Greater Dublin Drainage Project

Irish Water

Environmental Impact Assessment Report: Volume 3 Part A of 6

Chapter 23 Cumulative Impacts and Environmental Interactions

June 2018

Contents

23. Cumulative Impacts and Environmental Interactions

23.1 Introduction

This Chapter considers and assesses the potential for cumulative impacts arising from the Greater Dublin Drainage Project (hereafter referred to as the Proposed Project) in association with other development, and considers the potential interactions between environmental aspects arising from the Proposed Project.

The cumulative impacts of a development refer to the way in which an environmental resource may be subject to a particular type of impact from more than one proposed development. The impacts from multiple projects may overlap or act in combination at a particular location or upon a particular resource, thereby leading to more significant environmental impacts than if the impacts were considered in isolation. For example, two visually intrusive projects proposed within a sensitive landscape may lead to more significant landscape and visual impacts than just one of the projects considered in isolation.

Directive 2014/52/EU of 16 April 2014 on the assessment of the effects of certain public and private projects on the environment (Environmental Impact Assessment Directive) requires that, '*The description of the likely significant effects on the factors specified in Article 3(1) should [among other things] cover the … cumulative … effects of the project*'.

In addition to cumulative impacts, Article 3 of the Environmental Impact Assessment Directive requires that the Environmental Impact Assessment Report (EIAR) should identify, describe and assess the interactions between the other environmental factors (human beings, fauna and flora, soil, water, air, climate, landscape, material assets and cultural heritage). An interaction of impacts can occur when two or more types of environmental impacts associated with a proposed development arise at a particular location or act upon an environmental resource. For example, a residential property may be subject to air quality and noise impacts, a village may experience temporary severance of local rights of way as well as increased construction vehicle movements on local roads, and a watercourse may be subject to alterations in flow regime, geomorphology and water quality, which would interact with the aquatic ecology of the watercourse.

The scope of the proposed developments and development plan land allocations that have been considered as part of this cumulative assessment have been identified through a desk study involving general internet searches and, in particular, scrutiny of local planning authority websites. The developments were either registered in the planning system, are future Irish Water developments that client and project staff were aware of, or formed land allocations in Development Plans. Developments or land allocations, whose impacts could foreseeably overlap with the construction or operation of the Proposed Project or where construction impacts may be consecutive but cumulative, were included in the final list. The cut-off date for the developments considered was 15 March 2018.

There are no prescriptive techniques used in the evaluation of the significance of cumulative impacts or the interaction of impacts. Professional judgement and consideration of standards, guidelines and environmental carrying capacities have been applied to determine whether in-combination impacts give rise to additional levels of significance. The European Commission and Environmental Protection Agency (EPA) guidelines referenced below were considered.

23.2 Methodology and Impact Assessment

The following guidelines and publications were considered in undertaking this assessment:

- *Guidelines on the Information to be Contained in Environmental Impact Statements* (EPA 2002) (and revised and draft guidelines (EPA 2015b; 2017));

- *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA 2003) (and revised advice notes (EPA 2015a)); and
- *Guidelines for the Assessment of Indirect and Cumulative Impacts* as well as Impact Interactions (European Commission 1999).

23.2.1 Stage 1 – Identification of 'Other Developments'

The first step in determining cumulative impacts comprised the identification of a long list of 'other developments' which may have the potential to overlap with the Proposed Project based on available information. This involved a desk study of planning applications, development plan documents, relevant development frameworks and any other available sources to identify other developments which may have the potential to interact with the Proposed Project. A 'tier' (1 or 2) was assigned to the development to indicate the level of certainty associated with its implementation, as detailed in Table 23.1 below.

Table 23.1: Tier 1 and Tier 2 Classification for Other Developments

Tier 1	Under construction	Decreasing level of detail likely to be available ↓
	Permitted application(s) but not yet implemented	
	Submitted application(s) but not yet determined	
Tier 2	Identified in the relevant Development Plan (and emerging Development Plans, with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited	
	Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.	

The long list was scrutinised to identify which of the other developments were within the 'zone of influence' of the Proposed Project. The 'zone of influence' for the purposes of this assessment was developments within 20km of the Proposed Project. This involved the determination of which environmental factors have the potential to lead to overlap. This determination was used to screen out other developments where no overlap with the Proposed Project was considered. This allowed a 'short list' of potentially applicable developments for further assessment to be derived.

23.2.2 Stage 2 – Shortlisting

Inclusion or exclusion threshold criteria were applied to the shortlisted other developments to determine whether they had any potential to give rise to significant cumulative impacts with respect to the following:

- Temporal Scope – Is there any overlap and potential for interaction due to the construction, operation and decommissioning programmes of the 'other development'?
- Scale and Nature – Due to the scale and nature of the developments, are they likely to interact with the Proposed Project to result in a cumulative impact? Statutory definitions and Environmental Impact Assessment screening thresholds were considered in determining issues of scale.

Professional judgement was used in applying these threshold criteria.

The identification and shortlisting process is documented in Table 23.2. The reasons for excluding any development from further consideration are recorded. Where other developments with the potential to give rise to significant cumulative effects were identified, these were taken forward to Stage 3.

Table 23.2: Stage 1 and 2 Assessment – Identification and Shortlisting

'Other Development' Details						Stage 1		Stage 2		
ID	**Application Reference**	**Applicant for 'Other Development' and Brief Description**	**Approximate Distance from Proposed Development Infrastructure**	**Status**	**Tier**	**Within Zone of Influence?**	**Progress to Stage 2?**	**Overlap in Temporal Scope?**	**Scale and Nature of Development Likely to Have a Significant Effect?**	**Progress to Stage 3/4?**
1	F15A/0141	Fingleton White: Aviation fuel pipeline from Dublin Airport to Dublin Port	Various. Pipeline crosses the proposed orbital sewer route approximately 200m west of the proposed Wastewater Treatment Plant (WwTP) site.	Permission granted in October 2015. This decision was appealed but granted permission in April 2016.	1	Yes, generally north-south orientation but crossing to west of proposed WwTP	Yes	10-month construction period expected but timescales for commencement of development have not been confirmed.	Yes, geographical overlap could result in cumulative impacts if construction phases coincided.	Yes
2	FW16A/0123	Garlandbrook Limited: Residential development consisting of 219 dwellings	Approximately 6km north-west of the proposed Abbotstown pumping station and associated pipeline route	Permission granted by Fingal County Council (FCC) in April 2017	1	No, due to distance between Proposed Project and this proposed development at its closest point	No			
3	F16A/0542	ROXTIP Limited: A residential development of 36 dwellings	Approximately 6km north of proposed outfall pipeline route (land based section) and proposed outfall pipeline route (marine section)	Permission granted by FCC in June 2017. An appeal was subsequently lodged in July 2017 and is now under consideration by An Bord Pleanála (ABP).	1	No, due to distance between Proposed Project and this proposed development at its closest point	No			
4	F16A/0561	Hazel Rorke: An on-site wastewater treatment unit, percolation area and associated site works	Approximately 19km north of proposed outfall pipeline route (land based section) and proposed outfall pipeline route (marine section)	Permission granted by FCC in May 2017	1	No, due to distance between Proposed Project and this proposed development at its closest point	No			
5	F15A/0609	Gannon Properties: Belcamp Housing Development involving the redevelopment of Belcamp Hall to provide 34 apartments and development of a further 63 apartments and 166 houses and associated works	Approx. 750m from the south-east corner of the proposed WwTP	Planning permission granted by ABP in June 2017	1	Yes	Yes	Likely, as development commenced construction in 2017 and the Proposed Project is due to commence in 2021. Unlikely to be significant overlap of operational impacts.	Yes, Apartments and housing including new buildings and refurbishment of existing Belcamp College buildings	Yes

'Other Development' Details						Stage 1		Stage 2		
ID	Application Reference	Applicant for 'Other Development' and Brief Description	Approximate Distance from Proposed Development Infrastructure	Status	Tier	Within Zone of Influence?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to Have a Significant Effect?	Progress to Stage 3/4?
6	Dumping at Sea permit S0024-01 Planning permission 29N.PA0034	Dublin Port Company: Capital Dredging Dublin Port – Alexandra Basin Redevelopment Project Works include dredging of the Liffey Channel from East Link to Dublin Buoy over six-year period; dumping of dredged materials at entrance to Dublin Bay to west of Burford Bank.	Dumping site is approx. 9km from proposed outfall pipeline route (marine section)	Planning application submitted 25 Apr 2015, granted with conditions 7 Jul 2015. Application for Dumping at Sea permit submitted 13 Jul 2015; permit granted 13 Sep 2016.	1	Yes. However, 9km from proposed outfall pipeline route (marine section), so distance likely too far for significant cumulative impact.	Yes	Unlikely; EPA permit only allows for dumping to occur up to March 2021. Proposed Project not due to commence construction until 2021, so overlap unlikely.	No	No
7	F08A/1217/E1 (lapsed with new planning permission to be sought)	IDA Ireland: Remediation of 1.5ha of land in the Clonshaugh/Belcamp area.	Approximately 300m south of the proposed WwTP	Extension of duration of permission granted until May 2017 (now lapsed with new planning permission to be sought)	1	Yes	Yes	Potentially; new planning permission to be sought with timeline unknown at present (works to last eight months once commenced).	Potentially during Construction Phase of the Proposed Project	Yes
8	F16A/0412	Joint Statutory Receivers: The Coast Development – Baldoyle Growth Area 1 (550 residential units (379 apartments and 171 houses))	Approx. 400m south of proposed outfall pipeline route (land based section)	Planning permission granted July 2017	1	Yes	Yes	Potentially	Potentially in Construction Phase	Yes
9	29S.PA0043	National Paediatric Hospital Development Board: Connolly Hospital Development – Paediatric Outpatients and Urgent Care Centres	Immediately adjacent to western extent of proposed orbital sewer route	Planning permission granted in April 2016	1	Yes	Yes	The Paediatric Outpatients and Urgent Care Centres at Connolly is planned to open on a phased basis from 2018.	Currently insufficient details available to enable assessment; ongoing liaison between Proposed Project and hospital required throughout the Construction Phase.	Yes
10	29S.PA0043	Children's Hospital Dublin	To be located on a shared campus with St. James's Hospital, approximately 8km south of the proposed orbital sewer route	Planning permission granted in April 2016	1	No, due to distance between Proposed Project and this proposed development at its closest point	No			

'Other Development' Details						Stage 1		Stage 2		
ID	Application Reference	Applicant for 'Other Development' and Brief Description	Approximate Distance from Proposed Development Infrastructure	Status	Tier	Within Zone of Influence?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to Have a Significant Effect?	Progress to Stage 3/4?
11	02.VA0017	EirGrid: North South 400kV Interconnector	Approximately 20km north-west at its closest	Planning permission granted in December 2016	1	No, due to distance between the proposed projects at their closest point	No			
12	FW17A/0083	Irish Water: Blanchardstown Regional Drainage Scheme (BRDS) for development in the Tolka River Valley Park	The eastern end of the BRDS in Blanchardstown is planned to link into the proposed orbital sewer route at its western end	Planning permission granted in July 2017	1	Yes	Yes	Unlikely to be significant overlap in Construction Phase, as BRDS due to be completed by the end of 2021	Proposed Project to commence (pending planning permission) in 2021, so potential for consecutive construction impacts	Yes
13	F14A/0132	Shannon Homes (Dublin) Limited: Drumnigh Estate comprising 270 new houses, car parking, vehicular and pedestrian access and a new sewage pumping station	Adjacent to north of proposed orbital sewer route	Permission granted 2015, application for amendments submitted 2016, and granted in February 2017	1	Yes	Yes	Potential for cumulative impact during Construction Phase	Potentially in Construction Phase	Yes
14	F04A/1755/E1	daa (formerly Dublin Airport Authority Plc): Construction on airport lands of a runway, 3,110m in length and 75m in width.	Approximately 1.9km north of proposed orbital sewer route	In March 2017, the decision to grant extension of permission was made by FCC. Works on the North Runway began in Q4 2016 with expected completion date in 2020-2021	1	Yes – proposed orbital sewer route passes to the south of Dublin Airport	Yes	Unlikely to be significant overlap in construction activities. This new runway is due to be completed in 2020-2021.	Yes, could be combined effects if construction periods overlap	Yes
15	N/A	Malahide Road Realignment Scheme Realignment of the R107 Malahide Road, the East-West Distributor Road from Balgriffin to Clonshaugh Road and the upgrade of the N32 National Primary Road.	R107 Malahide Road junction is approximately 1.4km to east of proposed WwTP construction access point along R132 Swords Road	No current implementation date	2	Yes, road improvement works to R132 Swords Road from which access to proposed WwTP construction site will be made. Improvements also planned to R107 Malahide Road which will carry some Proposed Project construction traffic.	Yes	Not currently known	Yes, could be combined effects if construction periods overlap. No planning or detailed design information available at this stage to allow further assessment and identify potential for cumulative impacts.	No
16	N/A	Transport Infrastructure Ireland: Metro Link	Crosses proposed orbital sewer route to south of airport	Currently part of long-term transport strategy.	2	Yes, liaison was undertaken with regard to Metro Link and was accounted for during development of Proposed Project	Yes	Likely, as construction is likely to take place from 2021 with an estimated completion date in 2026/2027.	Potential for cumulative impacts if construction phases coincided; however, no planning permissions granted. There is insufficient information available to allow further assessment and identify potential for cumulative impacts.	No

'Other Development' Details						Stage 1		Stage 2		
ID	**Application Reference**	**Applicant for 'Other Development' and Brief Description**	**Approximate Distance from Proposed Development Infrastructure**	**Status**	**Tier**	**Within Zone of Influence?**	**Progress to Stage 2?**	**Overlap in Temporal Scope?**	**Scale and Nature of Development Likely to Have a Significant Effect?**	**Progress to Stage 3/4?**
17	F15A/0074 and F03A/1162	Helsingor Limited: Red Arches, The Coast Development, Baldoyle – 205 residential units	Approx. 650m to south-east of proposed Abbotstown pumping station	Currently under construction; application for modifications granted in 2015	1	Yes	Yes	Potentially during Construction Phase of the Proposed Project	Potential cumulative impacts if overlap in construction phases	Yes
18	N/A	Irish Water: Ringsend WwTP Upgrade Project	Ringsend WwTP and proposed WwTP are geographically approximately 8.5km apart	Planning application to be lodged in 2018	1	Yes	Yes	Unlikely to be overlap in construction activities. Concurrent operational phases.	Potential significant cumulative impacts in terms of marine discharges	Yes
19	PL06F.PA0048	Padraig Thornton Waste Disposal Limited: Materials Processing and Transfer Facility at Millennium Business Park, Cappagh Road	Approximately 2km north of proposed temporary construction compound No. 2 near Cappoge	Planning permission granted with conditions in May 2017.	1	Yes	Yes	Unlikely to be overlap in construction activities. Concurrent operational phases.	No due to distance between the two projects	No
20	VA0019	EirGrid Plc.: West Dublin substation and associated works in the Grange Castle area	Approximately 15km south of the proposed Abbotstown pumping station	Planning permission granted with conditions in June 2016	1	No, due to distance between Proposed Project and this other development at its closest point	No			
21	F07A/0947	Sherman Oaks Limited: Station Manor, Portmarnock Housing Development comprised of 684 residential units	Proposed outfall pipeline route (land based section) passes immediately to the south of the housing development	Planning has been granted by FCC. Construction commenced in 2017 on Phase 1 of the development	1	Yes	Yes	Yes, assuming construction of housing development continues to coincide with construction of Proposed Project	Yes, particularly during Construction Phase of the Proposed Project	Yes
22	F06A/1463/E1	daa (formerly Dublin Airport Authority Plc): A general refurbishment of the fuel storage facility including extension of site and increase in storage capacity	Within 1km north of the proposed orbital sewer route	Currently under construction, to be completed in 2020	1	Yes – proposed orbital sewer route passes to the south of Dublin Airport	Yes	Unlikely to be significant overlap in construction activities. This project is due to be completed in mid-2020	No	No

'Other Development' Details						Stage 1		Stage 2		
ID	**Application Reference**	**Applicant for 'Other Development' and Brief Description**	**Approximate Distance from Proposed Development Infrastructure**	**Status**	**Tier**	**Within Zone of Influence?**	**Progress to Stage 2?**	**Overlap in Temporal Scope?**	**Scale and Nature of Development Likely to Have a Significant Effect?**	**Progress to Stage 3/4?**
23	N/A	Fingal County Council: Sutton to Malahide Greenway – pedestrian and cycle route along the Fingal Coast	Proposed outfall pipeline route (marine section) crossed by proposed greenway	Currently under public consultation. Intended to be submitted to ABP for planning approval in 2018	1	Yes	Yes	Not currently known	Potential for cumulative impacts if construction phases coincided; however, proposed route has not been finalised, no planning application lodged.	Yes
24	N/A	Dublin Port Company: 44 hectares of lands near Dublin Airport which have been acquired in order to develop Dublin Inland Port to facilitate the relocation of non-core activities from the port	Proposed orbital sewer route runs just south of the proposed Dublin Inland Port sites, with the route running along the southern edge in parts	Currently forming part of the Dublin Port Masterplan Review which went out for public consultation in 2017. The consultation paper lists the development of the Inland Port to take place during the period of 2017 to 2021.	2	Yes	Yes	Unlikely to be significant overlap in Construction Phase with Dublin Inland Port due to be completed by 2021.	Proposed Project to commence (pending planning permission) in 2021 so potential for consecutive construction impacts	No

23.2.3 Stage 3 – Information Gathering

For the shortlisted developments, sufficiently detailed information was compiled to inform the Stage 4 assessment. This included information such as:

- Proposed design and location;
- Proposed programme of construction, operation and decommissioning; and
- Environmental assessments that set out baseline data and effects arising from the other development.

The relevant information was sourced from the websites of relevant local planning authorities and through general internet searches and project team knowledge.

Figure 23.1 Developments Considered during Detailed Cumulative Impacts Assessment shows the locations of each of the developments taken forward for cumulative impact assessment.

23.2.4 Stage 4 – Assessment

The cumulative impacts of the Proposed Project with the 'other development' were assessed to a level of detail commensurate with the information that was available at the time of assessment. Where information regarding proposed developments was limited, these gaps were acknowledged within the assessment and the associated uncertainty in these cases is documented.

It is acknowledged that certain assessments, such as transport and associated operational assessments for vehicular emissions (including air and noise), are inherently cumulative assessments. This is because they have incorporated modelled traffic data growth for future traffic flows. As these assessments are comprehensive, no additional cumulative assessment of these topics has been undertaken.

The significance criteria used to assess likely cumulative impacts considered the capacity of environmental resources and receptors to accommodate changes that are likely to occur. These include:

- The duration of impact, i.e. would it be temporary or permanent;
- The extent of impact, e.g. its geographical area;
- The type of impact, e.g. whether additive (i.e. the loss of two pieces of woodland of 1ha, resulting in 2ha cumulative woodland loss) or synergistic (i.e. two discharges combine to have an effect on a species not affected by discharges in isolation);
- The frequency of the impact;
- The 'value' and resilience of the receptor affected; and
- The likely success of mitigation.

The results of the assessment are documented in Table 23.3.

Table 23.3: Stage 3 and 4 Assessment – Information Gathering and Assessment

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
1	Tier 1 – permission granted	F15A/0141	Fingleton White: Aviation fuel pipeline from Dublin Airport to Dublin Port; pipeline route crosses the proposed orbital sewer route approx. 200m west of proposed WwTP site	The Environmental Impact Statement for a Proposed Aviation Fuel Pipeline from Dublin Port to Dublin Airport (Fehily Timoney & Company 2015) was reviewed for possible cumulative impacts. Due to temporary nature of pipeline construction, potential impacts would be short-term. There will be potential negative cumulative impacts with Proposed Project if timescales for Construction Phase overlap. <u>Proposed Project Construction Phase</u> • Population and human health: temporary cumulative impacts from traffic, noise, dust and combustion-related emissions. These will only potentially be significant in the event that the construction works overlap or occur consecutively in that area; • Hydrology, hydrogeology and aquatic biodiversity: potential temporary increase in suspended sediment loaded surface runoff, only potentially significant if construction phases overlap or are consecutive in the crossing area; • Aquatic biodiversity: additional crossings of the Cuckoo Stream and Mayne River. Unlikely to be significant unless construction phases overlap or are consecutive; • Terrestrial biodiversity: potential for cumulative effects of noise and visual disturbance on protected species where this project intersects the Proposed Project. Estimated duration of construction of the aviation fuel pipeline project is less than one year, and much less at the points of intersection with the Proposed Project. Protected species likely to be affected are common farmland bird species. No high value protected species located at the points of intersection. Cumulative effects of consecutive or simultaneous construction do not significantly increase the duration of the potential noise and visual disturbance at these locations. Hedgerow and grassland habitat will be lost as a result of both projects, and cumulatively, the amount of habitat which will be lost will increase. The cumulative loss does not however increase the magnitude of effect of the resulting hedgerow and grassland habitat loss. No significant cumulative habitat loss, noise and visual disturbance or displacement effects are predicted. • Landscape and visual: potential for temporary in-combination visual effects to occur if the construction periods coincide. Such effects are likely to be most noticeable for receptors along Clonshaugh Road where the aviation fuel pipeline will be laid and from where the most noticeable visual effects from the proposed WwTP will be experienced. Due to the temporary and transient nature of construction stage effects, particularly from the aviation fuel pipeline, these effects will not be significant; • Traffic: increase in traffic volume which could affect nearby R139 Road/Clonshaugh Road roundabout, which is already above capacity. However, comparably small volumes of additional traffic expected to be generated by pipeline construction, and this EIAR already allows for increase in traffic as part of growth predictions which would account for this. Therefore, cumulative impacts are not predicted to be significant; • Air quality, odour and climate: temporary increase in emissions of dust and construction activity related combustion emissions to air in the event that construction phases overlap. Potentially impacted receptors are identified as R18, R19, R20, R21, R22, R23 and R24; • Noise and vibration: increase in noise and vibration related impacts and associated nuisance. There is potential for both projects to interact along the Clonshaugh Road in the unlikely event of the proposed orbital sewer route construction works occurring at the same time as the aviation fuel pipeline works at this location. The	Management of the crossing of the fuel pipeline and proposed orbital sewer route will require liaison between the Proposed Project and aviation fuel pipeline project teams. In particular, the project teams will ensure that the proposed orbital sewer route works crossing Clonshaugh Road do not coincide with the aviation fuel pipeline works at this location. Apart from this, mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to Construction Environmental Management Plan (CEMP) and implementation of effective surface water management procedures and watercourse crossing methodologies; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for noisy operations (e.g. rock breaking) where required.	Mitigation would be effective in avoiding or reducing impacts during the Construction Phase as detailed in this EIAR. Some cumulative impacts from traffic may be expected during the Construction Phase, but these are already accounted for in the growth factors built into the traffic models and are not considered significant.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
				potential cumulative noise impact upon the nearest noise sensitive receptors (NSRs) (R19 and R20) is considered additive and could result in a Temporary (two-days maximum) Significant impact at these locations. The noise emissions associated with the construction works at the proposed WwTP site will not be of sufficient magnitude to result in an additive cumulative impact with the aviation fuel pipeline project; • Waste: potential increase in availability of surplus soils within the area in excess of volumes required by other construction projects, leading to greater volumes requiring disposal. Robust waste management plans will be required to ensure the potential impact is not significant; and • Material assets: management of the crossing between fuel pipeline and proposed orbital sewer route will be required.		
5	Tier 1 – permission granted	F15A/0609	Gannon Properties: Belcamp Housing Development involving the redevelopment of Belcamp Hall to provide 34 apartments and development of a further 63 apartments and 166 houses and associated works	The Environmental Impact Statement for the Lands at Belcamp (Downey Planning 2016) was reviewed for possible cumulative impacts. Belcamp Housing Development located approx. 750m to south-east of the proposed WwTP. Access to housing development will be from the R107 Malahide Road, although this will be north of main identified pinch point at the junction with R139 Road. <u>Proposed Project Construction Phase</u> • Population and human health: cumulative impacts from traffic, noise, combustion emissions; • Hydrology, hydrogeology and aquatic biodiversity: if there is overlap between housing development and Proposed Project construction, the combined area of exposed ground could lead to increased risk of impacts to surface water (Mayne River) from suspended solids in runoff. Unlikely to be significant unless construction phases overlap or are consecutive; • Terrestrial biodiversity: protected species are not predicted to be displaced from the zone of influence of the Proposed Project into the zone of influence of the Belcamp Housing Development. Hedgerow and grassland habitat will be lost as a result of both projects, and cumulatively, the amount of habitat which will be lost will increase. The cumulative loss does not however increase the magnitude of effect of the resulting hedgerow and grassland habitat loss. No significant cumulative habitat loss, noise and visual disturbance or displacement effects are predicted; • Landscape and visual: potential for temporary/short-term in-combination visual effects to occur if the construction periods coincide. Due to mature intervening treelines and hedgerows, there is a relatively low degree of intervisibility between these sites and cumulative construction stage effects are not considered to be significant; • Traffic: increase in traffic volume which could affect surrounding roads, including the junction of R139 Road/R107 Malahide Road, which is already above capacity (note that this EIAR already allows for increase in traffic as part of growth predictions); • Air quality, odour and climate: increase in emissions of combustion gases from construction plant and vehicles. Unlikely to be significant unless construction phases overlap or are consecutive; • Noise and vibration: the nearest NSRs that could potentially be impacted as a result of concurrent construction activities from both projects are NSR R21, NSR R22 and NSR R26. However, given the extended distances between these NSR locations and the Belcamp Hosing Development project, and also the existing baseline noise environment at these NSR locations, it is considered that there is no potential for an additive cumulative noise impact between these two projects; and • Waste: potential increase in availability of surplus excavation	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to CEMP and implementation of effective surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for noisy operations (e.g. rock breaking) where required.	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR. Some cumulative impacts from traffic may be expected during the Operational Phase but are already accounted for in the growth factors built into the traffic models and are not considered significant.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
				materials in the area in excess of volumes required by other construction projects, leading to greater volumes requiring disposal. Robust waste management plans will be required to ensure the potential impact is not significant. <u>Proposed Project Operational Phase</u> • The proposed housing development is relatively close to the proposed WwTP, which may result in some increases from Operational Phase traffic. However, the impact should not be significant as neither impact assessment highlighted any significant impacts; • Landscape and visual: cumulative increase in the intensity of built development in this peri-urban landscape setting. However, this is in keeping with this dynamic urban fringe; and • The increased wastewater treatment capacity once the Proposed Project is operational will ensure that there will be no adverse cumulative impacts to wastewater systems caused by the increased demand from proposed new housing developments and population growth in the area.		
7	Tier 1 – permission was extended to May 2017; however, as this permission has lapsed, a new planning permission will be sought by IDA Ireland	F08A/1217/E1 (now lapsed, but new planning permission to be sought)	IDA Ireland: Remediation of 1.5ha of land Clonshagh, Belcamp – excavation and off-site disposal of historically deposited waste and restoration of the area. A temporary site compound will be constructed.	The Environmental Impact Statement (O'Laoire Russell Associates with RPS 2008) was reviewed for possible cumulative impacts. The area of land subject to proposed remediation is located approx. 300m to the south of the proposed WwTP site, the main access road for which will be located approx. 650m to the east of the existing Belcamp waste body. <u>Proposed Project Construction Phase</u> • Traffic and transport: considered the most significant area of potential cumulative impact. The remediation project would involve the movement of up to 180 Heavy Goods Vehicles per day, similar to the proposed WwTP, accessing the site from the R132 Road. This would likely exacerbate the predicted impacts on surrounding roads, some of which are already above capacity (note that this EIAR already allows for increase in traffic as part of growth predictions); • Population and human health: cumulative impacts from traffic, noise and vibration, dust and construction activity combustion emissions (see below). Unlikely to be significant unless construction phases overlap or are consecutive; • Hydrology, hydrogeology and aquatic biodiversity: potential impacts associated with concurrent exposed ground (leading to risk of impacts to surface water (Mayne River) from suspended solids in runoff), although both projects include adequate mitigation measures; • Terrestrial biodiversity: protected species are not predicted to be displaced from the zone of influence of the Proposed Project into the zone of influence of the Clonshagh Belcamp remediation project. No additional significant cumulative noise and visual disturbance or displacement effects are predicted; • Landscape and visual: potential for temporary/short-term in-combination visual effects to occur if the construction period for the proposed WwTP coincides with the rehabilitation period for the Belcamp waste body. There is considerable screening to the south of the proposed WwTP site and such cumulative effects and not considered to be significant; • Air quality, odour and climate: temporary increase in emissions to air of construction activity combustion gases from concurrent activities. Potentially impacted receptors during construction are identified as R21 and R22; • Noise and vibration: the nearest NSRs that could potentially be impacted as a result of concurrent construction activities from both projects are NSRs R18, R19, R20, R21, R22 and R23. However,	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate most cumulative impacts: • Adherence to CEMP and implementation of effective dust, noise and vibration control and surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for noisy operations (e.g. rock breaking) where required.	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR. Some cumulative impacts from traffic may be expected but are already accounted for in the growth factors built into the traffic models and are not considered significant.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
				given the proposed locations of the two project sites, the only location where an additive cumulative impact could be experienced is NSR R23. The significance of the noise levels predicted at NSR R23 as a result of construction activities at the proposed WwTP site are rated as Imperceptible, and consequently, the cumulative noise impact between these two projects is also considered Imperceptible; • Waste: remediation project comprises removal for subsequent off-site treatment of current wastes, with retention and reuse of inert materials. Therefore, there is considered little potential for negative cumulative impact. May actually be positive impact if surplus material from the Proposed Project can be used in restoration of remediated site; and • Material assets: concurrent activities would need to take account of the presence of associated infrastructure. <u>Proposed Project Operational Phase</u> • Remediation project has no Operational Phase, and therefore no cumulative impacts.		
8	Tier 1 – permission granted	F16A/0412	Joint Statutory Receivers: The Coast Development – Baldoyle, Growth Area 1 Construction of 550 residential units, a village centre and surface water wetlands	The Environmental Impact Statement for Growth Area 1, Baldoyle-Stapolin, Baldoyle, Dublin 13 (RPS 2016) was reviewed for possible cumulative impacts with the Proposed Project. Potential negative cumulative impacts with the Proposed Project have been identified as follows. <u>Proposed Project Construction Phase</u> • Population and human health: cumulative impacts from traffic, noise and vibration and combustion gases; • Hydrology, hydrogeology and aquatic biodiversity: potential for larger area of exposed ground, increasing risk of impacts on Mayne River from suspended solids in surface runoff. Unlikely to be significant unless construction phases overlap or are consecutive; • Terrestrial biodiversity: protected species are not predicted to be displaced from the zone of influence of the Proposed Project into the zone of influence of the housing development project. No additional significant cumulative noise and visual disturbance or displacement effects are predicted; • Landscape and visual: potential for temporary in-combination visual effects to occur if the construction period for the proposed outfall pipeline route (land based and marine sections) coincides with the construction of this development. Due to the temporary nature of such cumulative effects, these will not be significant; • Traffic: increase in traffic volume which could affect nearby R106 Coast Road which is already above capacity; however, this EIAR already allows for increase in traffic as part of growth predictions which would at least partially account for this already; • Air quality, odour and climate: temporary increase in emissions to air of construction activity combustion gases if overlap in construction activities in the area. Potentially impacted receptors are identified as R29, R30, R31, R32, R47 and R48; and • Noise and vibration: the nearest NSRs that could potentially be impacted as a result of concurrent construction activities from both projects are NSR R32, NSR R33 and NSR R34. However, given the extended distances between these NSR locations and the Coast Development project, and the existing baseline noise environment at these NSR locations, it is considered that there is no potential for an additive cumulative noise impact between these two projects. <u>Proposed Project Operational Phase</u> • The increased wastewater treatment capacity once the Proposed Project is operational will ensure that there will be no adverse cumulative impacts to wastewater systems caused by the increased demand from proposed new housing developments and population	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to CEMP and implementation of effective surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for construction of launch shafts and other noisy operations (e.g. rock breaking) where required.	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR. Some cumulative impacts from traffic may be expected during the Construction Phase, but these are already accounted for in the growth factors built into the traffic models and are not considered significant.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
				growth in the area.		
9	Tier 1 – permission granted	29S.PA0043	National Paediatric Hospital Development Board: Connolly Hospital Development – Paediatric Outpatients and Urgent Care Centres	The Environmental Impact Statement for the National Paediatric Hospital Project (Bilfinger and GVA 2015) was reviewed for possible cumulative impacts with the Proposed Project. Potential negative cumulative impacts with the Proposed Project have been identified as follows. <u>Proposed Project Construction Phase</u> • Population and human health: cumulative impacts from traffic, noise and vibration and combustion gases; • Hydrology, hydrogeology and aquatic biodiversity: potential for larger area of exposed ground, increasing risk of impacts on the Tolka River from suspended solids in surface runoff; • Landscape and visual: potential for temporary in-combination visual effects to occur if the construction period for the proposed Abbotstown pumping station and proposed orbital sewer route coincides with the construction of this development. Due to the temporary nature of such cumulative effects, these will not be significant; • Terrestrial biodiversity: potential for cumulative effects from habitat loss and noise and visual disturbance on protected species where this project abuts the Proposed Project. Cumulative effects of consecutive or simultaneous construction do not significantly increase the duration of the potential noise and visual disturbance at these locations. Woodland and grassland habitat will be lost as a result of both projects, and cumulatively, the amount of habitat which will be lost will increase. The cumulative loss does not however increase the magnitude of effect of the resulting habitat loss. No additional significant cumulative habitat loss, noise and visual disturbance or displacement effects are predicted; • Traffic: increase in traffic volume which could affect nearby R843 Snugborough Road which is already above capacity; however, this EIAR already allows for increase in traffic as part of growth predictions which would at least partially account for this; • Air quality, odour and climate: temporary increase in potential emissions to air of construction activity combustion gases which could result in a temporary significant impact if not properly mitigated. Potentially impacted receptors are identified as R1, R2 and R3; and • Noise and vibration: there is potential for both projects to interact as a result of concurrent construction activities at Connolly Hospital during daytime hours only, as there will be no construction activity during night-time hours for the Paediatric Outpatients and Urgent Care Centre project. The noise emissions from the TBM works and, in particular, from the launch shaft construction works in conjunction with the Paediatric Outpatients and Urgent Care Centre project construction works is considered additive and could result in a Temporary Significant impact at the southern face of the western wing at Connolly Hospital. <u>Proposed Project Operational Phase</u> • The increased wastewater treatment capacity once the Proposed Project is operational will ensure that there will be no adverse cumulative impacts to wastewater systems caused by the increased demand from proposed new housing developments and population growth in the area; and • Landscape and visual: minor increase in the intensity of built development in this hospital/parkland landscape.	Management of the construction works at Connolly Hospital will require liaison between the Proposed Project, Connolly Hospital and the Paediatric Outpatients and Urgent Care Centre project teams. In particular, the project teams will ensure that the noisiest elements of each project do not occur concurrently and that launch shaft construction works are carried out at an agreed time with Connolly Hospital management. Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to CEMP and implementation of effective surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for construction of launch shafts and other noisy operations (e.g. rock breaking) where required.	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR. Some cumulative impacts from traffic may be expected during the Construction Phase, but these are already accounted for in the growth factors built into the traffic models and are not considered significant.
12	Tier 1 – permission granted	FW17A/0083	Irish Water: Blanchardstown Regional Drainage Scheme (BRDS) for	The Environmental Impact Statement for the BRDS 9C Sewer Duplication and Storage Scheme, incorporating Tolka Valley Park Pumping Station (Byrne Looby and ARUP 2017) was reviewed for possible cumulative impacts with	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to Construction CEMP and implementation of effective	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
			development in the Tolka River Valley Park	the Proposed Project. Potential negative cumulative impacts are most likely to occur with the Proposed Project where there is construction being completed at the eastern end of the BRDS, leading into construction beginning at the western end of the proposed orbital sewer route. Potential negative cumulative impacts with Proposed Project are as follows. <u>Proposed Project Construction Phase</u> • Population and human health: cumulative impacts from traffic, noise and vibration and combustion gases; • Landscape and visual: potential for temporary in-combination visual effects to occur if the construction period for the proposed Abbotstown pumping station and western end of the proposed orbital sewer route coincides with the construction of the BRDS. Due to the temporary nature of such cumulative effects, these will not be significant; • Terrestrial biodiversity: potential for cumulative effects from habitat loss and noise and visual disturbance on protected species where this project abuts the Proposed Project. Two key ecological features impacted by the BRDS (otter and kingfisher) are not adversely affected by the Proposed Project. Cumulative effects not to arise in relation to those features. Consecutive or simultaneous construction does not significantly increase the duration of the potential noise and visual disturbance at these locations. Low value habitats will be lost as a result of the BRDS project, and cumulatively, the amount of habitat which will be lost will increase. The cumulative loss does not however increase the magnitude of effect of the resulting habitat loss. No additional significant cumulative habitat loss, noise and visual disturbance or displacement effects are predicted; • Traffic: increase in traffic volume which could affect nearby R843 Snugborough Road which is already above capacity; however, this EIAR already allows for increase in traffic as part of growth predictions which would at least partially account for this already; • Air quality, odour and climate: potential temporary increase in emissions to air of construction activity combustion gases from overlapping or concurrent construction activities. Potentially impacted receptors are identified as R1, R2 and R3; • Noise and vibration: the nearest NSRs that could potentially be impacted as a result of concurrent construction activities from both projects is Connolly Hospital. However, given the extended distances between Connolly Hospital and the BRDS development project, and the existing baseline noise environment at Connolly Hospital, it is considered that there is no potential for an additive cumulative noise impact between these two projects at the Hospital. The combined effects of the BRDS project with the Proposed Project are not considered to have any greater effect on nearby NSRs than that outlined in Chapter 15 of this EIAR, and therefore, no significant cumulative effect is predicted; and • Hydrology, hydrogeology and aquatic biodiversity: potential for larger area of exposed ground at the overlapping ends of the two projects, should there be any overlap in construction works in that area, which may affect the Tolka River. <u>Proposed Project Operational Phase</u> • No significant cumulative impacts.	surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for noisy operations (e.g. rock breaking) where required.	
13	Tier 1 – permission granted	F14A/0132	Shannon Homes (Dublin) Limited: Drumnigh Housing Development Housing development immediately to the north of the	Southern extent of development site includes wayleave for proposed orbital sewer route. Timescales for construction of the housing development have not been confirmed but could overlap with construction of the proposed orbital sewer route. Potential negative cumulative impacts with Proposed Project are as follows. <u>Proposed Project Construction Phase</u>	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to CEMP and implementation of effective surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for construction of	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR. Some cumulative impacts from traffic may be expected during the Construction Phase, but these are already accounted for in the growth factors built into the traffic models and are not considered significant.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
			proposed orbital sewer route	• Population and human health: cumulative impacts from traffic, noise, vibration, dust and emissions of combustion gases; • Hydrology and hydrogeology: dependent upon works to proposed open space area, there could be an increase of exposed ground leading to increase in suspended sediment loaded surface runoff. Unlikely to be significant unless construction phases overlap or are consecutive; • Terrestrial biodiversity: potential for cumulative effects from habitat loss and noise and visual disturbance on protected species where this project intersects the Proposed Project. Cumulative effects of consecutive or simultaneous construction do not significantly increase the duration of the potential noise and visual disturbance. Hedgerow and grassland habitat will be lost as a result of both projects, and cumulatively, the amount of habitat which will be lost will increase. The cumulative loss does not however increase the magnitude of effect of the resulting habitat loss. No additional significant cumulative habitat loss, noise and visual disturbance or displacement effects are predicted; • Landscape and visual: potential for temporary in-combination visual effects to occur if the construction period for the proposed orbital sewer route coincides with the construction of this housing development. Due to the temporary and transient nature of such cumulative effects, these will not be significant; • Traffic: increase in traffic volume which could affect nearby road junction of the R123 Moyne Road/R106 Coast Road, which is already above capacity; however, this EIAR already allows for increase in traffic as part of growth predictions which would at least partially account for this already; • Air quality, odour and climate: potential temporary increase in emissions of dust and emissions to air of construction activity combustion gases should there be an overlap in the construction phase in that location; • Noise and vibration: there is potential for both projects to interact in the event of the proposed orbital sewer route construction works occurring at the same time as the Drumnigh Housing Development construction works. The potential cumulative noise impact upon the nearest NSRs (R31 and R32) is considered additive and could result in a Temporary (three weeks maximum) Moderate impact at these locations; • Waste: potential increase in availability of surplus soils within the area in excess of volumes required by other construction projects, leading to greater volumes requiring disposal. Robust waste management plans will be required to ensure the potential impact is not significant; and • Material assets: depending on timing of proposed orbital sewer route and proposed Abbotstown pumping station construction, construction activities would need to take account of the presence of the proposed orbital sewer route and proposed Abbotstown pumping station and infrastructure associated with it. <u>Proposed Project Operational Phase</u> • Population and human health: sterilisation of wayleave; however, no significant impact considered likely because affected area is identified as open space without development; and • The increased wastewater treatment capacity once the Proposed Project is operational will ensure that there will be no adverse cumulative impacts to wastewater systems caused by the increased demand from proposed new housing developments and population growth in the area.	launch shafts and other noisy operations (e.g. rock breaking) where required.	Residual negative impact during Operational Phase associated with sterilisation of wayleave for future development, but not considered significant because affected area is identified as open space without development.
14	Tier 1 – under	F04A/1755/E1	daa (formerly Dublin Airport Authority Plc):	The Environmental Impact Statement for the Dublin Airport Northern Parallel Runway (Mouchel Parkman 2004), which was drafted for the original planning	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts:	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR. Some

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
	construction		Construction on airport lands of a runway, 3,110m in length and 75m in width.	application, was reviewed for possible cumulative impacts with the Proposed Project. Potential negative cumulative impacts with Proposed Project are as follows. <u>Proposed Project Construction Phase</u> • Population and human health: cumulative impacts from traffic, noise, vibration, dust and emissions of combustion gases; • Terrestrial biodiversity: protected species are not predicted to be displaced from the zone of influence of the Proposed Project into the zone of influence of the North Runway project. No additional significant cumulative noise and visual disturbance or displacement effects are predicted. The runway project's Environmental Impact Statement states that 29km of hedgerows are to be removed for the North Runway project. The cumulative loss of approx. 29km of hedgerow and further removal of <1.5km of hedgerow associated with the Proposed Project does not increase the magnitude of effect of the resulting cumulative habitat loss. No additional significant cumulative habitat loss, noise and visual disturbance or displacement effects are predicted; • Aquatic biodiversity: potential for cumulative impacts to the Cuckoo Stream from operational impacts such as surface water drainage and discharges; however, this will be subject to a discharge licence consent procedure; • Traffic: possible increase in traffic volumes around the airport; • Air quality, odour and climate: temporary increase in emissions to air of construction activity combustion gases in the event of overlap of construction phases. However, site of proposed northern runway at opposite side of the airport from the Proposed Project, meaning that cumulative impacts are unlikely to be significant. Potentially impacted receptors are identified as R41, R42, R43, R14, R15, R16 and R17; and • Noise and vibration: slight increase in noise and vibration around the airport should construction for the Proposed Project (south of the airport) coincide with runway construction. Possible cumulative noise impact related to aircraft should operations on the new runway commence during the Proposed Project's Construction Phase. <u>Proposed Project Operational Phase</u> • No significant cumulative impacts.	• Adherence to CEMP and implementation of effective surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for construction of launch shafts and other noisy operations (e.g. rock breaking) where required.	cumulative impacts from traffic may be expected during the Construction Phase, but these are already accounted for in the growth factors built into the traffic models and are not considered significant.
17	Tier 1 – under construction; application for modifications granted 2015	F15A/0074 and F03A/1162	Helsingor Limited: Red Arches Housing Development, The Coast Construction of 205 residential units	Potential negative cumulative impacts with Proposed Project are as follows. <u>Proposed Project Construction Phase</u> • Population and human health: cumulative impacts from traffic; • Terrestrial biodiversity: protected species are not predicted to be displaced from the zone of influence of the Proposed Project into the zone of influence of the housing development project. No additional significant cumulative noise and visual disturbance or displacement effects are predicted; • Landscape and visual: potential for temporary in-combination visual effects to occur if the construction period for the proposed outfall pipeline route (land based and marine sections) coincides with the construction of this development. Due to the temporary nature of such cumulative effects, these will not be significant; • Traffic: increase in traffic volume which could affect nearby R106 Coast Road which is already above capacity; however, this EIAR already allows for increase in traffic as part of growth predictions which would at least partially account for this already; • Air quality, odour and climate: potential temporary increase in emissions to air of construction activity combustion gases if overlap in construction, unlikely to be significant; • Hydrology, hydrogeology and aquatic biodiversity: potential for	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to CEMP and implementation of effective surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for noisy operations (e.g. rock breaking) where required.	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in EIAR. Some cumulative impacts from traffic may be expected during the Construction Phase, but these are already accounted for in the growth factors built into the traffic models and are not considered significant.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
				larger area of exposed ground, increasing risk of impacts on Mayne River from suspended solids in surface runoff should construction overlap; and • Noise and vibration: the nearest NSRs that could potentially be impacted as a result of concurrent construction activities from both projects are NSR R32, NSR R33 and NSR R34. However, given the extended distances between these NSR locations and the Coast Development project, and the existing baseline noise environment at these NSR locations, it is considered that there is no potential for an additive cumulative noise impact between these two projects. <u>Proposed Project Operational Phase</u> • No significant cumulative impacts.		
18	Tier 1 – planning application to be submitted to An Bord Pleanála in 2018	N/A	Irish Water: Ringsend WwTP Upgrade Project Extension of Ringsend WwTP, use of AGS technology	Cumulative impacts during the Construction Phase will not occur. Cumulative impacts during the Operational Phase would be associated with discharge of treated wastewater into the Irish Sea from both WwTPs. Ringsend WwTPs discharge/hydraulic flows were modelled within the Proposed Project marine water quality numerical model (together with those of the WwTPs at Shanganagh, Swords, Malahide, Portrane, Barnageeragh), to assess the potential in-combination effects with the proposed outfall pipeline route (marine section). Average flow and flow to full treatment for the existing Ringsend WwTP discharge were taken from the Ringsend WwTP Upgrade Project EIAR (TJ O'Connor & Associates et al 2018). Average flow and flow to full treatment for the proposed Ringsend WwTP's discharge were provided by the proposed Ringsend WwTP Project Team. Average discharge rates for the remaining WwTPs were taken from their respective published annual environmental reports. Modelling of the proposed WwTP wastewater showed quick dispersion and only Dissolved Inorganic Nitrogen impacts within the immediate mixing zone. Based on this, and the distance to Ringsend WwTP discharge, cumulative impacts on water quality are not considered likely.	N/A	N/A
21	Tier 1 – planning granted and construction commenced in 2017	F07A/0947	Sherman Oaks Limited: Station Manor Portmarnock Housing Development Housing development, comprising 684 residential units, north of proposed outfall pipeline route; proposed outfall pipeline route crosses distributor road of Phase A of development.	The Environmental Impact Statement for the Portmarnock Local Area Plan Lands Residential Development (Simon Clear & Associates 2007) was reviewed for potential cumulative impacts. Potential negative cumulative impacts with Proposed Project have been identified as follows. <u>Proposed Project Construction Phase</u> • Population and human health: cumulative impacts from traffic, noise and vibration, dust and combustion gases; • Hydrology, hydrogeology and aquatic biodiversity: dependent upon timing of distributor road construction, area of exposed ground could be larger, increasing risk of impacts on Mayne River from suspended solids in surface runoff; • Marine flora and fauna: area north of proposed temporary construction compound no. 7 proposed for open space development could increase area of exposed ground and risk of sediment-containing runoff affecting Baldoyle Bay; potential increase in noise and visual impacts on birds; • Terrestrial biodiversity: potential for cumulative effects from habitat loss and noise and visual disturbance on protected species where this project intersects the Proposed Project. Cumulative effects of consecutive or simultaneous construction do not significantly increase the duration of the potential noise and visual disturbance. Hedgerow and grassland habitat will be lost as a result of both projects, and cumulatively, the amount of habitat which will be lost	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to CEMP and implementation of effective surface water management procedures; • Visual and noise screening of proposed temporary construction compound no. 9, west of Baldoyle Bay; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for construction of launch shafts and other noisy operations (e.g. rock breaking) where required.	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR. Some cumulative impacts from traffic may be expected during the Construction Phase, but these are already accounted for in the growth factors built into the traffic models and are not considered significant. Minor residual negative impact during Operational Phase associated with sterilisation of wayleave for future development cannot be avoided and would need to be included during master planning for any potential future developments.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
				will increase. The cumulative loss does not however increase the magnitude of effect of the resulting habitat loss. No significant cumulative habitat loss, noise and visual disturbance or displacement effects are predicted; • Landscape and visual: potential for temporary in-combination visual effects to occur if the construction period for the proposed outfall pipeline route coincides with the construction of this development. Due to the temporary nature of such cumulative effects, these will not be significant; • Traffic: increase in traffic volume which could affect nearby road junction of the R123 Road/R106 Coast Road, which is already above capacity. However, this EIAR allows for increase in traffic as part of growth predictions which would at least partially account for this already; • Air quality, odour and climate: potential temporary increase in emissions of dust and emissions to air of construction activity combustion gases if there is an overlap in construction activities in the area, though unlikely to be significant; • Noise and vibration: slight increase in noise and vibration related impacts and associated nuisance; • Waste: potential increase in availability of surplus soils within the area in excess of volumes required by other construction projects, leading to greater volumes requiring disposal. Robust waste management plans will be required to ensure the potential impact is not significant; and • Material assets: depending on timing of distributor road construction, construction activities would need to take account of the presence of the roads and infrastructure associated with it. <u>Proposed Project Operational Phase</u> • Population and human health: sterilisation of wayleave; no development during future phases of housing development; and • The increased wastewater treatment capacity once the Proposed Project is operational will ensure that there will be no adverse cumulative impacts to wastewater systems caused by the increased demand from proposed new housing developments and population growth in the area.		
23	Tier 1 – planning application to be submitted to An Bord Pleanála in 2018	N/A	Fingal County Council: Sutton to Malahide Greenway – pedestrian and cycle route along the Fingal Coast	Due to the temporary nature of pipeline construction, potential impacts would be short-term. There will be potential negative cumulative impacts with Proposed Project if timescales for Construction Phase overlap. <u>Proposed Project Construction Phase</u> • Population and human health: cumulative impacts from traffic, noise, dust and combustion-related emissions; • Hydrology and hydrogeology: potential temporary increase in suspended sediment loaded surface runoff to the marine environment if construction overlaps; • Landscape and visual: potential for temporary in-combination visual effects to occur if the construction period for the proposed outfall pipeline route coincides with the construction of this development. Due to the temporary and transient nature of such cumulative effects, these will not be significant; • Biodiversity: there is no potential for cumulative effects from habitat loss, as the Greenway project does not result in loss of habitats. There is potential for cumulative effects from noise and visual disturbance on protected species where this project passes by the nearest construction (microtunnelling) compound of the Proposed Project. Cumulative effects of consecutive or simultaneous construction do not significantly increase the duration of the potential noise and visual disturbance. The noise and disturbance effects of the Proposed Project are mitigated to the point where no	Mitigation measures already included in this EIAR are considered appropriate and sufficient to avoid, reduce or mitigate cumulative impacts: • Adherence to CEMP and implementation of effective surface water management procedures; • Adherence to traffic management plan; and • Noise monitoring and use of acoustic screens for construction of launch shafts and other noisy operations (e.g. rock breaking) where required.	Mitigation would be effective in avoiding or reducing impacts during Construction Phase as detailed in this EIAR. Some cumulative impacts from traffic may be expected during the Construction Phase, but these are already accounted for in the growth factors built into the traffic models and are not considered significant.

ID	Tier	Application Reference	Applicant for 'Other Development' and Brief Description	Assessment of Cumulative Effect with Proposed Project	Proposed Mitigation	Residual Cumulative Effect
				significant residual effect is predicted. No significant cumulative noise and visual disturbance effects are predicted; • Traffic: increase in traffic volume which could affect nearby R106 Coast Road. However, comparably small volumes of additional traffic expected to be generated by construction of the proposed outfall pipeline routes (land based and marine sections), and this EIAR already allows for increase in traffic as part of growth predictions which would account for this; • Air quality, odour and climate: potential temporary increase in emissions of dust and construction activity combustion emissions to air if there is an overlap in construction, though unlikely to be significant; and • Noise and vibration: slight increase in noise and vibration related impacts and associated nuisance. <u>Proposed Project Operational Phase</u> • No significant cumulative impacts.		

23.3 Summary of Cumulative Impacts

Of the initial long list of 23 'other developments' considered to have the potential to overlap with the Proposed Project, 12 developments were assessed for potential cumulative impacts with the Proposed Project.

The environmental factors for which there were considered to be potential cumulative impacts with the Proposed Project were population and human health, hydrology and hydrogeology, terrestrial and marine flora and fauna, water quality, landscape and visual, traffic and transport, air quality and odour, noise and vibration, waste and material assets.

The potential for cumulative impacts during the Operational Phase is expected to be less, on the basis that fewer impacts are anticipated during this phase. Potential cumulative impacts comprise:

- population and human health: cumulative impacts from increases in traffic; sterilisation of the land along the proposed 20m wayleave where it passes through areas of other development; and
- traffic and transportation: increase in traffic volume, which could affect surrounding roads, including areas which are already near, at or over-capacity.

23.4 Mitigation Measures

The results of the assessment presented in Table 23.3 indicate that no additional mitigation measures other than those provided in the EIAR and summarised in Chapter 24 Summary of Mitigation Measures in Volume 3 Part A have been found necessary to mitigate adverse cumulative impacts.

23.5 Residual Impacts

With the implementation of the specified mitigation measures, the majority of the identified potential cumulative impacts will be avoided or reduced to a not significant level. The exceptions to this are:

- Traffic during both the Construction Phase and Operational Phase, which may continue to represent a negative impact (although it should be noted that this is accounted for in the traffic growth factors built into models); and
- The sterilisation from future development of the proposed 20m wayleave, which would have to be accounted for during the master planning phases of such development.

23.6 Environmental Interactions

The potential interactions between environmental aspects arising from the Proposed Project were considered and are addressed in more detail within the applicable chapters of the EIAR.

A summary of the general interactions is presented in Table 23.4, and a detailed description of the interactions is included in Table 23.5.

The assessment has considered both the Construction Phase and Operational Phase. The mechanisms for interaction during the Construction Phase can be summarised as follows:

- Population and human health: impacts from traffic, noise and dust;
- Hydrology, hydrogeology and aquatic biodiversity: risks of increased surface water runoff containing suspended solids from areas of exposed soils and risks associated with the crossing of watercourses;
- Terrestrial flora and fauna: increased disturbance and direct harm or mortality to more mobile species such as birds and bats, particularly through the loss of a larger extent of hedgerows or greater number of trees;

- Marine flora and fauna: larger cumulative area of exposed soils, in particular adjacent to Baldoyle Bay, could result in greater risk of sediment-laden runoff entering the sea; potential increase in noise and visual impacts on birds from concurrent construction activities;
- Landscape and visual: greater visual impact and temporary landscape intrusion from concurrent activities;
- Traffic and transport: increase in traffic volume, which could affect surrounding roads, including areas which are already near, at or over-capacity;
- Air quality, odour and climate: increased levels of dust and emissions from construction plant and vehicles, particularly from activities in close proximity to each other;
- Noise and vibration: increased noise and vibration related impacts, including nuisance;
- Waste: potential increase in availability of surplus construction/excavation arisings that require disposal due to demand for reuse being satisfied from another source; however, in one instance this may present an opportunity and therefore be a positive impact if arisings from the Proposed Project can be used in land restoration; and
- Material assets: potential conflicts of infrastructure where developments are in close vicinity to each other.

23.7 Difficulties Encountered in Compiling Required Information

There were no specific difficulties encountered when carrying out this assessment.

Table 23.4: Environmental Interactions Matrix

Typical Inter-Relationship Matrix – Environmental Elements	Planning and Policy		Population and Human Health		Marine Water Quality		Biodiversity (Marine)		Biodiversity (Terrestrial and Freshwater Aquatic)		Landscape and Visual		Traffic and Transport		Air Quality, Odour and Climate		Noise and Vibration		Archaeological, Architectural and Cultural Heritage		Hydrology and Hydrogeology		Soils and Geology		Agronomy		Waste		Material Assets	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Planning and Policy																																
Population and Human Health	✓	✓																														
Marine Water Quality			✓	✓																												
Biodiversity (Marine)					✓	✓																										
Biodiversity (Terrestrial and Freshwater Aquatic)					✓		✓																									
Landscape and Visual	✓	✓	✓	✓			✓		✓	✓																						
Traffic and Transport			✓								✓																					
Air Quality, Odour and Climate			✓										✓																			
Noise and Vibration			✓			✓							✓																			
Archaeological, Architectural and Cultural Heritage			✓	✓							✓	✓					✓															
Hydrology and Hydrogeology			✓	✓	✓	✓	✓	✓	✓	✓																						
Soils and Geology			✓				✓	✓	✓	✓			✓		✓		✓		✓		✓											
Agronomy			✓			✓		✓	✓		✓		✓		✓		✓		✓		✓	✓	✓	✓								
Waste	✓	✓	✓								✓		✓										✓									
Material Assets			✓										✓										✓					✓				

Table 23.5: Interactions Between Environmental Aspects

Typical Inter-Relationship Matrix – Environmental Elements	Planning and Policy	Population and Human Health	Marine Water Quality	Biodiversity (Marine)	Biodiversity (Terrestrial and Freshwater Aquatic)	Landscape and Visual	Traffic and Transport	Air Quality, Odour and Climate	Noise and Vibration	Archaeological, Architectural and Cultural Heritage	Hydrology and Hydrogeology	Soils and Geology	Agronomy	Waste	Material Assets
Planning and Policy															
Population and Human Health	Land zoning near the proposed WwTP including Green Belt and residential development zoning. Socio-economic connection between county development plans/water services and infrastructure strategies and the Proposed Project.														
Marine Water Quality		Negative impacts to water quality due to proposed outfall pipeline route (marine section) construction could have the potential to impact bathing water quality and hinder diving and other marine sports. Once operational, the proposed WwTP will have a positive impact on water quality													
Biodiversity (Marine)			Impact of suspended and accumulated sediments on populations of sensitive reef habitats and shellfish species; impact on marine ecology if discharge reduced water quality												
Biodiversity (Terrestrial and Freshwater Aquatic)			Freshwaters will act as a direct pathway for pollutants and sediment to the marine environment as a consequence of the works, if not mitigated	Freshwaters will act as a direct pathway for pollutants and sediment to the marine environment as a consequence of the works, if not mitigated											

Typical Inter-Relationship Matrix – Environmental Elements	Planning and Policy	Population and Human Health	Marine Water Quality	Biodiversity (Marine)	Biodiversity (Terrestrial and Freshwater Aquatic)	Landscape and Visual	Traffic and Transport	Air Quality, Odour and Climate	Noise and Vibration	Archaeological, Architectural and Cultural Heritage	Hydrology and Hydrogeology	Soils and Geology	Agronomy	Waste	Material Assets
Landscape and Visual	Landscape sensitivity zones closely related to Fingal County Landscape Character Assessment and Green Infrastructure zonings.	Visual impact of the Proposed Project on the landscape and local amenities and resulting impact on tourism and leisure in the area		Disturbance of birds due to visual impact of construction compounds	Removal of trees and hedgerows affecting habitats of bats and birds. Planting proposed to screen the proposed WwTP site would enhance habitats.										
Traffic and Transport		Impacts on local residents and business created by nuisance and stress from increase in traffic and delays, particularly at junctions which are already over capacity; impact on human health from vehicle emissions				Visual impacts from heavy machinery and heavy goods vehicle construction traffic									
Air Quality, Odour and Climate		Impact on human health receptors from emissions, particularly aspergillus, dust and particulate matter; nuisance impacts associated with dust and odour					Impacts associated with creation of dust during construction and generation of vehicle emissions								
Noise and Vibration		Potential for noise and vibration related impacts from works near sensitive receptors (Connolly Hospital, St. Francis' Hospice and Schools)		Impact of noise and vibration resulting from dredging and piling works on sensitive marine mammals and birds			Impacts from noise/vibration due to construction/operational traffic								

Typical Inter-Relationship Matrix – Environmental Elements	Planning and Policy	Population and Human Health	Marine Water Quality	Biodiversity (Marine)	Biodiversity (Terrestrial and Freshwater Aquatic)	Landscape and Visual	Traffic and Transport	Air Quality, Odour and Climate	Noise and Vibration	Archaeological, Architectural and Cultural Heritage	Hydrology and Hydrogeology	Soils and Geology	Agronomy	Waste	Material Assets
Archaeological, Architectural and Cultural Heritage		Impact on population/society through loss of cultural heritage sites				Potential impact to heritage features such as designated heritage demesne landscapes			Potential for vibrations to cause structural damage to buildings, including built cultural heritage sites						
Hydrology and Hydrogeology		Impact on flood risk from Proposed Project; assessment of impact on groundwater abstraction boreholes from dewatering operations	Impacts on marine water quality from runoff containing suspended solids or hazardous substances from spills, etc.	Impacts on marine water quality and marine ecology from runoff containing suspended solids or hazardous substances from spills, etc.	Impacts on surface watercourses and ecology from runoff containing suspended solids or hazardous substances from spills, etc. Wayleave includes one pond with smooth newts that require translocation and draining of pond										
Soils and Geology		Impact of excavated contaminated ground on human health, particularly at Balseskin/Ballymun historical landfill sites		Impact on marine ecology through release of sediments from disturbance of seabed; generation of noise/vibration from tunnelling operations affecting marine mammals	Impacts from runoff from exposed ground and construction areas affecting surface water resources and ecology		Impact of construction traffic on land/wayleave soils	Generation of dust from exposed ground and construction activities	Some excavations into rock may involve rock-breaking techniques, which create greater noise than traditional excavations	Assessment included consideration of geological heritage sites	Assessment of impact on groundwater abstractions. Groundwater availability and vulnerability dependent upon geology				
Agronomy		Impact of the loss of 31.8ha of agricultural land on local famers and agricultural industry in the area Impact of public perception on uptake/costs of produce			Potential spread of noxious weeds, animal- and soil-borne diseases such as potato eelworm through exposed soil	Impacts from change of landscape character and loss of agricultural land	Nuisance impacts from increase in traffic and need to change farming operations, e.g. to use temporary access points	Impact of dust particles from construction on farm animals and produce (milk and crops)	Excessive noise can cause distress to farm animals. Tonal and impulsive noise can impact breeding and the training of horses		Impacts on private groundwater abstractions from dewatering operations	Reduction in soil fertility due to the loss of topsoil, soil mixing and soil compaction			

Typical Inter-Relationship Matrix – Environmental Elements	Planning and Policy	Population and Human Health	Marine Water Quality	Biodiversity (Marine)	Biodiversity (Terrestrial and Freshwater Aquatic)	Landscape and Visual	Traffic and Transport	Air Quality, Odour and Climate	Noise and Vibration	Archaeological, Architectural and Cultural Heritage	Hydrology and Hydrogeology	Soils and Geology	Agronomy	Waste	Material Assets
Waste	Waste management to follow waste hierarchy in accordance with European, national and regional legislation and policies	Potential impact upon available waste management capacities of licensed landfills may impact on collection of domestic waste				Impacts associated with need for off-site disposal of surplus soils reduced through material balance included in landscape design.	Increased traffic due to the presence of heavy goods vehicles transporting waste material					Waste arising from the excavation of soils/rock and the potential for spread of waste sludge on soils. Mobilisation of contaminants from historical landfills at Balseskin and Ballymun can impact surrounding soils; need to dispose of surplus soils if unsuitable for use			
Material Assets		Impact on population from road closures and infrastructure interruptions; impacts associated with availability of raw materials used in the construction process					Increase in traffic on roads surrounding the Proposed Project due to the import of materials					Excavations in areas of potential future aggregate reserves leading to sterilisation of potential future resource. Potential for slope failures due to excavations.		Impact on waste generation from choice of construction technique, including need for trenchless techniques at major infrastructure crossing points	

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