disturbance, spread of invasive non-native species and pollution.</p> <p><u>O'Connell's Quarry Development</u> Lower River Shannon SAC is approximately 2.5km south of the proposed development site, however the screening for AA concluded that there was no potential for likely significant effects and therefore no in-combination effects are predicted.</p>	<p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Coonagh to Knockalisheen Road works</p> <p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with Shannon Crossing/Killaloe, Bypass/R494 Upgrade works</p> <p>Yes – from disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21/N69 Limerick to Adare to Foynes Road & Limerick Regeneration Programme works</p> <p>Yes – from habitat loss, mortality risk, disturbance, spread of invasive non-native species and habitat degradation impacts on Lower River Shannon SAC if construction phase concurrent with N21 Newcastle West Road Scheme/N21 Abbeyfeale Road Scheme works</p> <p>Yes – from habitat loss, mortality, disturbance, spread of invasive non-native species and pollution impacts on Lower River Shannon SAC if construction phase concurrent with Bunratty Folk Park works</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Option specific mitigation as in Section 6.3.4</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	<p>N</p>
<p>All Preferred Options</p> <p>The European sites that may be impacted by options within Study Area 8 are Lower River Shannon SAC, Ratty River Cave SAC, Lower River Suir SAC, River Shannon and River Fergus Estuaries SPA, Blackwater River (Cork/Waterford) SAC, Tory Hill SAC, Slieve Aughty Mountains SPA, Lough Derg (Shannon) SPA, Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA and Slievefelim to Silvermines Mountains</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Habitat degradation Disturbance Spread of invasive non-native species Water table/availability 	<p><u>All Preferred Options</u></p> <p>There is potential for in-combination effects from the projects within SA8 to Lower River Shannon SAC given that options SA8-09, SA8-179, SA8-504, SA8-510, SA8-508, SA8-100, SA8-177, SA8-523, SA8-512, SA8-52, SA8-59, SA8-68, SA8-149, SA8-145, have the potential for impacts. Potential for in-combination from habitat loss (options 09, 510, 512, 504 and 508 only), mortality (options 512, 504, 510 and 508 only), disturbance (options 09, 01, 504, 22, 24, 179, 510, 508, 100, 177 and 512 only), spread of invasive non-native species (options 09, 01, 504, 22, 24, 179, 510, 508, 100, 177 and 512 only), and pollution (all options listed above) during construction and from hydrological changes (options 01, 504, 508, 510 and 177 only) and water table impacts (options 01, 504, 508, 510 and 177 only) during operation.</p> <p>There is potential for in-combination effects from the projects within SA8 to River</p>	<p>Yes – from habitat loss, mortality, disturbance, spread of invasive non-native species, habitat degradation impacts, hydrological changes and water table impacts on Lower River Shannon SAC if construction of options is concurrent and/or during operation.</p> <p>Yes – from disturbance and habitat degradation impacts on River Shannon and River Fergus Estuaries SPA if construction of</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Option specific mitigation as in Section 6.3.4</p> <p>Hydrogeological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse</p>	<p>N</p>

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
SPA.		<p>Shannon and River Fergus Estuaries SPA given that options SA8-09, SA8-510, SA8-01, SA8-504 and SA8-100 have the potential for impacts. Potential for in-combination effects from disturbance (all options listed above) and pollution impacts (options 09, 01, 504 and 510 only) during construction.</p> <p>There is potential for in-combination effects from the projects within SA8 to Slieve Aughty Mountains SPA given that options SA8-20a, SA8-22, SA8-24, SA8-21 and SA8-120 have the potential for impacts. Potential for in-combination effects from disturbance impacts during construction.</p> <p>Option SA8-516 is the only option within SA8 with potential for impacts on Blackwater River (Cork/Waterford) SAC. Therefore, there is no potential for in-combination effects to this European site.</p> <p>There is potential for in-combination effects from the projects within SA8 to Slievefelim to Silvermines Mountains SPA given that options SA8-523 and SA8-508 have the potential for impacts. Potential for in-combination effects from habitat loss and disturbance impacts during construction for all options.</p> <p>Option SA8-51 is the only option within SA8 with potential for impacts on Tory Hill SAC. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA8-09 is the only option within SA8 with potential for impacts on Ratty River Cave SAC. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA8-98 is the only option within SA8 with potential for impacts on Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA8-523 is the only option within SA8 with potential for impacts on Lower River Suir SAC. Therefore, there is no potential for in-combination effects to this European site.</p> <p>Option SA8-120 is the only option within SA8 with potential for impacts on Lough Derg (Shannon) SPA. Therefore, there is no potential for in-combination effects to this European site.</p>	<p>options is concurrent.</p> <p>Yes – from disturbance impacts on Slieve Aughty Mountains SPA if construction of options is concurrent.</p> <p>Yes – from habitat loss and disturbance impacts on Slievefelim to Silvermines Mountains SPA if construction of options is concurrent.</p>	<p>effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	

Table E9: SA9 - Potential in-combination effects with other projects and options within SA9

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
STUDY AREA 9					
<p>SA9-84 New Shannon Source surface water abstraction of 210MI/d and associated infrastructure.</p> <p>Option study area is within Lower River Shannon SAC. Therefore, there is the potential for some loss of/damage to QI/Annex 1 habitats during construction works given that the works are within the SAC boundary. Pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact migratory fish, restrict access to spawning habitat and smother freshwater pearl mussel. Potential pollution of nearby watercourses during construction could affect groundwater dependent/ groundwater fed habitats. There is potential for disturbance to otter from construction works. There is also potential for the spread of invasive non-native species given that the works are within the SAC boundary. Option involves direct abstraction from this European site which could lead to habitat degradation though hydrological changes during operation that could impact QI species and habitats. There is potential for impacts on aquatic QI species utilising watercourses hydrologically linked to this European site through a reduction in flows/water levels.</p> <p>Option study area is 500m from and hydrologically linked to Lisduff Fen SAC. There is potential for some loss of/damage to QI/Annex 1 supporting habitats during construction works given that the works are within 500m of the SAC boundary. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species. There is potential for the spread of invasive non-native species given the hydrological link to this site. No operational impacts are predicted.</p> <p>Option study area is 1.4km from and hydrologically linked to Sharavogue Bog SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species. There is potential for</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Water table/availability Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>MetroLink, Dublin, Luas Green Line Capacity Enhancement, National Train Control Centre</u></p> <p>MetroLink, BusConnects and DART expansion are three major transport infrastructure projects included in Project Ireland 2040. The Green Line upgrade includes a planned extension of the line further southwards to Bray. The MetroLink project will now comprise the delivery of a metro system between Swords and Charlemont with a short tunnel continuation to Ranelagh facilitating a future tie-in to the Green Line. Funding for the implementation phase of the National Train Control Centre is being provided by the Government of Ireland (through the National Transport Authority) as part of Project Ireland 2040. It is anticipated that the design, development, fabrication, installation, testing and commissioning and safety approvals for the main system at Heuston, Dublin will be completed in 2023, with the development of a back-up centre following. Lower River Shannon SAC is approximately 143km south-west of the southern extent of the schemes and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 110km south-west of the southern extent of the schemes and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 113km south-west of the southern extent of the schemes and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 59km south-west of the southern extent of the schemes and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 129km south-west of the southern extent of the schemes and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 83km west of the southern extent of the schemes and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 15km west of the schemes and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 32km north-west west of the northern extent of the schemes and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 108km west of the schemes and therefore no in-combination effects are predicted.</p> <p><u>North Runway Project at Dublin Airport, New Visual Control Centre at Dublin Airport</u></p> <p>North Runway is being delivered within the airport's existing land bank. Careful planning has allowed this land and the associated flight paths to be safeguarded for over 40 years. Construction began in December 2016 with the runway scheduled to be delivered by the end of 2021. Lower River Shannon SAC is approximately 148km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 115km south-west of the of the scheme and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 118km south-west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 57km south-west of the scheme and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 130km south-west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 84km south-west of the northern extent of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 16km south-west of the northern extent of the scheme and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 30km north-west west of the northern extent of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 107km west of the scheme and therefore no in-combination effects are predicted.</p>	No	N/A	N

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>the spread of invasive non-native species given the hydrological link to this site. No operational impacts are predicted.</p> <p>Option study area is 2.6km from and hydrologically linked to River Barrow and River Nore SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species. There is potential for the spread of invasive non-native species given the hydrological link to this site. No operational impacts are predicted.</p> <p>Option study area is 3.6km from and hydrologically linked to Lough Derg North-East Shore SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact hydrologically connected habitats and associated species. There is potential for the spread of invasive non-native species given the hydrological link to this site. No operational impacts are predicted.</p> <p>Option study area is 5.1km from and hydrologically linked to Charleville Wood SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species. There is potential for the spread of invasive non-native species given the hydrological link to this site. No operational impacts are predicted.</p> <p>Option study area is ca. 8km from and hydrologically linked to Rye Water Valley/Carlton SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact hydrologically connected habitats and associated species. There is potential for the spread of invasive non-native species given the hydrological link to this site. No operational impacts are predicted.</p> <p>Option study area is 13km from and hydrologically linked to River Boyne and River Blackwater SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated. There is potential for the spread of invasive non-native</p>		<p><u>M11 Capacity Enhancement (Phase 1& Phase 2)</u></p> <p>The M11/N11 is of strategic importance nationally and this is reflected in its inclusion within the TransEuropean Transport Network (TEN-T) comprehensive road network. Therefore, it is imperative that it begins to operate more efficiently. Lower River Shannon SAC is approximately 143km south-west of the southern extent of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 117km west of the of the scheme and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 119km west of the of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 55km south-west of the scheme and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 135km west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 91km west of the northern extent of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carlton SAC is approximately 25km north-west of the northern extent of the scheme and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 50km north-west west of the northern extent of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 122km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>M50 Enhancing Motorway Operation Services</u></p> <p>This is a framework for the delivery of various works and services by Transport Infrastructure Ireland to secure and continuously enhance the operation of a safe, efficient and sustainable motorway network. Lower River Shannon SAC is approximately 137km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 104km south-west of the scheme and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 107km south-west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 45km south-west of the scheme and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 123km south-west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 75km west of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carlton SAC is approximately 7km west and upstream of the scheme and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 31km north-west west of the northern extent of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 101km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Greater Dublin Drainage, Ballycoolin Trunk Main (Ballycoolin/Kingstown)</u></p> <p>Greater Dublin Drainage (GDD) is a project to develop a new regional wastewater treatment facility and associated infrastructure to serve north Dublin and parts of the surrounding counties of Kildare and Meath. The existing trunk main network capacity to the northern area of Fingal is considered deficient. The current peak demand for the supply area is in excess of the capacity of the existing trunk main. As a result, levels of service to customers in the area occasionally fall below desired levels. It has been identified that a new trunk main is required to augment the supply to this area and to ensure security of supply. This is also required to ensure that water supply does not hamper future development in the area. The scheme includes construction of a trunkmain from the Ballycoolin Reservoir site to Forrest Little, via Kingstown. Lower River Shannon SAC is approximately 156km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 111km south-west of the scheme and therefore no in-combination effects are predicted.</p>			

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<p>species given the hydrological link to this site. No operational impacts are predicted.</p> <p>Option study area is 14.8km from and hydrologically linked to River Shannon Callows SAC. Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species. There is potential for the spread of invasive non-native species given the hydrological link to this site. No operational impacts are predicted.</p>		<p>Sharavogue Bog SAC is approximately 114km south-west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 58km south-west of the scheme but is not hydrologically connected and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 128km south-west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 80km south-west of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 8.7km to the west of the Orbital Sewer within the scheme. An Appropriate Assessment of the scheme concluded that there is no potential for effects on this site as no connecting pathways, e.g. streams or rivers) potentially lie within the zone of influence¹. River Boyne and River Blackwater SAC is approximately 32km north-west west of the northern extent of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 105km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Ringsend Wastewater Treatment Plant Upgrade Project & Ringsend - Rathmines and Pembroke – Wastewater Network</u></p> <p>Located in the city of Ringsend in Dublin, Ireland, the Ringsend wastewater treatment plant has been treating wastewater from the Greater Dublin Area (GDA), including parts of Meath, since its opening in 2003. The upgrade will increase the plant's treatment capacity and construction will be completed in two phases by mid-2025. The Environmental Impact Assessment Report for the scheme concluded that there is no potential for SPAs and SACs outside Dublin Bay to be affected by the Proposed scheme as the effluent from the treatment works cannot be detected outside this area². Lower River Shannon SAC is approximately 145km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 115km south-west of the scheme and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 118km south-west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 53km south-west of the scheme but is not hydrologically connected and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 132km south-west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 87km west of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 17km west but not hydrologically connected to the scheme and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 40km north-west of the northern extent of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 110km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Blanchardstown Sewerage Scheme</u></p> <p>Irish Water is progressing the delivery of the Blanchardstown Regional Drainage Scheme (BRDS). The project will involve the upgrade of the existing sewer network currently serving Blanchardstown, Mulhuddart and Castleknock as well as a number of towns in Meath including Dunboyne, Clonee, Ashbourne and Ratoath. The scheme will be located alongside the Tolka River Valley in Blanchardstown between Parslickstown and Mill Road. The route will be adjacent to the existing 9C wastewater network. The pumping station will be located at Waterville Park close to Mill Road. Lower River Shannon SAC is approximately 140km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 106km south-west of the scheme and therefore no in-combination effects are</p>			

¹ Greater Dublin Drainage Project Natura Impact Statement. Commissioned by Irish Water. Jacobs and Tobin Consulting Engineers.

² Ringsend Wastewater Treatment Plant Upgrade Project Environmental Impact Assessment Report. Volume 3. June 2018. Commissioned by Irish Water. TJ O'Connor & Associates Consulting Engineers, Barry & Partners Consulting Engineers, and Royal HaskoningDHV.

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		<p>predicted. Sharavogue Bog SAC is approximately 109km south-west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 54km south-west of the scheme but is not hydrologically connected and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 123km south-west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 77km south-west of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 9km south-west but not hydrologically connected to the scheme and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 30km north-west west of the northern extent of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 100km west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Vartry Water Supply Scheme</u></p> <p>Construction of a new Water Treatment Plant on the site of the existing plant at Vartry and a 4km pipeline to secure the transfer of treated water from Vartry to Callowhill pumping station. Lower River Shannon SAC is approximately 137km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 110km west of the scheme and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 113km west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 55km west of the scheme and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 130km west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 90km north-west of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 40km north-west of the scheme and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 66km north-west west of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 120km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>New Children's Hospital</u></p> <p>Completion date 2022.</p> <p>An Appropriate Assessment commissioned by the National Paediatric Hospital Development Board shows that none of the European sites which may be impacted by this Option study area will be affected by the scheme³. Lower River Shannon SAC is approximately 142km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 110km south-west of the scheme and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 113km south-west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 50km south-west of the scheme and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 128km south-west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 82km south-west of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 13km north-west but upstream of the scheme and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 38km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 106km west of the scheme and therefore no in-combination effects are predicted.</p>			

³ Appropriate Assessment Screening and Natura Impact Statements for Draft Site Capacity Studies for the St James's, Tallaght and Connolly Hospital Campuses - Determination by National Paediatric Hospital Development Board

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p><u>E3 Building Trinity College Dublin</u></p> <p>Plans for a new E3 Institute in Engineering, Energy and Environment including a state of the art 6,086 square metre facility based on the main Trinity campus. Lower River Shannon SAC is approximately 145km south-west of the schemes and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 113km south-west of the schemes and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 116km south-west of the schemes and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 52km south-west of the schemes and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 130km south-west of the schemes and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 85km south-west of the schemes and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 16km north-west of the schemes and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 40km north-west west of the schemes and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 110km west of the schemes and therefore no in-combination effects are predicted.</p> <p><u>O'Devaney Gardens Regeneration Programme</u></p> <p>It will be a high-quality residential quarter comprising quality new homes supported by a complimentary range of mixed commercial, community and recreational facilities. The first phase will deliver 56 social homes with a budget of more than €20million. The overall re-development will deliver approximately 600 homes, with a mix of tenures, social, affordable and private homes. An Appropriate Assessment commissioned by Dublin City Council concluded that no European sites are likely to be impacted by the scheme⁴. Lower River Shannon SAC is approximately 143km south-west of the scheme and therefore no in-combination effects are predicted. Lisduff Fen SAC is approximately 111km south-west of the scheme and therefore no in-combination effects are predicted. Sharavogue Bog SAC is approximately 114km south-west of the scheme and therefore no in-combination effects are predicted. River Barrow and River Nore SAC is approximately 50km south-west of the scheme and therefore no in-combination effects are predicted. Lough Derg North-East Shore SAC is approximately 128km south-west of the scheme and therefore no in-combination effects are predicted. Charleville Wood SAC is approximately 81km south-west of the scheme and therefore no in-combination effects are predicted. Rye Water Valley/Carton SAC is approximately 13km north-west but upstream of the scheme and therefore no in-combination effects are predicted. River Boyne and River Blackwater SAC is approximately 38km north-west of the scheme and therefore no in-combination effects are predicted. River Shannon Callows SAC is approximately 106km west of the scheme and therefore no in-combination effects are predicted.</p>			
<p>SA9-87</p> <p>Common to all Requirements. This is a group of interventions required to improve resilience and quality, regardless of the Preferred Approach selected to address the SDB deficit.</p> <p>Option study area is 65m from and hydrologically linked to Baldoye Bay SAC. Potential pollution of nearby watercourses during construction could affect QI habitats/species. There is also potential for</p>	<ul style="list-style-type: none"> Habitat loss Mortality risk Water table/availability Habitat degradation Disturbance Spread of invasive non-native species 	<p><u>MetroLink, Dublin, Luas Green Line Capacity Enhancement, National Train Control Centre</u></p> <p>MetroLink, BusConnects and DART expansion are three major transport infrastructure projects included in Project Ireland 2040. The Green Line upgrade includes a planned extension of the line further southwards to Bray. The MetroLink project will now comprise the delivery of a metro system between Swords and Charlemont with a short tunnel continuation to Ranelagh facilitating a future tie-in to the Green Line. Funding for the implementation phase of the National Train Control Centre is being provided by the Government of Ireland (through the National Transport Authority) as part of Project Ireland 2040. It is anticipated that the design, development, fabrication, installation, testing and commissioning and safety approvals for the main system at Heuston,</p>	<p>Yes - from habitat degradation impacts on Baldoye Bay SAC, from habitat degradation and disturbance on Malahide Estuary SAC and disturbance on Malahide Estuary SPA and from disturbance only on North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Baldoye Bay SPA and Rogertown Estuary SPA if construction phase concurrent</p>	<p>General Mitigation Measures are outlined in Section 6.3.3</p> <p>Hydrological modelling as in Section 6.3.5</p> <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either</p>	<p>N</p>

⁴ APPROPRIATE ASSESSMENT SCREENING In Accordance With The Requirements Of ARTICLE 6(3) Of The EU HABITATS DIRECTIVE For the Non Statutory Draft Masterplan for the Regeneration of O Devaney Gardens Dublin 1. AMENDED VERSION 17/11/2010

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>the spread of invasive non-native species during the construction works. No operational effects are predicted.</p> <p>Option study area is 380m from and hydrologically linked to Malahide Estuary SAC. Potential pollution of nearby watercourses during construction could affect QI habitats/species. There is also potential for the spread of invasive non-native species during the construction works. No operational effects are predicted.</p> <p>Option study area is 5km from and hydrologically linked to The Murrough Wetlands SAC. Potential pollution of nearby watercourses during construction could affect QI habitats/species. No operational effects are predicted.</p> <p>Option study area is 5m from North Bull Island SPA. There is potential for disturbance to QI birds. No operational impacts are predicted.</p> <p>Option study area is 30m from South Dublin Bay and River Tolka Estuary SPA. There is potential for disturbance to QI birds. No operational impacts are predicted.</p> <p>Option study area is 340m from Baldoyle Bay SPA. There is potential for disturbance to QI birds. No operational impacts are predicted.</p> <p>Option study area is 380m from Malahide Estuary SPA. There is potential for disturbance to QI birds. No operational impacts are predicted.</p> <p>Option study area is 700m from Rogerstown Estuary SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p> <p>Option study area is 700m from The Murrough SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>		<p>Dublin will be completed in 2023, with the development of a back-up centre following. Baldoyle Bay SAC is approximately 7.5km east of the schemes and there is potential for in-combination effects from pollution during construction. Malahide Estuary SAC is approximately 430m east of the schemes and is hydrologically linked therefore there may be in-combination effects from spread of invasive non-native species and habitat degradation. The Murrough Wetlands SAC is approximately 27km south of the schemes and no in-combination effects are predicted. North Bull Island SPA is approximately 5.5km west of the schemes and there is potential in-combination effects from disturbance. South Dublin Bay and River Tolka Estuary SPA is approximately 3.5km west of the schemes and there is potential in-combination effects from disturbance. Baldoyle Bay SPA is approximately 8km west of the schemes and there is potential in-combination effects from disturbance. Malahide Estuary SPA is approximately 430m east of the schemes and there may be in-combination effects from disturbance. Rogerstown Estuary SPA is approximately 2.5km south west of the schemes and there is potential for in-combination from disturbance. The Murrough Wetlands SPA is approximately 27km south of the schemes and no in-combination effects are predicted.</p> <p><u>North Runway Project at Dublin Airport, New Visual Control Centre at Dublin Airport</u></p> <p>North Runway is being delivered within the airport's existing land bank. Careful planning has allowed this land and the associated flight paths to be safeguarded for over 40 years. Construction began in December 2016 with the runway scheduled to be delivered by the end of 2021. Baldoyle Bay SAC is approximately 6.5km north west of the schemes and there is potential for in-combination effects from pollution during construction. Malahide Estuary SAC is approximately 4km south west of the schemes and is hydrologically linked therefore there may be in-combination effects from habitat degradation. The Murrough Wetlands SAC is approximately 37km south east of the schemes and no in-combination effects are predicted. North Bull Island SPA is approximately 8.5km north west of the schemes and there is potential in-combination effects from disturbance. South Dublin Bay and River Tolka Estuary SPA is approximately 8.5km north of the schemes and there is potential in-combination effects from disturbance. Baldoyle Bay SPA is approximately 6.5km north west of the schemes and there is potential in-combination effects from disturbance. Malahide Estuary SPA is approximately 4km south west of the scheme and there may be in-combination effects from disturbance. Rogerstown Estuary SPA is approximately 7.9km south west of the scheme and there is potential for in-combination from disturbance. The Murrough Wetlands SPA is approximately 37km south east of the schemes and no in-combination effects are predicted.</p> <p><u>M11 Capacity Enhancement (Phase 1 & Phase 2)</u></p> <p>The M11/N11 is of strategic importance nationally and this is reflected in its inclusion within the TransEuropean Transport Network (TEN-T) comprehensive road network. Therefore, it is imperative that it begins to operate more efficiently. Baldoyle Bay SAC is approximately 17km north of the scheme and no in-combination effects are predicted. Malahide Estuary SAC is approximately 24m north of the scheme and no in-combination effects are predicted. The Murrough Wetlands SAC is approximately 3km east of the scheme and there is potential in-combination effects from pollution. North Bull Island SPA is approximately 12km north of the scheme and there is potential in-combination effects from disturbance. South Dublin Bay and River Tolka Estuary SPA is approximately 5.8km north of the scheme and there is potential in-combination effects from disturbance. Baldoyle Bay SPA is approximately 17km north of the scheme and there is no potential for in-combination effects. Malahide Estuary SPA is approximately 24m north of the scheme and no in-combination effects are predicted. Rogerstown Estuary SPA is approximately 28km north of the scheme and there is no potential for in-combination effects. The Murrough Wetlands SPA is approximately 3km east of the scheme and there is potential for in-combination from</p>	<p>with MetroLink Dublin, Luas Green Line Capacity Enhancement, National Train Control Centre works.</p> <p>Yes - from habitat degradation impacts on Baldoyle Bay SAC, Malahide Estuary SAC and disturbance on Baldoyle Bay SPA, North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Malahide Estuary SPA and Rogertown Estuary SPA if construction phase concurrent with North Runway Project.</p> <p>Yes - from habitat degradation impacts on, The Murragh Wetlands SAC and disturbance on North Bull Island SPA South Dublin Bay and River Tolka Estuary SPA and The Murragh Wetlands SPA if construction phase concurrent with M11 Capacity Enhancement (Phase 1 & Phase 2).</p>	<p>alone or in-combination with other plans or projects.</p>	

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		<p>disturbance.</p> <p><u>M50 Enhancing Motorway Operation Services</u></p> <p>This is a framework for the delivery of various works and services by Transport Infrastructure Ireland to secure and continuously enhance the operation of a safe, efficient and sustainable motorway network. Baldoyle Bay SAC is approximately 5.5km east of the scheme and hydrologically linked therefore is potential for in-combination effects from pollution and spread of invasives during construction. Malahide Estuary SAC is approximately 5.5km east of the scheme and no in-combination effects are predicted. The Murrough Wetlands SAC is approximately 15km south east of the scheme and no in-combination effects are predicted. North Bull Island SPA is approximately 4.5km east of the scheme and there is potential in-combination effects from disturbance. South Dublin Bay and River Tolka Estuary SPA is approximately 200m east of the scheme and there is potential in-combination effects from disturbance. Baldoyle Bay SPA is approximately 5.5km east of the scheme and there is potential in-combination effects from disturbance. Malahide Estuary SPA is approximately 5.5m east of the scheme and there may be in-combination effects from disturbance. Rogerstown Estuary SPA is approximately 10km north east of the scheme and there is potential for in-combination from disturbance. The Murrough Wetlands SPA is approximately 15km south east of the scheme and no in-combination effects are predicted.</p> <p><u>Greater Dublin Drainage, Ballycoolin Trunk Main (Ballycoolen/Kingstown)</u></p> <p>Greater Dublin Drainage (GDD) is a project to develop a new regional wastewater treatment facility and associated infrastructure to serve north Dublin and parts of the surrounding counties of Kildare and Meath. The existing trunk main network capacity to the northern area of Fingal is considered deficient. The current peak demand for the supply area is in excess of the capacity of the existing trunk main. As a result, levels of service to customers in the area occasionally fall below desired levels. It has been identified that a new trunk main is required to augment the supply to this area and to ensure security of supply. This is also required to ensure that water supply does not hamper future development in the area. The scheme includes construction of a trunkmain from the Ballycoolin Reservoir site to Forrest Little, via Kingstown. Baldoyle Bay SAC is approximately 0m of the schemes and there is potential for in-combination effects from pollution and spread of invasives during construction. Malahide Estuary SAC is approximately 3km north of the schemes and is hydrologically linked therefore there may be in-combination effects from spread of invasive non-native species and habitat degradation. The Murrough Wetlands SAC is approximately 31km south of the scheme and no in-combination effects are predicted. North Bull Island SPA is approximately 1.5km south of the schemes and there is potential in-combination effects from disturbance. South Dublin Bay and River Tolka Estuary SPA is approximately 5km south of the schemes and there is potential in-combination effects from disturbance. Baldoyle Bay SPA is approximately 0m of the schemes and there is potential in-combination effects from disturbance. Malahide Estuary SPA is approximately 3m north of the scheme and there may be in-combination effects from disturbance. Rogerstown Estuary SPA is approximately 10km north of the schemes and there is potential for in-combination from disturbance. The Murrough Wetlands SPA is approximately 31km south of the schemes and no in-combination effects are predicted.</p> <p><u>Ringsend Wastewater Treatment Plant Upgrade Project & Ringsend - Rathmines and Pembroke – Wastewater Network</u></p> <p>Located in the city of Ringsend in Dublin, Ireland, the Ringsend wastewater treatment plant has been treating wastewater from the Greater Dublin Area (GDA), including parts of Meath, since its opening in 2003. The upgrade will increase the plant's treatment capacity and construction will be completed in two phases by mid-2025. The</p>	<p>Yes - from habitat degradation and spread of invasive species impacts on Baldoyle Bay SAC, from habitat degradation and disturbance on North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Baldoyle Bay SPA, Malahide Estuary SPA and Rogertown Estuary SPA if construction phase concurrent with M50 Enhancing Motorway Operations Services.</p> <p>Yes - from habitat degradation and spread of invasive species impacts on Baldoyle Bay SAC, and Malahide Estuary SAC and disturbance on North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Baldoyle Bay SPA, Malahide Estuary SPA, Rogertown Estuary SPA if construction phase concurrent with Greater Dublin Drainage and Ballycoolin Trunk Main (Ballycoolen/Kingstown).</p> <p>Yes - from disturbance on North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA if construction phase concurrent with Ringsend Wastewater Treatment Plant</p>		

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		<p>Environmental Impact Assessment Report for the scheme concluded that there is no potential for SPAs and SACs outside Dublin Bay to be affected by the Proposed scheme as the effluent from the treatment works cannot be detected outside this area⁵. Baldoye Bay SAC is approximately 9km north east of the scheme and no in-combination effects are predicted. Malahide Estuary SAC is approximately 12km north of the scheme and no in-combination effects are predicted. The Murrough Wetlands SAC is approximately 28km south east of the scheme and no in-combination effects are predicted. North Bull Island SPA is approximately 2.5km north east of the scheme and there is potential in-combination effects from disturbance. South Dublin Bay and River Tolka Estuary SPA is approximately 500m south of the scheme and there is potential in-combination effects from disturbance. Baldoye Bay SPA is approximately 9km north east of the scheme and no in-combination effects are predicted. Malahide Estuary SPA is approximately 12km north of the scheme and no in-combination effects are predicted. Rogerstown Estuary SPA is approximately 18km north of the scheme and no in-combination effects are predicted. The Murrough Wetlands SPA is approximately 28km south east of the scheme and no in-combination effects are predicted.</p> <p><u>Blanchardstown Sewerage Scheme</u></p> <p>Irish Water is progressing the delivery of the Blanchardstown Regional Drainage Scheme (BRDS). The project will involve the upgrade of the existing sewer network currently serving Blanchardstown, Mulhuddart and Castleknock as well as a number of towns in Meath including Dunboyne, Clonee, Ashbourne and Ratoath. The scheme will be located alongside the Tolka River Valley in Blanchardstown between Parslickstown and Mill Road. The route will be adjacent to the existing 9C wastewater network. The pumping station will be located at Waterville Park close to Mill Road. Baldoye Bay SAC is approximately 10km north east of the scheme and no in-combination effects are predicted. Malahide Estuary SAC is approximately 11m north east of the scheme and no in-combination effects are predicted. The Murrough Wetlands SAC is approximately 35km south east of the scheme and no in-combination effects are predicted. North Bull Island SPA is approximately 9km east of the scheme and there is potential in-combination effects from disturbance. South Dublin Bay and River Tolka Estuary SPA is approximately 7.5km south east of the scheme and there is potential in-combination effects from disturbance. Baldoye Bay SPA is approximately 10km north east of the scheme and there is potential in-combination effects from disturbance. Malahide Estuary SPA is approximately 11m north east of the scheme and there may be in-combination effects from disturbance. Rogerstown Estuary SPA is approximately 16km north east of the scheme and no in-combination effects are predicted. The Murrough Wetlands SPA is approximately 35km south east of the scheme and no in-combination effects are predicted.</p> <p><u>New Children's Hospital</u></p> <p>Completion date 2022.</p> <p>An Appropriate Assessment commissioned by the National Paediatric Hospital Development Board shows that none of the European sites which may be impacted by this Option study area will be affected by the scheme⁶. Baldoye Bay SAC is approximately 15km west of the scheme and no in-combination effects are predicted. Malahide Estuary SAC is approximately 14m north east of the scheme no in-combination effects are predicted. The Murrough Wetlands SAC is approximately 37km south east of the scheme and no in-combination effects are predicted. North Bull Island SPA is approximately 13km east of the scheme and no in-combination effects are predicted. South Dublin Bay and River Tolka Estuary SPA is approximately 9.5km east of the schemes and no in-combination effects are predicted.</p>	<p>Upgrade Project & Ringsend - Rathmines and Pembroke – Wastewater Network.</p> <p>Yes - from disturbance on North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Baldoye Bay SPA and Malahide Estuary SPA if construction phase concurrent with Blanchardstown Sewerage Scheme.</p> <p>No</p>		

⁵ Ringsend Wastewater Treatment Plant Upgrade Project Environmental Impact Assessment Report. Volume 3. June 2018. Commissioned by Irish Water. TJ O'Connor & Associates Consulting Engineers, Barry & Partners Consulting Engineers, and Royal Haskoning DHV.

⁶ Appropriate Assessment Screening and Natura Impact Statements for Draft Site Capacity Studies for the St James's, Tallaght and Connolly Hospital Campuses - Determination by National Paediatric Hospital Development Board

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		<p>Baldoyle Bay SPA is approximately 13km east of the scheme and no in-combination effects are predicted. Malahide Estuary SPA is approximately 14km north east of the scheme and no in-combination effects are predicted. Rogerstown Estuary SPA is approximately 18.5km north east of the scheme and no in-combination effects are predicted. The Murrough Wetlands SPA is approximately 37km south east of the scheme and no in-combination effects are predicted.</p> <p><u>E3 Building Trinity College Dublin</u></p> <p>Plans for a new E3 Institute in Engineering, Energy and Environment including a state of the art 6,086 square metre facility based on the main Trinity campus. Baldoyle Bay SAC is approximately 10km north east of the scheme and no in-combination effects are predicted. Malahide Estuary SAC is approximately 13.5m north east of the scheme no in-combination effects are predicted. The Murrough Wetlands SAC is approximately 29km south east of the scheme and no in-combination effects are predicted. North Bull Island SPA is approximately 5.5km east of the scheme and no in-combination effects are predicted. South Dublin Bay and River Tolka Estuary SPA is approximately 2.7km south east of the schemes and no in-combination effects are predicted. Baldoyle Bay SPA is approximately 10km north east of the scheme and no in-combination effects are predicted. Malahide Estuary SPA is approximately 13.5km north east of the scheme and no in-combination effects are predicted. Rogerstown Estuary SPA is approximately 18.5km north eats of the scheme and no in-combination effects are predicted. The Murrough Wetlands SPA is approximately 29km south east of the scheme and no in-combination effects are predicted.</p> <p><u>O'Devaney Gardens Regeneration Programme</u></p> <p>It will be a high-quality residential quarter comprising quality new homes supported by a complimentary range of mixed commercial, community and recreational facilities. The first phase will deliver 56 social homes with a budget of more than €20million. The overall re-development will deliver approximately 600 homes, with a mix of tenures, social, affordable and private homes. An Appropriate Assessment commissioned by Dublin City Council concluded that no European sites are likely to be impacted by the scheme⁷. Baldoyle Bay SAC is approximately 11.5km north east of the scheme and no in-combination effects are predicted. Malahide Estuary SAC is approximately 15m north east of the scheme and no in-combination effects are predicted. The Murrough Wetlands SAC is approximately 32km south east of the scheme and tno in-combination effects are predicted. North Bull Island SPA is approximately 7.5km east of the scheme and no in-combination effects are predicted. South Dublin Bay and River Tolka Estuary SPA is approximately 5.5km south east of the schemes and no in-combination effects are predicted. Baldoyle Bay SPA is approximately 11.5km north east of the scheme and and there is potential in-combination effects from disturbance. Malahide Estuary SPA is approximately 15m north east of the scheme and no in-combination effects are predicted. Rogerstown Estuary SPA is approximately 17.5km north east of the scheme and no in-combination effects are predicted. The Murrough Wetlands SPA is approximately 32km south east of the scheme and no in-combination effects are predicted.</p>	<p>No</p> <p>No</p>		
<p>SA9-28 and SA9-46 Purchase of Poulaphouca Reservoir from ESB and Upgrade of Leixlip WTP Leixlip WTP Upgrade and increased of 50MLD from existing surface water abstraction from River Liffey.</p> <p>Option study area is ca. 200m from and</p>	<ul style="list-style-type: none"> Water table/availability Habitat degradation Disturbance 	<p><u>MetroLink, Dublin, Luas Green Line Capacity Enhancement, National Train Control Centre</u></p> <p>MetroLink, BusConnects and DART expansion are three major transport infrastructure projects included in Project Ireland 2040. The Green Line upgrade includes a planned extension of the line further southwards to Bray. The MetroLink project will now comprise the delivery of a metro system between Swords and Charlemont with a short tunnel continuation to Ranelagh facilitating a future tie-in to the Green Line. Funding</p>	<p>No</p>	<p>N/A</p>	<p>N</p>

⁷ APPROPRIATE ASSESSMENT SCREENING In Accordance With The Requirements Of ARTICLE 6(3) Of The EU HABITATS DIRECTIVE For the Non Statutory Draft Masterplan for the Regeneration of O Devaney Gardens Dublin 1. AMENDED VERSION 17/11/2010

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<p>hydrologically linked to Rye Water Valley/Carton SAC. Option includes an abstraction downstream of this European site. Therefore, during operation there is potential for impacts on aquatic QI species through a reduction in flows/water levels. This abstraction could also lead to hydrological changes that could impact QI species and habitats.</p> <p>Option study area is ca. 1.3km from Poulaphouca Reservoir SPA. There is potential for disturbance to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland). No operational impacts are predicted.</p>		<p>for the implementation phase of the National Train Control Centre is being provided by the Government of Ireland (through the National Transport Authority) as part of Project Ireland 2040. It is anticipated that the design, development, fabrication, installation, testing and commissioning and safety approvals for the main system at Heuston, Dublin will be completed in 2023, with the development of a back-up centre following. Rye Water Valley/Carton SAC is approximately 15km west of the schemes and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 21km south-west of the southern extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>North Runway Project at Dublin Airport, New Visual Control Centre at Dublin Airport</u></p> <p>North Runway is being delivered within the airport's existing land bank. Careful planning has allowed this land and the associated flight paths to be safeguarded for over 40 years. Construction began in December 2016 with the runway scheduled to be delivered by the end of 2021. Rye Water Valley/Carton SAC is approximately 15km west of the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 30km south-west of the southern extent of the scheme and therefore no in-combination effects are predicted.</p> <p><u>M11 Capacity Enhancement (Phase 1& Phase 2)</u></p> <p>The M11/N11 is of strategic importance nationally and this is reflected in its inclusion within the TransEuropean Transport Network (TEN-T) comprehensive road network. Therefore, it is imperative that it begins to operate more efficiently. Rye Water Valley/Carton SAC is approximately 25km north-west of the northern extent of the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 23km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>M50 Enhancing Motorway Operation Services</u></p> <p>This is a framework for the delivery of various works and services by Transport Infrastructure Ireland to secure and continuously enhance the operation of a safe, efficient and sustainable motorway network. Rye Water Valley/Carton SAC is approximately 7km west and upstream of the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 16km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Greater Dublin Drainage, Ballycoolin Trunk Main (Ballycoolin/Kingstown)</u></p> <p>Greater Dublin Drainage (GDD) is a project to develop a new regional wastewater treatment facility and associated infrastructure to serve north Dublin and parts of the surrounding counties of Kildare and Meath. The existing trunk main network capacity to the northern area of Fingal is considered deficient. The current peak demand for the supply area is in excess of the capacity of the existing trunk main. As a result, levels of service to customers in the area occasionally fall below desired levels. It has been identified that a new trunk main is required to augment the supply to this area and to ensure security of supply. This is also required to ensure that water supply does not hamper future development in the area. The scheme includes construction of a trunkmain from the Ballycoolin Reservoir site to Forrest Little, via Kingstown. Rye Water Valley/Carton SAC is approximately 13km south-west but not hydrologically connected to the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 27km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Ringsend Wastewater Treatment Plant Upgrade Project & Ringsend - Rathmines and Pembroke – Wastewater Network</u></p> <p>Located in the city of Ringsend in Dublin, Ireland, the Ringsend wastewater treatment plant has been treating wastewater from the Greater Dublin Area (GDA), including</p>			

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>parts of Meath, since its opening in 2003. The upgrade will increase the plant's treatment capacity and construction will be completed in two phases by mid-2020. The Environmental Impact Assessment Report for the scheme concluded that there is no potential for SPAs and SACs outside Dublin Bay to be affected by the Proposed scheme as the effluent from the treatment works cannot be detected outside this area⁸. Rye Water Valley/Carton SAC is approximately 18km east of the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 25km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Blanchardstown Sewerage Scheme</u></p> <p>Irish Water is progressing the delivery of the Blanchardstown Regional Drainage Scheme (BRDS). The project will involve the upgrade of the existing sewer network currently serving Blanchardstown, Mulhuddart and Castleknock as well as a number of towns in Meath including Dunboyne, Clonee, Ashbourne and Ratoath. The scheme will be located alongside the Tolka River Valley in Blanchardstown between Parslickstown and Mill Road. The route will be adjacent to the existing 9C wastewater network. The pumping station will be located at Waterville Park close to Mill Road. Rye Water Valley/Carton SAC is approximately 9km south-west but not hydrologically connected to the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 25km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>Saggart Reservoir</u></p> <p>A strategic project to provide connectivity between the existing treated drinking water reservoirs at Peamount and Saggart in South Dublin County. This will enable the transfer of treated water from Leixlip Water Treatment Plant to Saggart Reservoir and once complete, will increase the resilience of the water supply to Dublin City and South Dublin County. The project includes the construction of approximately 6.8km of a large diameter pipeline between the existing treated water storage reservoirs at Peamount and Saggart. As part of this project a major pumping station will also be constructed at Peamount Reservoir. Rye Water Valley/Carton SAC is approximately 5km north but not hydrologically connected to the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 11km south-west but not hydrologically connected the scheme and therefore no in-combination effects are predicted.</p> <p><u>Vartry Water Supply Scheme</u></p> <p>Construction of a new Water Treatment Plant on the site of the existing plant at Vartry and a 4km pipeline to secure the transfer of treated water from Vartry to Callowhill pumping station. Rye Water Valley/Carton SAC is approximately 40km north-west of the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 20km north-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>New Children's Hospital</u></p> <p>Completion date estimate 2023.</p> <p>An Appropriate Assessment commissioned by the National Paediatric Hospital Development Board shows that none of the European sites which may be impacted by this Option study area will be affected by the scheme⁹. Rye Water Valley/Carton SAC is approximately 15km north-east of the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 23km north-west</p>			

⁸ Ringsend Wastewater Treatment Plant Upgrade Project Environmental Impact Assessment Report. Volume 3. June 2018. Commissioned by Irish Water. TJ O'Connor & Associates Consulting Engineers, Barry & Partners Consulting Engineers, and Royal Haskoning DHV.

⁹ Appropriate Assessment Screening and Natura Impact Statements for Draft Site Capacity Studies for the St James's, Tallaght and Connolly Hospital Campuses - Determination by National Paediatric Hospital Development Board

Preferred Option	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project(s) being assessed against identified in bold and underlined	Potential for Likely Significant Effects in-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>of the scheme and therefore no in-combination effects are predicted.</p> <p><u>E3 Building Trinity College Dublin</u></p> <p>Plans for a new E3 Institute in Engineering, Energy and Environment including a state of the art 6,086 square metre facility based on the main Trinity campus. Rye Water Valley/Carton SAC is approximately 16km north-west of the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 25km south-west of the scheme and therefore no in-combination effects are predicted.</p> <p><u>O'Devaney Gardens Regeneration Programme</u></p> <p>It will be a high-quality residential quarter comprising quality new homes supported by a complimentary range of mixed commercial, community and recreational facilities. The first phase will deliver 56 social homes with a budget of more than €20million. The overall re-development will deliver approximately 600 homes, with a mix of tenures, social, affordable and private homes. An Appropriate Assessment commissioned by Dublin City Council concluded that no European sites are likely to be impacted by the scheme¹⁰. Rye Water Valley/Carton SAC is approximately 13km east of the scheme and therefore no in-combination effects are predicted. Poulaphouca Reservoir SPA is approximately 23km south-west of the scheme and therefore no in-combination effects are predicted.</p>			
<p>All Preferred Options</p> <p>The European sites that may be impacted by options within Study Area 9 are Lower River Shannon SAC, Lough Derg North-East Shore SAC, Lisduff Fen SAC, Sharavogue Bog SAC, River Barrow and River Nore SAC, Charleville Wood SAC, Rye Water Valley/Carton SAC, River Shannon Callows SAC, River Boyne and River Blackwater SAC, Baldoyle Bay SAC, Malahide Estuary SAC, The Murragh Wetlands SAC, North Bull Island SPA, South Dublin and River Tolka Estuary SPA, Baldoyle Bay SPA, Malahide Estuary SPA, Rogerstown Estuary SPA, The Murragh SPA and Poulaphouca Reservoir SPA</p>	<ul style="list-style-type: none"> • Habitat loss • Mortality risk • Habitat degradation • Disturbance • Spread of invasive non-native species • Water table/availability 	<p><u>All Preferred Options</u></p> <p>There is no potential for any in-combination effects to any European sites.</p>	No	N/A	N

¹⁰ APPROPRIATE ASSESSMENT SCREENING In Accordance With The Requirements Of ARTICLE 6(3) Of The EU HABITATS DIRECTIVE For the Non Statutory Draft Masterplan for the Regeneration of O Devaney Gardens Dublin 1. AMENDED VERSION 17/11/2010

Table E10: Potential in-combination effects between SAs within the EM region

European Site	Study Areas with Potential for Impacts on this European Site	Potential Impact on European Site	Potential for Likely Significant Effects In-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
Wicklow Mountains SAC (002122)	<ul style="list-style-type: none"> SA1 SA2 	<p>Disturbance – There is potential for disturbance to otter during construction.</p>	Yes – from disturbance to otter within Wicklow Mountains SAC if construction of options within SA1 and SA2 is concurrent	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Slaney River Valley SAC (000781)	<ul style="list-style-type: none"> SA1 SA2 SA6 	<p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats.</p> <p>Disturbance – There is potential for disturbance to otter during construction (SA2 and SA6 only).</p> <p>Spread of invasive non-native species – There is the potential for the spread of invasive non-native species during construction (SA2 and SA6 only).</p>	Yes – from habitat degradation (all SAs), disturbance (SA2 and SA6 only) and the spread of invasive non-native species (SA2 and SA6 only) if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 Option specific mitigation measures are outlined in Section 6.3.4 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
The Murrough Wetlands SAC (002249)	<ul style="list-style-type: none"> SA1 SA9 	<p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats.</p>	Yes – from habitat degradation if construction of options within these SAs is concurrent	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
The Murrough SPA (004186)	<ul style="list-style-type: none"> SA1 SA9 	<p>Disturbance – There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland).</p>	Yes – from disturbance if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
River Barrow and River Nore SAC (002162)	<ul style="list-style-type: none"> SA2 SA4 SA6 SA9 	<p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats.</p> <p>Spread of invasive non-native species – There is the potential for the spread of invasive non-native species during construction (SA6 and SA9 only).</p>	Yes – from habitat degradation (all SAs) and the spread of invasive non-native species (SA6 and SA9 only) if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 Option specific mitigation measures are outlined in Section 6.3.4 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
River Boyne and River Blackwater SAC (002299)	<ul style="list-style-type: none"> SA3 SA4 SA9 	<p>Habitat loss – There is potential for some loss of/damage to QI/Annex 1 habitats during construction works (SA3 only).</p> <p>Mortality risk – Pollution of water courses during construction (associated with</p>	Yes – from disturbance (SA3 and SA4 only), habitat degradation (all SAs) and the spread of invasive non-native species (all SAs) if construction of	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 	N

European Site	Study Areas with Potential for Impacts on this European Site	Potential Impact on European Site	Potential for Likely Significant Effects In-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>sediment runoff, or accidental spillage) could impact fish and restrict access to spawning habitat (SA3 only).</p> <p>Disturbance – There is potential for disturbance to otter during construction (SA3 and SA4 only).</p> <p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats (all SAs).</p> <p>Spread of invasive non-native species – There is the potential for the spread of invasive non-native species during construction (all SAs).</p>	options within these SAs is concurrent.	With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.	
River Boyne and River Blackwater SPA (004232)	<ul style="list-style-type: none"> SA3 SA4 	<p>Mortality – There is potential for mortality to kingfisher in the breeding season during construction given that the works are within the SPA boundary (SA3 only).</p> <p>Disturbance – Potential for disturbance to kingfisher during construction given that the works are within the SPA boundary (all SAs).</p> <p>Habitat degradation - Changes in water quality because of pollution (associated with sediment runoff, or accidental spillage) during construction could impact fish populations, having potential indirect impacts on kingfisher through reduced prey availability (all SAs).</p>	Yes – from disturbance (all SAs) and habitat degradation (all SAs) if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Lough Ree SAC (000440)	<ul style="list-style-type: none"> SA4 SA5 	<p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats (all SAs).</p> <p>Water table/availability – There is potential for impacts on aquatic QI species hydrologically linked to this European site through a reduction in flows/water levels during operation (SA5 only).</p> <p>Habitat degradation – A new/increase in abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact aquatic QI species or habitats during operation (SA5 only).</p>	Yes – from habitat degradation (all SAs) if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Lough Ree SPA (004064)	<ul style="list-style-type: none"> SA4 SA5 	<p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats (all SAs).</p> <p>Habitat degradation – changes in water quality (hydrological changes). Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) during operation that could impact QI bird species (SA5 only).</p>	Yes – from habitat degradation (all SAs) if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
River Shannon Callows SAC (000216)	<ul style="list-style-type: none"> SA5 SA7 SA9 	<p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats (all SAs).</p> <p>Spread of invasive non-native species – There is the potential for the spread of invasive non-native species during construction (all SAs).</p> <p>Water table/availability – There is potential for impacts on aquatic QI species hydrologically linked to this European site through a reduction in flows/water levels during operation (SA5 and SA7 only).</p> <p>Habitat degradation – A new/increase in abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact aquatic QI species or habitats during operation (SA5 and SA7 only).</p>	Yes – from habitat degradation and spread of invasive non-native species if construction of these SAs is concurrent, and during operation from water table/availability and habitat degradation impacts (SA5 and SA7 only).	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 Hydrological modelling as in Section 6.3.5 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Middle Shannon Callows SPA (004096)	<ul style="list-style-type: none"> SA5 SA7 	<p>Disturbance – There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland).</p>	Yes – from disturbance if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted</p>	N

European Site	Study Areas with Potential for Impacts on this European Site	Potential Impact on European Site	Potential for Likely Significant Effects In-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
				above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.	
River Little Brosna Callows SPA (004086)	<ul style="list-style-type: none"> SA5 SA7 	Disturbance – There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland).	Yes – from disturbance if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Dovegrove Callows SPA (004137)	<ul style="list-style-type: none"> SA5 SA7 	Disturbance – There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland).	Yes – from disturbance if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Poulaphouca Reservoir SPA (004063)	<ul style="list-style-type: none"> SA2 SA9 	Disturbance – There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable farmland).	Yes – from disturbance if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Charleville Wood SAC (000571)	<ul style="list-style-type: none"> SA4 SA6 SA9 	<p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats (all SAs).</p> <p>Spread of invasive non-native species – There is the potential for the spread of invasive non-native species during construction (SA6 and SA9 only).</p>	Yes – from habitat degradation (all SAs) and spread of invasive non-native species (SA6 and SA9 only) if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Lough Derg, North-east Shore SAC (002241)	<ul style="list-style-type: none"> SA7 SA9 	<p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats.</p> <p>Spread of invasive non-native species – There is the potential for the spread of invasive non-native species during construction.</p>	Yes – from habitat degradation and spread of invasive non-native species if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	N
Lough Derg (Shannon) SPA (004058)	<ul style="list-style-type: none"> SA7 SA8 	Disturbance – There is potential for disturbance during construction to QI birds using habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it (e.g. grassland, arable	Yes – from disturbance if construction of options within these SAs is concurrent.	<ul style="list-style-type: none"> General Mitigation Measures are outlined in Section 6.3.3 	N

European Site	Study Areas with Potential for Impacts on this European Site	Potential Impact on European Site	Potential for Likely Significant Effects In-combination (Yes/No)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		<p>farmland) (all SAs).</p> <p>Habitat degradation - Abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact QI species or habitats during operation (SA7 only).</p> <p>Water table/ availability - There is likely a high association between surface water and groundwater flows at the abstraction point; a high Baseflow Index (BFI). Therefore, there is potential impacts to groundwater dependent habitats during operation (SA7 only).</p>		<p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	
Lower River Shannon SAC (002165)	<ul style="list-style-type: none"> • SA8 • SA9 	<p>Habitat loss – There is potential for some loss of/damage to QI/Annex 1 habitats during construction works.</p> <p>Mortality risk – pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact migratory fish, restrict access to spawning habitat and smother freshwater pearl mussel.</p> <p>Disturbance – There is potential for disturbance to otter during construction.</p> <p>Habitat degradation – Potential pollution of watercourses during construction could affect QI species and hydrologically connected habitats.</p> <p>Spread of invasive non-native species – There is the potential for the spread of invasive non-native species during construction.</p> <p>Water table/availability – There is potential for impacts on aquatic QI species hydrologically linked to this European site through a reduction in flows/water levels during operation.</p> <p>Habitat degradation – A new/increase in abstraction could lead to hydrological changes (reduced flows – impacting on water quality) that could impact aquatic QI species or habitats during operation.</p>	<p>Yes – from habitat loss, mortality risk, disturbance, habitat degradation and spread of invasive non-native species if construction of options within these SAs is concurrent, and during operation from water table/availability and habitat degradation impacts.</p>	<ul style="list-style-type: none"> • General Mitigation Measures are outlined in Section 6.3.3 • Hydrogeological modelling as in Section 6.3.5 • Hydrological modelling as in Section 6.3.5 • Option specific mitigation measures are outlined in Section 6.3.4 <p>With the implementation of mitigation as noted above there will be no adverse effects on the integrity of this European site, either from the options within individual SAs or in-combination between SAs.</p>	<p>N</p>