Uisce Éireann
Irish Water

Report: May 2026

Galway Wastewater Strategy

SEA Environmental Report - Appendix B

Fine Screening of Options

Tionscadal Éireann
Project Ireland
2040

6 CLEAN WATER AND SANITATION

Safeguarding our water for our future

Contact details

Web:
www.water.ie

Twitter:
@IWCare

Uisce Éireann
PO Box 860
South City Delivery Office
Cork City

Account information or account enquiries

9am–5.30pm, Mon–Fri

Phone:
0818 778 778 or **+353 1 707 2827**

ITRS:
1800 378 378 (for hard of hearing customers)

Water supply queries and emergencies

24 hours a day, 7 days a week

Phone:
0818 778 778 or **+353 1 707 2827**

ITRS:
1800 378 378 (for hard of hearing customers)

Draft Galway Wastewater Strategy	
Client Name	Uisce Éireann
Project No.	6046 / 331003360
Project Title	Galway Wastewater Strategy (GWS)
Report Title	Strategic Environmental Assessment: Environmental Report Appendix B

Version History and Status

Version	Date	Status	Author	Checker	Reviewer
V0.1	Mar 26	Draft for Client Review	Eva de Jong	Kin Lo	Elaine Bennett
V1	May 26	Issued	Eva de Jong	Kin Lo	Elaine Bennett

Issue Log

Version	Date	Issue Approved	Issued to	Commentary
V1	May 26	Brendan Larkin	Uisce Éireann	Issued

Table of Contents

1. Approach to SEA Options Assessment

Fine screening was undertaken to assess the nine options in greater detail than the initial coarse screening stage. This process aimed to identify the potential for significant effects on the SEA topics and their associated Strategic Environmental Objectives (SEOs). The assessment was carried out on the basis that best practice construction methodologies would be implemented. **Table 1** outlines the SEA Topics and their SEOs which were assessed against the nine options. **Table 2** shows the assessment criteria for each option.

Table 1: SEA Topics and Strategic Environmental Objectives (SEOs) for Draft GWS Assessment

SEA Topic	SEA Objective (SEO)
Water Environment (W1)	Water quality • Contribute towards the 'no deterioration' in WFD (2000/60/EC) Status requirement and restore and improve waterbody status within the GWS Study Area to meet WFD and RBMP objectives related to the provision of wastewater services. • Minimise flood risk by separating foul and surface water flows and incorporating nature-based solutions such as sustainable drainage systems and wetlands.
Population, Economy, Tourism and Recreation, and Human Health (P1)	• Protect and contribute to enhancement of human health and wellbeing and support sustainable economic and population growth. • Prevent restrictions to recreation and amenity facilities, and improve the facilities, where possible. • Protect and enhance freshwater and marine fisheries, and designated shellfish areas.
Climate Change (C1)	Climate Change Mitigation • Reduce greenhouse gas and other air emissions from wastewater services by improving energy efficiency, promoting water conservation and reuse, and incorporating ecosystem services such as carbon sequestration into planning and operations. • Minimise flood risk by separating foul and surface water flows and incorporating nature-based solutions such as sustainable drainage systems and wetlands. • Climate Change Adaptation Strengthen the resilience of wastewater services and infrastructure to climate change by anticipating environmental and operational

SEA Topic	SEA Objective (SEO)
	pressures and implementing adaptive measures. Consider extreme weather events throughout project lifecycle.
Biodiversity (B1)	• Protect and enhance terrestrial and aquatic biodiversity with particular regard for designated European sites and nationally protected habitats and species. • Achieve Uisce Éireann's Biodiversity Action Plan commitments, with particular emphasis on construction and wastewater services. • Enhance and improve habitat connectivity.
Material Assets (M1)	<u>Resource use and waste management</u> • Minimise resource use and waste generation from wastewater infrastructure, including sludge and treatment residuals. • Apply circular economy principles across lifecycle decision making. <u>Asset use</u> • Minimise impacts on surrounding material assets and infrastructure. • Optimise the use of existing wastewater assets through effective capacity management and targeted upgrades to existing treatment facilities.
Landscape, Townscape and Seascape (L1)	• Protect and enhance designated and valued landscapes, townscapes, seascapes, and visual amenity in the planning and delivery of wastewater services.
Cultural Heritage – Archaeological and Architectural (H1)	• Protect designated cultural heritage assets, architectural sites, and archaeological sites. • Record, add to, and improve knowledge, documentation, and public access to cultural, architectural, and archaeological heritage.
Geology and Soils (G1)	• Protect geology and soils in the GWS Study Area. • Contribute towards the appropriate management of soil quality and quantity related to wastewater services.
Air Quality (A1)	• Identify and seek to apply wastewater treatment improvements, higher design standards and operation practices to minimise odour from wastewater plants.

SEA Topic	SEA Objective (SEO)
	• Apply best practice construction methodology to ensure there is no impact to air quality during construction.
Noise and Vibration (N1)	• The challenges and opportunities related to noise and vibration are considered localised issues to be addressed through the application of appropriate standards at programme and project levels. **Noise and Vibration has been scoped out of further assessment.**

Table 2: Assessment criteria for fine screening of the draft GWS

Major Positive/ Beneficial	Moderate Positive/ Beneficial	Minor Positive/ Beneficial	Neutral/Negligible Risk	Minor Risk	Moderate Adverse Risk	Major Adverse Risk
7	6	5	4	3	2	1
Plan approach / alternative is likely to make a considerable positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects.	Plan approach / alternative is likely to make a moderate positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects	Plan approach / alternative has potential to provide a minor positive contribution to SEOs or improve likelihood of delivery of positive effects and reduce risk of adverse effects.	Plan approach / alternative has negligible of contribution or conflict with SEOs or low risk of effects or uncertainty of effects.	Plan approach / alternative has minor potential to conflict to a greater extent with SEOs or increase risk of adverse effects.	Plan approach / alternative has moderate potential to conflict to a greater extent with SEOs or increase risk of adverse effects.	Plan approach / alternative has potential to conflict to a greater extent with SEOs or high risk of significant adverse effects.

2. SEA Options Assessment (Fine Screening)

The Tables in **Sections 2.1** to **2.9** contain the fine screening assessment of all nine options. **Table 3** summarises the results of the fine screening assessment.

Table 3: Overall results of fine screening assessment

	S1	S2	S3	S4	S5	S6	S7	S8	S9
Water Environment (W1)	6	4	5	6	4	5	6	4	5
Population, Economy, Tourism and Recreation, and Human Health (P1)	5	4	3	5	4	4	4	4	4
Climate Change (C1)	4	2	2	4	3	4	4	3	5
Biodiversity (B1)	6	4	4	6	4	4	6	4	4
Material Assets (M1)	5	5	5	5	5	5	5	5	5
Landscape, Townscape and Seascape (L1)	4	4	3	4	4	4	4	4	4
Cultural Heritage – Archaeological and Architectural (H1)	3	3	1	3	3	2	3	3	2
Geology and Soils (G1)	3	3	2	3	3	3	3	3	3
Air Quality (A1)	4	4	4	4	4	4	4	4	4
Total Score	**40**	**33**	**29**	**40**	**34**	**35**	**39**	**34**	**36**

2.1 West WwTP, West Outfall

2.1.1. Fine Screening

Table 4: West WwTP, West Outfall Fine Screening

West WwTP, West Outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• Requires a considerably shorter marine outfall (west outfall is likely to have a total length of c.600m) than eastern marine outfall option. This reduces construction time and potential for construction to impact on water quality. • The marine outfall with adequate dilution (rather than an outfall to a river) should ensure that regulatory limits for discharge volumes and effluent quality are not exceeded and should ensure that WFD water quality continue to be met in the receiving waterbody. • The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The groundwater in the region of the broad indicative area for the west WwTP is classified as having extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • It is likely that pipes carrying raw sewage will cross the Corrib River (SAC, drinking water, and salmonid river) twice. It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland_010) which is at Risk (due to urban run-off and hydromorphological pressures) once. It is likely that pipes carrying raw sewage will cross both Knocknacarragh_10 (Poor (modelling) (2019-2024)) and Barna (Stream)_010 (Moderate (modelling) (2019-2024)), which are both under 'Review' for existing pressures which are causing them to be at risk of not meeting WFD Objectives. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	6

West WwTP, West Outfall			
	• The treated effluent will be discharged into the Outer Galway Bay coastal waterbody, which has high ecological status and is likely to have good assimilative capacity. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm.		
Population, Economy, Tourism and Recreation, and Human Health (P1)	• The proposed outfall is located at least 3.4km away from designated recreational bathing waters. • Construction activities will provide a short-term boost to the local labour market, generating employment opportunities and delivering associated economic benefits. • Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing improved bathing waters and an improvement in water quality for shellfish.	• The works occur in a tourist-sensitive landscape with valued views, and construction may impact local amenity and tourism activity. • Construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues. • The pipeline route extending from Athenry to the broad indicative area for the west WwTP in Galway City will involve a significant construction period and phased delivery, which will result in temporary disruption to local communities and visitors. • The west outfall location is close to Galway Bay Scenic route and a number of viewpoints which have been identified in Galway County Development Plan 2022-2028. • The broad indicative area for the west WwTP is located in an area with only 18% of projected growth and on the opposite side of the city from the major projected growth areas.	5

West WwTP, West Outfall			
Climate Change (C1)	• The broad indicative area for the west WwTP has a low flood risk. • Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation. • The use of a marine outfall as the final discharge method eliminates the inherent downstream flooding risk that can be associated with riverine discharges in low-lying or sensitive catchment areas. • This option is unlikely to contribute significantly to flooding risks. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. The proximity of west WwTP to west outfall as well as the shorter marine outfall length (indicatively c.600m) will result in lower energy requirements in comparison to other WwTP and outfall combinations. • The design of the future WwTP, as well as collection systems and outfalls will be resilient to climate change.	• Energy will be required throughout multiple large-scale construction projects. As the western WwTP is the furthest away from projected growth centres, a lot of energy will be required to transport untreated effluent here. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. As the broad indicative area for the western WwTP is the furthest away from projected growth centres, a lot of energy will be required to transport untreated effluent from these areas to the west WwTP.	4
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS Study Area, thereby enhancing conditions for flora, fauna, and their habitats.	• A small section of Knock *Margaritifera* sensitive area intersects the northwest corner of the broad indicative area for the west WWTP. However, the potential WWTP location using UÉ's required site	6

West WwTP, West Outfall			
	• The draft GWS will be in line with UÉ's Biodiversity Action Plan (BAP) commitments. • Outfall and the broad indicative area for the west WwTP are outside of any EU-designated sites. The network and pipeline routes have minimal direct interaction with EU-designated sites. The west outfall is outside EU-designated sites, NHAs and pNHAs, nonetheless, given the lack of a dispersion model during the development of the draft GWS, thorough and detailed modelling studies are necessary to confirm that no adverse impacts of the west outfall extend into protected areas. • Outfall is not into an EU-designated site or other protected area. • Interaction with NHAs and pNHAs is minimal, with only a partial overlap between the broad indicative area for the west WwTP and the Moycullen Bogs NHA. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	and route selection process should avoid direct intrusion into any freshwater pearl mussel habitat. • It is likely that pipes carrying raw sewage will cross the Corrib River (Lough Corrib SAC, drinking water, and salmonid river) twice. However, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Material Assets (M1)	• Circular economy principles will be applied where feasible. • By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.	• The broad indicative area for the west WwTP is on the opposite side of the city from the major projected growth areas. Transferring wastewater over longer distances, including pumping the Athenry load across the city, would increase material requirements.	5

West WwTP, West Outfall			
		• During construction, there will be resource consumption and the production of waste, but circular economy principles will be integral throughout the process to re-use and reduce waste.	
Landscape, Townscape and Seascape (L1)	• The outfall will follow the shortest marine route (indicative proposed length of c. 600m) while discharging into the deepest available waters, thereby maximising dilution and minimising potential impacts on the surrounding landscape, townscape, and seascape.	• The west outfall location is close to Galway Bay Scenic route and a number of viewpoints which have been identified in Galway County Development Plan 2022-2028. • During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape.	4
Cultural Heritage – Archaeological and Architectural (H1)	• The broad indicative area for the west WwTP and shorter marine outfall are unlikely to traverse as many archaeologically significant areas as other options.	• Pipeline routes crossing the city will have to avoid many Site and Monuments Record (SMR), National Inventory of Architectural Heritage (NIAH), Archaeological Conservation Areas (ACAs), and protected structures. • Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. Geophysics and test trenching will aid in identifying sub-surface remains.	3

West WwTP, West Outfall			
Geology and Soils (G1)		• It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland River (Sink/Rising)) City Geological site once. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. • Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil structure and reduce fertility, porosity, and water infiltration. • West outfall is near Knocknagreana (Galway County Geological Site) and Rusheen Bay Drumlins (Galway City Geological Site). However, the potential outfall route using UÉ's selection process should avoid direct intrusion.	3
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**40**

2.2 West WwTP, Corrib Outfall

2.2.1. Fine Screening

Table 5: West WwTP, Corrib River Outfall Fine Screening

West WwTP, Corrib River outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The groundwater in the region of the broad indicative area of the west WwTP is classified as having extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • It is likely that pipes carrying raw sewage will cross the Corrib River (SAC, drinking water, and salmonid river) twice. It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland_010) which is at Risk (due to urban run-off and hydromorphological pressures) once. It is likely that pipes carrying raw sewage and treated effluent will cross both Knocknacarragh_10 (Poor (modelling) (2019-2024)) and Barna (Stream)_010 (Moderate (modelling) (2019-2024)), which are both under 'Review' for existing pressures which are causing them to be at risk of not meeting WFD Objectives. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	4

West WwTP, Corrib River outfall			
		• The treated effluent outfall will be into an SAC, drinking water source, and salmonid river. However, the proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge - a dispersion model and comprehensive, detailed modelling studies are required to confirm. • The Corrib River is a drinking water body, although the treated effluent discharge is likely to be downstream of the drinking water abstraction. • The Corrib River receiving waters then flow to the Corrib Estuary transitional waterbody, which is currently under review for potential pressures placing it at risk of failing to achieve its WFD objectives. • The assimilation capacity of the Corrib River may be limited (compared to marine outfall options) in terms of meeting future regulatory limits relating to discharge volumes and effluent quality.	
Population, Economy, Tourism and Recreation, and Human Health (P1)	• The broad indicative area for the west WwTP and outfall location are located away from designated recreational bathing waters. • Construction activities will provide a short-term boost to the local labour market, generating	• The pipeline route extending from Athenry to the broad indicative area for the west WwTP in Galway City and the pipeline returning to Corrib River outfall in Galway City will involve a substantial construction period and phased delivery, which may result in temporary disruption to local communities and visitors.	4

West WwTP, Corrib River outfall			
	employment opportunities and delivering associated economic benefits. • Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing improved bathing waters and an improvement in water quality for shellfish.	• Construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues. • The broad indicative area for the west WwTP is located in an area with only 18% of projected growth and on the opposite side of the city from the major projected growth areas. • It is likely that pipes carrying raw sewage will cross Galway City twice. The works occur in a tourist-sensitive landscape with valued views and tourism activity. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Climate Change (C1)	• Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation. • The broad indicative area for the west WwTP has a low flood risk. • The design of the future WWTP, as well as collection systems and outfalls will be resilient to climate change.	• Energy will be required throughout multiple large-scale construction projects. • The effluent discharge outfall is within an area with flooding risk. The proposal is expected to increase the flood risk within the River Corrib catchment. However, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. As the western WwTP is the furthest away from projected	2

West WwTP, Corrib River outfall			
		growth centres, a lot of energy will be required to transport untreated effluent here. There will be an energy requirement to continuously pump treated wastewater from the west WwTP to reach the final outfall location within the River Corrib.	
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS Study Area, thereby enhancing conditions for flora, fauna, and their habitats. • The draft GWS will be in line with UÉ's BAP commitments. • Outfall and broad indicative area for the west WwTP are outside of any EU-designated sites. • Interaction of the broad indicative area for the west WwTP with NHAs and pNHAs is minimal, with only a partial overlap between the broad indicative area for the west WwTP and the Moycullen Bogs NHA. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• A small section of Knock *Margaritifera* sensitive area intersects the northwest corner of the broad indicative area for the west WwTP. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into any freshwater pearl mussel habitat. • Treated effluent outfall will be into the Corrib River (Lough Corrib SAC and Lough Corrib pNHA). Treated effluent will flow onwards to Galway Bay Complex SAC, Inner Galway Bay SPA, Galway Bay Complex pNHA, and Inner Galway Bay RAMSAR site. However, the proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge - a dispersion model and comprehensive, detailed modelling studies are required to confirm. • It is likely that pipes carrying raw sewage will cross the Corrib River SAC twice. Adherence to best practice construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	4

West WwTP, Corrib River outfall			
Material Assets (M1)	• The outfall length will be short, as the discharge will occur directly into the river rather than requiring an extended marine outfall. • Circular economy principles will be applied where feasible. • By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.	• The broad indicative area for the west WwTP is furthest from the largest growth areas. Transferring raw wastewater from the eastern part of the city (where 82% of the growth in Galway city is projected to occur) to a site in the west of the city for treatment and the centre of the GMA to the Corrib River outfall would be a large use of material assets. • During construction, there will be resource consumption and the production of waste, but circular economy principles will be integral throughout the process to re-use and reduce waste.	5
Landscape, Townscape and Seascape (L1)		• The proposed outfall location is situated within a highly visited tourist area. • During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape.	4
Cultural Heritage – Archaeological and		• Route will have to avoid many SMRs, NIAH areas, ACAs, and protected structures, which will be challenging.	3

West WwTP, Corrib River outfall			
Architectural (H1)		• Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. Geophysics and test trenching will aid in identifying sub-surface remains. • There is a risk of encountering Cultural Heritage sites located along the Corrib River corridor and at the proposed outfall location.	
Geology and Soils (G1)		• Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil structure and reduce fertility, porosity, and water infiltration. • It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland River (Sink/Rising)) City Geological site once. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	3
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**33**

2.3 West WwTP, East Outfall

2.3.1. Fine Screening

Table 6: West WwTP, East Outfall fine screening

West WwTP, East outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • The marine outfall with adequate dilution (rather than an outfall to a river) should ensure that regulatory limits for discharge volumes and effluent quality are not exceeded and should ensure that WFD water quality continue to be met in the receiving waterbody. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The groundwater in the region of the broad indicative area for the west WwTP is classified as having extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • The indicative proposed long (c. 3,500m) outfall length presents a heightened risk of potential environmental effects (e.g., risk of damage during construction/maintenance) to the Inner Galway Bay North coastal waterbody over an extended area, increasing the potential for water quality impacts compared to shorter options. • It is likely that pipes carrying raw sewage will cross the Corrib River (SAC, drinking water, and salmonid river) twice and treated effluent pipes will cross the Corrib River once. It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland_010) which is at Risk (due to urban run-off and hydromorphology pressures) once and treated effluent will cross Terryland River once. It is	5

West WwTP, East outfall			
		likely that pipes carrying raw sewage and treated effluent will cross both Knocknacarragh_10 (Poor (modelling) (2019-2024)) and Barna (Stream)_010 (Moderate (modelling) (2019-2024)), which are both under 'Review' for existing pressures which are causing them to be at risk of not meeting WFD Objectives. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. • The indicative proposed long (c. 3,500m) outfall length presents a heightened risk of potential environmental effects (e.g., risk of damage during construction/maintenance) to the Inner Galway Bay North coastal waterbody over an extended area, increasing the potential for water quality impacts compared to shorter options.	
Population, Economy, Tourism and Recreation, and Human Health (P1)	• Construction activities will provide a short-term boost to the local labour market, generating employment opportunities and delivering associated economic benefits. • Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing improved bathing waters and an improvement in water quality for shellfish.	• Pipelines are likely to cross Galway city three times. Construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues. • Due to the increased distance for the collection system, disturbance from construction will affect a larger proportion of the draft GWS study area's population.	3

West WwTP, East outfall			
		• The works occur in a tourist-sensitive landscape with valued views, requiring mitigation to minimize impacts on local amenity, tourism activity, and human health during construction. The pipeline route extending from Athenry to the broad indicative area for the west WwTP and the pipeline returning to the eastern outfall will involve a substantial construction period and phased delivery, which may result in temporary disruption to local communities and visitors. • The construction of the indicative proposed long (c. 3,500m) marine outfall is likely to cause some maritime navigation issues, especially as it is in Galway Bay which is the entrance to Galway harbour. • The extension of the docks as part of Galway docks expansion project will need to be considered when planning the treated effluent outfall pipeline. • The broad indicative area for the west WwTP is in an area with only 18% of projected growth and on the opposite side of the city from the major projected growth areas. • The construction of the treated effluent outfall pipeline may be visible from several designated recreational bathing waters in Galway Bay. Works are expected to take place within 1.5 km of	

West WwTP, East outfall			
		Ballyloughane Beach, and during the construction phase this proximity could cause short-term disturbance.	
Climate Change (C1)	• Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation. • The broad indicative area for the west WwTP has a low flood risk. • The use of a marine Outfall as the final discharge method eliminates the inherent downstream flooding risk that can be associated with riverine discharges in low-lying or sensitive catchment areas. • The design of the future WwTP, as well as collection systems and outfalls will be resilient to climate change.	• Energy will be required throughout multiple large-scale construction projects. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. There will be a requirement to continuously pump treated wastewater from the east to the final outfall location in the west, which will use a lot of energy. • As the western WwTP is the furthest away from projected growth centres, a lot of energy will be required to transport untreated effluent from the eastern growth area here. There will be a large energy requirement to continuously pump treated wastewater from the west WwTP to reach the final east outfall location.	2
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS Study Area, thereby enhancing conditions for flora, fauna, and their habitats. • The draft GWS will be in line with UÉ's BAP commitments.	• The indicative proposed long (c. 3,500m) effluent pipeline and outfall location will be within Inner Galway Bay SPA, Galway Bay Complex SAC, Galway Bay complex pNHA, and Inner Galway Bay Ramsar site. However, the proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge - a dispersion model and comprehensive, detailed	4

West WwTP, East outfall			
	• The broad indicative area for the west WwTP is outside of any EU-designated sites. • Interaction of the broad indicative areas for the west WwTP with NHAs and pNHAs is minimal, with only a partial overlap between the broad indicative area for the west WwTP and the Moycullen Bogs NHA. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	modelling studies are required to confirm. Construction of the outfall will also occur within these areas which poses a risk of direct habitat fragmentation and disturbance to these sites of high ecological importance. The Annex I habitats - mudflats and sandflats not covered by seawater at low tide, reefs, and large shallow inlets and bays may be directly impacted through construction of the eastern outfall. • The proposed long outfall length presents a heightened risk of potential environmental effects and risk of damage during construction and maintenance over an extended area, increasing the environmental footprint compared to shorter options. • A small section of Knock *Margaritifera* sensitive area intersects the northwest corner of the broad indicative area for the west WwTP. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into any freshwater pearl mussel habitat. • It is likely that pipes carrying raw sewage will cross the River Corrib SAC (SAC, drinking water, and salmonid river) twice. It is likely that a treated effluent pipeline to the eastern outfall will mean there is a third River Corrib SAC crossing.	

West WwTP, East outfall			
		• Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Material Assets (M1)	• Circular economy principles will be applied where feasible. • By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.	• The eastern outfall will be long, necessitating an extended construction period and substantial materials. • The broad indicative area for the west WwTP is located in an area with only 18% of projected growth and on the opposite side of the city from the major projected growth areas, resulting in increased pumping requirements. Transferring wastewater over longer distances, including pumping untreated raw sewage from Athenry across the city, would increase energy requirements. • This option will result in excessive long-term energy usage during operation due to the necessity of an extensive pipeline network. The return of final treated effluent toward the original areas of development in the east would not be the most efficient use of material assets. • During construction, there will be resource consumption and the production of waste, but circular economy principles will be integral throughout the process to re-use and reduce waste.	5

West WwTP, East outfall			
Landscape, Townscape and Seascape (L1)		• During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape The long systems required transferring effluent east to west, and then east again, is likely to have the greatest impact on landscape, townscape, and seascape of all options.	3
Cultural Heritage – Archaeological and Architectural (H1)		• Route will have to avoid many SMRs, NIAH areas, ACAs, and protected structures, which will be challenging. • The long systems required to transfer effluent east to west, and then east again, is likely to have the greatest impact on cultural heritage and archaeology. • Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. The longer collection systems have the most potential for encountering archaeology during construction. Geophysics and test trenching will aid in identifying sub-surface remains. • The longer indicative route proposed for the outfall pipeline (c. 3,500m) significantly increases the	1

West WwTP, East outfall			
		probability of encountering previously unrecorded underwater cultural heritage assets. • There are a number of wrecks in the vicinity of the east outfall location and pipeline.	
Geology and Soils (G1)	• Minimal interaction with County or City Geological Sites.	• Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil structure and reduce fertility, porosity, and water infiltration. The long systems required transferring effluent east to west, and then east again, is likely to have the greatest impact on soils and geology.	2
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**29**

2.4 North WwTP, West Outfall

2.4.1. Fine Screening

Table 7: North WwTP, West outfall fine screening

S4 North WwTP, West Outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• Requires a considerably shorter marine outfall (west outfall is likely to have a total length of c.600m) than eastern marine outfall option. This reduces construction time and potential for construction to impact on water quality. • Unlike the western WwTP, pipes carrying raw sewage from Athenry are not likely to cross the Corrib River as the northern WwTP is likely to be located on the true left (defined as the left side when facing downstream, in the direction the water flows) of the Corrib River. • The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • The marine outfall with adequate dilution (rather than an outfall to a river) should ensure that regulatory limits for discharge volumes and effluent quality are not exceeded and should ensure that	• The groundwater in the region of the broad indicative area for the north WwTP is classified as having moderate to extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • The broad indicative area for the north WwTP is within the vicinity of Corrib Lower Lake (SAC, drinking water source) and the River Corrib (SAC, salmonid water, drinking water source). However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River to the north WwTP. Adherence to best construction practices	6

S4 North WwTP, West Outfall			
	WFD water quality continue to be met in the receiving waterbody. • The treated effluent will be discharged into the Outer Galway Bay coastal waterbody, which has high ecological status and is likely to have good assimilative capacity. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	and the use of high-quality materials make the likelihood of associated environmental issues extremely low. • It is likely that pipes carrying treated effluent to the western outfall will cross the Corrib River once. It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland_010) which is at Risk (due to urban run-off and hydromorphology pressures) twice. It is likely that pipes carrying treated effluent will cross the Terryland River once. It is likely that pipes carrying treated effluent will cross both Knocknacarragh_10 (Poor (modelling) (2019-2024)) and Barna (Stream)_010 (Moderate (modelling) (2019-2024)), which are both under 'Review' for existing pressures which are causing them to be at risk of not meeting WFD Objectives. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Population, Economy, Tourism and Recreation, and Human Health (P1)	• Construction activities will provide a short-term boost to the local labour market, generating employment opportunities and delivering associated economic benefits. • The proposed outfall is located at least 3.4km away from designated recreational bathing waters.	• Construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues. • The west outfall location is close to Galway Bay Scenic route and a number of viewpoints which have been identified in Galway County Development Plan 2022-2028.	5

S4 North WwTP, West Outfall			
	• Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing improved bathing waters and an improvement in water quality for shellfish.	• The broad indicative area for the north WwTP is not the closest to the projected growth to the east.	
Climate Change (C1)	• Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation. • The use of a Marine Outfall as the final discharge method eliminates the inherent downstream flooding risk that can be associated with riverine discharges in low-lying or sensitive catchment areas. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. Locating a WwTP in the north offers significant advantages regarding energy efficiency because it has the potential to optimize transfer routes. By minimizing transfer routes for untreated effluent, the northern WwTP site is expected to have reduced energy consumption compared to the other WwTP options. • The design of the future WwTP, as well as collection systems and outfalls will be resilient to climate change.	• Energy will be required throughout multiple large-scale construction projects. • The broad indicative area for the north WwTP is within a high-risk flood zone. Placing essential wastewater infrastructure in a high-risk flood zone makes the plant vulnerable to inundation, risking operational failure, environmental contamination during a flood event, and prolonged service disruption. However, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. As untreated effluent from the east would need to be pumped north for treatment and then treated effluent would need to be pumped west to the outfall for discharge, this would require a lot of energy.	4
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS	• The broad indicative area for the north WWTP is within Lough Corrib SAC and Lough Corrib pNHA. However, the potential WWTP location using UÉ's	6

S4 North WwTP, West Outfall			
	Study Area, thereby enhancing conditions for flora, fauna, and their habitats. • The draft GWS will be in line with UÉ's BAP commitments. • The west outfall is outside EU-designated sites, NHAs and pNHAs, nonetheless, given the lack of a dispersion model during the development of the draft GWS, thorough and detailed modelling studies are necessary to confirm that no adverse impacts of the west outfall extend into protected areas. • Unlike the western WwTP, pipes carrying raw sewage from Athenry are not likely to cross the Corrib River SAC as the northern WwTP is likely to be located on the true left (defined as the left side when facing downstream, in the direction the water flows) of the Corrib River. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	required site and route selection process should avoid direct intrusion. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WWTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River (Corrib River SAC) to the north WWTP.	
Material Assets (M1)	• The broad indicative area for the north WwTP is situated in the middle ground between multiple growth areas, establishing an efficient central hub for wastewater collection and treatment. • This central location prevents the need for duplicate infrastructure and minimizes the overall length and cost of required pipework, leading to greater	• During construction, there will be resource consumption and the production of waste, but circular economy principles will be integral throughout the process to re-use and reduce waste.	5

S4 North WwTP, West Outfall			
	operational and hydraulic efficiency across the entire collection network. • The central location of the northern WwTP minimizes the transport of raw sewage across the city. • Circular economy principles will be applied where feasible. • By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.		
Landscape, Townscape and Seascape (L1)	• The western marine outfall will follow the shortest route while discharging into the deepest available waters, thereby maximising dilution and minimising potential impacts on the surrounding landscape, townscape, and seascape.	• The west outfall location is close to Galway Bay Scenic route and a number of viewpoints which have been identified in Galway County Development Plan 2022-2028. • During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape.	4
Cultural Heritage – Archaeological and	• The shorter marine outfall is unlikely to traverse as many high-density and archaeologically significant areas.	• Route will have to avoid many SMRs, NIAH areas, ACAs, and protected structures, which will be challenging. However, it impacts fewer heritage sites than alternative western or eastern WwTP	3

S4 North WwTP, West Outfall			
Architectural (H1)		locations due to the more central northern location of the WwTP. • Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. Geophysics and test trenching will aid in identifying sub-surface remains.	
Geology and Soils (G1)		• The broad indicative area for the north WwTP is partially located within Lough Corrib County geological site. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion to the site. • Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil structure and reduce fertility, porosity, and water infiltration. • It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland River (Sink/Rising)) City Geological site twice. It is likely that pipes carrying treated effluent will cross the Terryland River once. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. • West outfall is near Knocknagreana (Galway County Geological Site) and Rusheen Bay Drumlins (Galway City Geological Site). However, the potential outfall	3

S4 North WwTP, West Outfall			
		route using UÉ's selection process should avoid direct intrusion.	
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**40**

2.5 North WwTP, Corrib River Outfall

2.5.1. Fine Screening

Table 8: North WwTP, Corrib River Outfall fine screening

S5 North WwTP, Corrib River outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • Unlike the western WwTP, it is unlikely that pipes carrying raw sewage from Athenry will cross the Corrib River as the northern WwTP is likely to be located on the true left (defined as the left side when facing downstream, in the direction the water flows) of the Corrib River. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The groundwater in the region of the broad indicative area for the north WwTP is classified as having moderate to extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • The broad indicative area for the north WwTP is within the vicinity of Corrib Lower Lake (SAC, drinking water source) and the River Corrib (SAC, salmonid water, drinking water source). However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • The Corrib River is a drinking water body, although the treated effluent discharge is likely to be downstream of the drinking water abstraction. • The treated effluent outfall is located within the River Corrib - an SAC, drinking water, and salmonid River. The receiving waters flow to the Corrib Estuary transitional waterbody, which is currently under	4

S5 North WwTP, Corrib River outfall			
		review for potential pressures placing it at risk of failing to achieve its WFD objectives. • The assimilation capacity of the Corrib River may be limited (compared to marine outfall options) in terms of meeting future regulatory limits relating to discharge volumes and effluent quality. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River to the north WwTP. • It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland_010) which is at Risk (due to urban run-off and hydromorphology pressures) twice. It is likely that pipes carrying treated effluent will cross the Terryland River once. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Population, Economy, Tourism and Recreation, and	• The proposed works area is located away from designated recreational bathing waters. • Construction activities will provide a short-term boost to the local labour market, generating	• Construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues.	4

S5 North WwTP, Corrib River outfall			
Human Health (P1)	employment opportunities and delivering associated economic benefits. • Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing improved bathing waters and an improvement in water quality for shellfish.	• Proposed WwTP location is not the closest to the main projected growth to the east. • The proposed Corrib outfall location and downstream flows directly through the city centre, which is an area of high amenity and tourism.	
Climate Change (C1)	• Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. Locating a WwTP in the north offers significant advantages regarding energy efficiency because it has the potential to optimize transfer routes. By minimizing transfer routes for untreated effluent, the northern WwTP site is expected to have reduced energy consumption compared to the other WwTP options. • As the final treated effluent outfall location is in close proximity to the WwTP and effluent may move by gravity from the WwTP to the outfall (depending on WwTP site section), this would be very energy efficient.	• The broad indicative area for the north WwTP is within a high-risk flood zone. Placing essential wastewater infrastructure in a high-risk flood zone makes the plant vulnerable to inundation, risking operational failure, environmental contamination during a flood event, and prolonged service disruption. However, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken. • Energy will be required throughout multiple large-scale construction projects. • The effluent discharge outfall is within an area with flooding risk. The proposal is expected to increase the flood risk within the River Corrib catchment. However, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken.	3

S5 North WwTP, Corrib River outfall			
	• The design of the future WwTP, as well as collection systems and outfalls will be resilient to climate change.	• Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. Energy will be required to pump untreated raw sewage from the East of the city to the northern WwTP.	
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS Study Area, thereby enhancing conditions for flora, fauna, and their habitats. • The draft GWS will be in line with UÉ's BAP commitments. • Unlike the western WwTP, pipes carrying raw sewage from Athenry are not likely to cross the Corrib River as the northern WwTP is likely to be located on the true left (defined as the left side when facing downstream, in the direction the water flows) of the Corrib River. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The broad indicative area for the north WwTP is within Lough Corrib SAC and Lough Corrib pNHA. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into their boundaries. • Construction of the outfall, and the outfall of treated effluent, will be into the Corrib River (Lough Corrib SAC and Lough Corrib pNHA). Treated effluent will flow onwards to Galway Bay complex SAC, Inner Galway Bay SPA, Galway Bay Complex pNHA, and Inner Galway Bay RAMSAR site. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it likely that a portion of untreated raw effluent would need to be transported across the Corrib River SAC to the north WwTP.	4
Material Assets (M1)	• The broad indicative area for the north WwTP is situated in the middle ground between multiple	• During construction, there will be resource consumption and the production of waste, but	5

S5 North WwTP, Corrib River outfall			
	growth areas, establishing an efficient central hub for wastewater collection and treatment and minimising the transport of raw sewage across the city. • The central location of both the WwTP and outfall prevents the need for duplicate infrastructure and minimizes the overall length and cost of required pipework, leading to greater operational and hydraulic efficiency across the entire collection network. • The outfall length will be short, as the discharge will occur directly into the river rather than requiring an extended marine outfall. This means less materials will be required for construction. • Circular economy principles will be applied where feasible. • By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.	circular economy principles will be integral throughout the process to re-use and reduce waste.	
Landscape, Townscape and Seascape (L1)		• The proposed outfall location is situated within a highly visited tourist area. • During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these	4

S5 North WwTP, Corrib River outfall			
		effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape.	
Cultural Heritage – Archaeological and Architectural (H1)		• Route will have to avoid many SMRs, NIAH areas, ACAs, and protected structures, which will be challenging. However, it impacts fewer heritage sites than alternative western or eastern WwTP locations due to the more central northern location of the WwTP. • There is a risk of encountering existing Cultural Heritage sites located along the Corrib River corridor. • Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. Geophysics and test trenching will aid in identifying sub-surface remains.	3
Geology and Soils (G1)		• The broad indicative area for the north WwTP is partially located within Lough Corrib County geological site. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into its boundary. • Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil structure and reduce fertility, porosity, and water infiltration.	3

S5 North WwTP, Corrib River outfall			
		• It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland River (Sink/Rising)) City Geological site twice. It is likely that pipes carrying treated effluent will cross the Terryland River once. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**34**

2.6 North WwTP, East Outfall

2.6.1. Fine Screening

Table 9: North WwTP, East outfall fine screening

S6 North WWTP, East outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • Unlike the western WwTP, pipes carrying raw sewage from Athenry are not likely to cross the Corrib River as the northern WwTP is likely to be located on the true left (defined as the left side when facing downstream, in the direction the water flows) of the Corrib River. • The marine outfall with adequate dilution (rather than an outfall to a river) should ensure that regulatory limits for discharge volumes and effluent quality are not exceeded and should ensure that WFD water quality continue to be met in the receiving waterbody. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The groundwater in the region of the broad indicative area for the north WwTP is classified as having moderate to extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • The broad indicative area for the north WwTP is within the vicinity of Corrib Lower Lake (SAC, drinking water source) and the River Corrib (SAC, salmonid water, drinking water source). However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • The indicative proposed long (c. 3,500m) outfall length presents a heightened risk of potential environmental effects (e.g. risk of damage during construction/maintenance) to the Inner Galway Bay • North coastal waterbody over an extended area, increasing the potential for water quality impacts compared to shorter options.	5

S6 North WWTP, East outfall			
		• Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River to the north WwTP. • It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland_010) which is at Risk (due to urban run-off and hydromorphology pressures) twice. It is likely that pipes carrying treated effluent will cross the Terryland River once. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Population, Economy, Tourism and Recreation, and Human Health (P1)	• The broad indicative area for the north WwTP is located away from designated bathing waters. • Construction activities will provide a short-term boost to the local labour market, generating employment opportunities and delivering associated economic benefits. • Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing	• Construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues. • The construction of an indicative long (c. 3,500m) marine outfall is likely to cause some maritime navigation issues, especially as it is in Galway Bay which is the entrance to Galway harbour. • A northern WwTP location is not the closest to the projected growth to the east.	4

S6 North WWTP, East outfall			
	improved bathing waters and an improvement in water quality for shellfish.	• The extension of the docks as part of Galway docks expansion project will need to be considered when planning the treated effluent outfall pipeline. • The construction of the treated effluent outfall pipeline may be visible from several designated recreational bathing waters in Galway Bay. Works are expected to take place within 1.5 km of Ballyloughane Beach, and during the construction phase this proximity could cause short-term disturbance.	
Climate Change (C1)	• Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation. • The use of a marine outfall as the final discharge method eliminates the inherent downstream flooding risk that can be associated with riverine discharges in low-lying or sensitive catchment areas. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. Locating a WwTP in the north offers significant advantages regarding energy efficiency because it has the potential to optimize transfer routes. By minimizing transfer routes for untreated effluent, the northern WwTP site is expected to have	• The broad indicative area for the north WwTP is within a high-risk flood zone. However, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken. • Energy will be required throughout multiple large-scale construction projects. • Placing essential wastewater infrastructure in a high-risk flood zone makes the plant vulnerable to inundation, risking operational failure, environmental contamination during a flood event, and prolonged service disruption. However, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken.	4

S6 North WWTP, East outfall			
	reduced energy consumption compared to the other WwTP options. • The design of the future WwTP, as well as collection systems and outfalls will be resilient to climate change.	• Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. Energy will be required to pump untreated raw sewage from the East of the city to the northern WwTP and energy will be required to transport treated effluent from the WwTP to the east outfall.	
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS Study Area, thereby enhancing conditions for flora, fauna, and their habitats. • The draft GWS will be in line with UÉ's BAP commitments. • Unlike the western WwTP, pipes carrying raw sewage from Athenry are not likely to cross the Corrib River as the northern WwTP is likely to be located on the true left (defined as the left side when facing downstream, in the direction the water flows) of the Corrib River. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The indicative proposed long (c. 3,500m) effluent pipeline and outfall location will be within Inner Galway Bay SPA, Galway Bay Complex SAC, Galway Bay complex pNHA, and Inner Galway Bay Ramsar site. However, the proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge - a dispersion model and comprehensive, detailed modelling studies are required to confirm. Construction of the outfall will also occur within these areas which poses a risk of direct habitat fragmentation and disturbance to these sites of high ecological importance. The Annex I habitats - mudflats and sandflats not covered by seawater at low tide, reefs, and large shallow inlets and bays may be directly impacted during construction of the eastern outfall. • The proposed long outfall length presents a heightened risk of potential environmental effects and risk of damage during construction and	4

S6 North WWTP, East outfall			
		maintenance over an extended area, increasing the environmental footprint compared to shorter options. • The broad indicative area for the north WwTP is within Lough Corrib SAC and Lough Corrib pNHA. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into the boundaries of protected sites. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River SAC to the North WwTP.	
Material Assets (M1)	• The broad indicative area for the north WwTP is situated in the middle ground between multiple growth areas, establishing an efficient central hub for wastewater collection and treatment. • The central location of the northern WwTP minimizes the transport of raw sewage across the city. • Circular economy principles will be applied where feasible.	• The outfall will be long, necessitating an extended construction period and substantial materials and labour. • The return of final treated effluent toward the original areas of development in the east would not be the most efficient use of material assets. • During construction, there will be resource consumption and the production of waste, but	5

S6 North WWTP, East outfall			
	• By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.	circular economy principles will be integral throughout the process to re-use and reduce waste.	
Landscape, Townscape and Seascape (L1)		• The proposed outfall location is situated within a highly visited tourist area. • During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape.	4
Cultural Heritage – Archaeological and Architectural (H1)		• Route will have to avoid many SMRs, NIAH areas, ACAs, and protected structures, which will be challenging. • The indicative longer route required for the proposed outfall pipeline (c. 3,500m) significantly increases the probability of encountering previously unrecorded underwater cultural heritage assets. • There are a number of wrecks in the vicinity of the east outfall location and pipeline. • Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. Geophysics and test trenching will aid in identifying sub-surface remains.	2

S6 North WWTP, East outfall			
Geology and Soils (G1)		• The broad indicative area for the north WwTP is partially located within Lough Corrib County geological site. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil structure and reduce fertility, porosity, and water infiltration. • It is likely that pipes carrying raw sewage will cross the Terryland River (Terryland River (Sink/Rising)) City Geological site twice. It is likely that pipes carrying treated effluent will cross the Terryland River once. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	3
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**35**

2.7 East WwTP, West Outfall

2.7.1. Fine Screening

Table 10: East WwTP, West outfall fine screening

East WWTP, West Outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• Requires a considerably shorter marine outfall (west outfall is likely to have a total length of c.600m) than eastern marine outfall option. This reduces construction time and potential for construction to impact on water quality. • The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • The treated effluent will be discharged into the Outer Galway Bay coastal waterbody, which has high ecological status and is likely to have good assimilative capacity. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • Being the closest to Athenry and Oranmore, the eastern WwTP requires shorter raw sewage transport distance from Athenry compared with other WwTP options.	• The groundwater in the region of the broad indicative area for the East WwTP is classified as having extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River to the east WwTP. • It is likely that pipes carrying treated effluent from the eastern WwTP to west outfall will cross the River Corrib (SAC, salmonid water, drinking water source) once. It is likely that pipes carrying treated effluent will cross the Terryland River (Terryland_010) which is at Risk (due to urban run-off and hydromorphological pressures) twice. It is likely that pipes carrying treated effluent will cross both Knocknacarragh_10 (Poor (modelling) (2019-2024)) and Barna (Stream)_010 (Moderate (modelling) (2019-	6

East WWTP, West Outfall			
	• The marine outfall with adequate dilution (rather than an outfall to a river) should ensure that regulatory limits for discharge volumes and effluent quality are not exceeded and should ensure that WFD water quality continue to be met in the receiving waterbody. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	2024)), which are both under 'Review' for existing pressures which are causing them to be at risk of not meeting WFD Objectives. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Population, Economy, Tourism and Recreation, and Human Health (P1)	• Construction activities will provide a short-term boost to the local labour market, generating employment opportunities and delivering associated economic benefits. • The proposed eastern WwTP is located where 82% of the projected growth is expected to occur, aligning the infrastructure with future demand. • Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing improved bathing waters and an improvement in water quality for shellfish.	• Pipeline construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues. Due to the increased distance for the collection system, disturbance from construction will affect a larger proportion of the draft GWS study area's population. • The majority of the WwTP construction work will take place within built-up, high-density areas, causing disruption. • The west outfall location is close to Galway Bay Scenic route and a number of viewpoints which have been identified in Galway County Development Plan 2022-2028.	4
Climate Change (C1)	• Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation.	• Energy will be required throughout multiple large-scale construction projects. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. As treated effluent	4

East WWTP, West Outfall			
	• The broad indicative area for the East WwTP has a low flood risk, enhancing the operational reliability and resilience of the facility against future climate impacts. • The use of a marine outfall as the final discharge method eliminates the inherent downstream flooding risk that can be associated with riverine discharges in low-lying or sensitive catchment areas. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. An Eastern WwTP situated in the highest growth area means that less energy will be required for pumping raw sewage compared to other WwTP options. • The design of the future WwTP, as well as collection systems and outfalls will be resilient to climate change.	from the east would need to be pumped across the city to the west outfall for discharge, this would require a lot of energy.	
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS Study Area, thereby enhancing conditions for flora, fauna, and their habitats. • The draft GWS will be in line with UÉ's BAP commitments. • Outfall construction and treated effluent outfall are outside EU-designated sites, NHAs and pNHAs,	• Kiltullagh Turlough pNHA is located within the broad indicative area for the East WwTP. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • It is likely that pipes carrying treated effluent from the eastern WwTP will cross the Corrib River (SAC and salmonid river) once. Adherence to best construction practices and the use of high-quality materials make the	6

East WWTP, West Outfall			
	nonetheless, given the lack of a dispersion model during the development of the draft GWS, thorough and detailed modelling studies are necessary to confirm that no adverse impacts of the west outfall extend into protected areas. • The broad indicative area for the East WwTP is outside of any EU-designated sites and achieves the furthest physical distance from SPAs or SACs. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	likelihood of associated environmental issues extremely low. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River SAC to the north WwTP.	
Material Assets (M1)	• The treated wastewater load would cross the city once and then discharge – only one entire city crossing. • As the Eastern WwTP is closest to the developing towns of Athenry and Oranmore, this ensures the most efficient and timely connection of essential services to these priority growth centres. • Circular economy principles will be applied where feasible. • By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.	• During construction, there will be resource consumption and the production of waste, but circular economy principles will be integral throughout the process to re-use and reduce waste.	5
Landscape, Townscape and Seascape (L1)	• The western outfall will follow the shortest marine route while discharging into the deepest available waters, thereby maximising dilution and	• The west outfall location is close to Galway Bay Scenic route and a number of viewpoints which have been	4

East WWTP, West Outfall			
	minimising potential impacts on the surrounding landscape, townscape, and seascape.	identified in Galway County Development Plan 2022-2028. • During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape.	
Cultural Heritage – Archaeological and Architectural (H1)	• The shorter marine outfall is unlikely to traverse as many high-density and archaeologically significant areas.	• Pipeline routes crossing the city will have to avoid many SMRs, NIAH areas, ACAs, and protected structures, which will be challenging. • Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. The longer collection systems have the most potential for encountering archaeology during construction. Geophysics and test trenching will aid in identifying sub-surface remains.	3
Geology and Soils (G1)		• The broad indicative area for the east WwTP is located in close proximity to Two Mile Ditch Quarry County geological site. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil	3

East WWTP, West Outfall			
		structure and reduce fertility, porosity, and water infiltration. • It is likely that pipes carrying treated effluent will cross the Terryland River (Terryland River (Sink/Rising)) City Geological site) twice. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. • West outfall is near Knocknagreana (Galway County Geological Site) and Rusheen Bay Drumlins (Galway City Geological Site). However, the potential outfall route using UÉ's selection process should avoid direct intrusion.	
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**39**

2.8 East WwTP, Corrib River Outfall

2.8.1. Fine Screening

Table 11 East WwTP, Corrib River outfall fine screening

East WwTP, Corrib River Outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • Being the closest to Athenry and Oranmore, the eastern WwTP requires shorter raw sewage transport distance from Athenry compared with other WwTP options. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The groundwater in the region of the broad indicative area for the east WwTP is classified as having extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • The treated effluent outfall is located within the River Corrib - an SAC, drinking water, and salmonid river. However, the proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge - a dispersion model and comprehensive, detailed modelling studies are required to confirm. • The Corrib River is a drinking water body, although the treated effluent discharge is likely to be downstream of the drinking water abstraction. • The assimilation capacity of the Corrib River may be limited (compared to marine outfall options) in terms of meeting future regulatory limits relating to discharge volumes and effluent quality.	4

East WwTP, Corrib River Outfall			
		• Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River to the north WwTP. • It is likely that pipes carrying treated effluent will cross the Terryland River (Terryland_010) which is at Risk (due to urban run-off and hydromorphology pressures) twice. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low.	
Population, Economy, Tourism and Recreation, and Human Health (P1)	• The broad indicative area for the east WwTP is located away from designated bathing waters. • The proposed outfall is located away from designated bathing waters. • Construction activities will provide a short-term boost to the local labour market, generating employment opportunities and delivering associated economic benefits. • The proposed eastern WwTP is located where 82% of the projected growth is expected to occur, aligning the infrastructure with future demand.	• Pipeline construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues. • The majority of the WwTP construction work will take place within built-up, high-density areas, causing disruption. • Outfall into highly touristed and amenity area • The proposed Corrib outfall location and downstream flows directly through the city centre, which is an area of high amenity and tourism.	4

East WwTP, Corrib River Outfall			
	• Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing improved waters and an improvement in water quality for shellfish.		
Climate Change (C1)	• Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation. • The broad indicative area for the east WwTP has a low flood risk, enhancing the operational reliability and resilience of the facility against future climate impacts. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. An eastern WwTP situated in the highest growth area means that less energy will be required for pumping raw sewage compared to other WwTP options. • The design of the future WwTP, as well as collection systems and outfalls will be resilient to climate change.	• Energy will be required throughout multiple large-scale construction projects. • The effluent discharge outfall is within an area with flooding risk, and is expected to increase the flood risk within the River Corrib catchment. However, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. As treated effluent from the east would need to be pumped to the centre of the city, this would not be the most energy efficient option.	3
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS Study Area, thereby enhancing conditions for flora, fauna, and their habitats.	• Kiltullagh Turlough pNHA is located within the broad indicative area for the east WwTP. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion.	4

East WwTP, Corrib River Outfall			
	• The draft GWS will be in line with UÉ's BAP commitments. • The broad indicative area for the east WwTP is outside of any EU-designated sites and achieves the furthest physical distance from SPAs or SACs. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• Treated effluent outfall will be into the Corrib River (Lough Corrib SAC and Lough Corrib pNHA). Treated effluent will flow onwards to Galway Bay complex SAC, Inner Galway Bay SPA, Galway Bay Complex pNHA, and Inner Galway Bay RAMSAR site. However, the proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River SAC to the north WwTP.	
Material Assets (M1)	• The treated wastewater load would not need to cross the entire city – less pipelines needed. • The broad indicative area for the East WwTP is not located in close proximity to high amenity areas, reducing the potential for visual, noise, or odour conflicts with existing residential and recreational spaces. • As the Eastern WwTP is closest to the developing towns of Athenry and Oranmore, this ensures the	• During construction, there will be resource consumption and the production of waste, but circular economy principles will be integral throughout the process to re-use and reduce waste.	5

East WwTP, Corrib River Outfall			
	most efficient and timely connection of essential services to these priority growth centres. • Circular economy principles will be applied where feasible. • By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.		
Landscape, Townscape and Seascape (L1)		• The proposed outfall location is situated within a highly visited tourist area. • During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape.	4
Cultural Heritage – Archaeological and Architectural (H1)		• Route will have to avoid many SMRs, NIAH areas, ACAs, and protected structures, which will be challenging. • There is a risk of encountering existing Cultural Heritage sites located along the Corrib River corridor. • Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. Geophysics and test trenching will aid in identifying sub-surface remains.	3

East WwTP, Corrib River Outfall			
Geology and Soils (G1)		• The broad indicative area for the east WwTP is located in close proximity to Two Mile Ditch Quarry County geological site. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • It is likely that there will be two Terryland River (Terryland River (Sink/Rising)) City Geological site crossings. Adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. • Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil structure and reduce fertility, porosity, and water infiltration.	3
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**34**

2.9 East WwTP, East Outfall

2.9.1. Fine Screening

Table 12 East WwTP, East outfall fine screening

East WwTP, East Outfall			
SEA Topic	**Strengths**	**Constraints**	**Score**
Water Environment (W1)	• There will be no pipelines crossing the Terryland River (Terryland_010). • The proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge. However, a dispersion model and comprehensive, detailed modelling studies are required to confirm. • The marine outfall with adequate dilution (rather than an outfall to a river) should ensure that regulatory limits for discharge volumes and effluent quality are not exceeded and should ensure that WFD water quality continue to be met in the receiving waterbody. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The groundwater in the region of the broad indicative area for the east WwTP is classified as having extreme vulnerability. Construction methodology will include mitigation to avoid effects on groundwater. • The indicative proposed long (c. 3,500m) outfall length presents a heightened risk of potential environmental effects (e.g. risk of damage during construction/maintenance) to the Inner Galway Bay North coastal waterbody over an extended area, increasing the potential for water quality impacts compared to shorter options. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River to the north WwTP.	5

East WwTP, East Outfall			
Population, Economy, Tourism and Recreation, and Human Health (P1)	• The broad indicative area for the east WwTP is located away from designated bathing waters. • Construction activities will provide a short-term boost to the local labour market, generating employment opportunities and delivering associated economic benefits. • The proposed eastern WwTP is located where 82% of the projected growth is expected to occur, aligning the infrastructure with future demand. • Improved water quality in rivers and in Galway Bay will have positive effects on tourism, recreation and human health, providing improved bathing waters and an improvement in water quality for shellfish.	• Pipeline construction activities in Galway City are likely to cause traffic disruption, particularly in areas already experiencing traffic congestion issues. • The majority of the WwTP construction work will take place within built-up, high-density areas, causing disruption. • The construction of a long marine outfall is likely to cause some maritime navigation issues, especially as it is in Galway Bay which is the entrance to Galway harbour. • The extension of the docks as part of Galway docks expansion project will need to be considered when planning the treated effluent outfall pipeline. • The construction of the treated effluent outfall pipeline may be visible from several designated recreational bathing waters in Galway Bay. Works are expected to take place within 1.5 km of Ballyloughane Beach, and during the construction phase this proximity could cause short-term disturbance.	4
Climate Change (C1)	• Where possible, renewable energy and high-efficiency equipment will be used during both construction and operation. • The broad indicative area for the east WwTP	• Energy will be required throughout multiple large-scale construction projects • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. The	5

East WwTP, East Outfall			
	has a low flood risk, enhancing the operational reliability and resilience of the facility against future climate impacts. • The outfall is situated close to the WwTP, minimizing the environmental impacts associated with construction and material use and reducing emissions. • By locating the WwTP and outfall in the east of the city, where 82% of growth will be, transfer routes for both domestic and industrial flows will be minimized, and this option is expected to require lower total dynamic head and reduced energy consumption. • The use of a Marine Outfall as the final discharge method eliminates the inherent downstream flooding risk that can be associated with riverine discharges in low-lying or sensitive catchment areas. • Most energy use in Ireland currently relies on fossil fuels, which contribute to climate change. An eastern WwTP situated in the highest growth area means that less energy will be required for pumping raw sewage compared to other WwTP options.	pumping of treated effluent via an indicative long (c. 3,500m) marine outfall will require a lot of energy.	

East WwTP, East Outfall			
	• The design of the future WwTP, as well as collection systems and outfalls will be resilient to climate change.		
Biodiversity (B1)	• The draft GWS aims to deliver long-term improvements to water quality in the draft GWS Study Area, thereby enhancing conditions for flora, fauna, and their habitats. • The draft GWS will be in line with UÉ's BAP commitments. • The broad indicative area for the east WwTP is outside of any EU-designated sites and achieves the furthest physical distance from SPAs or SACs. • The outfall is situated on the same side of the draft GWS study area as the WwTP, minimizing the environmental impacts associated with construction and material use and reducing emissions. • Increased system capacity and control will reduce the frequency and volume of storm overflow spills.	• The indicative proposed long (c. 3,500m) effluent pipeline and outfall location will be within Inner Galway Bay SPA, Galway Bay Complex SAC, Galway Bay complex pNHA, and Inner Galway Bay Ramsar site. However, the proposed application of Quaternary treatment in all scenarios will ensure very high effluent quality before discharge - a dispersion model and comprehensive, detailed modelling studies are required to confirm. Construction of the outfall will also occur within these areas which poses a risk of direct habitat fragmentation and disturbance to these sites of high ecological importance. The Annex I habitats - mudflats and sandflats not covered by seawater at low tide, reefs, and large shallow inlets and bays may be directly impacted during construction of the eastern outfall. • The proposed long outfall length presents a heightened risk of potential environmental effects and risk of damage during construction and maintenance over an extended area, increasing the environmental footprint compared to shorter options.	4

East WwTP, East Outfall			
		• Kiltullagh Turlough pNHA is located within the broad indicative area for the east WwTP. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of untreated raw effluent would need to be transported across the Corrib River SAC to the north WwTP.	
Material Assets (M1)	• The treated wastewater load would not need to cross the city – least number of pipelines needed • The broad indicative area for the east WwTP is not located in close proximity to high amenity areas, reducing the potential for visual, noise, or odour conflicts with existing residential and recreational spaces. • As the eastern WwTP is closest to the developing towns of Athenry and Oranmore, this ensures the most efficient and timely connection of essential services to these priority growth centres.	• The indicative outfall is proposed to be long (c. 3,500m), necessitating an extended construction period and substantial materials and labour. • During construction, there will be resource consumption and the production of waste, but circular economy principles will be integral throughout the process to re-use and reduce waste.	5

East WwTP, East Outfall			
	• Circular economy principles will be applied where feasible. • By optimising and enhancing wastewater infrastructure and management, there will be an improvement in material assets.		
Landscape, Townscape and Seascape (L1)		• The indicative long (c. 3,500m) length of the outfall is likely to alter the seascape over a long construction period, and it may be visible from many points along the Galway City shoreline, potentially affecting the visual character of the coastal environment. • During construction, machinery, materials, and landscape alteration will have a slight effect on the landscape, townscape and seascape. However, these effects would be short-term and transient as construction works progress. Following completion of construction, there will be no effect on the landscape, townscape and seascape.	4
Cultural Heritage – Archaeological and Architectural (H1)		• Route will have to avoid many SMRs, NIAH areas, ACAs, and protected structures, which will be challenging. • The indicative longer route (c. 3,500m) required for the outfall pipeline significantly increases the probability of encountering previously unrecorded underwater cultural heritage assets.	2

East WwTP, East Outfall			
		• There are a number of wrecks in the vicinity of the east outfall location and pipeline. • Due to the underground nature of the works, it is likely that sub-surface archaeology will be encountered. Geophysics and test trenching will aid in identifying sub-surface remains.	
Geology and Soils (G1)	• There will be no pipeline crossing the Terryland River (Terryland River (Sink/Rising)) City Geological site. • Minimal interaction with Geological sites.	• The broad indicative area for the east WwTP is located in close proximity to Two Mile Ditch Quarry County geological site. However, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion. • Construction can degrade soils through loss, mixing, and compaction of topsoil and subsoil. This can alter soil structure and reduce fertility, porosity, and water infiltration.	3
Air Quality (A1)	• With standard best practices in place, construction impacts on air quality will be short term and minor.		4
Total			**36**