

Galway County Council

N6 Galway City Ring Road

EIAR - Cumulative Impact Assessment
Update Addendum Report (Dealing with
approved and live pending applications
since Publication of the EIAR)

Issue 2 | ~~10 March 2020~~ 15 October 2020

NOTE: - Updates to this Addendum Update Report are in red text or red strike-through.

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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1 Introduction

1.1 Background

Annex IV (5)(e) of the EIA Directive as amended by Directive 2014/52/EU requires that the EIAR shall contain:

“A description of the likely significant effects of the project on the environment resulting from, inter alia:

*(e) the cumulation of effects with other **existing and/or approved projects**, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;*

The cumulative impact assessment of the proposed road development (N6 Galway City Ring Road (N6 GCRR)) in combination with other projects is presented in Section 19.5 (pages 1671-1709) of Chapter 19 (Major Accidents, Inter-Relationships, Interactions and Cumulative Impacts) of the EIAR.

While the EIA Directive specifically requires a description of the likely significant effects of the N6 GCRR on the environment resulting from the cumulation of effects with other *existing and/or approved projects*, Galway County Council went further in the EIAR and also considered and assessed any relevant proposed (but not approved at that time) developments likely to have significant cumulative effects.

As noted on page 1671 of Section 19.5.1, a review of the committed projects and the planning files for Galway City and County Council was carried out prior to publication of the EIAR (October 2018). These projects were either in existence, approved or proposed at that time and were considered and assessed as to whether they have the potential for likely significant direct, indirect and cumulative impacts on the environment.

Likely significant cumulative impacts of the proposed road development (N6 GCRR) in combination with other projects and plans identified in Section 19.5.1 (page 1671) and in Table 19.3 (page 1690) of the EIAR for each of the environmental factors were identified, considered and assessed in respective chapters of the EIAR. Further, Section 19.5 of Chapter 19 presented all of the individual assessments together and examined and assessed whether the proposed road development in combination with those other projects and plans would be likely to have significant environmental effects both on an individual basis with the proposed road development and also cumulatively with all such plans and projects identified in Chapter 19 of the EIAR. The conclusion of that assessment was that there would not be likely significant cumulative impacts other than those already identified in the individual assessments.

The Addendum Update Report handed in to the Oral Hearing on 10 March 2020 and as uploaded to the following website:- <http://www.n6galwaycityringroad.ie/> considered and assessed the direct, indirect and cumulative impacts of any projects approved since the publication of the EIAR together with any pending planning

applications that might have the potential for likely significant effects, up to 10 March 2020.

Given the suspension of the Oral Hearing due to Covid-19, it was thought prudent to update this Addendum Update Report for the interim period.

Since 10 March 2020, the status of some of the live projects originally assessed has changed:

- Two projects: 305982-19 (Gort na Bró) and 306413-19 (Rosshill) have been refused.
- One project: 19/372 (NUIG new pitches) has received a notice of a decision to grant planning permission
- Two projects: 306222-19 (Ballybane More Road) and 306403-19/306403-20 (Coolough Road) have been granted planning permission.

The three projects which have either, received a notice of a decision to grant planning permission or have received planning permission have been reviewed further in this report to ascertain if there were any changes since they were last assessed/considered.

Those projects which have been refused no longer need to be considered in the cumulative assessment process.

Since 10 March 2020, an updated review has been carried out of live applications contained in the planning files for:

- i. Galway City Council
- ii. Galway County Council
- iii. County Councils in neighbouring counties
- iv. An Bord Pleanála
- v. Department of Housing, Planning and Local Government EIA Portal

Arising from this review, there are three new live projects that have been identified which have the potential for likely significant cumulative impacts.

During the course of the Oral Hearing Twomileditch Quarry¹ was referred to and for completeness this has also been considered and assessed cumulatively with the N6 GCRR in this Addendum Update Report in **Table 3**, and also cumulatively with the N6 GCRR in combination with all of the other plans and projects considered in section 19.5 of the EIAR and in **Table 1** of this Addendum Update Report in **Table 4**.

¹ Twomileditch Quarry, Tuam, Co. Galway - Further development of quarry and all related ancillary site works Pollkeen and Ballygaurran Townlands. ABP Ref QD0021. Granted by ABP on 25/07/2017. <http://www.pleanala.ie/casenum/QD0021.htm>

1.2 Other projects considered since publication of the EIAR

There are a number of projects which have been approved since the publication of the EIAR (October 2018). There are also some pending and live applications as at the date of this addendum report (dated: 15 October 2020). Consistent with the approach taken in the EIAR, this addendum report considers and assesses the direct, indirect and in-combination effects of any projects approved since the publication of the EIAR together with any pending planning applications that might have the potential for likely significant impacts.

A review has been carried out of live and approved applications contained in the planning files for:

- i. Galway City Council
- ii. Galway County Council
- iii. County Councils in neighbouring counties
- iv. An Bord Pleanála, and
- v. Department of Housing, Planning and Local Government EIA Portal

Arising from this review, a number of live and/or approved projects (as listed in **Table 1** below) have been identified which have the potential for likely significant cumulative impacts. Drawing No GCRR-SK-OH-042 (as updated) shows the location of the live and approved projects listed in **Table 1**. The assessment in this addendum considers and assesses whether any of those live and/or approved projects will have likely significant cumulative impacts in combination with the N6 GCRR either on its own or in combination with the N6 GCRR and all of the projects and plans considered in Section 19.5 of the EIAR.

There are many projects (live/approved) within Galway city, county and neighbouring counties. However, only the projects listed in **Table 1** below are considered to have the potential to cause likely significant cumulative impacts (either in-combination with the N6 GCRR on its own or in-combination with the N6 GCRR and all those projects and plans considered in Section 19.5 of the EIAR) and the potential for cumulative impacts has been ruled out in respect of other projects due either to the distance of the proposed road development from these projects or the location or design or nature of those projects.

For example, there are two ~~recently approved/live~~ strategic housing development (SHD) projects approved/live in Co. Galway (304203² and 300560³), two wind

² ABP ref 304203: SHD development (212 residential units), permitted in 2019, located in townlands of Moneyduff, Oranmore, Co. Galway

³ ABP ref 300560: SHD development (128 dwelling houses), permitted in 2018, located in Halfstraddle, Ballynagaddy Road, Tuam. Co. Galway

turbine projects (303086⁴ and 191481⁵), and a solar farm (191315⁶) and biogas plant (191812⁷) (refused) in Co. Galway but given the location and nature of these projects, none of them have the potential to cause likely significant impacts (either in-combination with the N6 GCRR on its own or in-combination with the N6 GCRR and all of the projects and plans considered in Section 19.5 of the EIAR). Accordingly, these have not been considered or assessed in this addendum report.

There are other applications which have been refused planning consent or have been withdrawn or invalidated and these have not been considered or assessed in this addendum report.

It is noted that there are other known projects in the public domain (such as a potential large strategic housing development (SHD) application on Sandy Road, Galway) which have not yet been the subject of an application to a planning authority for consent. These have not been considered or assessed in this addendum report.

All of the experts have reviewed the available materials relating to the approved projects and live applications in **Table 1** below in order to conduct their assessments.

The methodology used to assess the likely significant cumulative effects is that as presented in Section 19.3 (pages 1638-1639) of the EIAR.

Table 2 of this addendum report presents the results of the likely significant direct, indirect and cumulative impact assessment (under all of the individual environmental factors) for each project listed in **Table 1** in combination with the N6 GCRR. **Table 3** presents the results of the likely significant direct, indirect and cumulative impact assessment of each project listed in **Table 1** in combination with the N6 GCRR and all of those projects and plans considered in Section 19.5 of the EIAR and the project listed in **Table 3**.

The conclusion of the assessment presented in this addendum is that there are no likely significant cumulative impacts arising from an assessment of the projects listed in Tables 1 and 3 above below save in relation to climate as explained in the Tables below.

⁴ ABP ref 303086: Construction of up to 25 wind turbines, mast and 110kv substation, permitted in 2019, located in Ardderroe, Letter and Finnaun, Oughterard, Co. Galway.

⁵ GCoC 191481: SSE Renewables Ltd & Coillte – Live application. A change to the dimensions and locations of nine previously consented turbines, located in Derradda, Seecon, Shannapheasteen, Uggoon, Letter, Finnaun, Oughterard, Co. Galway. Further information requested Nov 2019 Permitted but on appeal to ABP (307117). Case was due to be decided by 28/09/2020.

⁶ GCoC Ref 191315: Solar Farm, located at Cloonascragh, Tuam, Co Galway. Permitted but on appeal and appealed to ABP (306685) and subsequently permitted 04/08/2020. Case is due to be decided by 23/06/2020.

⁷ GCoC Ref 191812: Biogas Plant. Refused but on appeal to ABP (306709). Case is due to be decided by 24/06/2020

No additional mitigation measures are necessary or required following this assessment.⁸

Table 1: Live and approved projects since publication of EIAR

ABP ref	GCC ref	Details	Live/Approved Decision Date
-	19/372	NUIG New Pitches Planning permission for the development of 1 no. 3G pitch and 1 no. grassed GAA/soccer pitch plus all ancillary infrastructure, ball stop fencing, floodlighting, drainage, an enhanced biodiversity area and all associated site development works.	LIVE- FI REQUEST NOTICE OF DECISION TO GRANT PLANNING PERMISSION September 2020
305982-19	SHD 18/7	332 no. apartments, creche and all associated site works. Gort na Bró, Ragoon, Co. Galway. www.knoeknacarradistriceteentre.ie	LIVE 30/03/2020 REFUSED March 2020
306222-19	SHD 19/1	Ballybane More Road 102 no. residential units (24 no. houses, 78 no. apartments), childcare facility and associated site works. Ballybane More Road, Ballybrit, Doughiska, Co. Galway. www.ballybanemoreroadshd.ie	LIVE 20/04/2020 GRANT 21/04/20
306403-19 306403-20	SHD 18/9	255 no. student bedspaces. Coolough Road, Terryland, Co. Galway. www.cooloughstudentresidences.ie	LIVE 05/05/2020 GRANT 16/06/20
306413-19	SHD 19/2	342 no. residential units (185 no. houses, 157 no. apartments). Lands at Rosshill Road, in the townlands of Roseam, Merlin Park and Murrough, Rosshill Road, Galway, Co. Galway www.rosshillmanorshd.ie	LIVE 07/05/2020 REFUSED 06/05/20
-	20/47	Augustine Hill (Rear of Ceannt Station) The proposed development is for a mixed-use urban regeneration project consisting of the following uses: residential, retail, cafes/restaurants, hotel, office, cinema, childcare facility, community, cultural, parking, and associated site development works. EIAR and NIS accompany the planning application	LIVE FI REQUEST 15/6/2020
20/46		Mincloon Clybaun Road and Mincloon Cross Galway Planning permission is sought for the development which will consist of amendments and modifications to previously granted planning permission 14/248 (An Bord Pleanála Ref: PL 61.245292). (77 residential units)	LIVE FI REQUEST 04/06/2020
20/83		Bóthar Stiofáin, Ragoon, Galway	LIVE

⁸ As discussed in Table 3 below, a commitment has however been included in the Schedule of Environmental Commitments regarding liaison to schedule any blasting programmes relating to Twomileditch Quarry and the N6 GCRR.

ABP ref	GCC ref	Details	Live/Approved Decision Date
		Demolition of existing structures, construction of 4 storey apartment block (18 residential units) https://plan.galwaycity.ie/?file_number=2083	FI REQUEST 14/07/2020
20/101		2,3,4 Knocknacarra (R336) Salthill (17 apts) Permission is sought for the development which will consist of the demolition of existing Petrol Service Station, Shop and associated tanks, and sub-standard dwelling houses with site frontage on to Bruach na Mara, and for construction of new mixed use development including 17 residential units	LIVE FI REQUEST 16/07/2020
304345-19	SHD 18/5	Letteragh Road, Letteragh, Ragoon. 101 residential units (46 houses, 55 apts.), childcare facility & site works on lands to east of Ballymoneen	GRANT 02/08/19
304762-19	SHD 18/4	East Ballymoneen Road in the townland of Ballyburke. Demolition of an existing house and associated outbuildings, and the construction of 238 no. residential units (113 no. houses, 125 no. apartments), and a childcare facility with associated site works on lands to, Galway.	GRANT 14/10/19
304928-19	SHD 18/6	Crown Square, Monivea Road. & Joyce's Road., Mervue. 288 no res units.	GRANT 30/10/19
301693-18	SHD 18/1	Dangan, Upper Newcastle. Student Accommodation. 394 beds (53 apts.)	GRANT 04/01/19
303846-19	SHD 18/3	NUIG, Northern Campus, Dangan, 471 student beds	GRANT 11/06/19
	19/107	Galway West Water Supply Scheme – Terryland WTP Intake Works and Clifton Hill Rising Main (Irish Water). Permission for development which comprises of a new raw water intake works located on the east bank of the River Corrib, 100m downstream of Quincentenary Bridge; associated pipework to transfer raw water from the new intake works to the existing intakes works, which in turn supplies Terryland Water Treatment Plant (WTP); and a new treated water rising main extending between Terryland WTP and existing rising main on the east bank of the River Corrib. NIS included.	GRANT 24/01/20

1.3 Traffic

The air quality, climate and noise assessments are dependent on traffic data. Therefore, it is appropriate that information on the traffic assessment is referenced. Following the publication of the National Planning Framework (NPF) and associated population and employment targets for Galway, SYSTRA carried out a review of the N6 GCRR modelling, using the recently published NPF forecasts. The outputs from this modelling exercise were then used to determine the likely transport impacts of the scheme in the context of the updated demographic assumptions and this is set out at Section 8 in the Response to the Further Information Request and were considered in the air quality, climate and noise assessments as included in the Response to Further Information Response.

2 Overall Cumulative Impact Assessment

Table 2: Likely significant direct, indirect and cumulative impact assessment of live or approved projects listed in Table 1 in combination with the N6 GCRR

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
<p>NUIG New Pitches (19/372)</p> <p>NOTICE OF DECISION TO GRANT PLANNING PERMISSION</p>	<p>Socio Economic: The proposed NUIG project will have a positive cumulative impact on human beings, mitigating for the negative impact that the proposed road development will have on two existing pitches during construction. The proposed road development itself will provide a positive cumulative impact by facilitating access to users of the proposed pitches and visitors via the N59 Link Road North. There is no severance of access beneath the viaduct. There are no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed NUIG pitches project (19/372).</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: The proposed NUIG project (19/372) consists of the provision of new playing pitches which as noted above (socio-economic) will have a positive impact on people. There are no likely significant direct, indirect cumulative impacts on human health of the N6 GCRR in combination with the proposed NUIG pitches project (19/372).</p> <p>Material Assets Non-Agriculture: Given that NUIG project is for playing pitches, from a non-agricultural material assets perspective, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed NUIG pitches project (19/372).</p> <p>Material Assets Agriculture: There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed NUIG pitches project (19/372) because this land (19/375) is not agricultural.</p> <p>Air Quality and Climate: The proposed NUIG project (19/372) consists of the provision of new playing pitches. The construction phase of the proposed NUIG project is not expected to generate levels of dust so as to create a significant negative cumulative impact. The RFI Response updated the air impact assessment which considered the increased population as forecasted by the NPF which includes forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts will occur. The new playing pitches will not generate any</p>	<p>None save in relation to Climate.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>impacts on air quality during the operational phase. Therefore, no likely significant cumulative impacts will occur between the N6GCRR and this project.</p> <p>It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed project are likely to have likely significant cumulative impacts on climate.</p> <p>Noise and Vibration: The proposed NUIG project (19/372) consists of the provision of new playing pitches – likely significant noise effects during construction and operation will not arise. The construction of the N6 GCRR will dominate noise and vibration levels in this area once under construction. Similarly, noise levels from the operation of the N6 GCRR will become the main noise source in this area once operational. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed NUIG pitches project (19/372) on noise and vibration.</p> <p>Landscape and Visual: The proposed NUIG project (19/372) is located south of the existing soccer pitches and to the immediate north of the proposed N6 GCRR. It is also located within the grounds of the existing NUIG Sporting Campus, adjacent to existing sports pitches and in area where the land use zoning is ‘RA’ Recreational and Amenity. The NUIG project includes for provision of a biodiversity enhancement area to the north (riverside) of the existing pitches. While the layout of the pitch development has been designed to take account of the proposed road development, it will requires the removal of a small area of additional existing planting located to the north of the proposed road development. The proposed road development also includes for removal of vegetation in this area, however, the removal of additional vegetation for the pitch development is not significant given the extent of retained vegetation in the surrounding area and the new planting in the proposed biodiversity area. The proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with the proposed NUIG sports-related project as proposed.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed NUIG project in combination with the N6 GCRR. This is due to the nature and scale of the NUIG development, the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated in this area and the fact that no visual (indirect) impacts will arise that relate to the archaeological, architectural and cultural heritage resource.</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Soils and Geology: Some peat excavation/removal will likely be required, along with the loss of soil and very high aggregate potential from the proposed-NUIG project (19/372). However, the cumulative loss is still considered small on a local scale. No significant negative impacts are likely following the implementation of appropriate mitigation measures and adherence to the CEMP for the NUIG project. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed NUIG pitches project (19/372) on soils and geology.</p> <p>Hydrogeology: The proposed NUIG project is located on the Ross Lake groundwater body which is traversed by the proposed road development. The NUIG pitches will require a new drainage network to be installed which may modify the recharge locally. However, changes identified by the proposed NUIG pitches project will not interact with those impacts identified in the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed-NUIG pitches project (19/372) on hydrogeology.</p> <p>Hydrology: The proposed NUIG project is located adjacent to the river Corrib and will drain to the River Corrib SAC to the north of the N6 GCRR. Careful management of site runoff during construction of this NUIG project will be necessary to protect the Corrib SAC from potential pollution. The pitches avoid the flood zone being located in the low Flood Risk Zone C lands. During operation, the grassed GAA pitch may require the application of some fertilisers which will require management. However, given the proposed drainage design for the N6 GCRR and the proposed Sediment Erosion and Pollution Control Plan (within the CEMP), there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed-NUIG pitches project (19/372) on hydrology.</p> <p>Biodiversity: It should be noted that this application is still live and that a request for further information has been issued. The assessment provided here is based on the information currently available. As per the information submitted by the applicant for this development (which includes an Ecological Impact Assessment, as well as information submitted in response to a request for further information, in particular an updated Natura Impact Statement, a Biodiversity Management and Enhancement Plan, and a Woodland Assessment Report), considering the mitigation measures proposed therein, it alone will not result in any likely significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance.</p> <p>Areas of the priority Annex I habitat Residual alluvial forest were recorded within the 19/372 development site as part of the N6 GCRR surveys undertaken in 2014. The information submitted by NUIG for this development, includes surveys and relevés undertaken in May 2020. If On the basis of this information, as it is has been considered that the area of habitat</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>to be lost to the 19/372 development is not Annex I habitat Residual alluvial forest, then there would will be no cumulative loss of this habitat together with the N6 GCRR. In the alternative, if it is considered that the area of habitat to be lost to the 19/372 development is in fact Annex I habitat Residual alluvial forest, then there would be a cumulative loss of this habitat together with the loss of 0.14ha of this habitat to be lost to the N6 GCRR.</p> <p>Regardless of whether the 19/372 development site supports Residual alluvial forest habitat, the N6 GCRR project alone will not have any likely significant residual effects on this habitat type as it is proposed to create 0.18ha of this habitat as part of the N6 GCRR mitigation strategy to address the loss of 0.14ha for the proposed road development, resulting in no net permanent habitat loss. Therefore, the N6 GCRR project will not contribute to any potential cumulative residual effects arising from permanent loss of Residual alluvial forest habitat from any other projects including development 19/372.</p> <p>According to the information submitted by NUIG this development 19/372 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. In addition as this development will not result in any significant residual biodiversity impacts at any geographic scale, the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and development 19/372, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p>	
<p>Knocknacarra District Centre, Gort na Bró, Ragoon SHD (305982-19) (SHD 18/7)</p> <p>REFUSED</p>	<p>Socio-Economic: There will be a positive cumulative socio-economic impact arising from the N6 GCRR in combination with the proposed Knocknacarra SHD (305982-19) through provision of a cycle lane from Western Distributor Road along Gort na Bro Road towards the Gaelseoil together with pedestrian crossing facilities across Gort na Bro from the entrance to the proposed SHD (305982-19) development. In addition, there will be a positive cumulative impact between the N6 GCRR in combination with the proposed Knocknacarra SHD (305982-19) as the N6 GCRR now contains proposals for cycle lanes and pedestrian footpaths on both sides of Gort na Bro with crossing facilities at the Ragoon Junction with the N59 Link Road South. There are no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed Knocknacarra SHD (305982-19) project.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p>	<p>None save in relation to Climate.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Human Health: The proposed Knoeknacarra SHD (305982-19) project is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts on human health will arise from the N6 GCRR in combination with the Knoeknacarra SHD (305982-19) project.</p> <p>Material Assets Non-Agriculture: Given that that the Knoeknacarra SHD (305982-19) project is set at sufficient distance from the proposed road development, from a non-agricultural material assets perspective, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project.</p> <p>Material Assets Agriculture: There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed Knoeknacarra SHD project because this land (located on a 2.96 hectare site) is not agricultural.</p> <p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed Knoeknacarra SHD (305982-19) project, no significant air quality cumulative construction impacts will occur. The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur. Therefore, taking the N6 GCRR with this project, no likely significant cumulative impacts will occur. The proposed SHD residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance⁹, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in combination. Accordingly, the construction of this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate during the construction phase and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: The proposed Knoeknacarra SHD project is set at sufficient distance from the proposed road development such that no cumulative noise impacts will arise as a result of construction or operational phase of this SHD development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed Knoeknacarra SHD project (19/372) on noise and vibration.</p>	

⁹ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Landscapes and Visual: The proposed Knocknacarra SHD is located on lands zoned for 'CI' (Enterprise, Light Industry and Commercial) development. The site has an urban/suburban context and is adjacent to the Gort na Bró Link Road (effectively an urban/suburban tie-in from the N59 Link Road South) element of the proposed road development. The Knocknacarra SHD will give rise to visual impacts during construction and operation. These visual impacts will be typical of urban development and will be greatest during construction stage in this established, developed and appropriately zoned location. Likewise, in this location the proposed road development provides for an urban/suburban tie-in road network. The proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with the proposed Knocknacarra SHD project at this location.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed Knocknacarra SHD project in combination with the N6 GCRR. This is due to the nature and scale of the development and the proposed N6 GCRR at this location, the existing developed nature of the receiving environment, the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated in this area and the fact that no visual (indirect) impacts will arise that relate to the archaeological, architectural and cultural heritage resource.</p> <p>Soils and Geology: While the majority of the site consists of shallow bedrock, the Knocknacarra SHD EIAR assessment concluded that there will be a small loss of soil (based on Teagasc/EPA soil mapping), in addition to the loss of very high aggregate potential. However, the cumulative loss is considered small on a local scale. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed Knocknacarra SHD project is located on granite and is significantly down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impact identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed Knocknacarra SHD project is down gradient of the proposed road development and will manage its storm runoff as required by the current Development Plan such that greenfield flood runoff rates will be maintained post development with attenuation for the 100-year rainstorm event with 20% climate change. This development will discharge to the Knocknacarra Stream which outfalls into Rusheen Bay within the Galway Bay Complex eSAC. The proposed road</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>development discharges to this stream from the mainline and the N59 Link Road. The foul effluent from the proposed Knocknacarra SHD project will be discharged to the public foul sewer and will be treated at the Mutton Island wastewater treatment plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment. The foul discharge from the proposed development has been assessed and permissions obtained from Irish Water. There will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology</p> <p>Biodiversity: As per the Biodiversity chapter of the Ecological Impact Assessment Report submitted by the applicant for development SHD 18/7, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance.</p> <p>According to the Ecological Impact Assessment Report, development SHD 18/7 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development SHD 18/7 will not result in any significant residual biodiversity impacts at any geographic scale (being an urban site comprising predominantly of spoil and bare ground habitat), the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and SHD 18/7, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p>	
<p>Ballybane More Road SHD (306222-19) (SHD 19/1)</p> <p>GRANTED</p>	<p>Socio Economic: The proposed road development provides very slight positive cumulative socio-economic impact in making the proposed SHD project potentially easier to access due to expected reduction in congestion in the area of Briarhill where the R339 meets the existing N6. There are no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed Ballybane SHD (306222-19) project.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: Proposed Ballybane SHD project is set at sufficient distance from the proposed road development such that no cumulative human health impacts arise as a result of construction or operational phase of this SHD development.</p>	<p>None save in relation to Climate</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed-SHD development and the proposed N6 GCRR.</p> <p>Material Assets Agriculture: There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed Ballybane SHD project because this land (located on a 2.09 hectare site) is not agricultural.</p> <p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed-SHD project, no likely significant air quality cumulative construction impacts will occur. The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore no likely significant cumulative impacts will occur between the N6GCRR and this project.</p> <p>The proposed-residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹⁰, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in-combination. Accordingly, this proposed-SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: The proposed development is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project will arise. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis is included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered the increased population as forecasted in the NPF and the forecasted traffic volumes in proximity to the proposed road development and concluded that there are no likely significant impacts and therefore, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration.</p> <p>Landscape and Visual: The proposed Ballybane SHD is set within the existing developed urban/sub-urban context of Ballybane More Road, which is physically and visually separated from the proposed road development by surrounding developed context. The proposed development is located on 'R' Residential zoned lands. The proposed road development</p>	

¹⁰ Institute of Environmental Management and Assessment (IEMA) guidance note on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with the proposed SHD project at this location.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed Ballybane SHD project and the proposed N6 GCRR. This is due to the nature and scale of the development, the existing developed nature of the receiving environment; the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated in this area and the fact that no visual (indirect) impacts will arise that relate to the archaeological, architectural and cultural heritage resource.</p> <p>Soils and Geology: While there is a small loss of soil, and very high aggregate potential from the proposed Ballybane SHD project, the cumulative loss is considered small on a local scale. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed-SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed-Ballybane SHD is located on limestone and is within the Clarinbridge groundwater body. It is located down gradient of the proposed road development. Although excavations and some dewatering may be required at the SHD site these will not interact with impact identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed-SHD project on hydrogeology.</p> <p>Hydrology: The proposed-Ballybane SHD project is down gradient of the proposed road development and will manage its storm runoff as required by the current Development Plan such that greenfield flood runoff rates will be maintained post development. The storm drainage from the Ballybane SHD project will discharge to the Public Storm Drain at Doughiska. The proposed road development will also discharge to the public storm sewer at Doughiska. The foul effluent will be collected and treated at Mutton Island Wastewater Treatment Plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and water quality so as to protect the receiving environment and permissions obtained from Irish Water to discharge to public storm sewer. The foul discharge from the proposed development has been assessed and permissions obtained from Irish Water. There will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed-SHD project on hydrology.</p> <p>Biodiversity: As per the Ecological Impact Assessment submitted by the applicant for development SHD 19/1, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts</p>	

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	<p>at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance.</p> <p>According to the Ecological Impact Assessment, development SHD 19/1 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development SHD 19/1 will not result in any significant residual biodiversity impacts at any geographic scale, the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and SHD 19/1, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p> <p>In granting permission for this development, An Bord Pleanála concluded that, by reason of the nature, scale and location of the subject site, the development would not be likely to have significant effects on the environment and decided, therefore, that an environmental impact assessment report for the development was not necessary in this case.</p>	
<p>Coolough Residences, Coolough Road, Terryland (306403-19, 306403-20) (SHD 18/9) GRANTED</p>	<p>Socio Economic: The proposed Coolough SHD project is some distance away from the proposed road development. Coolough Road connects Dyke Road and onto Menlo, but the proposed road development crosses it on a viaduct and so no additional traffic is added due to the proposed road development between here and the NUIG campus (1km). For any students accessing GMIT (>3km) additional traffic is added to the N84 and therefore to the junction between this road and the existing N6, although traffic would be reduced on the latter. Therefore, no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed Coolough SHD project will arise.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: This Proposed development is set at sufficient distance from the proposed road development such that no cumulative human health impacts arise as a result of construction or operational phase of this SHD development.</p> <p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR.</p> <p>Material Assets Agriculture: There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed Coolough SHD project because this land is not agricultural.</p>	None save in relation to Climate.

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed SHD project, no likely significant air quality cumulative construction impacts will occur. The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore there is no likely significant cumulative impact of the N6GCRR with this project.</p> <p>The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹¹, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in-combination. Accordingly, this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate during the operational phase.</p> <p>Noise and Vibration: Proposed The Coolough SHD project is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project will arise. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered the increased population as forecasted in the NPF and the forecasted traffic volumes in proximity to the proposed road development and concluded that there are no likely significant impacts and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration.</p> <p>Landscape and Visual: The proposed Coolough SHD is set within the existing developed sub-urban context of Coolough Road and is physically and visually separated from the proposed road development by means of topography, vegetation and distance. The proposed SHD development is located on 'R' Residential zoned lands. The proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with the proposed SHD project at this location.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this</p>	

¹¹ Institute of Environmental Management and Assessment (IEMA) guidance note on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'

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	<p>proposed Coolough SHD project and the proposed N6 GCRR. This is due to the nature and scale of the SHD project, the distance from the scheme, the existing developed nature of the receiving environment and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated in this area.</p> <p>Soils and Geology: While there is a small loss of soil, and very high aggregate potential from this SHD project, the cumulative loss is considered small on a local scale. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed development at Coolough Road is located on limestone and is within the Clare-Corrib (Terryland) groundwater body. It is located down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impacts identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed Coolough SHD project is down gradient of the proposed road development and will manage its storm runoff as required by the current Development Plan such that greenfield flood runoff rates will be maintained post development. The storm drainage will discharge to the combined Public Sewer. The foul effluent will be collected and treated at Mutton Island Wastewater Treatment Plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment. The foul discharge from the proposed development has been assessed and permissions obtained from Irish Water. There will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology.</p> <p>Biodiversity: As per the Ecological Impact Assessment submitted by the applicant for development SHD 18/9, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance.</p> <p>According to the Ecological Impact Assessment, development SHD 18/9 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As</p>	

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	<p>development SHD 18/9 will not result in any significant residual biodiversity impacts at any geographic scale, the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and SHD 18/9, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p> <p>In granting permission for this development, An Bord Pleanála concluded that, by reason of the nature, scale and location of the subject site, the development would not be likely to have significant effects on the environment and decided, therefore, that an environmental impact assessment report for the development was not necessary in this case.</p>	
<p>Rosshillmanor Rosshill Road SHD (306413-19) (SHD 19/2)</p> <p>REFUSED</p>	<p>Socio-Economic: The Rosshillmanor SHD project is within the city over 2km from the nearest connection between the proposed road development and the N67. Therefore, no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed Rosshillmanor SHD (306413-19) project will arise.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: Proposed development is set at sufficient distance from the proposed road development such that no cumulative human health impacts arise as a result of construction or operational phase of this SHD development.</p> <p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR</p> <p>Material Assets Agriculture: This 10 hectare grassland site located at Rosshill Road, is not within the study area – it is located approx. 1.75 km south west of and is not directly affected by the N6 GCRR. This land parcel is currently farmed with a medium sensitivity equine enterprise. While the loss of 10 hectares of agricultural land would represent a significant adverse individual impact, it has no cumulative effects on the land parcels within the study area. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed Rosshillmanor SHD project within the study area nor within a regional basis.</p> <p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed SHD project, no likely significant air quality cumulative construction impacts will occur. The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in</p>	<p>None save in relation to Climate</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore no likely significant cumulative impacts will occur between the N6 GCRR and this project.</p> <p>The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹², any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in combination. Accordingly, this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: Proposed SHD project is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project will arise. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment the increase in population forecasted in the NPF and the forecasted traffic volumes in proximity to the proposed road development and concluded that there are no likely significant impact and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration.</p> <p>Landscape and Visual: The proposed Rosshillmanor SHD is located south of railway and south of Merlin Park University Hospital. The proposed development is located on 'LDR' Low Density Residential zoned lands. The site is physically and visually separated from the proposed road development with intervening development and significant distance. The proposed N6 GCRR will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with the proposed SHD project at this location.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed Rosshillmanor SHD project and the proposed N6 GCRR. This is due to the nature and scale of the SHD development; the distance from the scheme, the existing developed nature of the receiving environment and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated in this area.</p>	

¹² Institute of Environmental Management and Assessment (IEMA) guidance note on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Soils and Geology: The SHD assessment concluded that while there is shallow bedrock, there will be a small loss of soil (based on Teagasc/EPA soil mapping), in addition to the loss of very high aggregate potential. However, the cumulative loss is considered small on a local scale. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed SHD project at Rosshill Road, is located on limestone and is within the Clarinbridge groundwater body. It is located down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impact identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed Rosshillmanor SHD project at Roseam is down gradient of the proposed road development and will manage its storm runoff as required by the current Development Plan such that greenfield flood runoff rates will be maintained post development. Its storm water will discharge to Galway Bay. The foul effluent will be collected and treated at Mutton Island Wastwater Treatment Plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment. The foul discharge from the proposed development has been assessed and permissions obtained from Irish Water. There will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology.</p> <p>Biodiversity: As per the Biodiversity chapter of the Ecological Impact Assessment Report submitted by the applicant for development SHD 19/2, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance.</p> <p>According to the Ecological Impact Assessment Report, development SHD 19/2 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development SHD 19/2 will not result in any significant residual biodiversity impacts at any geographic scale (being an urban site comprising predominantly of spoil and bare ground habitat), the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p style="color: red;">Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCR and SHD 19/2, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p>	
<p>Letteragh Road, Rahoon SHD (304345-19) (SHD 18/5)</p>	<p>Socio Economic: Letteragh Road connects with the N59 Link Road South and some additional traffic is likely to use Letteragh Road to access the city, but the proposed SHD project itself is contained with two access roads to the Letteragh Road (slight negative). However, access to the proposed SHD project is made easier by the proposed road development (moderate positive). Therefore, no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCR in combination with the proposed Letteragh SHD (304345-19) project will arise and, on balance, it will give rise to a slight positive cumulative socio-economic impact.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: In the event that both projects are constructed simultaneously, construction activities associated with the Letteragh SHD project will dominate at closest noise or air sensitive locations to its boundary. There are no cumulative human health impacts associated with the operational phase due to the insignificant noise or air sources from this SHD development.</p> <p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCR</p> <p>Material Assets Agriculture: This housing development affects land parcel Ref No 258/464 located on the Letteragh Road. The impact of the proposed N6 GCR on this medium sensitivity beef enterprise is slight adverse. The loss of a further 2.5 hectares to the housing development increases the impact to significant adverse on this individual land parcel. The impact on the study area will not change due to a further loss of 2.5 hectares and the impact is not significant at a regional basis. Thus are no likely significant direct, indirect cumulative impacts of the N6 GCR in combination with the proposed SHD project on Letteragh Road within the study area nor within a regional basis.</p> <p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed SHD project, no likely significant air quality cumulative construction impacts will occur. The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in</p>	<p>None save in relation to Climate</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore no likely significant cumulative impacts will occur between the N6GCRR and this project.</p> <p>The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹³, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in-combination. Accordingly, this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: In the event both projects are constructed simultaneously, construction activities associated with Letteragh SHD project will dominate at closest noise sensitive locations to its boundary. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project at operation stage due to the insignificant noise sources from this SHD development. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered NPF forecasted traffic volumes which includes the increased population in proximity to the proposed road development and concluded that there are no likely significant impacts and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration.</p> <p>Landscape and Visual: The permitted Letteragh SHD is located within the sub-urban edge of Letteragh Road on ‘R’ Residential zoned lands. The site is physically and visually separated from the proposed road development by intervening topography and vegetation. The proposed N6 GCRR will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with the proposed SHD project at this location.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed Letteragh Road SHD project and the proposed N6 GCRR. This is due to the distance of the SHD development from the scheme and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6GCRR will be fully mitigated.</p>	

¹³ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Soils and Geology: Some of the SHD site will result in the loss of very high aggregate potential, in addition to the loss of soil. However, the cumulative loss is considered small on a local scale. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed development at Letteragh Road is located on granite and is significantly down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impact identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed Letteragh Road SHD residential development is down gradient of the proposed road development and will manage its storm runoff as required by the current Development Plan with attenuation for the 100 year rainstorm event with 20% climate change. This development will discharge to the Knocknacarra Stream which outfalls into Rusheen Bay within the Galway Bay Complex cSAC. The proposed road development discharges to this stream from the Mainline and the N59 Link Road. The foul effluent from the proposed Letteragh Road SHD project will be discharged to the public foul sewer and will be treated at the Mutton Island wastewater treatment plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment. The foul discharge from the proposed development has been assessed and permissions obtained from Irish Water. There will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology.</p> <p>Biodiversity: As per the Biodiversity chapter of the Ecological Impact Assessment Report submitted by the applicant for development SHD 19/2, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance.</p> <p>According to the Ecological Impact Assessment Report, development SHD 19/2 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development SHD 19/2 will not result in any significant residual biodiversity impacts at any geographic scale (being an urban site comprising predominantly of spoil and bare ground habitat), the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and SHD 19/2, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.	
East Ballymoneen Road SHD (304762-19) (SHD 18/4)	<p>Socio Economic: The proposed road development provides a net slight positive cumulative socio-economic impact by facilitating access to and from the proposed East Ballymoneen Road SHD project via the Ballymoneen Junction, although there will be an increase in traffic on Ballymoneen Road south of the junction compared with current levels. Therefore, no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed East Ballymoneen Road SHD (304762-19) project will arise.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: There are no cumulative human health impacts associated with the operational phase of this SHD development combined with the N6 GCRR due to the insignificant noise or air sources from this development.</p> <p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR.</p> <p>Material Assets Agriculture: This land parcel is very low sensitivity with very low agricultural activity for the past number of years. The cumulative impact of this on the lands to the south of the proposed road development in plot 229 would reduce the agricultural area of this land parcel increasing the proportionate land-take and reducing the effect from severance. Overall there would be no change to the assessment of impacts on this land parcel due to this SHD. There no likely significant direct, indirect cumulative impacts of the N6 GCRR on agriculture in combination with the proposed SHD project (2.56 ha site) within the study area or at a regional level.</p> <p>Air Quality and Climate: No likely significant air quality cumulative construction impacts will occur due to the mitigation measures proposed for the N6 GCRR and the implementation of the CEMP required under permission 304762-19. The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore no likely significant cumulative impacts will occur between this project and the N6 GCRR.</p>	None save in relation to Climate.

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹⁴, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in-combination. Accordingly, this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project during the operational phase due to the insignificant noise sources from this SHD development. In the unlikely scenario both projects will be constructed at the same time, construction activities associated with the proposed road development will be the dominant noise and vibration source at the closest sensitive buildings to its alignment. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered NPF forecasted traffic volumes associated with the increased population in proximity to the proposed road development and concluded that there are no likely significant impact and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration.</p> <p>Landscape and Visual: The permitted SHD is located on the existing sub-urban edge at Ballymoneen Road. The site is on 'R' Residential zoned lands and is adjacent to the proposed road development. The permitted SHD will give rise to landscape and visual impacts both during the construction stage, and in operation when new residential development will be established on zoned, but nevertheless previously undeveloped agricultural. The proposed road development will reinforce the degree of change that the permitted SHD will introduce to the area. The zoned and adjacent nature of the site was considered during the landscape and visual impact assessment in the EIAR and screen planting has been provided along the proposed road development to mitigate potential cumulative visual impacts in this area as per Figure 12.1.04 of the EIAR. The proposed N6 GCRR will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with the proposed SHD project at this location.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed development and the proposed N6 GCRR. This is due to the fact that any negative impacts upon the</p>	

¹⁴ Institute of Environmental Management and Assessment (IEMA) guidance note on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated and no visual (indirect) impacts will arise that relate to the archaeological, architectural and cultural heritage resource.</p> <p>Soils and Geology: Some peat excavation/removal may be required at the proposed SHD project, along with the loss of soil and very high aggregate potential. However, the cumulative loss is still considered small on a local scale. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed SHD project at East Ballymoneen Road is located on granite and is significantly down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impacts identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed Ballymoneen Road SHD project is down gradient of the proposed road development and will manage its storm runoff as required by the current development plan such that greenfield flood runoff rates will be maintained post development with attenuation for the 100year rainstorm event with 20% climate change. This development will discharge to the Tonabrocky Stream which is a tributary of the Bearna Stream and which discharges into the Galway Bay Complex cSAC at Rusheen Bay. The proposed road development discharges to this stream from the Mainline. The foul effluent from the proposed Ballymoneen Road SHD project will be discharged to the public foul sewer and will be treated at the Mutton Island wastewater treatment plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment. The foul discharge from the proposed development has been assessed and permissions obtained from Irish Water. There will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology.</p> <p>Biodiversity: As per the Ecological Impact Assessment submitted by the applicant for development SHD 18/4, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance. An Bord Pleanála, in granting permission for SHD 18/4, concluded that “<i>by reason of the nature, scale and location of the subject site, the proposed development would not be likely to have significant effects on the environment</i>”.</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>According to the Ecological Impact Assessment, development SHD 18/4 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development SHD 18/4 will not result in any significant residual biodiversity impacts at any geographic scale, the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and SHD 18/4, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p>	
Crown Square, Monivea Road & Joyce's Road, Mervue SHD (304928-19) (SHD 18/6)	<p>Socio Economic: No significant cumulative socio-economic impact. The proposed Crown Square SHD project is located 300m from the junction between the Tuam Road and existing N6 and over 2km from the proposed road development. Therefore, no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed SHD (304928-19) project will arise.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: Proposed development is set at sufficient distance from the proposed road development such that no cumulative human health impacts arise as a result of construction or operational phase of this SHD development.</p> <p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR.</p> <p>Material Assets Agriculture: This 5.1 hectare site is located at Crown Square, Monivea Road. and is not within the study area. It is not agricultural land. Thus, no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project will arise.</p> <p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed SHD project, no likely significant air quality cumulative construction impacts will occur. Further, the RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality are will occur and therefore no likely significant cumulative impacts will occur between this project and the N6 GCRR.</p>	None save in relation to Climate.

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹⁵, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in-combination. Accordingly, this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: Proposed SHD development is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project during the construction or operational phase will arise. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered NPF forecasted traffic volumes which includes the increased population in proximity to the proposed road development and concluded that there are no likely significant impacts and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration..</p> <p>Landscape and Visual: The permitted SHD is located on ‘CI’ (Enterprise, Light Industry and Commercial) zoned lands within the existing developed urban edge of the city. The site is physically and visually separated from the proposed road development with intervening established development and by distance. The proposed road development will not give rise likely significant direct, indirect cumulative impacts in combination with the permitted development at this location.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed development and the proposed N6 GCRR. This is due to the distance of the SHD development from the scheme; the already developed nature of the site and its surrounding and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated.</p> <p>Soils and Geology: No contamination was identified and little to no loss of natural soil is likely to occur, given the urban location of the proposed SHD development and the indication of made ground according to available mapping. Loss of aggregate potential is considered small on a local scale. There are no likely significant direct, indirect cumulative impacts of</p>	

¹⁵ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed SHD development at Crown Square is located on limestone and is within the Clarinbridge groundwater body. It is located down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impacts identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed SHD residential development is down gradient of the proposed road development and will manage its storm runoff as required by the current Development Plan such that greenfield flood runoff rates will be maintained post development. The foul effluent will be collected and treated at Mutton Island Wastewater Treatment Plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment and consequently, there will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology.</p> <p>Biodiversity: As per the Biodiversity chapter of the Ecological Impact Assessment Report submitted by the applicant for development SHD 18/6, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance. An Bord Pleanála, in granting permission for SHD 18/6, concluded that “<i>subject to the implementation of the mitigation measures set out in the EIAR, and subject to compliance with the conditions set out below, the effects on the environment of the proposed development, by itself and in combination with other development in the vicinity, are not considered significant</i>”.</p> <p>According to the Ecological Impact Assessment Report, development SHD 18/6 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development SHD 18/6 will not result in any significant residual biodiversity impacts at any geographic scale (being an urban site comprising predominantly of spoil and bare ground habitat), the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and SHD 18/6, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the N6 GCRR presented in the EIAR.</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
<p>Dangan, Upper Newcastle. Student Accommodation. (301693-18) (SHD 18/1)</p>	<p>Socio Economic: The proposed road development will have a slight positive socio-economic impact by providing improved access to N59 and through transfer of a proportion of traffic from the existing N6. Therefore, no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed SHD (301693-19) project will arise.</p>	<p>None save in relation to Climate.</p>
	<p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p>	
	<p>Human Health: Proposed SHD development is set at sufficient distance from the proposed road development such that no cumulative human health impacts arise as a result of construction or operational phase of this SHD development.</p>	
	<p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR.</p>	
	<p>Material Assets Agriculture: This 5.7 hectare site located at Dangan, Upper Newcastle is not agricultural land. There no likely significant direct, indirect cumulative impacts of the N6 GCRR on agriculture in combination with the proposed SHD (301693-18) project.</p>	
	<p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed SHD project, no likely significant air quality cumulative construction impacts will occur.</p> <p>The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore no likely significant cumulative impacts will occur between this project and the N6 GCRR.</p> <p>The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹⁶, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in-combination. Accordingly, this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when</p>	

¹⁶ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: Proposed SHD development is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project during the construction or operational phase will arise. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered NPF forecasted traffic volumes associated with the increased population as forecasted in proximity to the proposed road development and concluded that there are no likely significant impact and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration.</p> <p>Landscape and Visual: The permitted SHD is located on part 'R' Residential and part 'CI' (Enterprise, Light Industry and Commercial) zoned lands within the existing developed suburban context of Thomas Hynes/N59 Roads. The development is nearing completion and is physically and visually separated from the proposed road development with intervening established development vegetation and significant separation distance. The proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with the permitted development at this location.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR. This is due to the distance of the development from the scheme, the developed nature of the site and its surrounding and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated.</p> <p>Soils and Geology: Some of the SHD site will result in the loss of soil, while some is categorised as made ground. There is also the loss of high aggregate potential. However, the cumulative loss is considered small on a local scale. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed SHD development at Dangan, Upper Newcastle, is located on limestone and is within the Ross Lake groundwater body. It is located down gradient of the proposed road development. Although excavations and</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>some dewatering may be required at the site these will not interact with impacts identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed SHD project is down gradient of the proposed road development and will manage its storm runoff as required by the current Development Plan and will discharge to the existing storm Sewer that serves Dangan Area which eventually outfalls into Distillery Stream at NUIG Campus. This is a brown field site that previously had hotel and carparking areas. The foul effluent will be collected and treated at Mutton Island Wastewater Treatment Plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment and consequently, there will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology.</p> <p>Biodiversity: As per the Ecological Impact Assessment submitted by the applicant for development SHD 18/1, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance. An Bord Pleanála, in granting permission for SHD 18/1, concluded that <i>“by reason of the nature, scale and location of the subject site, the proposed development would not be likely to have significant effects on the environment”</i>.</p> <p>According to the Ecological Impact Assessment, development SHD 18/1 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development SHD 18/1 will not result in any significant residual biodiversity impacts at any geographic scale (being an existing city centre hotel complex), the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and SHD 18/1, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the N6 GCRR presented in the EIAR.</p>	
NUIG, Northern Campus, Dangan (303846-19)	Socio Economic: The proposed road development provides a slight positive socio-economic impact by providing improved access to N59 and through transfer of a proportion of traffic from the existing N6. Therefore, no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed SHD (303846-19) project will arise.	None save in relation to Climate.

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
(SHD 18/3)	<p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p>	
	<p>Human Health: Proposed development is set at sufficient distance from the proposed road development such that no cumulative human health impacts arise as a result of construction or operational phase of this SHD development.</p>	
	<p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR.</p>	
	<p>Material Assets Agriculture: This 0.88 hectare site located at Northern Campus, Dangan, is not agricultural land. There no likely significant direct, indirect cumulative impacts of the N6 GCRR on agriculture in combination with the proposed SHD (303846-19) project.</p>	
	<p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed SHD project, no significant air quality cumulative construction impacts are predicted to occur.</p> <p>The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore no likely significant cumulative impacts will occur between this project and the N6GCRR.</p> <p>The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹⁷, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in-combination.</p> <p>Accordingly, this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p>	
	<p>Noise and Vibration: Proposed SHD development is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this SHD project during the construction or operational phase will arise. Operational traffic associated with the proposed road development assessed</p>	

¹⁷ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered NPF forecasted traffic volumes which includes the increased population in proximity to the proposed road development and concluded that there are no likely significant impacts and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration.</p> <p>Landscape and Visual: The permitted SHD is located on ‘CF’ ‘Community, Cultural and Institutional’ zoned lands within the existing partly developed campus of NUIG. While the site is physically separated from the proposed road development, the proposed River Corrib bridge will be visible from the development. Nevertheless, the permitted SHD is set within an existing partly developed campus location and the proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with this development.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR. This is due to the distance of the development from the scheme and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6GCRR will be fully mitigated.</p> <p>Soils and Geology: According to available GSI/Teagasc mapping, there will be loss of soil and very high aggregate potential. However, this is considered small on a local scale. According to the SHD screening report, it is not likely that there will be any significant effect on the environment with regards to soils and geology. As such, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: The proposed SHD project at Dangan, is located on limestone and is within the Ross Lake groundwater body. It is located down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impacts identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed student accommodation development is down gradient of the proposed road development and will manage its storm runoff as required by the current development plan such that greenfield flood runoff rates will be</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>maintained post development. The foul effluent will be collected and treated at Mutton Island Wastewater Treatment Plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment and consequently, there will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology.</p> <p>Biodiversity: Areas of the priority Annex I habitats Calcareous grassland and Residual alluvial forest were recorded within the SHD 18/3 development site as part of the N6 GCRR surveys undertaken in 2014. A reduced area of both habitat types was noted in the Ecological Impact Assessment submitted by the applicant for development SHD 18/3 and it is stated that the areas of priority Annex I Calcareous grassland and Residual alluvial forest habitats recorded there in 2016 will be retained and not directly impacted by the SHD 18/3 development. Regardless, the N6 GCRR project will not have any likely significant residual effects on either habitat type as the losses of each that are associated with the proposed road development will be addressed as a result of the creation of Calcareous grassland and Residual alluvial forest habitat proposed as part of the N6 GCRR mitigation strategy.</p> <p>According to the Ecological Impact Assessment, Development SHD 18/3 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect.</p> <p>As per the SHD 18/3 Ecological Impact Assessment, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance. An Bord Pleanála, in granting permission for SHD 18/3, concluded that <i>“by reason of the nature, scale and location of the subject site, the proposed development would not be likely to have significant effects on the environment”</i>.</p>	
<p>Augustine Hill, GCC ref 2047 FI REQUEST</p>	<p>Socio-Economics: The proposed Augustine Hill development will be located to the rear of Ceannt Station over 3km from the proposed road development. Therefore, no negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed Augustine Hill project will arise.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: Proposed development is set at sufficient distance from the proposed road development such that no cumulative human health impacts arise as a result of construction or operational phase of this SHD development.</p>	<p>None save in relation to Climate</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR.</p> <p>Material Assets Agriculture: This site is not located on agricultural land. Therefore, no likely significant direct, indirect cumulative impacts of the N6 GCRR on agriculture in combination with the proposed Augustine Hill project will arise.</p> <p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed development, no significant air quality cumulative construction impacts are predicted to occur.</p> <p>The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore no likely significant cumulative impacts will occur between this project and the N6GCRR.</p> <p>The proposed Augustine Hill development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹⁸, any increase in carbon emissions could be considered significant whether that be from this development or the N6 GCRR or in-combination. Accordingly, this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed SHD project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration Proposed development is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this project during the construction or operational phase will arise. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered NPF forecasted traffic volumes associated with the increased population as forecasted in the NPF in proximity to the proposed road development and concluded that no likely significant impacts will occur and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the SHD project on noise and vibration.</p>	

¹⁸ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Landscape and Visual: The site is located within the centre of Galway City at substantial distance and physical and visual separation from the proposed road development. Thus the proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with this development.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed development and the proposed N6 GCRR. This is due to the distance of the development from the scheme, the developed nature of the surrounding environs and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated.</p> <p>Soils and Geology: The aggregate potential is considered to be low at this proposed development. In addition, little to no loss of natural soil is likely to occur, given the urban location of the proposed development and the indication of made ground according to available mapping. According to Chapter 7 of the EIAR for the Augustine Hill development, there is no likely significant effect on the land and soils. As such, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p> <p>Hydrogeology: This site is located over 3km from the proposed road development in the city centre. Although excavations and some dewatering may be required at the site these will not interact with impacts identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed development on hydrogeology.</p> <p>Hydrology: The proposed Augustine Hill project, located to the rear of Ceannt Station is down gradient of the proposed road development and will manage its storm runoff as required by the current development plan such that greenfield flood runoff rates will be maintained post development with attenuation for the 100year rainstorm event with 20% climate change. This development will discharge to the Combined Public Sewer. The foul effluent from the proposed project will be discharged to the public foul sewer and will be treated at the Mutton Island wastewater treatment plant prior to disposal to sea via the Mutton Island outfall. The proposed road development will manage its storm runoff and storm water quality so as to protect the receiving environment. The foul discharge from the proposed development has been assessed and permissions obtained from Irish Water. There will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed SHD project on hydrology.</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Biodiversity: As per the Biodiversity chapter of the Ecological Impact Assessment Report submitted by the applicant for development 20/47, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale.</p> <p>According to the Ecological Impact Assessment Report, development 20/47 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development 20/47 will not result in any significant residual biodiversity impacts at any geographic scale (being an urban site comprising predominantly of spoil and bare ground habitat), the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and development 20/47, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p>	
<p>Galway West Water Supply Scheme – Terryland WTP Intake Works and Clifton Hill Rising Main (Irish Water) 19/107</p>	<p>Socio-Economics: No likely significant cumulative effects due to the nature of the proposed development.</p> <p>Irish Language: No likely significant cumulative effects due to the nature of the proposed development.</p> <p>Human Health: The proposed Irish Water development will improve waste water infrastructure in Galway city. No negative likely significant direct, indirect cumulative socio-economic impacts of the N6 GCRR in combination with the proposed development will arise.</p> <p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, no negative cumulative impacts have been identified in relation to this proposed SHD development and the proposed N6 GCRR.</p> <p>Material Assets Agriculture: This site is not agricultural land. Therefore, no likely significant direct, indirect cumulative impacts of the N6 GCRR on agriculture in combination with the proposed project (19/107) will arise.</p> <p>Air Quality and Climate: During the construction phase, the implementation of mitigation measures (on both N6 GCRR and this project) will ensure that no likely significant direct or indirect cumulative air quality impacts will arise at sensitive receptors. The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur and therefore no likely significant cumulative impacts will occur between this project and the N6GCRR.</p>	<p>None save in relation to Climate</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>The proposed development will generate carbon emissions during the construction phase. In accordance with IEMA guidance¹⁹, any increase in carbon emissions could be considered significant whether that be from this development or the N6 GCRR or in-combination. Accordingly, proposed project (19/107) will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate and it follows that, when taken in combination, the N6 GCRR and this proposed project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration Proposed development is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this project during the construction or operational phase will arise.</p> <p>Landscape and Visual: The development is located on the east side of the River Corrib over 1.5km south/southeast of the proposed road development. The main raw water intake structure is located south of the existing Quincentenary Bridge and adjoining road embankment. There is no physical or visual connection between the development and the proposed road development. Thus, the proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with this development.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed development and the proposed N6 GCRR. This is due to the distance of the development from the scheme and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6GCRR will be fully mitigated.</p> <p>Soils and Geology: The proposed Irish water project will result in the loss of a small quantity of soil and the loss of very high and high aggregate potential. However, this is considered small on a local scale. In addition, mitigation measures are outlined to protect the environment if contamination arises from construction or the existing soil (i.e. NIS outlines that hazardous construction waste will be stored within temporary bunded storage areas prior to removal). As such, there is no likely significant effect on the land and soils and there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed project on soils and geology following implementation of appropriate mitigation measures outlined in the N6 GCRR and adherence to the CEMP.</p>	

¹⁹ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Hydrogeology: Although excavations and some dewatering may be required at the site these will not interact with impacts identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed development on hydrogeology.</p> <p>Hydrology: No likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed Irish Water project on hydrology due to the nature of the proposed development. The proposed road development will have no noticeable effect on the flow regime, salinity, sedimentation process or water quality downstream in the River Corrib Estuary and Inner Galway Bay, both during construction and operation stages. Refer also to Schedule of Environmental Commitments in relation to Irish Water.</p> <p>Biodiversity: As per the Ecological Impact Assessment submitted by the applicant for development 19/107, and considering the mitigation measures proposed therein, it alone will not result in any significant residual biodiversity impacts at any geographic scale including any related to European sites, nationally designated areas for nature conservation, hydrology, hydrogeology, air quality or species disturbance. An Bord Pleanála, in granting permission for development 19107, concluded that <i>“by reason of the nature, scale and location of the subject site, the proposed development would not be likely to have significant effects on the environment”</i>.</p> <p>According to the Ecological Impact Assessment, development 19107 will not result in the loss of any Annex I habitat types or any other habitat types for which the proposed road development will have a likely significant residual effect. As development 19107 will not result in any significant residual biodiversity impacts at any geographic scale, the proposed N6 GCRR will not act cumulatively with it to affect the local bat or peregrine falcon populations.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and development 19107, and the mitigation measures proposed for each of those projects, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the N6 GCRR presented in the EIAR.</p>	
<p>20/46 Minclon Clybaun Road and Minclon Cross Galway FI REQUEST</p>	<p>Socio-Economics: The proposed 20/46 (Minclon Clybaun) residential development is to be located on lands zoned for development. There will be no likely significant direct, indirect cumulative impacts on socio-economics arising from the N6 GCRR in combination with the proposed project Ref No 20 / 464.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p>	<p>None save in relation to Climate</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Human Health: The proposed 20/46 (Minclon Clybaun) residential development is to be located in proximity to the proposed N6 GCRR. As there are no significant cumulative impacts envisaged for the pathways that impact human health, air quality, noise and vibration, water and soils, there will be no likely significant direct, indirect cumulative impacts on human health arising from the N6 GCRR in combination with the proposed project Ref No 20 / 464.</p> <p>Material Assets Non-Agriculture: The proposed 20/46 (Minclon Clybaun) residential development impacts lands associated with the proposed road development, protected road scheme no. 242. These lands are zoned for development which is in keeping with the proposed residential development and the proposed road development is considered to have a slight impact on these lands and there is no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination-with this proposed project Ref No 20 / 464.</p> <p>Material Assets Agriculture: This housing development affects lands on protected road scheme no. 242. This land parcel is categorised as very low sensitivity because it was not actively farmed and the impact is assessed as not significant due to land-lost to the N6 GCRR. The loss of the entire land parcel increases the impact to moderate adverse on this individual land parcel. The impact on the study area will not change due to a further loss of 2.6 hectares and the impact is not significant at a regional basis. Thus, there are no likely significant direct or indirect cumulative impacts of the N6 GCRR in combination with the proposed project Ref No 20 / 464 within the study area nor at a regional level.</p> <p>Air Quality and Climate: The proposed 20/46 (Minclon Clybaun) residential development is to be located in proximity to the proposed N6 GCRR. The planning permission for the development includes the requirement for the development and implementation of a Construction Management Plan which is to include details of intended construction practice for the development. This will require the developer to minimise off site dust nuisance. On that basis, and due to the proposal for significant measures to minimise dust on the N6 GCRR project, no likely significant direct or indirect air quality cumulative construction impacts will occur. The RFI Response for the proposed N6 GCRR updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur. Therefore, taking the N6 GCRR with this project, no likely significant direct or indirect cumulative impacts will occur. The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance²⁰, any increase in carbon emissions could be considered significant whether that be from this development</p>	

²⁰ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>or the N6 GCRR or in-combination. Accordingly, the construction of this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate during the construction phase and it follows that, when taken in combination, the N6 GCRR and this proposed residential project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: In the event both projects are constructed simultaneously, construction activities associated with Mincloon Clybaun residential development will dominate at closest noise sensitive locations to its boundary. There are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this residential development at operational stage due to the insignificant noise sources from this type of development. Operational traffic associated with the proposed road development assessed as part of the RFI sensitivity analysis has included for significant population growth in Galway City in line with NPF forecasts. The RFI noise sensitivity assessment considered NPF forecasted traffic volumes which includes the increased population in proximity to the proposed road development and concluded that there are no likely significant impacts and therefore there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the residential development on noise and vibration.</p> <p>Landscape and Visual: The proposed development is located southeast of junction between Ragoon Road and Clybaun Road. The site is close to the mainline of the proposed road development. Landscape mitigation measures as part of the proposed road development provides for extensive planting on the southern embankment slopes of the mainline (Ch. 6+000 to Ch.6+550), which will screen the proposed road development from the residential application site and vice versa. The residential development is sited on the on 'R' Residential zoned land at the leading edge of existing residential development in the area and as such will be assimilated into the existing suburban fabric. The proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with this development.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed Crown Square SHD project in combination with the N6 GCRR. This is due to the nature and scale of the development and the proposed N6 GCRR at this location, the existing developed nature of the receiving environment, the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated in this area and the fact that no visual (indirect) impacts will arise that relate to the archaeological, architectural and cultural heritage resource.</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Soils and Geology: The development will likely result in the loss of well drained soils, in addition to the loss of very high aggregate potential. However, the cumulative loss is considered small on a local scale. There are no likely significant direct or indirect cumulative impacts of the N6 GCRR in combination with the proposed Mincloon development on soils and geology.</p> <p>Hydrogeology: The proposed SHD project is located on granite and adjacent to but down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impact identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: Mincloon/Clybaun is for a residential estate located close to the southeast of the proposed road development. There are no associated impacts to water quality or flooding of surface waters in this area from the proposed road development. The proposed estate is not located within a flood risk zone and its storm water will be managed through attenuation. The foul effluent from the proposed residential estate will be discharged to the public foul sewer and will be treated at the Mutton Island wastewater treatment plant prior to disposal to sea via the Mutton Island outfall. There will be no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this proposed residential development project on hydrology.</p> <p>Biodiversity: Neither the parent application, nor this application, seeking to amend the granted parent application, were accompanied by an Environmental Impact Assessment Report, an Ecological Impact Assessment or any Appropriate Assessment reports. Based on available mapping and data, the habitats within the development site appear to be rough and agricultural grassland with encroaching bramble and scrub, and outcropping granite with a hilly topography. Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and this development, and the mitigation measures proposed for the N6 GCRR, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p>	
<p>20/83 (Bothar Stiofan, Rahoon) FI REQUEST</p>	<p>Socio-Economics: Traffic from this proposed residential development destined for the N59 Link Road will increase traffic on Bothar Stiofan. However, it is to be located on lands zoned for development. There will be no likely significant direct, indirect cumulative impacts on socio-economics arising from the N6 GCRR in combination with the 20/83 (Bothar Stiofan) residential project.</p>	<p>None save in relation to Climate</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: The proposed 20/83 (Bothar Stiofan) residential project is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts on human health will arise from the N6 GCRR in combination with the 20/83 (Bothar Stiofan) residential project.</p> <p>Material Assets Non-Agriculture: Given that the proposed 20/83 (Bothar Stiofan) residential project is set at sufficient distance from the proposed road development, from a material assets non-agriculture perspective, there is no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination-with this 20/83 (Bothar Stiofan) residential project.</p> <p>Material Assets Agriculture: There are no likely significant direct or indirect cumulative impacts of the N6 GCRR in combination with the proposed 20 / 83 (Bothar Stiofan) housing development because this land is not agricultural.</p> <p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed Bothar Stiofan (20/83) development, no likely significant direct or indirect air quality cumulative construction impacts will occur. The RFI Response updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and concluded that no likely significant impacts on air quality will occur. Therefore, taking the N6 GCRR with this project, no likely significant direct or indirect cumulative impacts will occur.</p> <p>The proposed SHD residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance²¹, any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRR or in-combination. Accordingly, the construction of this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRR will have a likely significant impact on climate during the construction phase and it follows that, when taken in combination, the N6 GCRR and this proposed residential are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: The proposed Bóthar Stiofáin residential development is set at sufficient distance from the proposed road development such that no cumulative noise impacts will arise as a result of construction or operational phase of this</p>	

²¹ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed Bóthar Stiofáin residential development (20/83) on noise and vibration.</p> <p>Landscape and Visual: The proposed development is located on ‘R’ Residential zoned land, in an existing residential area within the developed context of Knocknacarra. The site is approximately 800m southeast of the mainline of the proposed road development. There is no physical or visual connection between the development and the proposed road development. The proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with this development.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed Bothar Stiofan project in combination with the N6 GCRR. This is due to the nature and scale of the development and the proposed N6 GCRR at this location, the existing developed nature of the receiving environment, the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRR will be fully mitigated in this area and the fact that no visual (indirect) impacts will arise that relate to the archaeological, architectural and cultural heritage resource.</p> <p>Soils and Geology: The development will likely result in the loss of very high aggregate potential. However, the cumulative loss is considered small on a local scale. As the site is located in an urban area with previous development, there is likely to be very little to no loss in terms of agricultural soil. There are no likely significant direct or indirect cumulative impacts of the N6 GCRR in combination with the proposed development on soils and geology.</p> <p>Hydrogeology: The proposed SHD project is located on granite and down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impact identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: Residential apartment development at Bóthar Stiofáin, Ragoon is service by the public storm and foul sewers. The proposed N6 GCRR in combination with the small apartment development at Bóthar Stiofáin, Ragoon will not result in any likely significant, direct or indirect cumulative impacts on hydrology. The residential site is located well downstream of the Road development and its storm water discharges to the public sewer and its foul waste to the public foul sewer where it will be treated at Mutton island and discharged to sea at Mutton Island marine outfall. The road development provides</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>water quality and storm water attenuation at all of its proposed outfalls and therefore will not negatively impact the local streams or public storm sewers.</p> <p>Biodiversity: Based on available mapping and data, the habitats within the development site appear to be built, disturbed and recolonising bare ground.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and this development, and the mitigation measures proposed for the N6 GCRR, there is no potential for any cumulative effects to arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.</p>	
<p>20/101 (Knocknacarra) LIVE FI REQUEST</p>	<p>Socio-Economics: Given that the proposed 20 / 101 (Knocknacarra) project is set at sufficient distance from the proposed road development, from a socio-economic perspective, there is no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination-with this 20 / 101 (Knocknacarra) project.</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: The proposed 20 / 101 (Knocknacarra) project is set at sufficient distance from the proposed road development such that no likely significant direct, indirect cumulative impacts on human health will arise from the N6 GCRR in combination with the 20 / 101 (Knocknacarra) project.</p> <p>Material Assets Non-Agriculture: Given that the proposed 20 / 101 (Knocknacarra) project is set at sufficient distance from the proposed road development, from a material assets non-agriculture perspective, there is no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination-with this 20 / 101 (Knocknacarra) project.</p> <p>Material Assets Agriculture: There are no likely significant direct or indirect cumulative impacts of the N6 GCRR in combination with the proposed 20 / 101 (Knocknacarra) development because this land is not agricultural.</p> <p>Air Quality and Climate: Due to the separation of the proposed road development from the proposed Knocknacarra (20/101) development, no likely significant air quality direct or indirect cumulative construction impacts will occur. The RFI Response for the N6 GCRR updated the air quality impact assessment taking into account the increased population forecasted in the NPF which included forecasted traffic volumes in proximity to the proposed road development and</p>	<p>None save in relation to Climate</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>concluded that no likely significant impacts on air quality will occur. Therefore, taking the N6GCRRL with this project, no likely significant direct or indirect cumulative impacts will occur.</p> <p>The proposed residential development will generate carbon emissions during the construction phase. In accordance with IEMA guidance²², any increase in carbon emissions could be considered significant whether that be from this SHD or the N6 GCRRL or in-combination. Accordingly, the construction of this proposed SHD project will have a likely significant impact on climate. It has already been concluded that the N6 GCRRL will have a likely significant impact on climate during the construction phase and it follows that, when taken in combination, the N6 GCRRL and this proposed residential project are likely to have significant cumulative impacts on climate.</p> <p>Noise and Vibration: The proposed Knocknacarra residential development is set at sufficient distance from the proposed road development such that no cumulative noise impacts will arise as a result of construction or operational phase of this development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRRL in combination with the proposed Knocknacarra residential development (20/101) on noise and vibration.</p> <p>Landscape and Visual: The proposed development is located on ‘R’ Residential zoned land, in an existing residential area close on the west side of Salthill. The site is approximately 2km south of the proposed road development. There is no physical or visual connection between the development and the proposed road development. The proposed road development will not give rise to likely significant direct, indirect cumulative landscape and visual impacts in combination with this development.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed Knocknacarra project in combination with the N6 GCRRL. This is due to the nature and scale of the development and the proposed N6 GCRRL at this location, the existing developed nature of the receiving environment, the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6 GCRRL will be fully mitigated in this area and the fact that no visual (indirect) impacts will arise that relate to the archaeological, architectural and cultural heritage resource.</p>	

²² Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>Soils and Geology: The development is proposed in an area of made ground. Adequate mitigation must be put in place to capture and safely dispose of any contaminated material due to the previous use of the site as a petrol station. It is possible that some material may need to be disposed to a suitably licenced waste facility. The Authority has requested further information on the methodology regarding removal and proposals for decommissioning of the site.</p> <p>The N6 GCRR EIAR (Section 9.5.3.6) outlines that no known areas of contaminated ground were located within the study area. However, the underlying soil could be impacted from the exposure of previous buried hazardous material, in an unlicensed dumping site for example. The significance of the potential impact is moderate / slight.</p> <p>Given the size of the proposed development in Knocknacarra, the cumulative impact in terms of contaminated ground is still anticipated to be moderate / slight. However, as requested by the Authority, further clarification is required to determine the extent of contamination at the proposed site and the mitigation measures required.</p> <p>There are no other likely significant direct or indirect cumulative impacts of the N6 GCRR in combination with the proposed development on soils and geology.</p> <p>Hydrogeology: The proposed SHD project is located on granite and is significantly down gradient of the proposed road development. Although excavations and some dewatering may be required at the site these will not interact with impact identified for the proposed road development. Thus, there are no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with the proposed SHD project on hydrogeology.</p> <p>Hydrology: The proposed N6 GCRR in combination with proposed development of 17 apartments at 2,3,4 Knocknacarra (R336) Salthill will not result in any likely significant direct or indirect cumulative impact on hydrology. The residential site is located well downstream of the Road development and will be required to manage on site its storm water and discharge to the public foul sewer where it will be treated at Mutton island and discharged to sea at Mutton Island marine outfall. This site is not within the surface water catchment area that the proposed GCRR will discharge to.</p> <p>Biodiversity: Based on available mapping and data, the habitats within the development site appear to be built, ground (an existing petrol station) and a residential property.</p> <p>Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and this development, and the mitigation measures proposed for the N6 GCRR, there is no potential for any cumulative effects to</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	arise that would affect the conclusions in the environmental impact assessment for the proposed road development presented in the EIAR.	

Table 3: Likely significant direct, indirect and cumulative impact assessment of Twomileditch Quarry²³ in combination with the N6 GCRR

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
<p>QD0021 Twomileditch Quarry expansion GRANTED</p>	<p>Socio-Economics: Given that this is a proposed extension to an existing quarry development, from a socio-economic perspective, there is no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination with this quarry extension development</p> <p>Irish Language: Having considered the proposed road development in tandem with this project, it is considered that no significant negative cumulative impact upon the status of Irish as a community language will occur.</p> <p>Human Health: No likely significant direct or indirect cumulative impacts on air, noise, water and soils will arise between the proposed N6 GCRR and the proposed quarry extension development (see below.) It was noted in the 2016 Inspectors report of the proposed quarry extension development that <i>“Having regard to the nature of quarrying activity long established at the subject site and the extent of development currently proposed, it is considered that the proposed development would not have any significant impacts on human health”</i> Therefore, it can be concluded that there will be no likely significant direct or indirect cumulative impacts on human health between the proposed N6 GCRR and the proposed quarry extension development.</p> <p>Material Assets Non-Agriculture: From a material assets non-agriculture perspective, there is no likely significant direct, indirect cumulative impacts of the N6 GCRR in combination-with this quarry extension development.</p> <p>Material Assets Agriculture: The proposed N6 GCRR in combination with the proposed quarry development will not result in any likely significant direct or indirect cumulative impact on material assets – agriculture because the proposed quarry development extension does not involve agricultural land-take.</p> <p>Air Quality and Climate: It was noted in the 2016 Inspectors report of the proposed quarry extension development that <i>“having regard to the nature of the application and to the mitigation measures outlined in the EIS, the proposed development would not result in any significant impact on the air quality of the area”</i> Therefore, it can be concluded that there will be no likely significant direct or indirect cumulative impacts on air quality between the proposed N6 GCRR and the proposed quarry extension development.</p>	None

²³ Twomileditch Quarry, Tuam, Co. Galway - Further development of quarry and all related ancillary site works Pollkeen and Ballygaurran Townlands. ABP Ref QD0021. Granted by ABP on 25/07/2017. <http://www.pleanala.ie/casenum/QD0021.htm>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>It was noted in the 2016 Inspectors report of the proposed quarry extension development that “<i>The EIS concludes that the proposed development is not of sufficient scale to have any direct or indirect impacts on regional or local climates.</i>” Therefore, it can be concluded that there will be no further likely significant direct or indirect cumulative impacts on climate over and above those outlined for the N6 GCRR.</p> <p>Noise and Vibration: It was noted in the 2016 Inspectors report of the proposed quarry extension development that the EIS is compliant with the noise and vibration emission limits in its current operation. The same noise & vibration limits have been applied for the proposed extension therefore no change to the noise environment should occur with the extended operations. It is concluded that there will be no likely significant direct or indirect cumulative noise impacts associated with the normal day to day operations of the proposed quarry extension in combination with the proposed N6 GCRR. Consideration has also been given to the potential for a likely significant vibration effect on sensitive receptors arising from the highly unlikely event of blasting being carried out by the N6 GCRR (between the N84 and School Road) and the quarry development at the same time (concurrently). Given the strict control of explosives for blasting and the advance notice required to the public & Gardai, it is highly unlikely that this would occur. However, a commitment has been included in the Schedule of Commitments that the Contractor shall liaise with the operator for Twomileditch Quarry in relation to the blasting schedule for the N6 GCRR and the blasting schedule for the quarry. The Contractor shall ensure that N6 GCRR blasting between the School Road and N84 does not take place at the same time (concurrently) as blasting in Twomileditch Quarry.</p> <p>Landscape and Visual: The proposed N6 GCRR in combination with the proposed quarry development will not result in any likely significant direct or indirect cumulative impacts on landscape and visual. The proposed quarry extension development relates to deepening of a part of the existing quarry. As all works will be contained within the existing void of an existing working quarry, no cumulative landscape and visual impacts will arise with the proposed N6 GCRR.</p> <p>Archaeology, Architectural and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to this proposed quarry extension in combination with the N6 GCRR. No direct or indirect impacts on cultural heritage from the proposed quarry extension were identified by ABP.</p> <p>Soils and Geology: The proposed development consists of the proposed continuation of use and deepening of the existing quarry and will involve excavation of the underlying bedrock and extraction of natural rock reserves. While this will result in depletion of the natural resource, it will result in the generation of crushed rock aggregate. The proposed road development (N6 GCRR) will result in</p>	

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors	Overall Cumulative Impact (if any)
	<p>the loss or sterilisation of high and very high crushed rock aggregate potential which is reported in the EIAR as a moderate/slight residual impact. Therefore, there are no likely significant direct or indirect cumulative impacts of the N6 GCRR in combination with the proposed quarry extension development on soils and geology.</p> <p>Hydrogeology: The 2016 ABP Inspectors report for the quarry extension identified that groundwater levels will continue to be locally drawn down in the surrounding Visean Limestone by dewatering in the quarry void, which will maintain the existing groundwater regime. The proposed restoration plan (Planning Condition 10) will result in a rebounding of groundwater levels in the quarry void to specified maximum of 11m AOD, which will form a large enclosed quarry lake. The groundwater levels for the proposed road development will not change as a result of the implementation of the quarry restoration plan because the road development groundwater levels are significantly higher (cutting EW27 (22.84m AOD)) than the maximum rebounded groundwater level specified for Twomileditch quarry (11m AOD).</p> <p>Thus, there are no likely significant direct, indirect cumulative hydrogeological impacts of the proposed N6 GCRR in combination with the proposed quarry extension (including restoration plan) at Twomileditch.</p> <p>Hydrology: The proposed N6 GCRR in combination with the proposed quarry development will not result in any likely significant direct or indirect cumulative impact on hydrology. Surface water will be managed within the proposed quarry development resulting in no direct discharge to surface waters and there is no potential interaction with the proposed road development. The proposed restoration plan will result in a rebounding in the quarry basin of groundwater to an specified maximum of 11m AOD forming a large enclosed quarry lake. Given the levels relative to the road development and the flood risk area on the Tuam Road at Twomileditch, there will be no opportunity for any cumulative negative impacts on surface hydrology either as it affects the hydrological regime, flood risk or water quality in any adjacent surface water receptors.</p> <p>Biodiversity: The 2017 ABP Inspectors report for the quarry extension identified that no significant ecological impacts will occur. Considering the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR and the mitigation measures proposed for the N6 GCRR in combination with the quarry development, it is concluded that there is no potential for any direct or indirect likely significant cumulative effects to arise.</p>	

Table 34: Likely significant direct, indirect and cumulative impact assessment of the likely significant direct, indirect and cumulative impact assessment of the N6 GCRR in combination with all of the projects and plans considered in Section 19.5 of the EIAR together with all of the projects listed in Tables 1 and 3 above.

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
<p>Cumulative Impact Assessment of all the above live or approved projects identified since the publication of the EIAR, and the project considered in Table 3 together with the N6 GCRR and the projects and plans considered in Section 19.5 of the EIAR.</p>	<p>Socio-Economics: From a socio economic perspective, taking the N6 GCRR in combination with all of the projects listed in Section 19.5 of the EIAR and in Tables 1 and 3 of this addendum, there is no potential for any significant negative direct or indirect cumulative impact to arise. As identified in Chapter 18 of the EIAR, the proposed N6 GCRR will have a significant positive residual impact from a socio economic perspective. While the cumulative assessment carried out in Section 19.5 of the EIAR and in Tables 1 and 3 identifies some limited slight negative socio economic impacts, these will be mitigated by the net positive socio economic benefits introduced by the proposed N6 GCRR.</p>
	<p>Irish Language: Having considered the proposed N6 GCRR in combination with all of the projects listed in Section 19.5 of the EIAR and in Tables 1 and 3 of this addendum, it is considered that no likely significant direct or indirect cumulative effects will arise upon the status of Irish as a community language.</p>
	<p>Human Health: The construction of the proposed road development will generate the highest noise, vibration and air quality impacts at the properties closest to its alignment such that this development will dominate human health impacts in its immediate environment during its construction phase. Moving further from the construction of the proposed road development, construction of other projects (as listed in Tables 1 and 3 of this addendum and in Section 19.5 of the EIAR) will dominate the human health impacts environment at the closest sensitive properties to their site boundaries. However, overall the impact on human health is broadly positive. When assessing the in-combination impacts of the N6 GCRR with the plans and projects identified in Chapter 19 of the EIAR and those listed in Tables 1 and 3 above and given that the nature of those developments and their location, no likely significant direct, indirect cumulative impacts on human health will arise.</p>
	<p>Material Assets Non-Agriculture: From a non-agricultural material assets perspective, taking into account the N6 GCRR in combination with all of the projects listed in Section 19.5 of the EIAR and in Tables 1 and 3 of this addendum, no likely significant direct, indirect cumulative impacts will arise.</p>
	<p>Material Assets Agriculture: Given that the agricultural area of Co Galway is approx. 346,881 hectares (2010 CSO Statistics), the area of land lost to all of these projects combined (i.e. N6 GCRR in combination with all of the projects listed in Section 19.5 of the EIAR and in Tables 1 and 3 of this addendum) would have to exceed 3,439 hectares (1%) to approach any level of significance. It does not do so. In the period 2010 to 2018, cattle numbers in the Western Region increased by 3% and sheep numbers increased by 11% (CSO). This upward trend verifies the ability of agriculture to increase production despite land lost to urban and new road developments. Thus, likely significant direct, indirect cumulative impacts on agriculture will not arise.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Air Quality and Climate: During the construction phases, where the development of the projects (as listed in Tables 1 and 3 of this addendum and in Section 19.5 of the EIAR) occurs in proximity to the N6 GCRR construction site, the implementation of mitigation measures (on both N6 GCRR and those other projects) will ensure that no likely significant direct or indirect cumulative air quality impacts will arise at sensitive receptors.</p> <p>The proposed N6 GCRR in-combination with the proposed developments (as listed in Tables 1 and 3 of this addendum and in Section 19.5 of the EIAR) and in particular the residential developments will generate carbon emissions during the construction phase. In accordance with IEMA guidance²⁴, any increase in carbon emissions could be considered significant whether that be from these projects or the N6 GCRR or in-combination. Accordingly, when taken in combination, the N6 GCRR, the projects listed in Section 19.5 of the EIAR and the projects listed in Tables 1 and 3 of this addendum are likely to have significant cumulative impacts on climate and significant cumulative impacts are predicted to occur.</p> <p>Noise and Vibration: The construction of the N6 GCRR will generate the highest noise and vibration impacts at the properties closest to its alignment such that this development will dominate noise levels in its immediate environment during its construction phase. Moving further from the construction of the proposed road development, construction of other projects (as listed in Tables 1 and 3 of this addendum and in Section 19.5 of the EIAR) will dominate the noise and vibration environment at the closest sensitive properties to their site boundaries. Assessing the in-combination impacts of the N6 GCRR with the plans and projects identified in Chapter 19 of the EIAR and those listed in Tables 1 and 3 above, given the nature of those developments and their location, no likely significant direct, indirect cumulative impacts on noise and vibration will arise.</p> <p>Landscape and Visual: From a landscape and visual perspective, taking into account the N6 GCRR in combination with all of the projects listed in Section 19.5 of the EIAR and in Tables 1 and 3 of this addendum, no likely significant direct, indirect cumulative impacts will arise for reasons of distance, physical or visual separation, appropriate land use zoning or by reason of existing or proposed screening.</p> <p>Archaeology, Architectural and Cultural heritage: When considering all of the above projects in Tables 1 and 3 together with those set out in Chapter 19 of the EIAR in combination with the proposed N6 GCRR, from an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified. This is due in main to the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed N6GCRR will be fully mitigated. It is also due to the distance of the developments from the proposed road scheme, the nature and extent of developments and their existing receiving environments.</p> <p>Soils and Geology: When considering all of the projects together (i.e. those listed in Tables 1 and 3 above as well as those identified in Chapter 19 of the EIAR) in combination with the N6 GCRR, the loss of soil and geology features is still considered small on a local scale. Mitigation measures and requirements are set out in the project specific CEMPs and also in the N6 GCRR CEMP. As such, no likely significant direct, indirect</p>

²⁴ Institute of Environmental Management and Assessment (IEMA) guidance note on ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>cumulative impacts on soils and geology will arise from the proposed N6 GCRR in combination with all of the projects listed in Section 19.5 of the EIAR and in Tables 1 and 3 of this addendum.</p> <p>Hydrogeology: From a hydrogeological perspective, taking into account the N6 GCRR in combination with all of the projects listed in Section 19.5 of the EIAR and in Tables 1 and 3 of this addendum, no likely significant direct, indirect cumulative impacts will arise. This is due in the main to the fact that any negative impacts on hydrogeology arising from the proposed N6 GCRR will be fully mitigated. It is also due to the location of the developments from the proposed road development (e.g. distant or downgradient of the N6 GCRR), the nature and extent of developments and the lack of interaction with impacts identified for the proposed road development.</p> <p>Hydrology: From a hydrological perspective, taking into account the N6 GCRR in combination with all of the projects listed in Section 19.5 of the EIAR and in Tables 1 and 3 of this addendum, no likely significant direct, indirect cumulative impacts on hydrology will arise because storm drainage runoff will be managed as part of SUDS (sustainable urban drainage systems) development policy so as not to cause increased flooding from all of the projects, water quality is protected through site specific design measures for the N6 GCRR and the all of the proposed developments described in Tables 1 and 3 will be connected to the Galway City Foul Drainage system which undergo secondary and tertiary treatment at Mutton Island prior to outfalling to Galway Bay.</p> <p>Biodiversity: None of the projects assessed above identified that there were any likely significant negative residual effects on biodiversity. In all cases, mitigation measures were/are proposed to ensure that those projects, either alone or in cumulatively with one another, will not result in any likely significant negative residual effects on biodiversity.</p> <p>As concluded in Chapter 10, Biodiversity of the EIAR for the proposed N6 GCRR, and having regard to the mitigation measures detailed therein (see Section 8.6 of the EIAR), the proposed road development will have likely significant residual effects on biodiversity as a result of habitat loss (including areas of priority and non-priority Annex I habitat types), permanent displacement of peregrine falcon from nest sites at Lackagh Quarry and impacts on local bat populations arising from habitat loss, severance, disturbance and mortality risk. With regard to Annex I habitat loss, the predicted significant residual biodiversity effects have accounted for the fact that the proposed road development will be contributing to an existing trend of Annex I habitat loss locally. However, as assessed in Section 8.8 of the EIAR, none of the plans or projects originally considered as part of the cumulative impact assessment, either individually or cumulatively with one another, are likely to result in a significant effect cumulatively with the proposed road development.</p> <p>Considering the mitigation measures for all the developments considered above and the mitigation measures proposed in the EIAR for the N6 GCRR, there is no potential for any cumulative effects to arise as a consequence of the proposed road development acting together with any, or all, of the additional projects assessed in this document, or cumulatively with those plans and projects originally assessed in the EIAR, that would increase the likely significant residual effects on biodiversity predicted in relation to the N6 GCRR.</p>

